"A complete man with balanced development of body, mind and spirit is called a Superman. ...As is the case of the body, mind and spirit will also evolve gradually, and the spirit and mind will become so pure that a Superman will come into existence."

–Revered Prof. Prem Saran Satsangi

Foreword

हे दयाल सद् कृपाल |
हम जीवन आधारे ||
सप्रेम प्रीति और भक्ति रीति |
बन्दे चरन तुम्हारे ||
दीन अजान इक चहें दान |
दीजे दया बिचारे ||
कृपा दृष्टि और मेहर वृष्टि |
सब पर करो पियारे ||

Translation in Telugu

హే దయాలా! సదా కృపాలా!
మా జీవన ఆధారమా!
ప్రేమ ప్రీతితో భక్తి రీతితో
తమ చరణములకు మా వందనములు || హే దయాలా||
దీనుడనజ్ఞానినినే, కోరుదునొక దానమును
దయను జూపి మాపై వరము నిండు;
కృపాదృష్టి మీ దయావృష్టి
అందరిపై కురిపించుము ప్రియతమా || హే దయాలా||

हे दयाला सदा कृपाला
मा जीवन आधारमा

प्रेम प्रीति तो भक्ति रीति तो
तम चरणमुलकु मा वन्दनमुलु

दीनुड़ नज्ञानिनि ने कोरुदुनोक दानमुनु
दयनुजूपि मा पै वरमु निण्डु
कृपा द्रुष्टि मी दया द्रुष्टि
अंदरिपै कुरिपिन्चुमु प्रियतमा

Translation in Bangla

হে ডয়াল সদা কৃপাল আমার জীবন আধারে	हे दाँयाल शौदा किरपाल आमार जीबाँनो आधारे
সপ্রেম প্রীতি আর ভক্তি রীতি বন্দে চরণ তোমারি	शौप्रेमो प्रीति आर भाँक्ति रीति बाँन्दे चाँरनो तोमारी
দীন অজানএক চাহী দান দাও দয়া বিচারে	दीनो ऑजाँन ऐको चाही दान दाओ दाँया बिचारे
কৃপা দৃষ্টি তোমার দয়া বৃষ্টি সবার পরে করো পিয়ারে	कृपा दृष्टि तोमार दाँया बृष्टि सोबार परे कौरो पियारे

Translation in Odia

ହେ ଦୟାଲ ସଦ କୃପାଲ ଆମ ଜୀବନ ଆଧରେ	हे दायलो सद क्रूपालो आमो जीबानो आधारे
ସପ୍ରେମ ପ୍ରୀତି ଆଉ ଭକ୍ତି ରୀତି ବନ୍ଦେ ତୁମ ଚରଣ ରେ	सप्रेमो प्रीति अउ भाक्ति रीती बान्दे तुम चरणों रे
ଦୀନ ଅଜ୍ଞାନ ଚାହେଁ ଏକ ଦାନ ଦିୟନ୍ତୁ ଦୟା ବିଚାରି	दीनो अजानो चाहें एक दानो दियान्तु दाया बिचारी
କୃପା ଦୃଷ୍ଟି ନିଜ ଦୟା ବୃଷ୍ଟି ସମସ୍ତଙ୍କ ଉପରେ କରନ୍ତୁ ପିୟାରେ	क्रुपा द्रुष्टि निजो दाया व्रुष्टि समस्तोंक उपरे करन्तु पियारे

Translation in Tamil

ஏ தயாளரே என்றும் கிருபாளரே, ஏ தயாளரே என்றும் கிருபாளரே
எமதுயிரின் ஆதாரமே, ஏ தயாளரே என்றும் கிருபாளரே
பிரேமை ப்ரீத்தியுடன் பக்தி ரீதியும் கொண்டே திருவடி பணிந்தோம்
ஏ தயாளரே என்றும் கிருபாளரே

ஏழை எளியோர் நாம் வரமொன்று கேட்கின்றோம்
தந்தே அருள் புரிவீரே
கருணைக் கண் நோக்கும் திருவருட் பார்வையும்
அனைவருக்கும் அருள்வீரே ஐயனே அனைவருக்கும் அருள்வீரே
ஏ தயாளரே என்றும் கிருபாளரே எமதுயிரின் ஆதாரமே

ऐ दयालरे एंड्रुम कृपालरे ।
यमदुयिरिन आधारमे ।।

प्रेमै प्रीतियुड़न भक्ति रीतियुम् ।
कोंडे तिरुवडी पाणिंदोम् ।।

येलै येलियोरनाम वरमोंड्रुम केट्किन्ड्रोम् ।
तंदे अरुल पुरीवीरे ।।

करुणै कणोक्कुम तिरुवरुल पार्वयुम् ।
अनैवरुक्कुम् अरुलवीरे, अय्यने अनैवरुक्कुम् अरुलवीरे ।।

Translation in German

All gütiger immer barmherziger Herr,
Die Stütze unseres Lebens

Mit Herzen voller Hingabe
Fallen wir auf die Knie zu Deinen Lotus Füssen

Demütig und unschuldig beten wir
um Deinen Segen
Der gütig gewährt

Zeige Deine Gnade
Und überschütte mit Deiner Barmherzigkeit
All Deine Kinder
Liebster Herr !

Translation in French

Seigneur tout bienveillant et toujours charitable,
Le soutien de notre vie.

Les cœurs pleins de dévotion
Nous nous prosternent devant
Tes Pieds de Lotus.

Humblement et en toute confiance nous
Prions pour Ta grâce
Qui accorde bienveillant

Montre Ta Grâce
Et couvre tous Tes enfants
de Ta Charité
Seigneur le plus aimé !

Translation in English

All Gracious ever Merciful Lord!

The prop of our life!

With hearts full of devotion,

We prostate at Thy Lotus Feet.

Humble and guileless we pray for Thy boon,

Which Graciously grant.

Show Thy Grace and Shower Thy Mercy, (On All Thy Children)

Dearest Lord!

P.S. Satsangi

Emeritus Chairman

Advisory Committee on Education

Dayalbagh Educational Institutions

Dayalbagh, Agra.

Preface

Systems Thinking for Evolutionary Innovations in Education: Approach of the Dayalbagh Educational Institute

The Dayalbagh Educational Institute (DEI) was founded in 1917 as a co-educational middle school, the Radhasoami Educational Institute, by the August founder of Dayalbagh, Sir Anand Sarup. The Dayalbagh community emphasizes nurturing of one's spiritual and intuitive faculties through Surat Shabd Yoga. Dayalbagh itself is a century-old, living example of cooperative co-existence, self-sufficiency and self-reliance, untouched by the swinging pendulum of inflation, and DEI was nurtured with these same set of values, practices and morals.

Foreseeing the challenges of the future, the founders of DEI emphasized skilling and the importance of working with one's own hands. In 1917, an industrial park called Model Industries was established in Dayalbagh, which offered opportunities for apprentice-ship to students at the middle school level, in addition to providing employment to the community's residents. Vocationalization of skills was thus integrated into DEI education from its inception.

In 1916, community-based farming was initiated on a small scale, which grew into full-fledged agricultural operations on 1250 acres of land by 1941. Daily field work is part of life for every member of the Dayalbagh community. Dayalbagh also set up Asia's best Dairy processing plant in 1926, and these initiatives created a sustainable model of living and material minimalism.

DEI education is rooted in its Educational Policy of 1975, the Architect of which was Revered Prof. Makund Behari Lal Sahab, Himself an outstanding academician, teacher and educa-tionist. An alumnus of Lucknow University, He went on to obtain the D.Sc. degree in Zoology from the University of Edinburgh and returned to Lucknow University eventually becoming its Vice-Chancellor.

The mission objective of DEI education is to evolve a complete person through physical, intellectual, emotional and ethical integration. The Policy, which is rooted in Indian culture, philosophy and spirituality, outlines how this may be achieved via its Aims & Objectives, Educational and Organizational structures.

The DEI Education Policy was a disruptive innovation in higher education and followed a systems approach that integrated social and environmental systems with formal systems of education. This allowed DEI to evolve at the pace at which social needs and the world order was changing. It benefitted society at large by encouraging sustainable, frugal innovation through optimization of economy, energy and resources. The Education Policy also emphat-ically enunciated the centrality of values-based education and 'excellence with relevance', and this is practiced throughout DEI, from pre-primary to higher education.

A unique aspect of DEI is the integration of education from pre-nursery to Ph.D. on the one side, and skilling to entrepreneurship as part of formal education on the other. The opportunity for mobility from general to skill-based education and vice versa through well-defined pathways has spurred creativity, frugal innovation and an entrepreneurial mindset in our students. Introduction of vocational courses (B.Voc. and M.Voc.) at Bachelor's and Master's level has taken skilling education to the next level. Synthesis of mainstream education and entrepreneurship has led to "Earn while Learn", on-campus enterprises in dairy, food processing, automobiles, apparel design etc. These opportunities provide students with a means to support their education.

DEI has created an ecosystem that encourages innovative ideas from young students on socially relevant problems, and we have tried to facilitate the transformation of these 'idea

quanta' into frugal or jugaad solutions. We call this harnessing of small, frugal innovations 'Quantum Jugaad', and it has led to the creation of many student-run, on-campus enterprises. These naturally evolving, and exponentially growing student-run enterprises have given an entrepreneurial flavor to teaching and learning. But the meaning of entrepreneurship here is not innovation that leads to revenue-driven venture creation, but rather, the creation of value through social, economic or environmental ventures that benefit the lowest and the least among our masses.

Innovation, whether incremental, procedural, need-based or blue ocean type, always follows the SIGMA SIX Q framework of the Institute, which weaves 6 basic threads together, and emphasizes in improving the QUALITY(Q) of life. The sum (Sigma) of these 6 is greater than the individual parts. The areas are:

(i) Innovation including generation & use of renewable energy
(ii) Water quality
(iii) Air quality
(iv) Education and healthcare
(v) Agriculture and dairy practices
(vi) Quality and Values.

I would like to discuss here the link between innovation and system thinking in education. Innovation is not driven by technology alone (hardwired innovation); it can as well be driven by a change in one's way of thinking, or through emergence of new knowledge, or even a change in the mindset that one brings to a problem (soft innovation). Educational institutes can innovate by providing new learning organizations and new pathways such as skill development and opportunities for analysis, synthesis, experiential experiments, teaching-learning methodologies and creative technological interventions. These then lead to innovative design of curricula, emergence of new knowledge and new pathways for student mobility. Ecology, energy and economy optimization too, are good reasons to motivate creative innovation. A combination of these ideas leadsto frugal innovation that evolves continuously and dynamically over all time to come.

At the IITs, Prof. P. K. Kelkar introduced science-based engineering education that included social sciences. This approach gave young engineering graduates a wide knowledge base, and an edge in solving complex social problems economically, by using local resources. Prof. Mo Jamshidi of University of Texas, was of the view that methods of education must be refined and expanded to meet changing needs from a system to a system-of-systems vision, from a disciplinary to a multidisciplinary outlook, from a steady state to a real-time perspective, and from an optimal to an adaptive approach.

Innovative evolutionary approach in our education conforms to the philosophy of "Renaissance Man" by Prof. Jay W. Forrester of MIT, one who has broad intellectual interests and is accomplished in areas of both the arts and the sciences. Such a person tries to see common elements in diverse settings and thus creates transferability between diverse structures, which is one of the hallmarks of the systems approach.

Norbert Wiener's prediction in 1950 that electronic computers were capable of taking over many human decision-making processes has come true today, raising an array of crucial ethical and moral issues: Are humans in danger of becoming slaves to these machines? Will such machines have autonomous thinking and resultant morals, or will the designers consciously or unconsciously build into them their own moral values? And who we will turn to for proper answers? Prof. Rajaraman says that commonsense knowledge, religious beliefs, and consciousness will be the drivers, and we, at DEI, have set ourselves the huge challenge of not only instilling in our students the thought process to address social change, but also how to adopt and adapt technology to answer some of the questions raised above.

Under the guidance and direction of Prof. Prem Saran Satsangi the scientific study of consciousness and ultra-transcendental meditation is undertaken at DEI's Centre for Consciousness Studies. Experiential knowledge of 150 years of spiritual practice by the

members of the Dayalbagh community has given DEI a living laboratory to analyse the phenomena of consciousness practically, as also the effects of ultra-transcendental meditation. But this, much- required discipline is yet to become part of formal education elsewhere.

DEI aims to become a leading research-cum-teaching institute in Consciousness Studies. In DEI this pursuit is carried out by bringing together teachers, researchers and students from various disciplines like psychology and cognitive science, physics, mathematics, life science, language studies, arts and music, engineering management etc. This truly transdisciplinary study has unfolded many aspects of human behavior, psychology and functioning of the brain. Rigorous scientific research is being carried out to understand the experiential science through experimental techniques.

The Strategic Plan will be anchored by an accountability framework through measurable inputs and deliverables that monitor progress towards our goals. Over the next five years, building on our foundational strengths and propelled by the promises outlined in this Strategic Plan, DEI will emerge as an institute with excellence in specific disciplines and strong societal outreach that delivers holistic education to every learner.

The DEI will leverage its strength, taking advantage of the opportunities to overcome the existing weaknesses to reach the goals. We will allocate our resources in the areas that sets us apart and will align our future resources with the upcoming deliverables to become leading research and teaching institute in agriculture, entrepreneurship and consciousness while sustaining other areas of research in the institute. Learning ecosystem in DEI will be enhanced through experiential learning by connecting class rooms, labs and research to real world problems.

DEI's Strategic Plan charts the distinctive course expected of an institution with a long and distinguished history. It builds on the traditions of excellence established by our founders, with a clear view of our strengths, opportunities and weaknesses.

DEI has chalked out a bold 15-year strategic plan (Vision 2031) and aspires to become an Institution of Excellence in the areas of Consciousness, Agriculture and Entrepreneurship. I do not think any other institute offers such a broad spectrum of integration on one platform.

We hope to help in the creation of a race of 'Supermen', who would be set apart from the rest of humanity, by their quality, character, behavior, values and ideals, and their desire to serve. The recent scheme of Evolutionary Superman (popularly known as the 'Sant-Su Scheme') for children of age 3-months to 3- years is the first step in this journey. As regular participants in the agricultural field work every day, these children gain good sanskaras from a very tender age. This year, we were happy to host them at DEI on our Founder's Day, and we consider them our pre-pre-nursery students!

Prof. Prem Kumar Kalra
Director
Dayalbagh Educational Institute
1-Nov-2018

Acknowledgement

We would like to express our deepest gratitude to
Prof. Prem Saran Satsangi,
Chairman, Advisory Committee on Education,
Dayalbagh Educational Institutions,
for inspiring us every moment, for His Foresight and Guidance,
for His Models encapsulating Best Practices in Total Quality Management, Education, Sustainability and Consciousness and for His encouragement in completing the DEI Vision book.

Our special gratitude to Prof. Prem Kumar Kalra, Director, Dayalbagh Educational Institute for his support, his ideas and suggestions that have helped us put together this book.

The Education Policy of 1975 is wide and deep and the understanding of the policy by contributors has led to the development of this Vision document and the related actions and tasks to be implemented in an evolutionary fashion.

Many individuals have contributed towards creation of this Vision. Inputs were received through multiple presentations to the Advisory Committee on Education and to the Governing Body members. Faculty members and students actively participated in preparation of chapters and there were contributions from members of the wider community and experts from around the globe. Family members and friends of contributors extended help and support in content development and refining ideas, editing contents and formatting of presentations.

The Institute expresses its thanks to all such named and unnamed contributors.

Mentioned below are the names of the members of the teams that were created for the purpose of putting together this Vision document and is not a comprehensive list of contributors to this effort.

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Please do let us know of any errors or omissions and we would be happy to correct these in future editions.

Editor

Contents

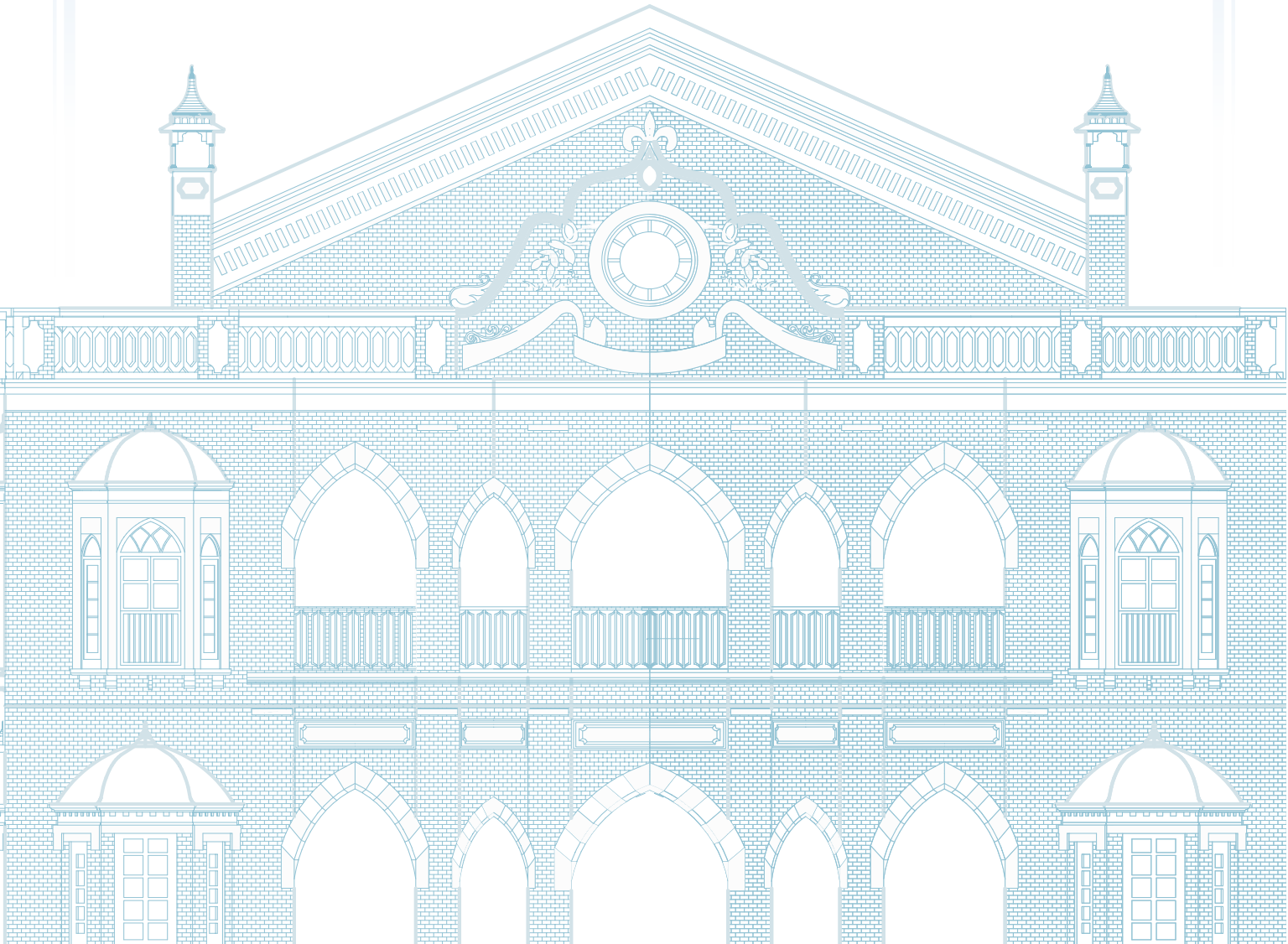
1	Vision and Mission	1
2	Academic Plan	9
3	Faculty Recruitment Policy and Plan	29
4	Admissions Policy & Plan	41
5	Research Plan	51
6	Networking & Collaborations	85
7	Infrastructure	99
8	Governance	109
9	Accreditation Plan	129
10	Laboratory Development Plan	137
11	International Students, Programs and Partnerships	153
12	Library	167
13	Societal Contribution	173
14	Skill Development to Entrepreneurship	195
15	Role of Alumni	209
16	Technology Interventions	221
17	Innovation & Incubation	239
18	Central Facilities	253
19	Student Amenities	275
20	Industry Institute Partnership	283
21	Non-Teaching Staff	295
22	Unique Features of DEI	305
23	Executive Summary of the 15-year Strategic Plan	355

Annexes

1	Education for All	372
2	List of Dayalbagh Dairy Products	373
3	East-West Forum at TSC	374
4	Multi-Disciplinary Research Plan	376
5	Detailed Multi-Disciplinary Research Plan	377
6	United Nations Agenda for Sustainable Development - 2030	379
7	15 Year Faculty Projection	380
8	Rolling Recruitment Proforma	384
9	Faculty Assessment Proforma	385
10	5 Year-Faculty Commitment Plans	399
11	Quarterly Confidential Report (QCR)	402
12	Annual Confidential Report (ACR)	403
13	Quantum and Nano-Centre	405
14	15-Year Strategic Plan for Research	406
15	Networking & Collaboration Details	408
16	Governance Plan - Details	421
17	Administrative Structure, Various Bodies and Committees Details	424
18	Library Services - Strategic Plan & Case Studies	430
19	Societal Contribution	435
20	Action Plan for Skill Development (2018 - 2032)	439
21	List of Courses for Skill Development	442
22	Case Study on DEI-APAC	446
23	Some Distinguished CEOs and Entrepreneurs from DEI Alumni	448

1

Vision and Mission



"You see things; and you say, 'Why?'
But I dream things that never were;
and I say, 'Why not?'"

–George Bernard Shaw

Central Administrative Office, DEI

The Dayalbagh Educational Institute's Vision is ambitious, clearly defined and backed by over a hundred years of experience of imparting quality education. The Vision reflects DEI's commitment to impart pragmatism together with self-realization. The DEI Education Policy, articulated in 1975, laid down the following foundational concepts:

- physical, intellectual, emotional and ethical integration of an individual to help evolve the complete man with values of humanism, secularism and democracy, to better equip him to solve social, economic and environmental challenges.
- truthfulness, temperance and courage
- ideals of humility, simple living, selfless service and sacrifice
- habit of learning by developing the faculties of thinking, analysis and reason
- general awareness and knowledge
- best in class-relevant education
- scientific temper
- respect for 'soiled hands', dignity of labour, and, self-reliance
- study of the classics, and pride in national culture and heritage

Students at DEI

- shaping each student for a calling suited to his aptitude, skills and the needs of society
- understanding of various beliefs and faiths, which fosters an attitude of tolerance and national unity
- engendering the spirit of 'Brotherhood of Man', and promoting the establishment of a classless and casteless society
- fuller understanding of rural life, to appreciate the polity, economy and the social forces at work in our country
- democratic values and freedoms which an Indian citizen should be prepared to defend
- respect for the rights of others and an awareness of duties and obligations to society
- strong character and high ethical standards.

This policy was submitted to the University Grants Commission in 1977 for grant of deemed-to-be University status. The UGC team visited the colleges and facilities in the colony of Dayalbagh to assess the potential for achieving excellence with relevance. The Committee's observations and recommendations endorsed and supported the Policy and its implementation.

Observations and Recommendations of UGC Visiting Team on DEI in 1977

- At DEI, teaching institutions, industrial-technical workshops, agricultural farms are together engaged in teaching, training, production and extension.
- Including school children, a community of students, teachers and workers belonging to all castes, creeds, communities and various parts of the country are involved in a variety of programmes for integrated community development.
- The complex provides a healthy environment for educational innovation and national integration.
- The DEI is engaged in providing a good academic programme in agricultural-rural-industrial complex, oriented to specific conditions and needs and providing suitable social service, work experience, national integration and vocational training programmes aligning with academic curricula.
- The DEI is tethered to the principle of excellence but not at the cost of relevance; which inculcates the dignity of manual labour, encourages initiative and creative work; has an interdisciplinary approach to build an integrated personality of a well-adjusted man.
- The DEI is a departure from the existing pattern of University education.
- The then Agra University expressed its inability to accord autonomy to DEI as the DEI experiment envisaged the fullest integration, collaboration and cooperation of all the faculties.
- To enable DEI to develop independently as per its own genius, the DEI should acquire a separate identity with the status of a deemed-to-be-university by which the university system in the country will be enriched.
- DEI, with its courses, is able to give a greater emphasis on preparing students for self-reliance and self-employment and thus fulfill its objective more effectively.
- DEI educational programmes address the contemporary needs by applying the most relevant principles of educational process like work-experience, learn by themselves, continuous assessment system, objective methods of assessment, integrated-interdisciplinary and inter-faculty teaching, accent on experimental teaching, production of effective teaching and learning materials and appropriate orientation of teachers.

Vision Statement

To provide linkages to all stakeholders' potential 'Values and Quality' to the kinetic permanent state in a dynamically-oriented and refreshed equilibrium through integrated hierarchical system of education enabled by economic and flexible (jugaad) innovation technology founded firmly on DEI's Education Policy.

DEI, a leading Entrepreneurship and Consciousness, Teaching-cum-Research Institute, is a model University, measured by its 'excellence, but not at the cost of social relevance' reaching up to the last, the least, the lowest and the lost; pursuing research and discovery with frugal innovations contributing with principle of achieving more with less for nation and community-building and beneficial to public at large with cultural reforms enriching and empowering weaker sections, women and children.

In the year 2004, DEI defined its VISION 2011. This policy heralded many features that have later been incorporated in the Nation's education policy and programs. DEI has been a visionary and forerunner in adopting innovative schemes in the field of education.

The DEI Education Policy – 1975, foresaw many elements of the National Policy on Education – 1986. Similarly, the vocational education programmes of DEI started in 2004, foresaw many elements of the AICTE NVEQF and MHRD Community Colleges schemes launched almost a decade later and is an effort to effectively implement the following national missions for the Socio-Economic Development of the Country:

- The National Mission of Sarv Shiksha Abhiyan – Universal Elementary Education under the Right to Education Act
- Make in India
- Skilling India
- Digital India
- Clean India (Swachh Bharat Abhiyan)
- Unnat Bharat Abhiyan
- Beti Bachao Beti Padhao Abhiyan
- Green India

Vision 2031

The Dayalbagh Educational Institute has embarked upon a bold initiative, VISION 2031, and formulated a comprehensive and progressive Strategic Plan for 2012-2031, with the goal to become a top teaching-cum-research Institute through an exemplary system of education. To establish Total Quality Management across all activities of the University, the Plan encompasses undergraduate and postgraduate education, research, infrastructure, information and communication technology and campus development.

The Institute has accepted this challenge and is confident of achieving success with the cooperation of faculty, staff, students, alumni and other interested partners.

Mission Objective

Development of super-intelligent (super-conscious) humans who are self-governed and render selfless service in a rapidly-changing global scenario.

Education in Dayalbagh provides the linkages for this kinetic state in dynamic equilibrium. The linkages have to be provided at all levels of hierarchy, right from pre-nursery to higher

education, through an integrated education system. With technology intervention, this can be extended to the global level. The DEI Education Policy also offers a minimal-input to maximum-output approach through an economic, frugal (*jugaad*) and flexible model.

The DEI Education model is based on an experiential system rooted in Eastern spirituality and wisdom on the one hand, and modern scientific concepts and Western materialism on the other. While modern science provides solutions to mysteries of the physical world, Saints of the East had knowledge of the highest spiritual regions and consciousness, evolving to better worldliness.

At DEI, teaching institutions, industries and agricultural farms provide the three-dimensional activities for teaching-learning, production, and extension. The social service, work experience, educational innovation, cultural moorings, national integration and vocational training programmes are aligned with academic curricula. A teaching-learning community, including student and staff from pre-nursery to higher education from all castes, creeds, communities, and regions, works toward integrated community development.

Major goals

DEI has identified the following major goals:

- Strengthen Entrepreneurial Education giving access to all applicants, *even those without means*
- Integrate agricultural farming and dairy education with Entrepreneurial and Consciousness Studies
- Emerge as an Entrepreneurial and Consciousness University.

A Unique Entrepreneurial University

The emergent model of education allows our students to self-support their education, making them job-creators, rather than job-seekers. Student entrepreneurship provides a platform for students to develop and market a variety of products and services, and capable of starting microenterprises, an earn-while-you-learn opportunity with vocational training at low cost. The entrepreneurship model advocated is unique: the DEI model advocates a frugal, flexible (*jugaad*) approach to problem-solving rather than seeking funds from venture capitalists, and tries to do 'more, with less'. We encourage *jugaad* and frugal innovation: the concept of *jugaad* does not imply sub-optimal but rather, the creation of a product that is flexible in its usage and has been economically innovated using locally-available materials, manpower and resources. Such products are affordable and cater to local market needs. DEI's model of entrepreneurship tethers the student-entrepreneur to the rural economy, and also with national and international markets.

Integration of the Green and White Revolutions

Experiential knowledge gained in Dayalbagh's practice of agriculture and dairy farming has been mainstreamed into education at DEI with the aim of creating the willingness and capacity to work with one's own hands, promoting a respect for 'soiled hands', dignity of labour and a spirit of self-reliance.

Practical knowledge is gained by students where they are involved in the manufacture, distribution and sale of dairy and agricultural produce. The results have been highly encouraging and need to be replicated across the country and around the globe. Participation creates platform for research and labs on land, enabling creation of Intellectual Property by entrepreneurs and researchers.

A major by-product will be a library of successful ideas about agriculture, dairy and entre-

preneurship in nano-enterprises in remote and distant villages. This combination of the second white and green revolution in over 400 villages will prove to be a game changer for women and children.

Through technology intervention the benefit of such unique education will be made available to one and all at any time, place and pace around the globe.

Excellence in Consciousness Studies

DEI proposes a new science of consciousness scientifically and experimentally, substantiating the existence of higher orders of consciousness through the SQUID (Super-conducting Quantum Interference Device) facility in its own Centre for Consciousness Studies. Our approach as an institute of excellence in consciousness studies is to integrate science and religion by applying the principles and rigour of science and scientific method to religion. The Institute desires to see its students contribute to one or both of these areas, since a better understanding of either implies an improved ability to contribute to the development of society. Therefore, the education system, with its emphasis on values, is complemented by the inter-, trans- and multi-disciplinary academic curriculum. The Education Policy is based on the systems approach, through a study of science, mathematics, engineering, social sciences, fine arts, etc.

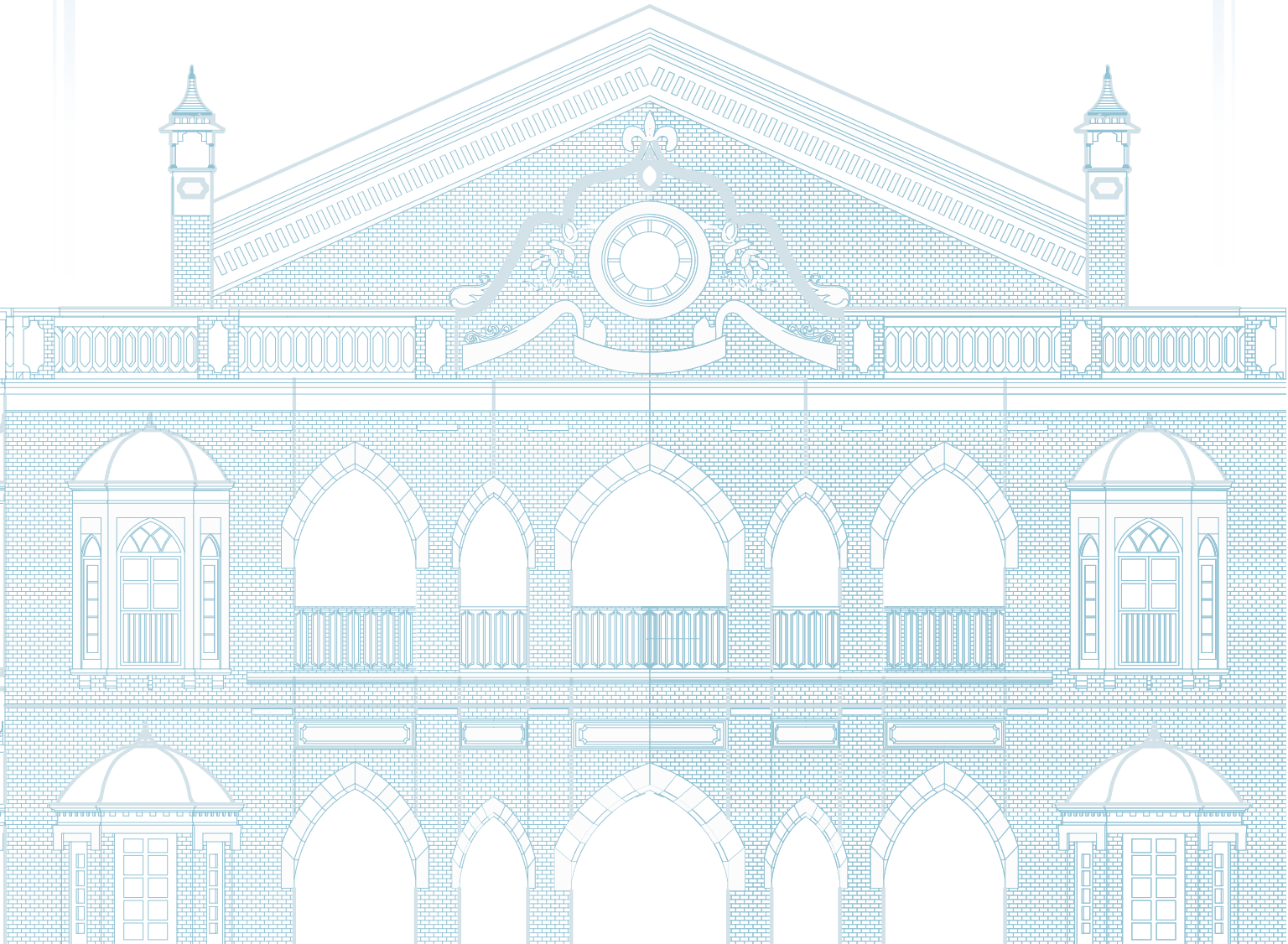
"He will not come into existence in a day; he will evolve gradually as the human body evolved gradually according to the Darwinian principle. As is the case of the body, the mind and spirit will also evolve gradually, and when the spirit and mind achieve high purity, a Superman will come into existence. Such a Superman, through the principle of administration of inner self, will enjoy inner peace and harmony and strive continuously to spread the message of, Fatherhood of God and Brotherhood of Man".

–Revered Prof. Prem Saran Satsangi

The DEI mission objective is to transform *Homo sapiens* into *Homo spiritualis*: a complete man with balanced development of body, mind and spirit.

2

Academic Plan



The Dayalbagh Educational Institute follows a unique scheme of innovative, comprehensive, inter-disciplinary and value-based education that fosters academic excellence along with holistic development, at university and non-university level for both,general and technical education. A multi-disciplinary approach prepares students for an increasingly techno-oriented society, connecting them with agriculture, and valuing the dignity of labour. Students imbibe basic values of humanism, secularism and democracy through an exposure to the principles of all major world religions, and better understand their own cultural heritage. The educational system aims to provide affordable quality education to all sections of society, irrespective of the student's caste, colour, race, and gender. It aims to prepare individuals with emotional and spiritual strength who can contribute to development of their community and nation.
The Dayalbagh Educational Institute Education Policy and Academic Plan specifically aim to:

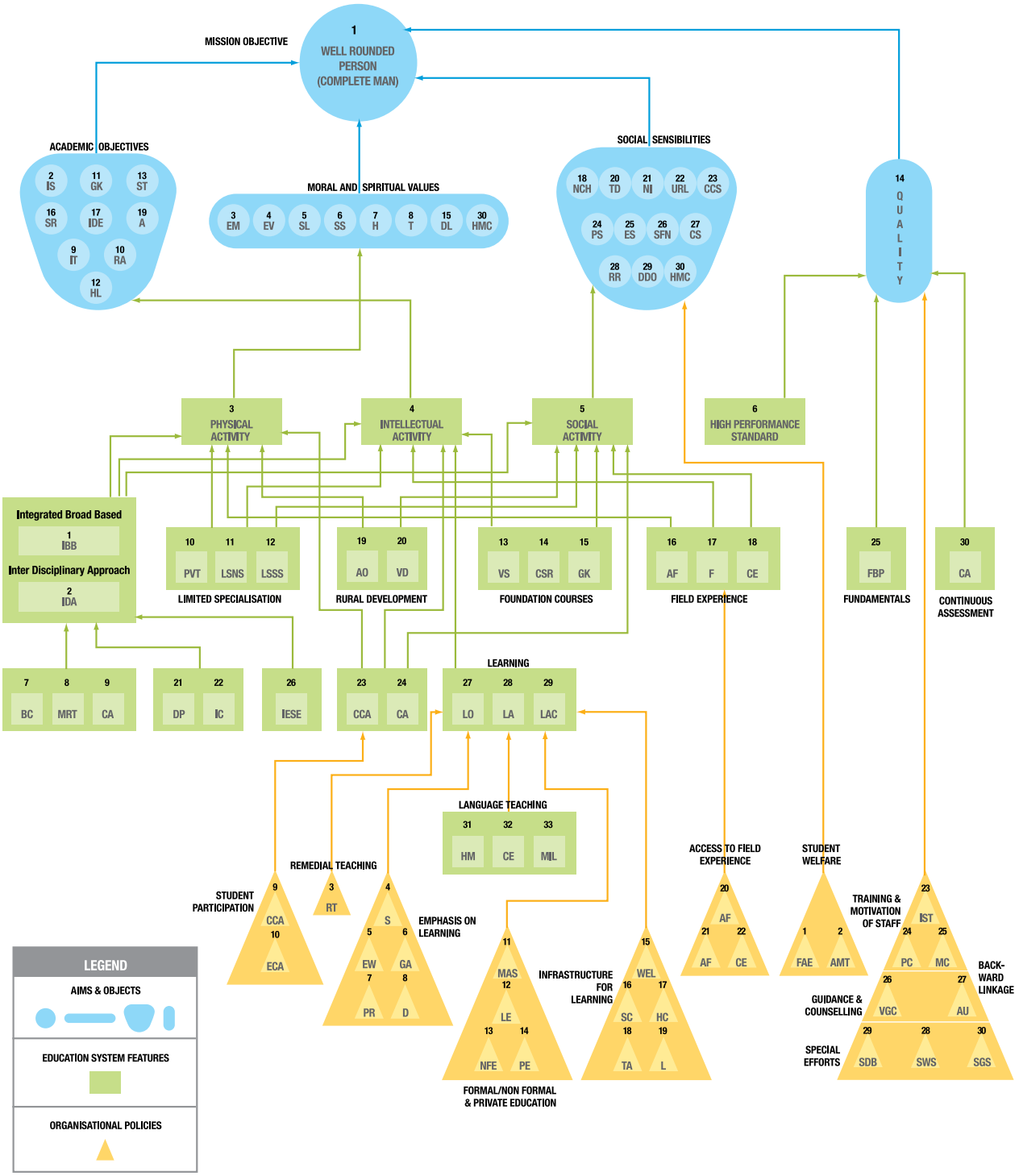
- Follow an integrated system of education providing a continuous pathway from pre-nursery to higher education that makes quality, value-based, cost-effective education accessible to all sections of society.
- Provide comprehensive, integrated education, affording students the opportunity to obtain a first-rate, broad-based exposure through an interdisciplinary curriculum. An emphasis on practice allows students to learn a craft or industrial technique through compulsory work-based training and industry interaction, facilitating employment.
- Evolve a 'complete man' whose hallmarks are intellectual strength, emotional maturity, truthfulness, high moral character, scientific temper and who lives simply and discharges his duties and responsibilities.
- Focus on the development of all three dimensions, physical, mental and spiritual, of a human being.
- Follow the 'Sigma Six Q' sustainable way of life. 'Sigma Six Q' is the enhanced outcome of the integration of six qualities: Innovation, Water Quality, Air Quality, Education and Healthcare, Agriculture and Dairy practices, and Human Values.
- Apply a total physical systems' modelling framework to interpret the DEI Education Policy.
- Offer students the flexibility to pursue diploma, certificate, and degree courses according to their preference and pace, with choice-based credits and modular programmes, allowing progress laterally and upwards.
- Apply a comprehensive and continuous evaluation system to help students learn every day easing the learning process.
- Provide Institutional Core Courses, Work-based Training, Departmental Core Courses and Non-faculty courses, to ensure a well-rounded education and build character.
- Encourage initiative and creative work in every aspect of a student's life.

The aims and objectives of the education policy can be grouped into four themes, Experiential Education, Entrepreneurship, Agricultural Sciences and Consciousness, based on the areas of strength and ongoing programmes at DEI; this involves integrating the role of each of the six faculties of DEI: Arts, Commerce, Education, Engineering, Science, and Social Sciences.

The Academic Plan promotes the science of agriculture in teaching and research, encourages jugaad technology (based on innovation, economy and flexibility) and entrepreneurial practices to improve human lives and ensure sustainability.

Drawing upon its intra-disciplinary resources, DEI proposes to establish research divisions in Esoteric Art and Science, Digital Life, Thinkism, Life and Mathematics, Sustainability (Sigma Six Q), and Classical Studies, to promote research in challenging and emerging areas.

Interpretive Structural Model for Educational Policy of DEI



LEGEND

I AIMS AND OBJECTS

1. Well-rounded Person
2. Intellectual Strength
3. Emotional Maturity
4. Ethical Values
5. Simple Living
6. Selfless Service
7. Humility
8. Truthfulness
9. Independent Thinking
10. Reasoning Ability
11. General Knowledge
12. Habit of Learning
13. Scientific Temper
14. Quality of Education
15. Dignity of Labour
16. Self Reliance
17. Inter Disciplinary Exposure
18. National Culture & Heritage
19. Aptitude
20. Tolerance for Diversity
21. National Integration
22. Understanding Rural Life
23. Class-less and Caste-less Society
24. Political System
25. Economic System
26. Social Forces & Needs
27. Civic Sense
28. A Respect for Rights
29. Duties & Discharge of Obligations
30. High Moral Character

II EDUCATIONAL SYSTEM

1. Integrated & Broad Based
2. Inter Disciplinary Approach
3. Physical Activities
4. Intellectual Activities
5. Social Activities
6. High Perfomance Standard
7. Breadth of Coverage
8. Most Recent Trends of Thought
9. Concentrates of Academics
10. Primarily Vocational and Technical
11. Limited Specialisation in Natural Sciences
12. Limited Specialisation in Social Sciences
13. Foundation Courses and Value System
14. Foundation Courses like Comparative Study of Religion
15. Foundation Courses like General Knowledge
16. Field Experience (Work Experience) in Farms
17. Field Experience (Work Experience) in Factories
18. Field Experience (Work Experience) in Commercial Establishments
19. Agricultural Operations
20. Village Developments Programs
21. Democratic Processes in Student Activities
22. Indian Constitution and Other Forms of Government
23. Co-Curricular Activities
24. Cultural Activities
25. Fundamental and Basic Principles
26. Interlinkage between the Educational System and Environment
27. Learning by Observation
28. Learning by Analysis
29. Learning by Acquisition of Knowledge
30. Continuous Assessment
31. Hindi as the Medium of Instruction
32. Competence in English
33. One other Modern Indian Language

III ORGANISATION

1. Free / Affordable Education
2. Assistance through Means Test
3. Remedial Teaching
4. Learning through Seminars
5. Learning through Experimental Work
6. Learning through Group Activities
7. Learning through Paper Reading Sessions
8. Learning through Discussions
9. Students Participation in Management & Organisation of Co-Curricular Activities
10. Students Participation in Management & Organisation of Extra-Curricular Activities
11. Major Academic Subjects
12. Lateral Entry
13. Non-Formal Education
14. Private Education
15. Well Equipped Workshop / Laboratories
16. Science Centre
17. Hobby Centre
18. Teaching Aids
19. Library
20. Agricultural Farms for Field Experience
21. Small Scale Industries for Field Experience
22. Commercial and Service Establishments for Field Experience
23. In-Service Training Programmes & Orientation Courses
24. Adequate Physical Conditions for Motivating the Teachers
25. Adequate Mental Climate for Motivating the Teachers
26. Vocational Guidance and Counselling of the Students
27. Attachment of the School to a University Level College
28. Special Efforts to Overcome Handicaps of Weaker Sections
29. Special Efforts to Overcome Handicaps of Disadvantaged Background
30. Special Care to the Gifted Students

Interpretive Structural Model (ISM) of DEI Education System

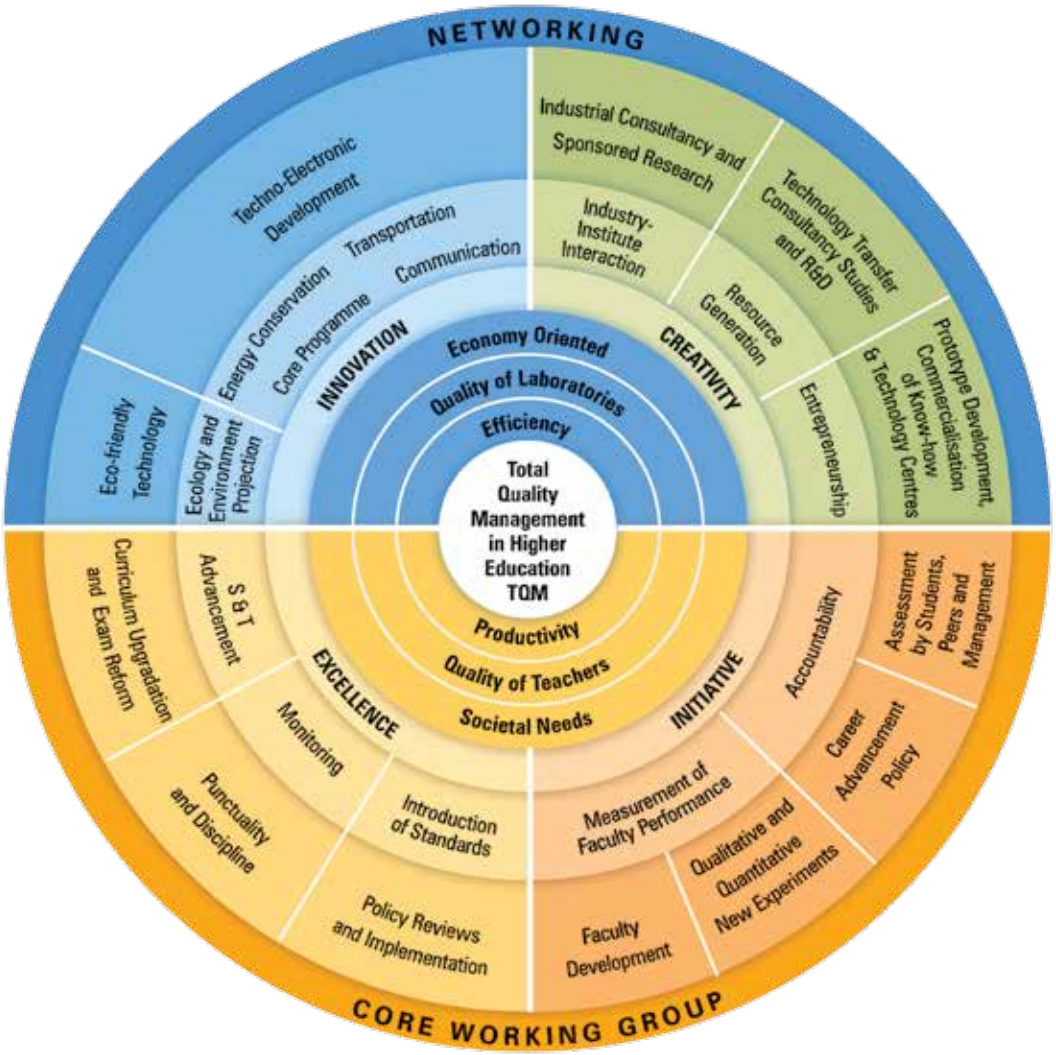
Professor P.S. Satsangi,Director of DEI from 1993 to 2002 developed an Interpretive Structural Model shown in the figure below, to represent DEI's Education System.

The mission objective, i.e., the development of a Complete Man is at the top of the structure. The Organization elements, Students Participation, Remedial Teaching, Interface for Learning, Access to Field Experience, Backward Linkage, Training and Motivation of Staff, etc. are shown as the grassroots level in the figure. The Educational System that has been designed to achieve the development of the Complete Man is shown in the middle layer. A student at the undergraduate level in DEI has to perform not only intellectual activities but also take part in Physical and Social Activities through Foundation Courses, Field Experience, Rural Development, limited specializations, etc.

Different educational activities lead to Academic Objectives and inculcate Moral and Spiritual Values and develop Social Sensibilities. High Performance Standards, Fundamentals and Basic Principles and Continuous Assessment in the Educational System lead to 'Quality'. Integration of all the Aims and Objects in the diagram finally leads to the Mission Objective: developing a well-rounded person or Complete Man.

Students at DEI

The Total Quality Management framework through which DEI endeavours to achieve quality in Higher Education is shown in the figure below.



A Conceptual Model for the Total Quality Management (TQM) Framework in Higher Education
(Professor P.S. Satsangi, Chairman Advisory Committee on Education, Dayalbagh Educational Institutions and former Director, DEI, 2002, 'TQM in Higher Education and Technical Education')

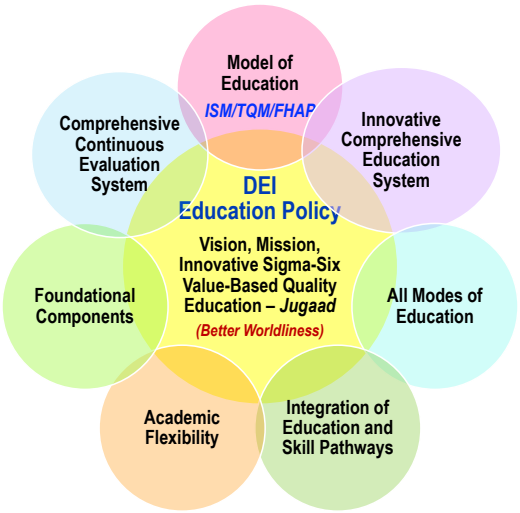
Innovative Sigma Six Q based Quality Education

The term 'Sigma Six Q' is the enhanced outcome of the integration of six qualities: Innovation, Water Quality, Air Quality, Education and Healthcare, Agriculture and Dairy practices, and Human Values.

The Sigma Six Q Model

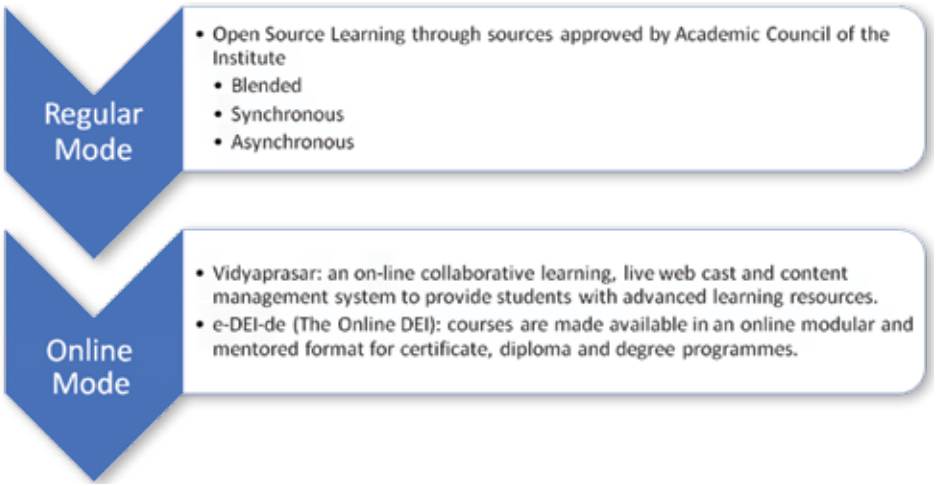
Unique Features of DEI Education System

The DEI education system imparts knowledge with a spirit of dedication and devotion to inspire its students in their quest for Truth, to become lifelong learners, and benefit from and protect their Indian cultural heritage, and to imbibe higher qualities, awareness and consciousness levels, living a life of better worldliness.



Unique Features of DEI Education System

The Institute is geared to contribute significantly to the socio-economic development of the country by providing ICT enabled vocational education, thereby allowing DEI to reach remote, tribal areas and underprivileged sections of society with special emphasis on women entrepreneurial development, with both regular and online mode of education.



DEI has evolved a unique Innovative Integrated Value-Based Vocational Education system that provides opportunity to all sections of society by integrating the all levels of Education:

The academic curriculum is economical and flexible and includes a wide range of core and elective courses offered both within and across Departments and Faculties. Students are encouraged to develop a global view in association with partner universities, such as, University of Maryland and IIT Delhi.

The courses are designed to be:

- Intra-disciplinary
- Inter-disciplinary
- Cross-disciplinary
- Multi-disciplinary
- Trans-disciplinary

The coursework is based on the following features:

- Modular system: Courses are offered in modular form, providing students the freedom and flexibility to progressively complete credit requirements and earn certificates, diplomas and degrees based on the number of modules accumulated.
- Semester system: The Institute follows the semester system with the even semester (January 1-May 20) and odd semester (July 1-December 20).

The Curriculum has been designed to include essential elements to ensure employability. Compulsory Work-Based Training courses are an integral component of all undergraduate courses in the Institute. Applications of concepts in theory courses are supplemented with laboratory courses in the same semester to emphasize practical hands on experience and develop necessary skills.

Academic Flexibility

The DEI Model of Education provides a seamless pathway from school to university. In addition, students can pursue vocational and technical education through various modular,

certificate, diploma and degree courses. Students with technical qualifications can pursue degree courses through lateral entry. Exposure to industry interactions,trainings, internships and co-op. programmes, provides students the ability to become successful entrepreneurs. Academic flexibility is offered through the following:

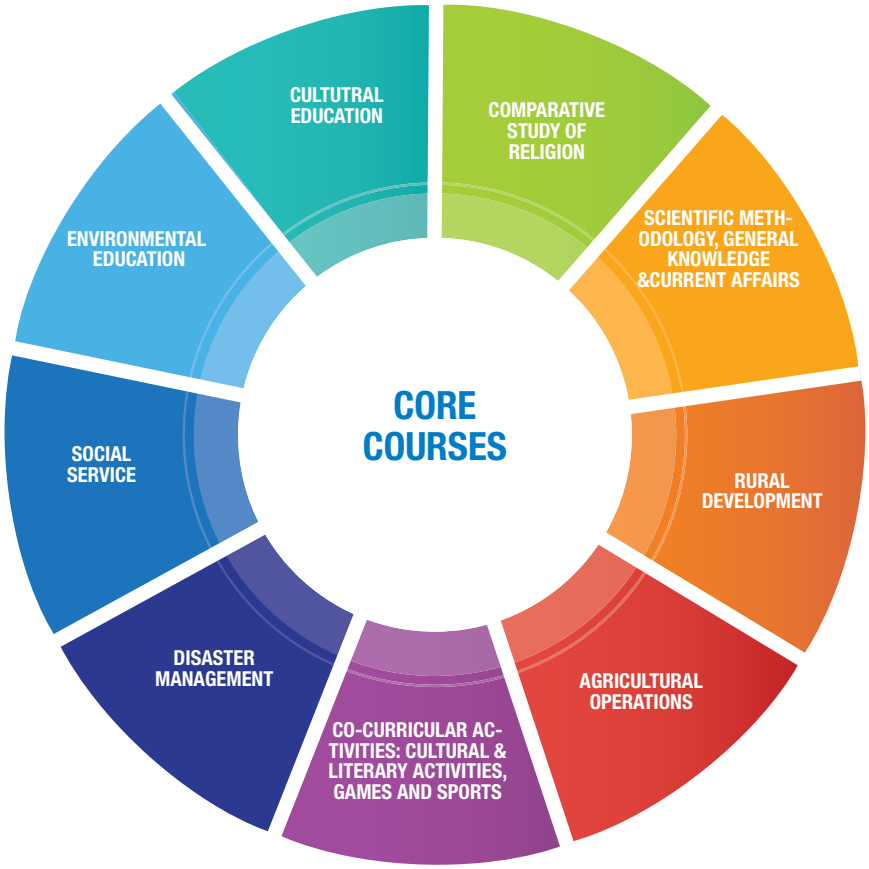
- Tinkering Labs, Skilling, Kaushal Kendra
- Choice-Based Credits
- Certificate, Diploma and Degree Programmes
- Upward or Lateral Progression

Foundational Components

In addition to the main academic courses, the programme includes compulsory inter-disciplinary and ancillary electives, work-based training and core courses.

Distinctive Features of the Unique and Innovative DEI Education System

Compulsory Core Courses



Compulsory Core Courses in DEI Education System

The following compulsory core courses are offered in different semesters:

- Cultural Education: inculcate appreciation of India's Cultural Heritage (1 Semester)
- Comparative Study of Religion: introduce the main principles of Buddhism, Christianity, Hinduism, Islam, Jainism, Judaism, Sant Mat and other Modern Religious movements with an aim of inculcating moral and spiritual values, a spirit of tolerance and national integration (1 Semester).
- Scientific Methodology, General Knowledge and Current Affairs: nurture scientific temper and awareness of contemporary world (4 Semesters).
- Rural Development: study rural society and economy and gain a fuller understanding of the rural life (1 Semester).
- Agricultural Operations: develop connect to Mother Earth, engendering humility and dignity of labour (2 Semesters).

- Social Service: promote brotherhood of man and establish a casteless and classless society (4 Semesters). Programmes include the following:
    - Village Adoption for Rural Reconstruction
    - Life-Long Learning and Extension
- Co-Curricular Activities: Cultural and Literary Activities, Games and Sports and Discipline for intellectual, physical and moral development (4 Semesters).
- Environmental Studies: awareness of environmental issues, environmental protection and conservation.

National Cadet Corps (NCC)and National Service Scheme (NSS) is integral to DEI education.

Students imbibe the ideal of proceeding from *Aparavidya* (Material knowledge) to *Para vidya* (Transcendental knowledge) and achieve the true objective of education as enshrined in the famous Sanskrit verse: '*Sa vidyayavimuktaye*', knowledge is that which liberates.

Co-operative Education Programmes

Compulsory Internship programmes in some faculties allow students to understand the industrial environment necessary for a successful professional career.

Comprehensive Continuous Evaluation System

The Institute follows a continuous evaluation system. The academic progress of students is evaluated continuously in each course, through both internal (75%) and external (25%) examinations, consisting of the following components:

Theory Course Evaluation

- Class Tests
- Assignments (Class/Home)
- Seminar-cum-Group Discussion
- External End-Semester Exam
- Daily Home Assignments
- Attendance (min. 75% to appear for end-sem. Exams)

Practical Course Evaluation

- Records
- Experiments
- Viva-voce
- Attendance

The Institute follows the credit-system of evaluation. The academic performance of students is evaluated on a 11-point Cumulative Grade Point Average (**CGPA**) scale and graded on a 11-point scale (A-F). The ***grade moderation exercise*** is conducted at two levels, i.e., Departmental and Institute level with active participation of the course teachers. Each course has defined Lecture Hours, Tutorials, Seminars and Practical Laboratory work allocated based on its credits. Course syllabus is divided into five units and students are provided with a Question Bank with a minimum of ten questions per unit. There is provision for re-evaluation of marks and students who fail in courses are provided the opportunity to improve through Remedial teaching and exams.

Centres of Excellence

DEI has established centres of advanced learning and research to promote excellence in specific areas. Research at these centres has been appreciated by global experts. There is ongoing collaboration with leading universities and industry leaders. There are the following centres of excellence:

- Centre for Consciousness Studies
- Quantum and Nano Systems Centre
- (i-c-n-c-)TALL
- Rajaborari Centre (ATMA, ADyNam, AAM)
- All B.Voc. Programmes

Recent Initiatives

DEI has implemented several initiatives to enhance learning.

Daily Home Assignments
Daily Home Assignments (DHAs) were introduced from 2015-16 session at all levels in the Institute to increase retention of learning of the days topics. DHAs are short questions that are given after each class and are to be submitted by students the next day. DHAs are promptly evaluated by the course teachers and deviations in understanding are discussed in the class.

Modular Courses
A wide range of programmes that include certificate, diploma, advanced diploma and degree programmes, especially skill-based and vocational programmes, have been modularized, to provide greater flexibility and freedom to the students, in both regular and distance learning modes. This ensures that "no one is left behind".

ICT in Education

Information and Communication Technology has been extensively deployed and used to enhance the quality and reach of education. To cities, villages and remote tribal areas.

Details are in Annexure.

Entrepreneurship

Early Pioneering Initiatives

- Established a Technical School in 1927
- Compulsory Work-based Core Courses started in 1976

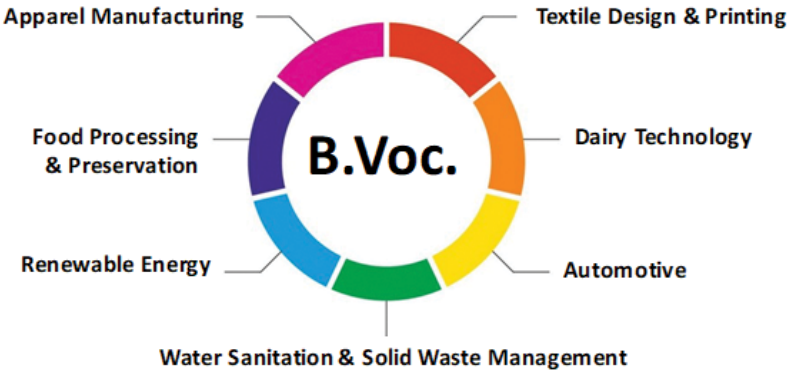
Unique Features to promote Entrepreneurship

- Skilling Laboratories with activities for every age and stage designed to harness creative potential of learners.
- Multiple entry and exit points into skill and conventional pathways, and lateral and vertical transitions give students an opportunity to identify their interests and passion.
- Skill building is a Pan-India initiative through the distance education programmes, with focus is on upliftment of youth in the rural zones by providing mentored vocational courses.

To promote Vocation and Entrepreneurship in Rajaborari, M.P., DEI established the following three *Karkhanas*:

- ATMA (Apparel and Toy Manufacturing Association) focusing on training women;
- ADyNam (Agro and Dairy Nano processing of Multi-products) with a Food Testing Laboratory;
- AAM (Automotive And Multi-skill): To train youth in repair and maintenance of farm equipment, two wheelers, pumps, solar lanterns etc.

DEI has established nine B.Voc. programmes.



B.Voc. programmes offered in DEI

An Entrepreneurship & Virtual Incubation Cell was established. The Deen Dayal Upadhyay Kaushal Kendra, a Community College offers support for Nano/Micro Business Start-ups, to provide opportunities to students from various sections of the society for entrepreneurship initiatives.

Entrepreneurial initiatives and support offered in DEI

Agricultural Sciences

DEI has right from its inception has accorded utmost importance to agricultural operations and rural development and provided technical knowhow in the following areas:

- To improve the crop yield by improvising sowing techniques and seed quality

- Design of low-cost equipment for preparing fodder for cows
- Mechanization of milking of cows
- Healthcare of cattle and their breeding
- Feasibility studies for low cost biofuels.

The famous Dayalbagh Dairy has been transformed into an efficient self-sustainable diary, preparing a wide range of products, under the B.Voc. in Dairy Technology and B. Voc. in Food Processing and Preservation Programme.

Consciousness Studies

Consciousness is the final frontier of science. Since time immemorial, man has been intrigued by his own self, his awareness and his existence in the universe. These fundamental questions have provided the impetus for mankind to probe nature and acquire knowledge and understanding in a search for conclusive answers. Although there are different perspectives, these issues have acquired great significance in the 21st century because of significant scientific and technological advances in quantum physics, information processing, artificial intelligence, nano and biotechnology, advanced neuro-imaging techniques such as fMRI and PET and optogenetics, for examining and understanding neurological processes with unprecedented spatial and temporal resolution. During the past quarter century there has been an explosive multidisciplinary interest in studying consciousness from the perspectives of neuroscience, psychology, philosophy, cognitive science, artificial intelligence, molecular biology, medicine, quantum physics, and cosmology as well as neuro-aesthetics, neurotheology and experiential and contemplative approaches.

The Centre for Consciousness Studies was established at DEI in 2011 to facilitate multidisciplinary research activities in this extremely challenging area. The Dayalbagh community around DEI, provides a unique opportunity for research at the interface of scientific and experiential approaches to Consciousness. The research activities at the Centre have made an impact and received international recognition. The Centre organizes research colloquia department-wise to facilitate collaborative research and organized the 20th International Conference on The Science of Consciousness (TSC) in 2013 at DEI.

The Annual Integrated East-West Forum at TSC

The research work also led to a *regular one-day global forum on Integration of East-West Perspectives on Consciousness* as part of the International TSC series of Consciousness organized in collaboration with the Centre for Consciousness Studies at the University of Arizona, USA. The Centre has also successfully organized this event since TSC-12 at Arizona, TSC-13 at DEI, TSC-14 at Arizona, TSC-15 at Helsinki, Finland, TSC-16 at Arizona and TSC-17 at San Diego, USA through *live two-way interactive video-conferencing*, facilitating exchange of ideas and meaningful discussions.

The Integrated East-West Forum facilitates the presentation of key ideas from both approaches, and where these ideas can interact in the spirit of constructive mutual criticism, evaluation and enrichment. It appears plausible to evolve a science of inner experience (which is repeatable and verifiable) by attempting to integrate Eastern and Western scientific approaches and philosophy by verifying inner spiritual phenomenology of consciousness through well-established scientific epistemology, including three important stages of observation (awareness), report (description) and analysis (understanding) (Price and Barrell, 2012) while also availing of modern techniques of FMRI and MEG scans in capturing repeatable physiological/physical parameters of neural correlates accompanying inner spiritual experience during meditational practices. Invoking higher and higher level of unified quantum field theory, with correspondingly subtler and subtler particle size of fine grained geometry will lead to a significant jump in the level of fineness (fine-grained quantum geometry) which should enable us to access, at least in the abstract world of mathematics and physics, the primary ultimate source of consciousness in the whole Universe. We need to resolve the inextricably linked problems of subtlest particles smaller than Planck's length

(10-35 m) and large distances more than 1010 light years, and approach zero and infinity by application of logic and induction in the right way.

DEI has introduced, PG Diploma in Theology, M.A., M.Phil. and PhD Theology programmes in the Sanskrit Department.

Pioneering studies on various aspects of Consciousness, carried out in DEI include the following:

- Measurement of Environmental Correlates during Meditation with Super-Quantum Interference Devices (SQUID)
- Quantum Teleportation Experiments in Consciousnesswith 15 & 2 channel SQUIDS
- Psychometric Study of Consciousness
- Spiritual-Psycho-Physical Quantum System Model of Consciousness
  - Spiritual System Theory Framework
  - Omni-Quantum Theory for Spiritual Consciousness System Modelling in Cosmology
  - Neuro-environmental Cognitive Spiritual Phenomenology
  - Hierarchical Order Theory (HOT) of Consciousness and Spiritual-cognitive And Neural-Environmental correlates (SCANE).
  - Approach to Integrate Arts (First-Person Spiritual-Cognitive-Material Phenomenology) and Science (Third-Person Neuro-Physical Environmental -Cognitive Correlates) of Consciousness
  - A Graph Theoretic Quantum Systems Model of the Human Brain
- Eastern Philosophy and Consciousness
  - Altered states of consciousness
  - Correlation of the different states of consciousness as described in various religious traditions
  - Identification of unifying principles across traditions
  - Organization of progressive revelations of higher states of consciousness
  - Preparation of a Map of full Spectrum of Consciousness
  - Interpretation of Eastern Philosophy in terms of modern scientific advance-ments
  - Neuro-aesthetics

Education Policy and Academic Plan – Outlook

The purpose of DEI's Strategic Academic Plan is to assist the administrators and policy makers in steering the progress of DEI towards realisation of the aims and objectives envisaged in its education policy. Planned progress is expected to result in recognition of DEI as one of the most innovative universities in the world.

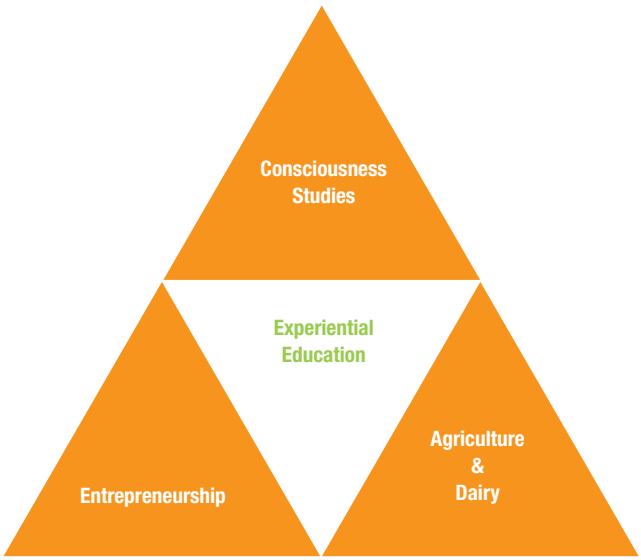
Proposed Thrust Areas

The proposed DEI Strategic Academic Plan aims to contribute and fulfil the United Nations' the 2030 Agenda for Sustainable Development to transform our world that involves their stated Sustainable Development Goals.

The Education Policy and Academic Plan covers the aims and objectives of the education policy, which are grouped into four themes based on the areas of strength that set DEI apart from other institutions, viz.,

- Experiential Education
- Entrepreneurship
- Agriculture
- Consciousness Studies

The Education Policy and Academic Plan involves each of the six Faculties of DEI, namely Arts, Commerce, Education, Engineering, Science and Social Sciences, to support and advance strategic action in all its aspects.



Proposed Interrelated Themes

Experiential Education

Aim: To be a world-leading university in various forms of experiential and work-integrated learning that includes co-op. education.

At DEI, higher education is not limited to the classroom. Experiential education comprises hands on learning experiences that bridge the gap between theoretical knowledge and practical experience. DEI aims to make experiential knowledge as an integral part of education, broaden the scope of work-integrated learning opportunities available and offer the required international exposure and research opportunities.

Objectives

In DEI's value-based experiential education the learning environment stretches from the classroom to sports and agricultural fields, and co-op. industrial experience.

The proposed academic plan will further strengthen it through the following strategic efforts:

- Provide all levels of education, from pre-school to the highest spiritual education.
- Provide all modes of education to all sections of the society, especially weaker sections and underprivileged, with a zero-drop policy.
- Strengthen the innovative culture of experiential education at the University

- Educate outstanding and globally competent graduates whose skills are in high demand across the globe.
- Focus on niche emerging multidisciplinary areas in both teaching and research that are of vital importance for the development of India and the world at large.
- Expand experiential education to include service-based community activities and international programmes.

The strategic academic plan proposes to further DEI's efforts to achieve its vision of Education, more education, education made perfect as the panacea of all our country's ills and evils. It attempts to add further dimensions to education, taking inspiration from the Indian Philosophy of Education that aims to achieve enlightenment, the highest objective of life. It aims to serve as an exemplary model of education, covering the entire spectrum of knowledge and wisdom, by implementing the all-encompassing physical, intellectual and spiritual education, spanning from pre-nursery to continuing life-long education. This noble effort would serve mankind to evolve a race of supermen, who possess the virtues to resolve the grave global challenges and establish a more humane and enlightened society.

A Uniquely Entrepreneurial University

Aim: To be a global leader in all forms of entrepreneurship education, practice and research.

DEI has taken bold initiatives in Entrepreneurship by extending it from its classrooms to remote tribal and rural communities. Its spirit is defined by the zeal to make things better. DEI embraces entrepreneurial approaches in teaching, learning and scholarship, by educating, inspiring and employing people to enable transformational changes.

Objectives
To be a leader in India's innovation initiatives, DEI aspires to be a uniquely entrepreneurial university and strives:

To extend the benefits of the DEI's innovative and flexible educational model that integrates regular education from the school to the university level with skilling, vocational and technical education, with emphasis on entrepreneurship, to all sections of society.

To train weaker sections of society in vocational skills to make them employable and entrepreneurs to the call of 'Make in India'.

To facilitate creation of earn-while-you-learn opportunities and vocational training at low cost

- To provide free online learning in multiple languages through ICT based instruction across the country, including e-content generation and field trials.
- To facilitate women empowerment.
- To increase the Gross Enrolment Ratio (GER).
- To develop Digital India through E3: Empowerment-Enrichment-Employability, using state-of-the-art technology.
- To bring back dropouts and elderly, through continuing education, to the mainstream.
- To develop 10 Skill Parks in villages and backward areas through Networking.
- To facilitate neighbourhood development by active community service.
- To facilitate linking of rural economy to international markets (REZ to SEZ).

The academic plan proposes to promote entrepreneurship in both academic programs and research, and in practice at not only DEI, but throughout DEI's vibrant ecosystem. Innovation and Entrepreneurial practices are to be encouraged in every aspect of the DEI community – faculty, students and staff.

Innovation in teaching, practical implementation of research, scholarship, and experiential learning — best exemplified by co-op education — are longstanding pillars of DEI education policy. It is uniquely placed among universities to address the growing societal need for more innovative and entrepreneurial approaches to major problems facing both public and private sectors.

Agricultural Education

Aim: To develop the educational ecosystem firmly moored to agriculture, the basic need of life.

DEI's education system aims to develop of humility and dignity for labour, and appreciation for working with one's own hands. It also emphasizes the study of rural society and economy to foster a fuller understanding of the rural life, with a view to appreciate the polity and economy of our country and the social forces at work. The strong community orientation of Dayalbagh work culture, that is based on the ***Sigma Six Qualities***, underlines the special features of the Educational System of DEI. Hence, Agricultural Operations and Rural Development are foundational core courses that are credited by all UG students. The healthy environment, culture and traditions of the Institute that involve a strong social commitment, effectively complement students' academic learning experience..

Objectives
DEI will strive to be a leader in education focusing on Agricultural Education and Rural Development by:

- Enhancing student opportunities in the field of Agricultural Sciences.
- Formulating socially relevant cost-effective curriculum focusing on Organic, Regenerative, and Sustainable Agriculture.
- Establishing living field laboratories to enhance quality and achieving excellence in Agricultural Science.
- Developing modern techniques in agronomic practices, horticulture sciences, irrigation strategies, precision farming, climate-smart agriculture, advanced plant breeding, crop alteration and plant physiology, modern dairy practices, and energy.
- Involving all stakeholders in developmental efforts.

The academic plan proposes to promote the science of agriculture in teaching and research to benefit rural economy and environment. It encourages jugaad technology (i.e.,based on innovation, economy and flexibility), to evolve transformational technologies and entrepreneurial practices in improving human life and ensuring self-sustainability.

Consciousness Studies

Aim: To be a global leader in the Science of Consciousness.

Since time immemorial, man has been intrigued by his own self, his awareness and his existence in the universe. Who am I? What is life? Does it have any purpose? What is truth or ultimate reality? These fundamental questions have provided the impetus for mankind to probe nature and acquire knowledge and understanding in a search for conclusive answers.

Consciousness is today, claimed to be the final frontier of science. With the phenomenal advances in science and engineering that include, quantum science, neuroscience, cognitive science and biomedical engineering, there is tremendous research effort directed to decode the working of the brain. In addition, the worldwide recognition of the benefits of Yoga and the emergence of complementary therapies in health sciences, we are poised to probe deeper into the ancient Indian wisdom of the relationship between body, mind and spirit, to comprehend consciousness.

DEI has made important advancements in the science of consciousness, by pioneering theoretical as well as experimental research on various aspects, especially ultra-transcendental meditation, to substantiate Indian philosophical traditions. This has been facilitated by the multidisciplinary research undertaken at the Quantum and Nano Systems Centre, the Centre for Consciousness Studies and i-c-n-c-TALL laboratory at DEI. The famous Weber–Fechner Power Law has been generalized and extended to the spiritual domain. *Sat-Chit-Anand-Swarupam-Chaitanyam* (Consciousness) has been extended to *Param Sat-Chit-Prem-Anand-Swarupam-ParamChaitanyam* (Ultimate Reality, i.e. Supreme Consciousness–*AparaVidya* to *Para Vidya*).

Objectives
To be a global leader in Consciousness Studies, DEI will take the following initiatives:

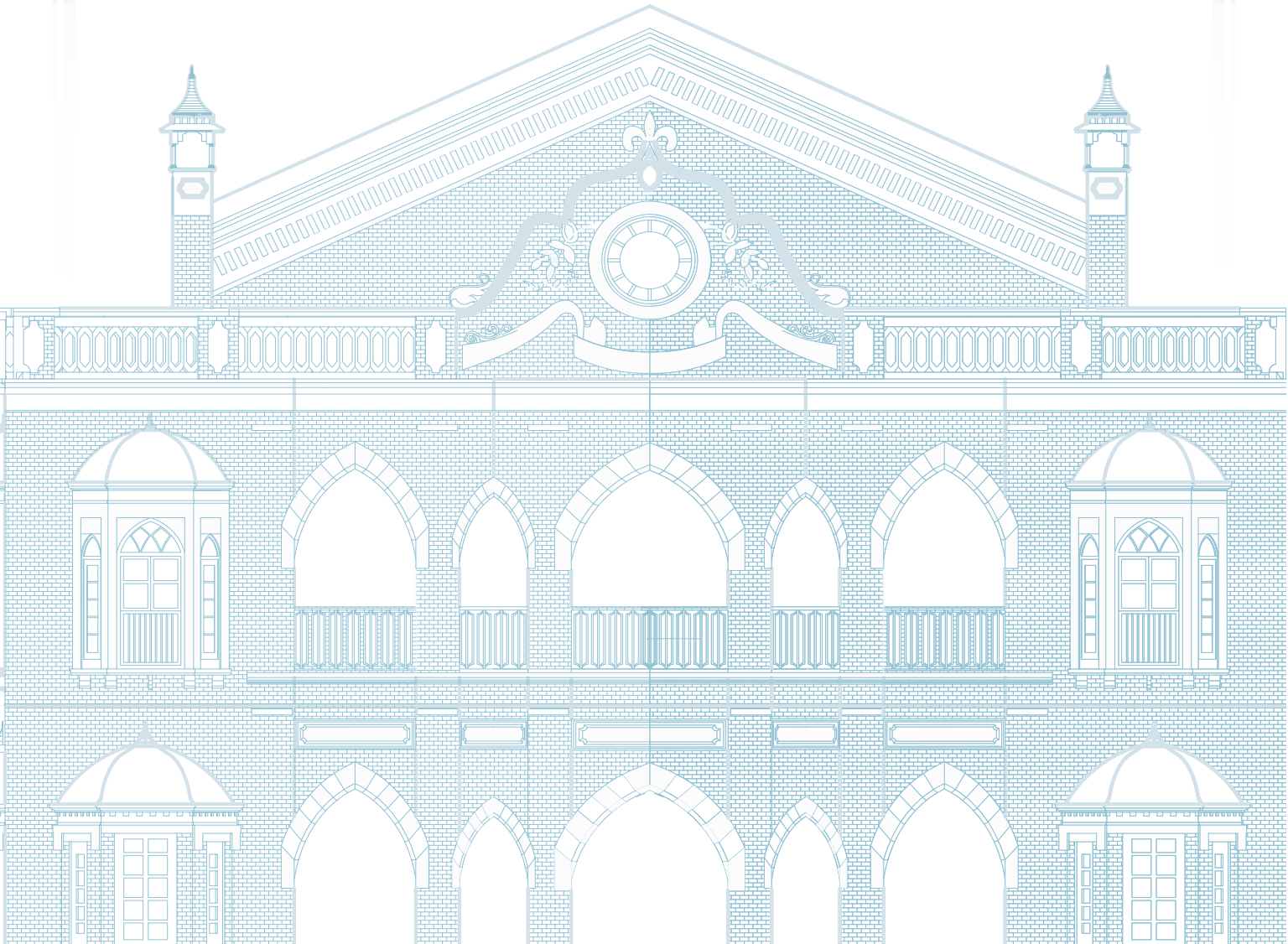
- To establish new multidisciplinary programmes in Theology, Cognitive Science, Neuroscience, AYUSH, etc., offered jointly by different departments.
- To undertake theoretical and experimental research in emerging niche areas of expertise, that include Neuro-aesthetics, Neuro-Linguistics, Neuro-Theology, Graph Theoretic Topological Quantum Computing, Psycho-Physics, Yoga and Meditation, Neuro-phenomenology, Cognitive Neuroscience, Internet of Everything and AI Super-intelligent machines with safety net.
- To promote integration of knowledge through multidisciplinary programmes.
- To emphasise spiritual education, the highest form of education, to achieve the mission objective of evolving superconscious and super-intelligent human beings.

The strategic academic plan proposes to orient and introduce new courses related to consciousness studies (from *AparaVidya* to *Para Vidya*), in all departments and to encourage both teaching and research in Consciousness studies. It aims to make path breaking contributions in teaching and research, to bring Indian wisdom to the forefront.

The DEI Education Policy and Academic Plan is comprehensive, bold, and action oriented. The plan embodies the spirit of "Why not?" It is a road map for providing an environment to produce quality students who are well-rounded men and women, ready to take on challenges and be successful entrepreneurs and leaders, with a blend of top quality academics, work-experience, and a strong value system. The plan is based on the Indian Philosophy of Education combining excellence with the much-needed relevance for contemporary and futuristic needs. It has the power to affect social transformation of India and lead the world, by setting the right objectives, high goals, increasing competence and accountability, and energizing mankind to evolve into an enlightened society.

3

Faculty Recruitment Policy and Plan



The value-based education policy of DEI is focused on its mission of bringing about the physical, intellectual, ethical and emotional development of an Individual to evolve a well-rounded, complete man.

In this context, the mission of DEI's Faculty Recruitment Policy and Plan is:

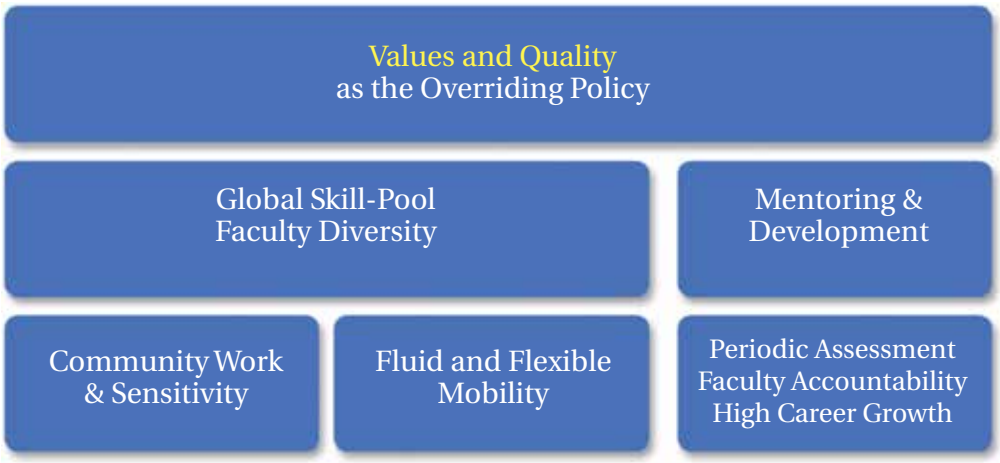
"To attract, groom and retain high-achieving, values-driven educators of national and international repute across diverse academic and research disciplines, who can be instrumental in transforming each student into a 'Complete Man' with high entrepreneurial skills, scholarly competence and socio-environmental super-consciousness"

DEI therefore targets:

- Developing an integrated and cohesive framework for faculty recruitment, development, assessment and retention
- Developing faculty skills and competencies to facilitate the transformation of each student into a 'Complete Man'.

Principles of Faculty Recruitment

DEI follows the Participative Method of Staff Recruitment, an objective and democratic method of recruiting faculty. Student seminars, group discussions and personal interviews are used to help evaluate candidates (details in Annexure).



DEI Recruitment Policy Statement

DEI Factors Of Appeal

Education Philosophy

Over the last 100 years, the Institute has encouraged synergy between education and spirituality, prompted by the recognition that the unique integrated educational system, serves as an incubator of intellectual and spiritual life.

Holistic and Natural

The Institute is located in the tranquil environment of Dayalbagh, a self-contained ashram colony on the outskirts of Agra, on the banks of the Yamuna. The campus provides an excellent academic setting in harmony with nature. The ashram's simple, disciplined and principled life, contributes to the strength of the social, moral and spiritual fiber of DEI's educational system.

Transparent and Equitable Career Growth

DEI assists professional betterment of faculty and believes in equality of caste, creed, religion, race, gender, etc., with merit and capability being of utmost importance.

Mentoring and Retention

DEI builds a conducive environment that promotes collaborative mentoring between new and old faculty based on its principles and values.

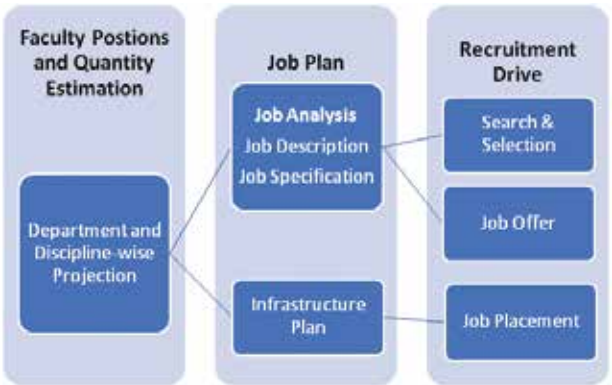
Global Network of Opportunity

As DEI's network grows, faculty will have a formal platform to explore opportunities in the global arena.

Academic, Industrial and Entrepreneurial Career Integration

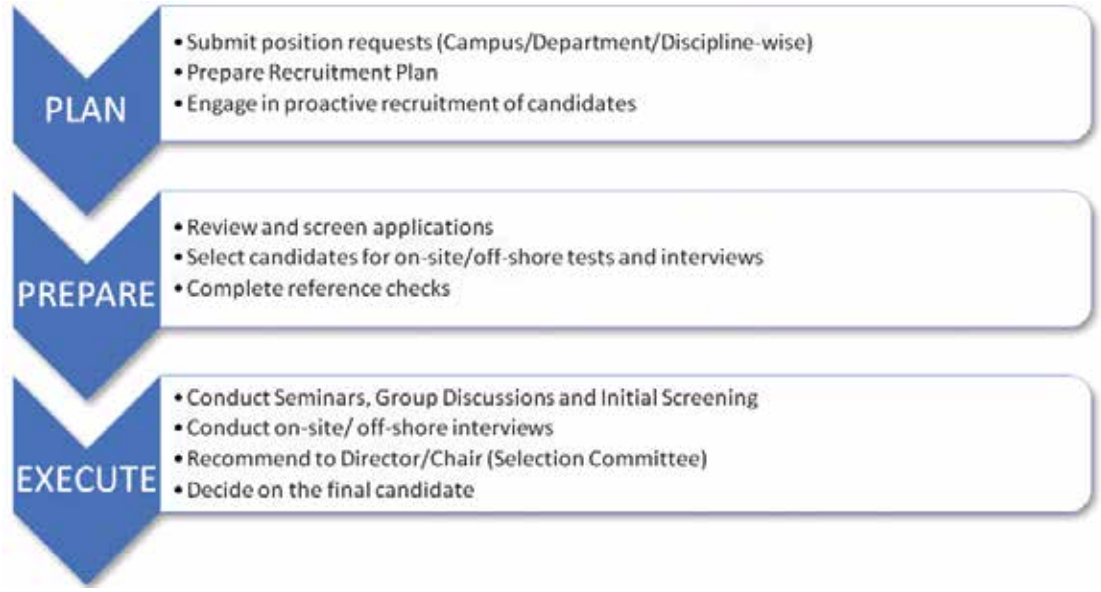
An inter-disciplinary, trans-disciplinary, multi-disciplinary and systemic approach is adopted in the institute: faculty are integrated across departments and disciplinary barriers. A diverse, multidisciplinary pool of faculty competencies is being created, with a focus on entrepreneurial opportunities. Career growth of the faculty is promoted through a program of joint-appointments and institute-industry collaboration.

Activities Preceding Recruitment Drives



An assessment plan for infrastructure at department and faculty level is prepared with a view to creating superior amenities and working conditions for the faculty. It includes e-infrastructure for building connectivity and knowledge networks among and within campuses in India and abroad.

Rolling Schedule for Recruitment: Guidelines



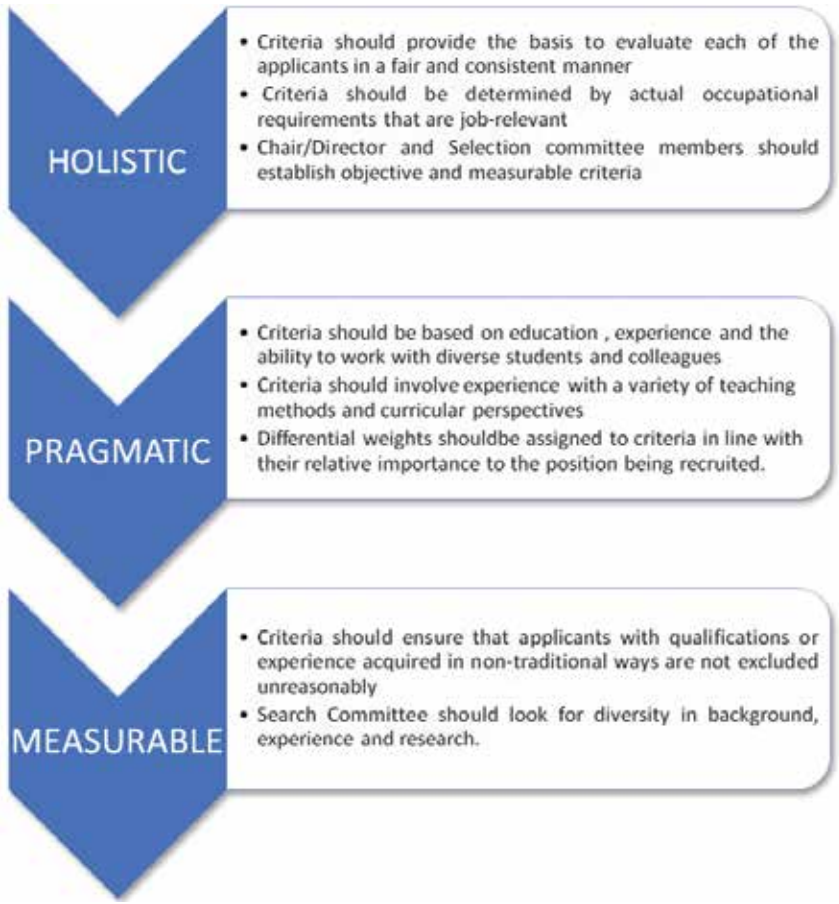
Activities in detail

- All departments create academic plans for major, minor and other courses and research needs.
- The recruitment cell coordinates individually with dean/heads to discuss faculty needs and how they fit each departmental/divisional academic plan.
- Departments submit search requests to Recruitment Cell.
- Recruitment Cell discusses the constitution of search committees and the recruitment plan with the Director and Dean-UG/PG.
- A Search Committee meets with the Recruitment Cell to discuss the recruitment plan which it then forwards to the Director for approval.
- Search Chair/Liaison meets with Recruitment Cell to discuss the recruitment plan and position announcement
- As the application deadline approaches, the Search Committee screens the applicant pool and discusses the depth, quality and diversity of the pool with the Dean-UG/PG.
- The applicant pool is narrowed down to 10-20 candidates, then 3-4 are selected for on-campus interviews.
- Interviews may be scheduled after the Director approves the pool of candidates and then on-campus interviews are scheduled.
- The Search Committee deliberates upon the final selection.
- The Governing Body approves the final selection and the Dean makes the offer.

- If a search has been unsuccessful or closed without a hire, the search committee chair submits a summary of the search to the Director's Office. A new Faculty Recruitment Request Form needs to be submitted when the position search is reopened.

**Faculty from diverse backgrounds are invited to serve on the Search Committee; it may also involve students: undergraduate and/or graduate, depending on the nature of the position being filled, as well as faculty from other institutions, when appropriate.*

Search and Selection Criteria: Guidelines



Key Performance Indicators (KPI) for Faculty Search, Selection and Development

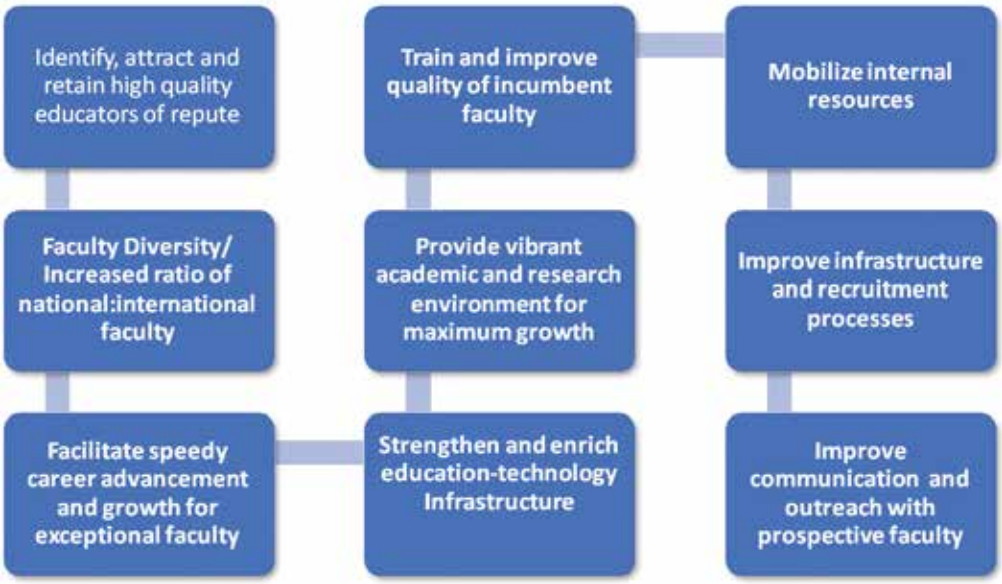
- Consciousness and entrepreneurial pursuits, projects, study and work
- Exceptional academic grades and achievements
- Scholarly competence and eminence in research
- Extraordinary leadership and organizational competence
- State-of-art computational intelligence and IT-skills
- High moral character, social-sensitivity, perseverance and conscientiousness
- High performance score during selection-tests and interviews

Recruitment-Development: Goals and Strategies

Year 2018-2022

This Recruitment Plan sets out an explicit, measurable and data-informed goals and recommends strategies to reach those goals mapped on a 15-year timeline.

Goals



Strategies

- Mobilize a global network of Alumni, APAC (Alumni Placement Assistance Cell) and Faculty Placement Cells to launch rolling recruitment-drive
- Pursue high-calibre talent ('Star Faculty') within disciplines and in interdisciplinary domains aggressively
- Canvassing in national/ international job markets for sustained recruitment of diverse faculty within the country and abroad.
- Set up consortia with Industry, Government and Private HR Consultancies to initiate recruitment drives (such as GIAN, Global Initiative of Academic Networks, by MHRD, India; and VAJRA - Visiting Advanced Joint Research Faculty Scheme **)
- Consolidate and exploit Alumni, Industry and MoU networks
- Design an attractive incentive structure relevant to the faculty background, qualifications and experience
- Remain vigilant and competitive so as to retain outstanding faculty
- Hire faculty with global exposure and overseas perspective.
- Screen candidates carefully for overseas deputation and teaching / research assignments.
- Network with foreign governments, institutions and DEI Alumni and Friends (AADEI & AAFDEI) to recruit International faculty
- Attract and retain foreign faculty across all disciplines of teaching and research
- Strengthen, streamline and innovate the Faculty appraisal system
- Quarterly assessment and reward-mechanism for faculty achievements and contributions (**Self-appraisal Proforma in Annex)

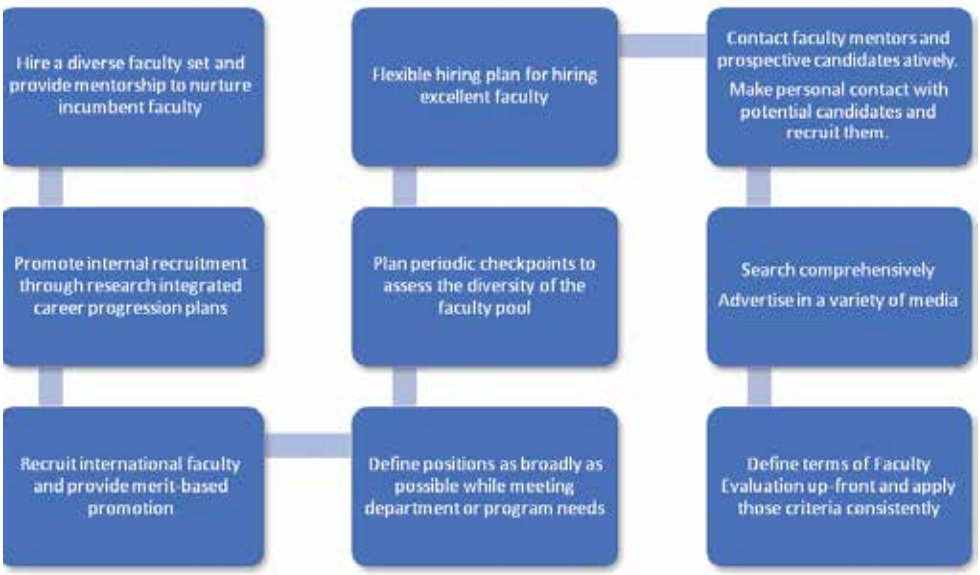
- Provide internal HRD avenues regularly, for the growth of staff
- Promote faculty to attend FDPs from premier institutions
- Undertake high-end research projects and encourage consultancy projects
- Promote faculty-exchange programmes with Indian and foreign universities
- Enhanced joint research projects and resource-sharing
- Sensitize the faculty on the unique value-ambience and attributes of the university environment
- Ensure compliance to DEI Commitment Plan and Professional Code of Conduct. (**Proforma in Annex)
- Upgrade class-room infrastructure with technical support
- Develop work-flow automation programs
- Equip faculty with hi-tech tools
- Provide modern amenities and technology in laboratories
- Mobilize inter-departmental and inter-disciplinary research collaborations in new areas of research and teaching
- Create new avenues of funds to support recruitment of exceptional faculty

** Govt. of India approved a new program titled Global Initiative of Academic Networks (GIAN) in Higher Education, aimed at tapping the talent pool of scientists and entrepreneurs internationally, to encourage their engagement with the institutes of Higher Education in India so as to augment the country's existing academic resources, accelerate the pace of quality reform, and elevate India's scientific and technical capacity to levels of global excellence.*

***VAJRA Faculty Scheme is instituted to bring a strong international connect to the R&D ecosystem of India. The scheme offers adjunct / visiting faculty positions to overseas scientists / faculty / R&D professionals including Non-resident Indians (NRIs) and Overseas Citizen of India (OCI) to undertake high quality collaborative research in public-funded academic and research institutions of India. VAJRA Faculty may also be involved in technology development, start-ups, etc.*

Year 2023-27

Goals

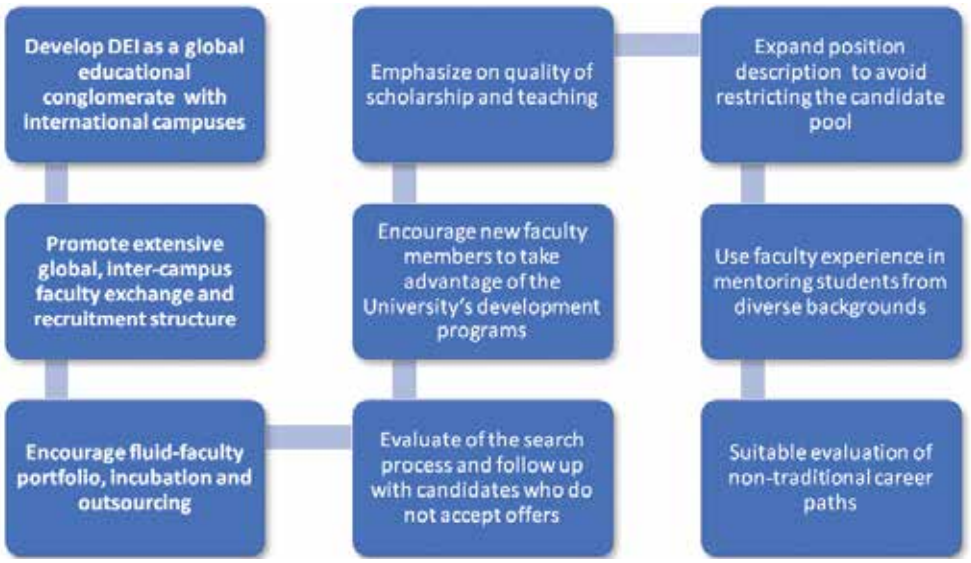


Strategies

- Create a formal network for conducting intensive deliberations within the institute for expert mentoring and support to faculty
- Identify key areas of new skill development
- Impart professional and leadership skills with advancement opportunities
- Promote engagement among research fellows (national/international) and temporary faculty across disciplines for sharing academic load and enabling future absorption
- Handle career issues for future success in tandem with routine research engagements
- Create opportunities for researchers to leverage their expertise in enriching the curriculum and supporting University best practices
- Attract foreign faculty, industry experts and government employees of high credential for tenure appointments
- Scrap the time-based promotion policy in lieu of the one based purely on merit (**Ref. KPI Self-appraisal Pro forma as annexed)

Year 2028-32

Goals

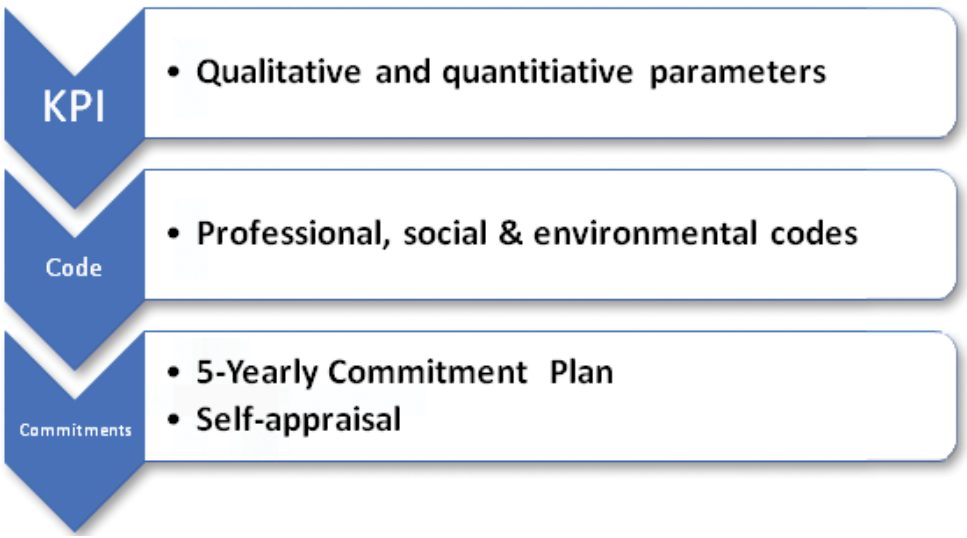


Strategies

- Capitalize on global reputation of DEI to launch dedicated international campuses
- Network with foreign governments, Institutions and DEI Alumni and Friends (AADEI & AAFDEI) to recruit global faculty
- Launch effective PR campaign to acquire high talent foreign faculty
- Design and develop a competitive incentive structure for foreign faculty
- Create highly permeable global faculty-flow structure to cater to skill and specialization demands

- Offer avenues to faculty to get international exposure through deputations on foreign campuses
- Raise a culturally heterogeneous faculty
- Create a fluid portfolio for faculty drawn from academia, government and industry (etc.)
- Deliver or outsource research components to variety of Institutions through active MoUs and Incubation projects
- Groom scholars, PDF and pre-doctoral students to handle teaching or research assignments
- Recruitment initiatives pertaining to joint appointments or cross-unit responsibilities would entail early and candid discussion of expectations and search procedures. These conversations would touch on potential teaching assignments, research requirements, committee and other service obligations, conduct of promotion processes (including the location of the tenure home), valuation of interdisciplinary engagements, and so forth.

Faculty Accountability and Assessment



A detailed plan has been worked out in the form of proforma documents (Annexures) pertaining to the following areas-

- Self-Performance appraisal
- 5-Yearly Faculty Commitment Plan
- Professional, Social and Environmental Codes of Conduct in DEI
- Self-appraisal Plan

Measurable Growth Indicators

Category	2018-22	2023-27	2028-32
No. of Campuses- India : Abroad	5:2	10:4	14:9
Estimated numbers of Student- enrollment	16000	23000	30000-32000
Estimated Faculty Numbers	1150	1950	3000
Teacher-Student ratio	1:14	1:12	1:10
National-International Faculty Ratio	90:10	85:15	75:25
Proportion of Faculty from Govt., Industry, NGOs	10%	20%	30%
Faculty Productivity & Deliverables	Variable, as per institutional needs		
Awards and Recognitions	Variable, as per institutional needs		

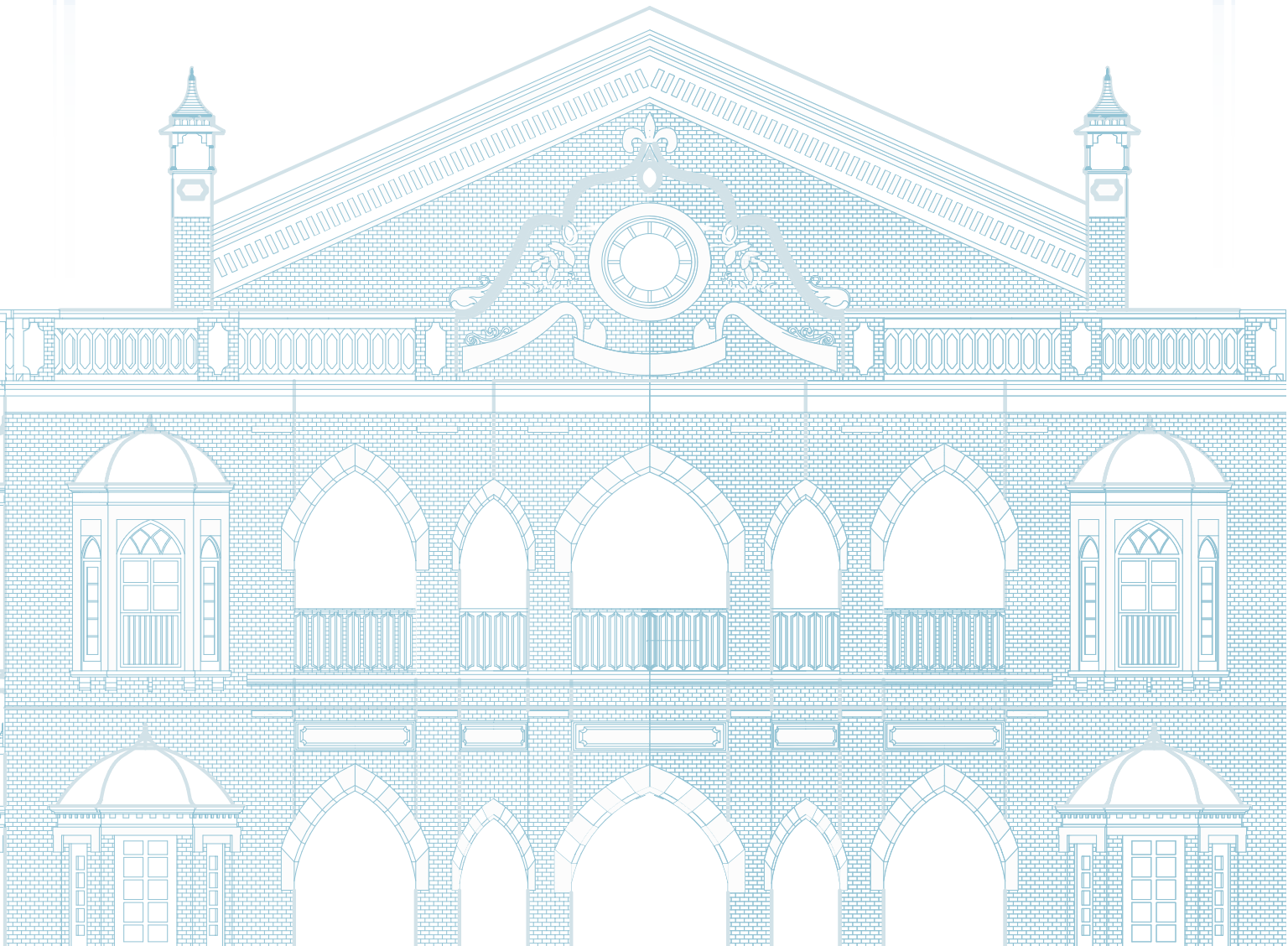
Projection For Support Infrastructure

With a prediction of 6.3 % CAGR rise in student-enrollment and 12.6% in faculty positions a substantial increase in infrastructure facilities and corresponding budget is on the anvil. With more students and staff, the infrastructure department would probably have to provide more staff rooms/classroom space, IT support, equipment and other amenities. The institute would also need additional security, cleaning, and maintenance staff for meeting increased wear and tear.

Dayalbagh Educational Institute has a long-term commitment to holistic education. Over the last 36 years, the Institute has encouraged the development of a vital conversation between education, entrepreneurship and spirituality. It has responded to the science of transformational education for enlightening the individual by integrating his inner, outer and transcendental life through active, sustainable and compassionate community work. The future vision for Faculty at DEI in the aforesaid context, can be portrayed through the following schematic:

4

Admissions Policy and Plan



The philosophy of 'Education for All' and in particular, for those short of means, forms the core of the admissions policy of DEI.

The DEI Education Policy, formulated at the University's inception in 1975, sought to overcome societal barriers of caste and gender and make vocational education more oriented towards employment.

DEI subscribes to the idea of low-cost, value-based quality education for all sections of society. The admission policy is in line with the core objectives of DEI, below:

- Ensuring a fair and transparent online admission process.
- Focusing on the least, lost, last and lowest sections of society.
- Providing students opportunities to upgrade their skills and qualifications.
- Admitting deserving candidates from both, within the country and abroad.
- Admitting applicants to programmes best suited to their need and capability.
- Implementing a zero drop-out policy.

The admission policy encompasses the six pillars of education at DEI, needs-blind admission, increase in enrolments, low tuition fees, services in lieu of fees, life-long learning and different modes of learning.

Education for All – Key Aspects

The admissions policy and procedures do not consider the financial status of the candidate at any stage. Assistance is provided by way of services rendered in lieu of fees.

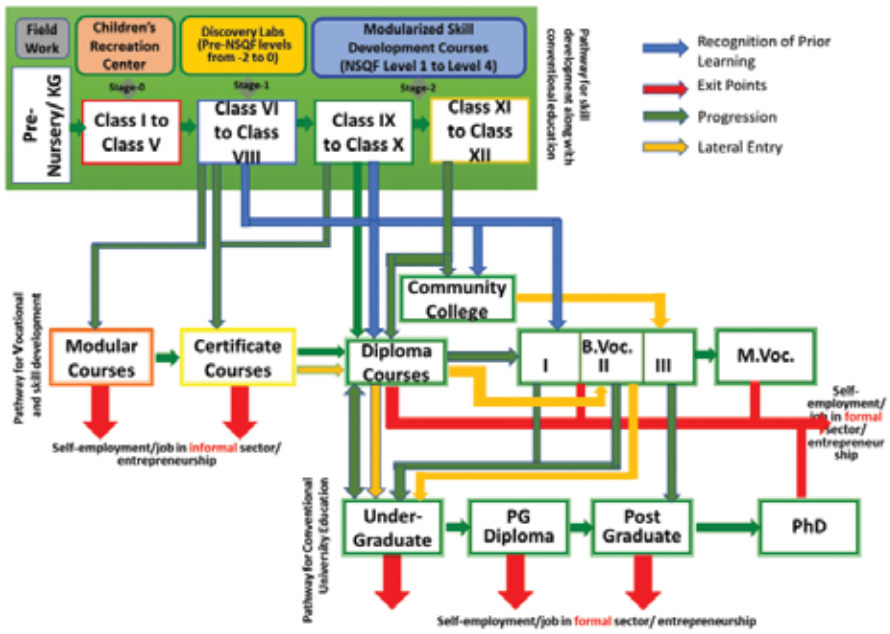
The life-long Learning and Extension policy of DEI seeks to provide opportunities for extended learning, thereby achieving higher employability and social equity.

The following sections detail the Student Admission Policy and Plan for the next fifteen years, starting 2018.

The Admissions Policy

Programmes and Pathways

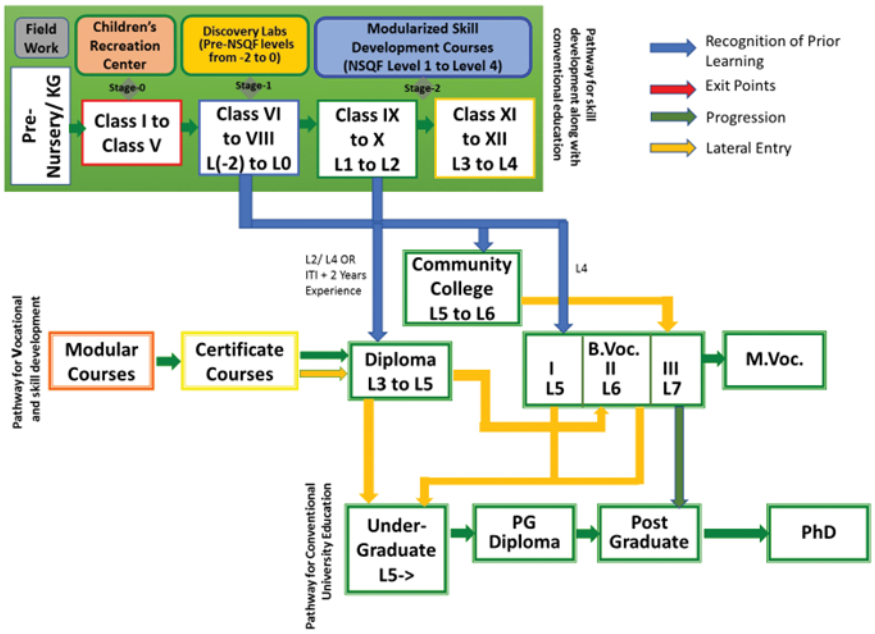
DEI has a unique multi-board system with its components split over the six pillars of education spanning the entire gamut of education, from school to entrepreneurial level. The system allows transitions from skill education to conventional education and vice versa. These pathways begin at nursery school and continue right up to PhD Degrees in conventional, as well as skill education. They permit progression to higher levels of education by clearing tests and meeting eligibility criteria.



Dual-mode educational pathways with multiple entry and exit points

Progression implies movement to a higher-level course along a skilling or conventional pathway, for instance, movement from UG to PG in a conventional pathway. Meritorious students may be admitted to higher level programmes through lateral entry, if found eligible, after clearing requisite tests at appropriate stages of the Certificate/ Diploma/ B.Voc Programmes.

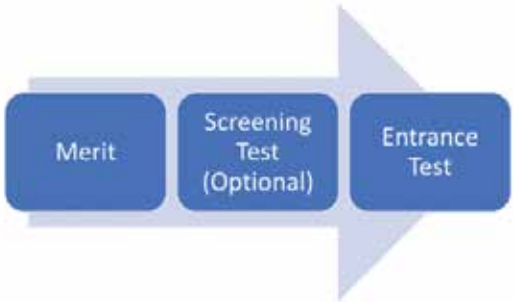
The National Skills Qualifications Framework (NSQF) is a competency-based framework of the Ministry of Skill and Entrepreneurship Development that organizes all qualifications according to a series of knowledge levels, skills and aptitude. The NSQF allows for a learner to acquire the certification for competencies needed at any level through formal, non-formal or informal learning. The following figure explains how DEI's educational pathways align with the NSQF levels.



Lateral Entry and Recognition of Prior Learning at DEI along with NSQF levels

Branch Transfer

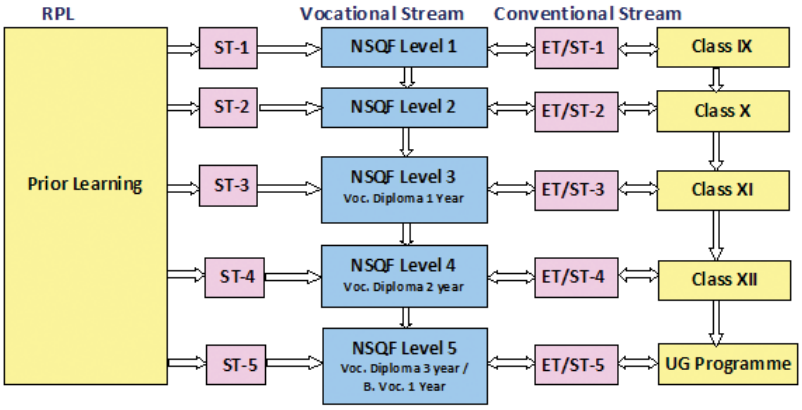
Students are provided an opportunity to change their branch of study after completing the first year of study, based on merit, if there are vacancies in the branch sought.



Recognition of Prior Learning

The National Policy on Skill Development and Entrepreneurship – 2015 introduced the Recognition of Prior Learning (RPL) Framework. NSQF accommodates experiential, life-long learning through mechanisms such as these.

In accordance with the National Policy, DEI proposes a framework for a different segments/ level of skills. The RPL process would include a pre-assessment, skill-gap training and final assessment leading to certification of skills in an individual. The RPL certification would be on a par with the certifications through skill training under NSQF.



RPL Framework at DEI

Bridge courses or skill training programs will be offered to facilitate the transition of candidates from the vocational to the conventional mode of education or vice-versa at each level, if admitted through recognition of prior learning. This also supports the **zero-dropout policy** of the Institute.

Paradigms for Testing and Evaluation of Candidates

Entrance tests for candidates

DEI imparts education that fosters all-round development of students. Thus, the entrance tests evaluate candidates on academics as well as co-curricular and extra-curricular achievements. A candidate takes only one written test for entrance to related programmes.

Components of evaluation in an entrance test

Innovative Evaluation

The Institute administers alternate, innovative, methods of evaluation to assess candidates, where necessary. For example, for admission to the Undergraduate programme in Drawing & Painting and Music, practical tests are replaced by written tests.

The Office of Admissions conducts counselling and career guidance sessions to ensure the best fit of students for the chosen courses.

Roles and Responsibilities

The Admission Committee is responsible for the entire admission process, starting from the evaluation of candidates to their admission. The office of the Registrar and Controller of Examinations is ultimately responsible for admissions to different programmes, with support of the Chairman Admissions and the Office of Admissions. The duties of the Office of Admissions, in consultation with the other offices mentioned above, are

- coordinating admissions to all programmes of the Institute
- publicizing the programmes on offer
- framing the prospectus
- preparing the list of successful candidates and notifying them
- examining credentials of candidates seeking admission or re-entry.

Open Distance Learning

DEI has implemented the Open Distance Learning (ODL) system since 2004. The different modes of delivery are:

- Blended
- Asynchronous
- Semi-synchronous
- Synchronous, and
- Online (e-DEI-de)

All candidates are selected through DEI's central admission process.

Transfers and Transfer Credit Policy

Undergraduates who have completed the course of study for the first year, in a university other than DEI, may request a transfer to DEI. The procedure of admission remains the same as that for beginners, but the Director of the Institute may permit a direct admission on compassionate grounds. Forms for migration/ transfer of admission are available online, at the DEI website.

A Credit Transfer request can be submitted by students only after admission to the concerned programme in DEI. Satisfying the following conditions is mandatory:

- The course work has been completed at a university approved and accredited by the UGC
- The University accreditation grade/ ranking is not lower than that of DEI's
- The courses conform to the common minimum syllabus under the UGC CBCS system
- The letter grade obtained in the courses is "B" or better
- The number of credits to be transferred does not exceed the prescribed limit
- The programme in question has a similar credit system, modular or semester in particular.

Transfer of Application at the Time of Admission

Applicants who do not get selected for admission are given an opportunity to apply for to other courses for which they are eligible.

International Students

The following are categorized as International Students:

- Foreign students: students holding passports issued by foreign countries, including those of Indian origin who have acquired foreign nationality.
- Non-Resident Indians (NRI): Non-Resident Indian students who have passed the qualifying examinations from schools or colleges in foreign countries. This includes those studying abroad, including students affiliated to Indian Boards / Universities.

All international students require a student visa endorsed by DEI. Students wishing to join a research programme require a research visa endorsed by DEI, as well. The visa should be valid for the duration of the course.

Only students who have qualifications recognized by the UGC/ Association of Indian Universities (AIU) are eligible for admission. The admission procedure is similar for Indian candidates. However, all the formalities of admission should be completed at their place of residence or at the nearest Information Centre of the Institute.

General Admission Criteria and Procedure

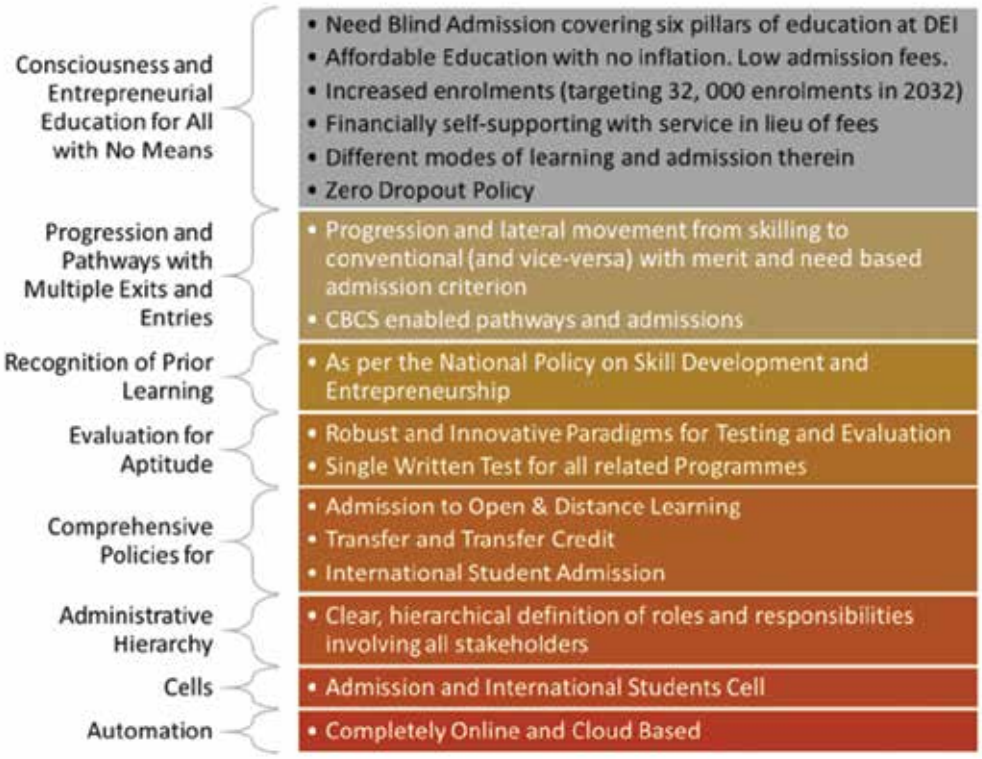
These are overriding criteria that cover admission to all programmes. They include applications for admission to different programmes, reservation of seats, criteria for selection, written (objective) tests, personal interview, certificates for participation in extra and co-curricular activities, the final selection, counselling for admission, medical examination, registration and fees, orientation, communication, zero-dropout policy and complaints and appeals.

The Admission Plan

Goals

The prime focus of the admission plan is, 'Education for all, including students with no means, and without any geographical barriers'.

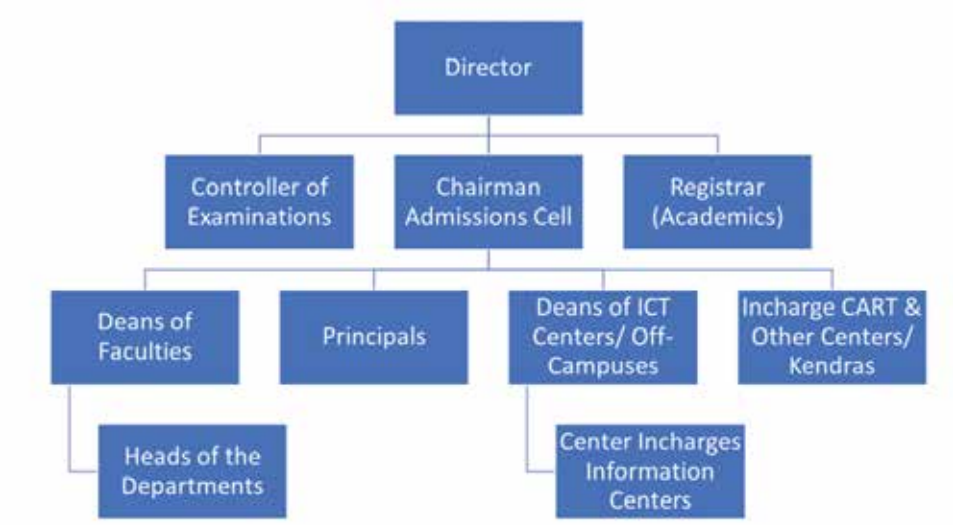
The goals of the admission plan are summarized as follows:



Admission Plan – Goals

The Office of Admissions – Administrative Structure

The Office of Admissions shall serve as the coordinating office for all admissions to the Institute.



Administrative Structure of the Office of Admissions

International Students Cell

The Centre will provide a single point access for all information and assistance to international students at the time of admission, during their period of study and after they leave the Institute. The primary task of the Cell will be coordinating with the admissions office for publicity, conduct of entrance tests and registration of students.

Admission to various programmes of the institute will be governed by general guidelines issued by the University Grants Commission (UGC), Association of Indian Universities (AIU) and other statutory/ regulatory directives.

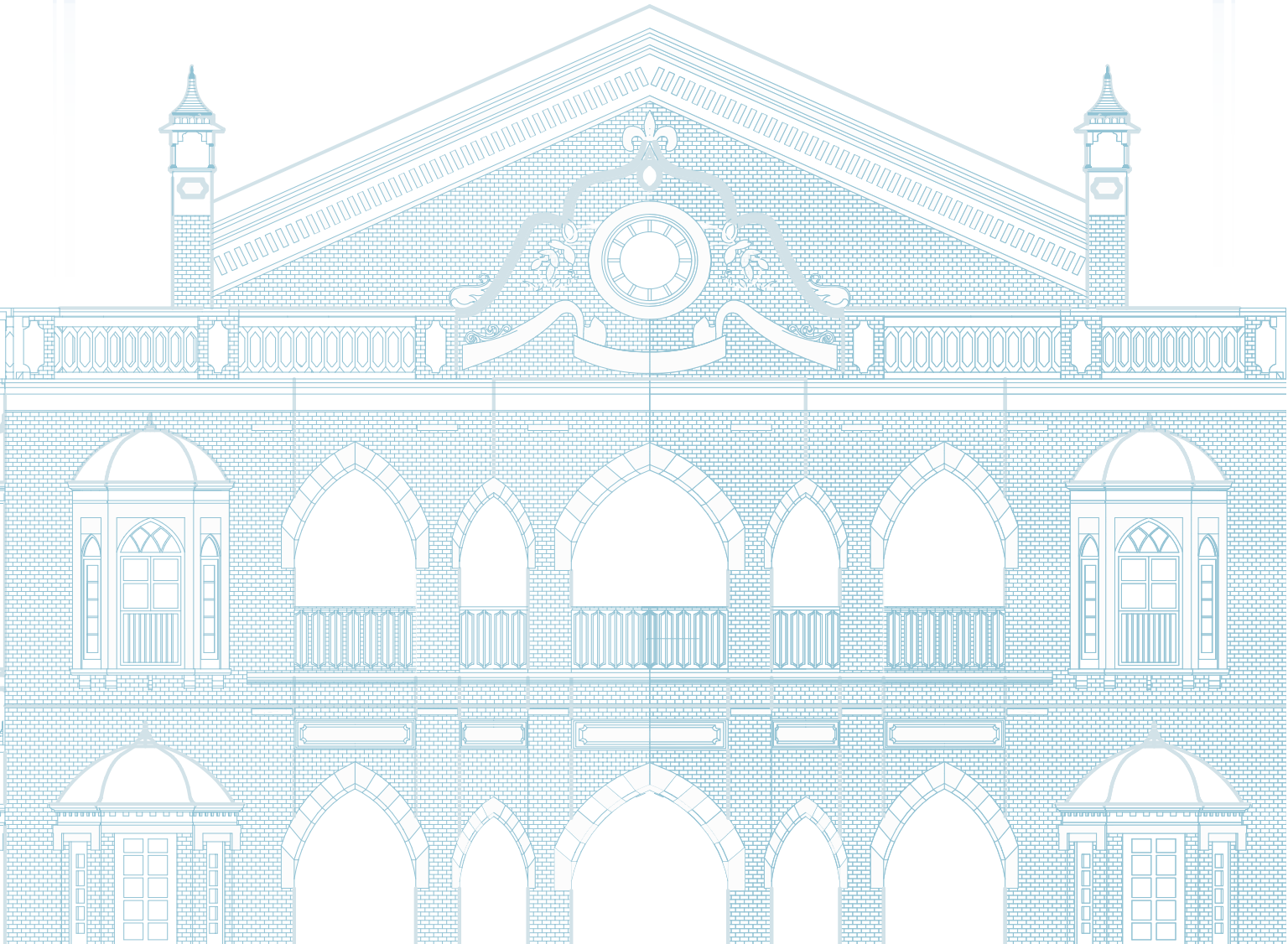
The International Cell will also provide information on credit transfer process, relevant examinations (TOFEL etc.), admission schedules, admission processes, certificates etc. to the students of DEI, who intend to join study or research programmes outside the country.

Systematic Publicity Campaign

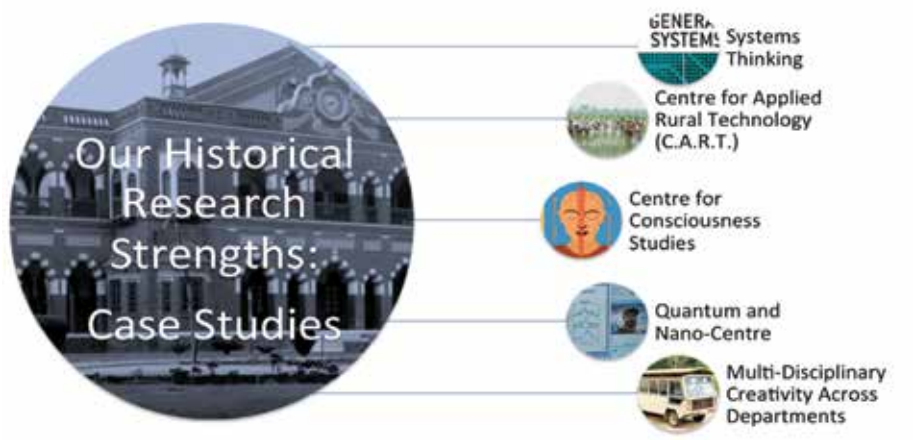
The publicity campaign of DEI will involve different media, as shown under:

5

Research Plan



The Dayalbagh Educational Institute stresses a combination of excellence in research with relevance to the contemporary needs of society, the nation, and the world at large. At the local level, DEI collaborates with the local community, government and non-government organizations to solve problems, facilitating engagement in experiential learning opportunities for students and scholars, allowing them to return to the community. Internationally, DEI partners with institutions that can help extend its global reach and transfer knowledge in the field where DEI plans to focus its research.



Research strengths

The vision for research focuses on DEI's aim to be a Spiritual-Entrepreneurial University, combining excellence with relevance.

The strategic plan envisages nine interdisciplinary research divisions, which will initially complement, and, later, supersede the existing traditional hierarchical divisions of research in the form of departments and faculties with respective specializations. Some highlights of ongoing research in certain niche areas pursued at DEI, such as neuro-theology and neuro-aesthetics, are presented at the end.

The vision identifies consciousness, theology and neuro-theology, (micro)-entrepreneurship and agriculture as focus areas. The plan involves introducing multi-disciplinary research divisions that will initially complement, and may eventually replace, the existing conventional hierarchical structure of traditional departments and faculties.

Nine Divisions of Interdisciplinary, Multidisciplinary and Transdisciplinary Research

DEI follows the Blue Ocean Strategy in setting strategic goals and to identify the niche research areas to which DEI intends to contribute. The Blue Ocean Strategy(W. Chan Kim and Renée Mauborgne, 2005) states that leading companies (or universities) will succeed, not by engaging in perpetual battles with numerous competitors, but instead by creating "blue oceans" of (relatively) uncontested market space with high potential for growth.

DEI's approach of integrating theology with neuroscience (via the emerging field of neuro-theology), philosophy of mind, physics and consciousness studies enables harnessing of India's unique treasures of philosophy with western advancements in science. DEI can emerge as a leader in this multidisciplinary and niche research area of global interest, with relatively little competition from other universities.

Ongoing research

DEI's strength is its commitment to developing new perspectives on the relationship between engineering, science, and technology, and other enterprises such as agriculture, healthcare, environment, society, business, consciousness, theology, humanities and the arts. The idea is to imbue its students with a holistic perspective, which requires expertise in multiple areas and an interdisciplinary approach. Multidisciplinary education and research is essential to enhanced living standards, healthier lives, and more sustainable environments. DEI strives to develop the next generation of citizens who will combine the highest level of technical competence with values and ethics, creativity, innovation, and leadership ability which gives them the skills to solve complex and challenging problems.

Centre for Consciousness Studies

DEI has established a Centre for Consciousness Studies. The center facilitates research in a cross-section of subject areas including Botany, Zoology, Chemistry, Physics and Computer Science, Mathematics, Psychology, Management, Languages (English / Hindi / Sanskrit), Theology, Commerce, Education, Engineering and Medical Science.

The Centre is equipped with a magnetically-shielded room with MEG apparatus and a 15-channel SQUID device for the study of brain-consciousness. The main activities of the Centre include experiments in the Science of Consciousness, Neuro-Theology, Neuro-Psychology, modeling of novel microtubule-based neural networks, organization of lecture series, and focused workshops. The Centre is situated adjacent to the Quantum and Nano Centre and was opened with the inaugural workshop CONCENT 2011.

In 2013, the Centre hosted the annual international conference series, Toward a Science of Consciousness (TSC) (March 3-9, 2013) covering all aspects of conscious experience, founded by philosopher,Prof. David Chalmers and anesthesiologist,Prof. Stuart Hameroff. The week -long conference hosted several hundred participants.

East-West Forum

The Centre for Consciousness studies has organized the East-West Forum as a regular feature of TSC since 2012, in Tucson, Arizona; Helsinki, Finland; and San Diego, USA. The East-West Forum explores how Eastern meditational exploration of consciousness can connect with Western scientific and philosophical study of consciousness.

A unique text (emeritus editors, Rev. Prof. P.S. Satsangi and Prof. Stuart Hameroff), based on previous editions of the forum has been published bringing together Eastern and Western perspectives on consciousness with essays from philosophers and scientists. This cohesion is believed to be pivotal in understanding consciousness and its place in nature and science.

Neurotheology with in-house custom-made MEG facility

The Centre has developed an indigenous magnetically-shielded room with SQUID for MEG experiments, where research is underway and interesting correlates of meditational practice have been obtained. Earlier the Centre used the 30-channel magnetoencephalography (MEG) facility at the Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam near Chennai in November 2012 for neurotheology experiments.

Quantum and Nano Centre

A notable achievement has been the establishment of the multidisciplinary Quantum and Nano Centre funded by the Ministry of Human Resource Development's National Mission on Education through ICT, with the following partners: IIT Kanpur, IIT Delhi and IIT Madras, and, Institute for Quantum Sciences, Michigan State University; Massachusetts Institute of Technology; Institute for Quantum Computing, University of Waterloo; University of Maryland, College Park.

With a focus on the rapidly-growing area of quantum-Nano computing and quantum information sciences, the Quantum-Nano Centre provides an environment for researchers to explore the fundamental physical characteristics of quantum systems, to devise and implement prototype quantum computers, and to develop quantum algorithms and novel applications. Through a program of lectures, seminars, and workshops, the Centre stimulates intellectual exchange among students, faculty, and academic partners.

The Centre has hosted leaders in quantum computing and information technology. In an annual winter school, QANSAS, the first school supported by the Indo-US Science and

Technology Forum. These schools have enabled students and researchers at Indian universities to interact with leaders, including, Prof. Sir Roger Penrose (Oxford), December 2013; Prof. Richard Josza (Cambridge), December 2011; Prof. Vlatko Vedral (Oxford), December 2011; Prof. Robert C Richardson (Cornell), Nobel Prize winner in Physics, December 2010; Prof. Douglas Osheroff (Stanford), Nobel Prize winner in Physics, December 2009; Prof. Charles Bennett (IBM Research) December 2008; Prof. Scott Aaronson (MIT), December 2007
The collaborations have led to joint publications with researchers in institutes including Harvard University, Stanford University, University of Maryland, College Park; Perimeter Institute for Theoretical Physics, Tata Institute of Fundamental Research, and the University of Waterloo.

Centre for Applied Rural Technology

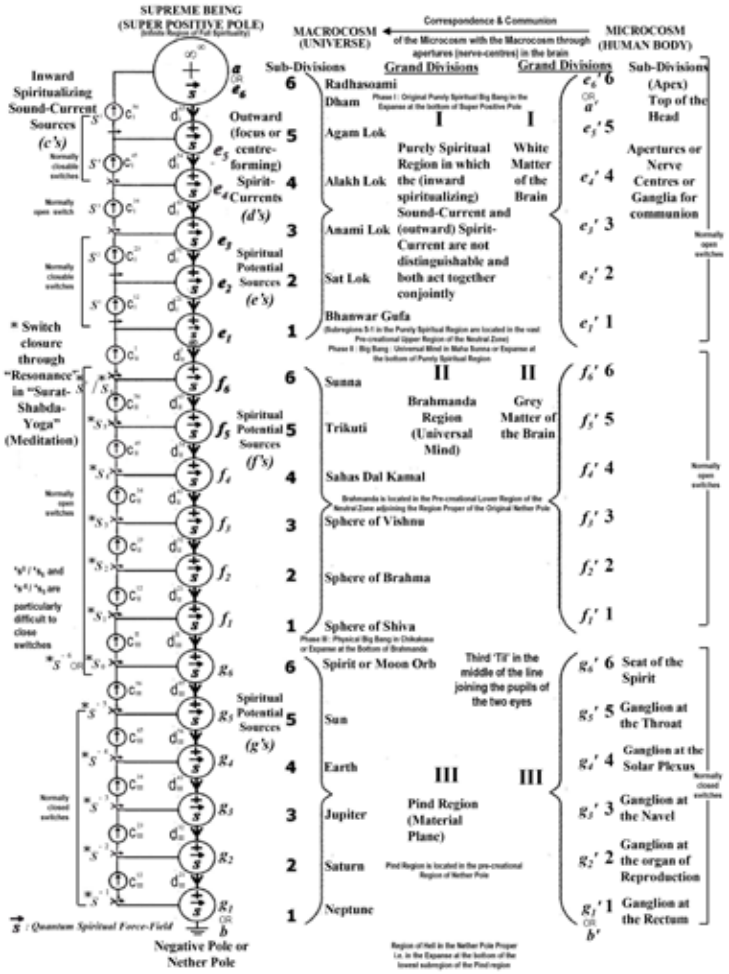
DEI's Education Policy emphasises combining excellence with relevance to the contemporary needs of society. The Centre for Applied Rural Technology (CART) offers various vocational courses through its Modular and Certificate level programmes. The Centre now researches rural technology, which has become an interdisciplinary research theme involving members from all departments in previous year, a change from its earlier focus on education.

Dignitaries visiting the Centre for Applied Rural Technology, DEI, known for its research and education in skilling and sustainable development.

Systems Thinking

Drawing inspiration from von Bertalanffy's philosophy of General Systems Theory, DEI applies the methods of graph theoretic systems modeling to diverse problems and research areas. The figure below illustrates how linear graph theory, a mathematical abstraction commonly associated with the study of electrical networks, can also be applied to diverse disciplines with the appropriate identification of through and across variables.

The figure below shows an application of linear graph theory to the subject of neurotheology, and esoteric phenomenology of spiritual domains (stages of meditation).



Schematic : A Rudimentary Modelling Framework for Spiritual Domains
(The entire creation is evolved out of the pre-creational Nether Pole)
The second sub-division sphere of a set of six sub-divisions of each grand-division of Macrocosm or Human-Microcosm is the one which is endowed with generative function : e.g. e2 (Sat Lok), f2 (Sphere of Brahma); and g2' (Man : Ganglion at the organ of reproduction)

A Systems Graph Depicting Stages of Meditation and Esoteric Spiritual Domains (Professor P S Satsangi at the Inaugural Function of The Twentieth Conference On Toward a Science of Consciousness, March 3, 2013)

Children (aged 3months to 3 years) are part of a new longitudinal study of the effect of daily exposure to field work on their social skills, cognitive developments and values. This is a new experimental initiative and example of multi-disciplinary creativity at DEI.

15-year strategic action plan

DEI's research objectives are to: Emerge as an international leader for interdisciplinary research in consciousness, with an emphasis on theology, neuro-theology and eastern philosophy, as well as other related areas such as physics, mathematics, computer science, and biology. Its research focus in agriculture and sustainable agriculture, is to develop low-cost and innovative solutions to problems that face the nation. DEI encourages research that promotes and creates opportunities for micro-entrepreneurship, Nano-entrepreneurship, especially for the lowest and least-empowered members of society.

Our founder Director established DEI's ethos that quality always wins over quantity. To achieve international recognition in a short time-frame through objective rating mechanisms, we must have quantitative ways of measuring and documenting the impact of our research activities.

Six key performance indicators for research at the institute level are presented in the following table:

Key Performance Indicators	
1 Publications, Citations and Patents	Measuring the number of publications in highly reputed journals, the numbers of citations these publications receive, and number of patents is a quantitative measure of our research and innovations.
2 Visibility in Major International Conferences	The visibility of our research activities at major international conferences is a quantifiable measure of our research. DEI plays a role in the interdisciplinary study of consciousness by hosting the annual East-West forum at the Toward a Science of Consciousness conference series.
3 Visibility in News Media and Social Media	The amount of attention our research receives in news media, social media, and magazines such as Scientific American, is an important measure of its impact. Altmetric is one agency that provides a quantitative measure of this.
4 Success in Entrepreneurial and Agricultural Activities	Our entrepreneurial focus in research activities will create jobs and enable many Indians to earn their livelihood. Any evidence documenting this fact is a measure of success.
5 Ability to attract International Scientists for short and long-term visits, joint appointments and permanent positions.	The number of short-term, long-term and adjunct faculty from prestigious foreign universities is a measure of our reputation internationally.

6 Transfer of knowledge	Transfer of knowledge to society and end-users through last-mile connectivity will prove the relevance of the research & development endeavours. The number of live R&D projects in societal/community settings can be a measure of this KPI.

DEI has a robust plan for maximizing the measurable impact of its research and development programmes in the areas mentioned above, through increased citations, mentions in social media, articles in news media and magazines. Profit or fame have not been motives driving researchers and neither is there a focus on gaining attention from international ranking agencies. Tables detailing the research plans until 2032 are provided in the Annexure.

Multi-disciplinary Research Divisions

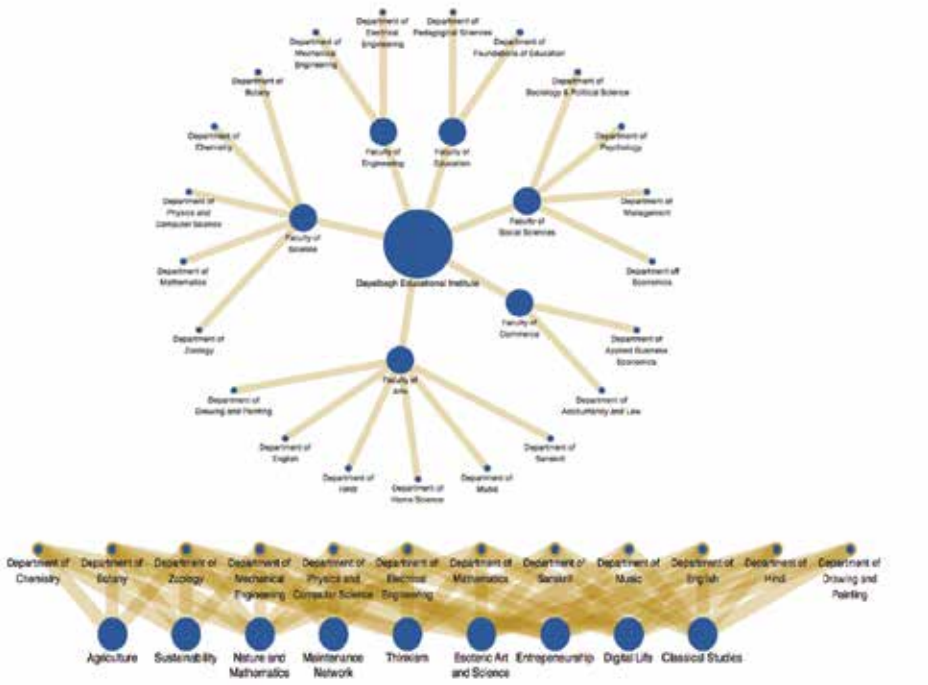
Dayalbagh Educational Institute is a Spiritual-Entrepreneurial University, and as such the vision and expectation for the research programmes is different, with researchers coordinating their activities around the flagship themes. It would appear that DEI's unique and emerging interdisciplinary areas, of importance to our nation, are not covered by conventional institutions or universities. The existing research programme, set to evolve and expand as outlined in the 15-year plan, organically meets Objectives 3.2, 3.3 and 3.4 of the Gazette Notification announcing the Institutions of Eminence scheme.

Research at a Spiritual-Entrepreneurial University, DEI feels must have a short-term and long-term socio-economic impact, with a view to benefiting our nation and world.

Skilling, low-cost innovation (jugaad) and entrepreneurship (in the form of cottage industries, etc.) have been crucial features and strengths of research and education at DEI. Integration of agricultural activities with university education, provides a unique opportunity for research not only in agriculture and food security, but also education and sociology.

Research at a Spiritual-Entrepreneurial University must also understand how the highest possible qualities and values can be instilled in students, in order to develop superhumans with super-consciousness, with strong values and the ability to face today's challenges. DEI strives to redirect the acquisitive impulse of mankind from accumulating material wealth to the acquisition of knowledge, or truth. Thus, DEI's focus is on selected areas of cutting edge research in quantum physics: quantum field theory and string theory, quantum information and foundations; as well as neurotheology.

To achieve these goals, DEI proposes organizing research activities via multi-disciplinary research divisions rather than departments. Each faculty member will have one primary affiliation and upto two secondary affiliations. Research scholars would be admitted to a research division rather than a department and may choose any advisor(s) in that division, thereby encouraging interdisciplinary research.



Transitioning from traditional hierarchical departmental structure, to a system involving multi-disciplinary research divisions.

Agriculture

Agriculture is a major focus of research activities at the institute, and incorporates expertise from diverse departments such as botany, zoology, chemistry, mechanical engineering, and mathematics. A detailed discussion appears in the chapter Agriculture.

Research Highlight

Enhancing secondary metabolites and essential oils in plants

Prof. Prem Dantu, Department of Botany

The identification of proteins and subsequently genes associated with the application of inexpensive irradiated sodium alginate at very low concentration in the form of aqueous solution, at whole plant level to boost the herbage yield and essential oil production as well as active constituents viz. Menthol yield, Mentone yield and Menthyl Acetate of peppermint (***Mentha piperita*** L.).The next generation sequencing study of the pathways leading to production of natural products such as piperine in ***Piper longum*** will help discover additional natural products for developing new medicines and operate pathways in plants. Transcriptome has cost effective approach of sequence determination and it helps to improve the efficiency and speed of gene discovery. Piper longum is an important plant used for medicinal purposes, but transcriptome and genetic information are not available in NCBI database.

Entrepreneurship

Entrepreneurship is a major focus of research activities at the institute and incorporates expertise from diverse departments. DEI's vision for entrepreneurship is not to create large multinational companies but to create micro- and Nano-enterprises that bring sustainable wealth generation to groups of people, including those from underprivileged backgrounds. Details are available in a separate chapter on Entrepreneurial activities, including research.

Research Highlight

Women's Entrepreneurship

Prof. Sumita Srivastava, Faculty of Social Sciences

Sumita Srivastava, Rupali Misra, (2017) "Exploring antecedents of entrepreneurial intentions of young women in India: A multi-method analysis", Journal of Entrepreneurship in Emerging Economies, Vol. 9 Issue: 2, pp.181-206, https://doi.org/10.1108/JEEE-04-2016-0012

This paper is a research project sanctioned by the Indian Council of Social Science Research (ICSSR), New Delhi on the topic "Designing Educational and Training Interventions for preparing Undergraduates to Pursue Entrepreneurship as a Career Choice: A roadmap, for universities and institutions of Higher Education" with a grant-in-aid of Rs. 6 lakhs.

The purpose of this study is to identify the antecedents of entrepreneurial intentions of young women in India because of the Indian Government's current emphasis on women's participation in mainstream economic activities. This study focuses on entrepreneurial intentions as the most important stage of the entrepreneurship process. Based on the theory of planned behavior, propounded by Ajzen (1991), it points out intentions as the most significant predictor of human behavior.

Research Highlight

Green Supply Chain Coordination and Management

Prof. Sanjeev Swami, Faculty of Social Sciences

One of the significant research areas in supply chain management is linked to the disagreement and coordination issues that can arise between a variety of players in the chain. These conflicts can be both horizontal and vertical in nature. The horizontal issues are among the players at the same level of the supply chain, while the vertical conflicts are among the players at the upstream (say, a manufacturer) and downstream (say, a retailer) levels of the chain. We plan to address such coordination issues in the green supply chain management. Fundamental Theoretical Contributions: This form of contribution will be made through game-theoretic modelling of the strategic decision-making situations.

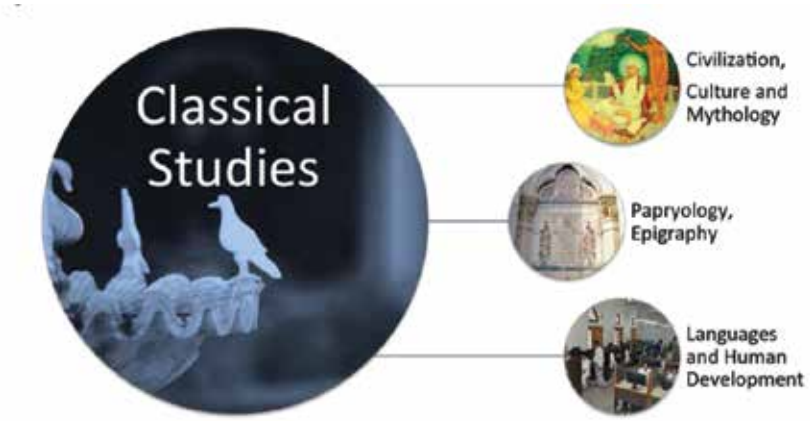
Applied Contributions: With the advent of self-driving, solar–powered automobiles, the supply chain structures will undergo drastic changes, but will necessarily be greener in nature. Through industrial case studies, and large-scale surveys, cutting-edge knowledge will be generated to assist industrial organizations around the world.

Phase 1 (first 5 years) – Focus will be on game-theoretic modelling
Phase 2 (5-10 years) – Large-scale surveys, econometric modelling and case studies
Phase 3 (10-15 years) – Integration with other technologies like artificial intelligence

Partner Institutes – IIT Delhi, IIM Udaipur, IIM Calcutta, Malaysia Institute for Supply Chain Innovation.

Classical Studies

Classical studies involve the study of all aspects of classics, including comparative studies of culture and languages, and are in line with the DEI education policy objective, "To promote the study of classics and develop pride in national culture and heritage." We draw your attention to i-c-n-c-TALL, our innovative language learning laboratory. One of the major goals of this language lab is to provide education in Sanskrit, through digital learning initiatives.



Research Highlight

DEI - iNFORMATION-cOMMUNICATION–nEURO-cOGNITIVE Technologies Assisted Language Lab, (i-c-n-c) TALL

An overview by Dr. Bani Dayal Dhir, Department of English

(i-c-n-c) TALL facilitates teaching and learning of various languages using technology and also promotes interdisciplinary research in the realms of consciousness, literature, language learning and teaching. It is a central teaching cum interdisciplinary research Centre of the Institute which functions in conjunction with the Centre of Consciousness Studies DEI. State-of-the-art teaching spaces, rich software resources and expert support personnel together make the DEI (i-c-n-c) TALL a dynamic and highly efficient teaching and learning facility. It is the multilingual computing and assessment hub of the Institute with reliable audio and video recording capability, foreign language digital media content, and software images.

Facilities include:

- Main lab with 25 computers, 3 class rooms and one lecture Hall.
- A network of computers, server with appropriate application software (Instructor server / Student Client).
- Orell Digital language Lab software, installed at i-c-n-c Tall, facilitates the learning of any language effortlessly. The software has the following features:
  - ASL- Tool to assign speaking and listening activities to students
  - Intercom- Enables two-way communication between the teacher and students
  - Live Classroom - It performs live classes and allows evaluation of students' learning activities

- Lesson Studio- It allows teacher to create study materials in video, audio and text format.
- e-Writer - It is used to assign writing assignments to students
- e- Reader - It is used to send reading assignments to individual or group of students.
- Screen Viewer - Teacher can capture the students' screen and monitor their activities even without their knowledge.
- Model Student - With this feature we can select a student as a model for other learners to view the assignments submitted by the model student.
- Billboard - It is used to write news or information for students
- Alert - It is an aid for students to call the teacher

- The lab is also equipped with LED Projector WXGA, Projection Screen, smart boards, 49" LED LFD Displays, Lumens Document Camera, Digital Podium with control panels, Sony VCU Camera, Audio System with Speakers and Microphone, Audio Mixer
- The lab resources are not only available on-campus but can be accessed and used off-campus.
- The lab is used not only for teaching English, but it is used for teaching Indian Regional languages and foreign languages as well.
- Artificial Intelligent tools like chatbots are also available. The following chatbots are currently being used:
  - **Alice ESL** Bot is useful for Practicing English.
  - **Leslie Linguo** is an ESL-oriented chat robot and dictionary with text-to-speech feature to practice oral and written communication in English.
  - **ESL Robot** lets one practice English.
  - **Andy Bot** is a friendly robot which can be used by beginners to converse in English. One can learn language by using it in a conversation. One can take grammar lessons and learn new words every day!
- The lab is equipped with Two 'Multilingual Electronic Translators – ECTACO 500 AL'. ECTACO 500 AL is one of the best translators available in the world because of its ability to translate numerous languages on the fly.
- The Lab has access to various useful links, websites, and apps for language learning. For example – British Council online tools, ESL Gold, ESL.net, 101 Languages of the World, Sanskrit learning tools, Online Sanskrit Sandhi tool, Online Sanskrit newspaper, Online Sanskrit dictionaries, Online Sanskrit Newspapers, Sanskrit thesaurus, Monier Williams Sanskrit-English Dictionary, http://lexica.indica-et-buddhica.org/dict/lexica, Monier Williams Online Dictionary [English to Sanskrit], Sanskrit OCR tool.

(i-c-n-c)TALL - Sanskrit Teaching and Research

One of the primary objectives of (i-c-n-c-) TALL is to conserve and disseminate the treasure of Sanskrit language, the language of Devas, language of transcendental consciousness by using ICT. It is aiming to promote man – machine interaction, natural language processing with reference to Sanskrit, including spoken Sanskrit to make it once again the dominant language of the world. This multi-cultural and multi-lingual lab cum research centre would also motivate Sanskrit scholars to pursue research in neuroscience, cognition, computational Sanskrit and Science of Consciousness using EEG, MEG and fMRI installed at DEI.

While referring to Sanskrit language, I am reminded of Albert Einstein, who, once tried talking in Sanskrit to Dr B.N. Gupta, an Indian scientist. Dr Gupta's confession that he did not know the language left Einstein stunned and his instant response was:

"You hail from India which is the home of Hindu Philosophy, yet you have not cared to learn that language. Come along, see my library which treasures classics from Sanskritam."

We are in the process of developing a Digital Library for Sanskrit Texts, Scriptures and other literature along with English and other languages to open up a huge ocean of knowledge hidden in Sanskrit compositions and treatises composed centuries ago. Sanskrit Language Learning material is being prepared by DEI Sanskrit Department. The Content includes Listening comprehension exercises, videos of short stories (Pancha-tantra etc.), narration of the shlokas of the Bhagvadgita and their explanation, grammar, essays on a variety of topics, videos for conversation, etc. We propose to run short term certificate courses in Spoken Sanskrit and they can be also run in distance mode. Researchers have observed that as compared to other languages, Sanskrit has many advantages for computer processing due to its structural properties. Through Sanskrit language teaching and research at (i-c-n-c) TALL, we are making a humble effort to open up a huge ocean of knowledge in different areas hidden in Sanskrit compositions and treatises composed centuries ago. I quote here the following observation of Paul Kiparsky, Emeritus Professor at Stanford University,
"Many of the insights of Panini's grammar still remain to be recaptured, but those that are already understood constitute a major theoretical contribution."

Virtual Lab for Vocational Electronic Centre for Cultural Studies in DEI

This Lab would be developed as a unique place where skill based vocational courses are proposed to be launched to provide "linguistic - technical competence" to all, thus helping people earn livelihood and fulfilling the needs of the country. Vocational programmes such as Creative writing and Digital Skills, Communicative Skills, Translation, Certificate /diploma courses in speaking &writing other Indian and foreign languages are proposed, blending beautifully 'Power of Man' and 'Power of Technology'. All vocational programmes, short term certificate programmes including lab facility will be available off campus as well so students and faculty at different places may make optimum utilization of the rich lab. Conforming to the mission objective of DEI, in the words of Most Revered Prof. Prem Saran Satsangi is transformation of India to a knowledge society, the learning at Lab aims to make people skilled to lead a better life. In this context it would not be inappropriate to quote the following observation of Dr. S. Radhakrishnan:

"India is a free nation, but it will be free in true sense only when each Indian will have employment and shelter."

Most Revered Prof Prem Saran Satsangi in his address at the inauguration of Distance Education Programme at MTV Puram enlightened:
"Now we switch from the top down and bottom up approach to the middle out approach for management and planning of education. And it is at the middle level of vocational education that we are making a beginning here. Primary level education is already established. The top level is already there in the form of Satsangis here. So, we now go to the middle level and we use the middle–out approach of linking it to the bottom level providing the children with the Primary education at the present and then moving out towards the top and providing inter-linkage with the spiritual education.
So that is how the whole education system will get completed and will have the realization of the University in Satsang in the true sense."

Reinforcing the lofty ideal of 'self-reliance', inspiring each one saying, "Trust thyself: every heart vibrates to that iron string", our humble endeavour is to make everyone realize, in the words of Ralph Waldo Emerson, "the power which resides in him is new in nature, and none but he knows what that is which he can do, nor does he know until he has tried." Adequate exposure to state of the art technology and 'hands on experience' to "each and all" will make them competent to work in various capacities in various organizations and even motivate them for self- employment.

Research in Psycholinguistics: Researchers from DEI Psychology Department have proposed to conduct experiments exploring the linguistic competence of learners. They have proposed to pursue studies in the areas of memory, attention, perception, speech disorders, slow learning. In collaboration with Psychology department tests are proposed- Boston naming test, (BNT), Clinical Evaluation of Language Functioning (CELF), Controlled Oral Word Association Test (COWAT), Multilingual Aphasia Examination, Peabody Picture Vocabulary Test (PPVT), Test of Written language (TOWL) etc.

Upliftment of underprivileged children: It is one of the mission objectives of the lab cum research centre to impart training and education to the tribal and rural children and adults. Special language learning programmes are proposed to be launched for socially and economically deprived strata of the society. The lab would initiate such programmes for the children of Rajaborari, Murar and MTV Puram.

On-going Interdisciplinary Research Initiatives and language teaching Programmes at (i-c-n-c) TALL: A Bird's Eye View

- In collaboration with Centre for Consciousness Studies experiments in Neuroaesthetics to study the impact of various literary texts on human brain and also personality using MEG. The results were presented at the international conference "The Science of Consciousness", Tucson, University of Arizona held in April from 25-30, 2016.
- The Department of English is running four compulsory lab courses as part of the undergraduate English programme. The students are evaluated based on the practical assignments done throughout the semester covering four important skills – reading, writing, speaking and listening.
- The Department of Sanskrit has launched the Sanskrit Work Experience Course for undergraduate students.
- The Department of Hindi has launched Hindi tutorial class for undergraduate students.
- One of the unique features is the launch of English lab classes for the children of DEI Primary School from class 1 to 5. It's a delight to watch these kids operating the software efficiently and learning English. Apart from Dayalbagh Primary School, the students of class 6,7,8 of DEI Prem Vidyalaya and DEI REI Inter College are also having their regular English lab Classes.
- The syllabus of English lab classes has been designed in such a way that it integrates the topics done in the traditional lecture method in the class room. The lab classes reinforce their learning through interactive method, speaking and listening activities. At the same time,they also get an opportunity to learn useful additional topics.
- Classes of Dayalbagh School of languages have commenced successfully.

- A One Week English proficiency Course is organized every year at (i-c-n-c) TALL during winter camp at DEI.
- Experiments in Language and Psychology by the Department of Psychology.

The lab cum research centre at Dayalbagh functions with the noble objective of 'humanizing technology' not 'technology technisizing human'. To recall the words of Most Revered Dr. M. B. Lal Sahab, the founder of Dayalbagh Educational Institute:

We should try to see that the modern trends become only supplements and not substitutes of our basic concepts of education. We do not like to put the clock back but would certainly do well to introduce a more human and realistic approach to education to meet the present day needs of society.

In an age when man is becoming an automaton with the displacement of the qualities of humility, love and generosity, plagued by the Frostian dilemma – which road to travel? Making choices on the basis of short term myopic considerations, I believe learning humanities in the Technology Assisted Language Lab (TALL) will enable children evolve and grow TALLER and reach the Zenith with the blend of scientific temper and humanistic spirit. In his latest book entitled, Life 3.0: Being Human in the Age of Artificial Intelligence (2017), Max Tegmark raises concerns regarding human life in the age of technology. As '(i-c-n-c) TALL' envisions the era of Super intelligent machines, it also follows the enlightening guiding lines of Most Revered Prof. Prem Saran Satsangi Sahab that the Super intelligent machines developed with innovative qualities and values alone can be beneficial. He also observes that the misuse of Super intelligent machines can be prevented by developing supermen endowed with values. While imparting linguistic-technical competence within the Value-Based Education system of DEI, (i-c-n-c) TALL endeavours to exemplify the unique 'Dayalbagh Way of Life'. The relation between "quality of life" and "quality of education" has been elucidated by Most Revered Prof. Prem Saran Satsangi Sahab through His model of "Sigma Six Q Way of Dayalbagh Life".

As we march ahead with firm conviction, reverence and humility to translate the lofty vision of making (i-c-n-c) TALL a unique learning and Research centre in the world, I place the following prayer, by Robert Browning, at the Lotus Feet of Supreme Lord Almighty:

Take and use Thy work:
Amend what flaws may lurk,
What strain o' the stuff, what warping's past the aim!
My times be in Thy hand!
Perfect the cup as planned!

Esoteric Art and Science

This area focuses on the study of consciousness— an interdisciplinary theme of research that challenges the boundaries between the natural sciences and the social sciences. To explain the importance of Esoteric Art and Science, Prof. P.S. Satsangi (former Director, DEI, and Chairman Advisory Committee on Education, Dayalbagh) quoted the Dalai Lama:

'Finally, I would like to draw your attention to this quote from Dalai Lama, "Certainly physics designed the bombs; biology, the germ warfare; chemistry, the nerve gas; and so on, but it will be the unhealthy emotions of individuals that will trigger these horrors. These emotions can only be controlled, reshaped and re-channeled by technologies developed from successful inner science." So, it is important to integrate inner experience with scientific investigations and develop what one might call inner science or experiential science or phenomenological science'. (Satsangi, 2012)

Esoteric studies include the study of meditation, inner experience, and comparative study of religion. Our flagship activity is the East-West Forum.

Studies in many disciplines, including the history and philosophy of science and technology, linguistics, music and neuropsychology are questioning the nature and status of human rationality and creativity. Cognitive science at DEI brings together researchers in computer science, philosophy, psychology and linguistics, looking to the neurosciences to extend the reach and impact of their work.

Research Highlight

Neurotheology

Institute-Wide Research Endeavor

Consciousness implies awareness – subjective experience of internal and external phenomenal worlds. Consciousness is central also to understanding, meaning and volitional choice with the experience of free will (Hameroff and Penrose, 2014). While the science of consciousness in ancient India as given in Vedas and Upanishads dates to the second millennium B.C., it is over the past 50 years or so that there has been considerable interest in the modern science in the West, in terms of cognitive psychology and neuroscience (neuro-physiology or neuro-medicine) in studying consciousness (Satsangi, 2006).

It appears plausible to evolve a science of inner experience (which is repeatable and verifiable) by attempting to integrate Eastern and Western scientific approaches and philosophy by perhaps verifying inner meditational phenomenology of consciousness through well-established scientific epistemology, including four important stages of observation (awareness), report (description), analysis (understanding) and verification (hypothesis-testing) (Price and Barrell, 2012) while also availing of modern techniques of fMRI and MEG scans in capturing repeatable physiological / physical-environmental parameters of neural correlates accompanying inner experience during meditational practices (Satsangi, 2012).

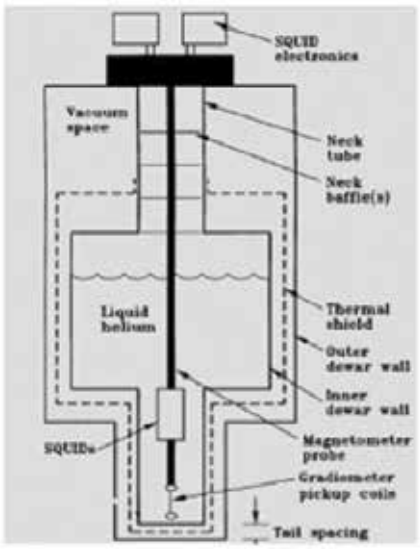
We would like to emphasize that the program we are proposing conforms to scientific methodology. First person experiential data and ancient wisdom are translated (via an established methodology described in detail below) into hypotheses testable via the traditional third-person tools of science. Any scientific endeavor must attempt to model the system under investigation — and a multi-scale model of the brain based on quantum mechanics will play a crucial role in our investigation.

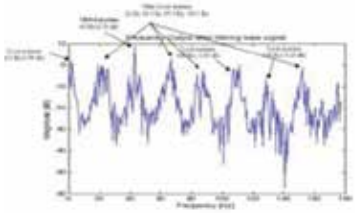
For experimental studies at the physical level, we will focus on magnetoencephalography (MEG) as our primary instrument. We have a SQUID-based MEG facility, developed in-house by Prof. Vishal Sahni, which was recently upgraded to 16 channels.

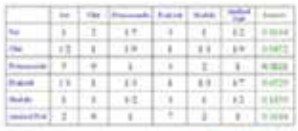
The advantage of MEG is that it is susceptible to harmonic analysis (i.e., Fourier transformation). We have made what we consider to be a breakthrough by attempting to correlate the *power spectrum of MEG data* with various stages of meditation practice.

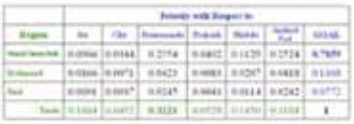
In MEG studies carried out at our own MEG facility at Dayalbagh, as well as at the more-sophisticated 38-channel MEG at the Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam near Chennai in November 2012, we have identified peaks at certain characteristic frequencies — (3 Hz, 4.5 Hz, 76 Hz, 108 Hz, and 126 Hz) — in the power spectrum of MEG readings which can be robustly correlated with the various stages of meditation practice. A sample reading is depicted on the right.

The various stages of meditation practice were identified collectively by practitioners using the established, scientific method known as fuzzy Analytic Hierarchy Process (AHP), commonly invoked in operations research. These are depicted on the right.
The results depicted here form the basis for this study (See Satsangi and Sahni, 2007, 2009 and 2011 for more details).









Sahni and Satsangi (research presented at Toward a Science of Consciousness Conference 2015) also believe that interesting conclusions can be drawn from the $1/f^{\alpha}$ behaviour of MEG brain scans.

Noise with a power spectrum that varies as 1/f, i.e., $|\alpha|=1$, is pink noise — and represents the most interesting noise known to physics.

We believe the presence of pink noise potentially contains a wealth of information about the inner workings of the mind and brain. Therefore, there may be great scope for developing rich and testable theoretical models of cognition and consciousness based on a harmonic paradigm for correlates in the electromagnetic activity of the brain.

Research Highlight

Prof. Vishal Sahni, Centre for Consciousness Studies

Much of Western scientific and philosophical study of consciousness takes place in a secularized setting. To facilitate its integration with the eastern experiential wisdom, we have generalized the modelling framework for contextuality based quantum teleportation to n-dimensional quantum states, or n-qudits (quantum odd-prime based units) which holds considerable promise for even higher mathematical abstraction. The proposed generalization extends the two states in the qubit model, to n states and this n could tend towards infinity. We are heading towards point-sized loops or fine-grained particles of nature, which have been rejected out of hand by string theorists. It is not physical reality when measured from the sense of Planck's length of 10^{-35} metres, but finer-grained particles than Planck's length 10^{-35} metres may exist, although, they are not matter anymore. We argue that why stop at degree of freedom of three, but instead pursue quantum odd-prime based units with higher degree n such as 5, 7, 11, 13, 17 and so on till n*th* degree of freedom even tending to infinity. String theorists admit its multiple landscapes with higher degrees of freedom which points its uniqueness both for particles finer than 10^{-35} metres as well as distances greater than 10^{10} light years.

Digital Life

The research division Digital Life represents multi-disciplinary research on all aspects of the human-computer interaction, including artificial intelligence, super-intelligence, digital music and related topics.

DEI's research community is engaged in building cognitive systems including those in computational neuroscience and machine learning, computational modelling of human learning, language, vision, audition, and knowledge representation and applying the results of their investigations to the design of intelligent artificial agents.

How will new digital and social media and their associated information and communications technologies (ICT) — the creative convergence of digital arts, science, technology and business for human expression, communication, social interaction and education — continue to change how and what we communicate? The exploration of these modes of making meaning and constructing narrative, along with their social, technological and ethical implications, is an essential activity in understanding our society. Digital media and ICT are applied in a vast variety of contexts, including political discourse and radical cultural critiques, digital art and literature projects, e-health innovations in diagnostics and treatment, computational biology, information policy research and computer-human interaction and social networking.

Research Highlight

Super-intelligence

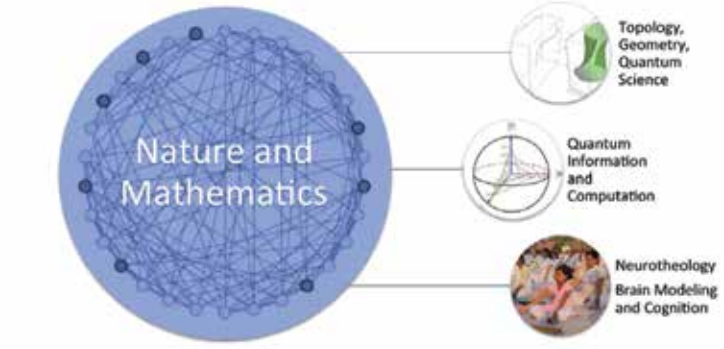
Prof. C Patvardhan, Department of Electrical Engineering, DEI

Impressive growth in the computational power of the machines has created a wide-spread belief that soon (as early as 2024, according to some people) computers shall have processing power that will exceed the human processing power. This has raised the expectation that we shall soon see Artificial General Intelligence (AGI), as opposed to the Narrow AI which is domain specific. It is envisioned that the AGI shall be characterized by machines that will outperform humans at a large variety of tasks. The invention of AGI would imply that these machines also include the design of more Intelligent and powerful machines. This could result in a spiraling explosion of intelligence. This is being referred to as the Singularity in Artificial Intelligence Research. One possible consequence could be that the machines would, by their superior intellect, subjugate the human beings and that could lead to the extermination of humans, in the worst-case scenario. Scientists are worried that unless appropriate steps are taken to take care of this possibility right at the design stage, it would not be possible to take corrective actions later because, the AGI, due to its superior intellect would not let that happen. Therefore, by design, it must be ensured that the machines have a reasoning process that precludes any activities detrimental to humans. Thinkers like Stephen Hawking, Nick Bostrom, Bill Gates, Elon Musk have echoed this sentiment. Research and Development in AI cannot be regulated or stopped simply because the benefits are too many and too commercially important and the monitoring too difficult or even impossible. This leaves us with only one possibility and that is to ensure that the development of the AGI be taken up vigorously and rigorously by people with benevolent intentions.

We, at the Dayalbagh Educational Institute have taken up this challenge. Dayalbagh has a 100-year history in a Value-Based Quality Education (VBQE) system that has been recognized for its attempts at integrating the development of core values with a Quality perspective in education with the idea that excellence cannot be at the cost of relevance. Development of AI with integrated Quality and Values is akin to the development of individuals which an egalitarian society like Dayalbagh envisages with its comprehensive education system. Attempts are being made to develop AI models along these lines.

Life and Mathematics

Eugene Wigner emphasized the unreasonable effectiveness of mathematics in the physical sciences in his famous essay. Max Tegmark, in his recent book, Our Mathematical Universe, elevates this to a principle that the natural universe is nothing more than an abstract mathematical structure. Inspired by these viewpoints, we have established the research division Nature (Life) and Mathematics.



This research division centers on the application of mathematics to all areas of natural sciences, particularly biology. To emphasize the role of mathematics and biology, this research division is sometimes also called "Life and Mathematics", though its scope includes all areas of natural sciences. Quantum computing, quantum field theory, string theory, as well as mathematical biology and systems biology are key research areas of this division

Research Highlight

String Theory and Quantum Field Theory

Prof. Gunjan Aggrawal, Dr. Sonali Bhatnagar, Dr. Shiroman Prakash, Departments of Mathematics & Physics and Computer Science

The string theory and quantum field theory research group in DEI has active collaborations with Princeton University and the Indian Institute of Science, Bangalore (both of which resulting in joint publications in 2017). Faculty also frequently visits Tata Institute of Fundamental Research, under a newly signed memorandum of understanding. At present, research is funded by a DST Inspire Faculty Award, and a recently approved DST Early Career Research Award "Fault Tolerant Quantum Computing and Holographic Error Correcting Codes". Our research interests span quantum field theories, general relativity and string theory; with an increasing focus on interplay with quantum information.

Neuroaesthetics

Dr. Dayal Pyari Srivastava, Department of Physics and Computer Science

"If one is working from the point of view of getting beauty into one's equation, ... one is on a sure line of progress." Paul Dirac [Scientific American 208 (5) (1963)]

This work is inspired by recent groundbreaking research by Semir Zeki et al. (2014) on the perception of mathematical beauty. The subjects of the experiment studied 16 mathematicians, whose brains were scanned while they were presented with several mathematical equations of varying degrees of beauty. They found that the experience of mathematical beauty correlates with activity in part of the medial orbito-frontal cortex (mOFC): the same area of the brain activated by other forms of beauty, such as artistic beauty.

These results are very profound, but two major open questions remain unanswered. The authors note that, "the mOFC is active in a variety of conditions, [including]… experiences relating to pleasure, reward and hedonic states." It is a major open question to precisely identify the correlates of the experience of beauty (or, what is often called the "aesthetic emotion" (Zeki, 2013)) as opposed to generic feelings of pleasure or reward. Ideally, one might wonder whether there exist neural correlates that distinguish between experience of coarse (or low) and subtle (or high/intense) beauty.

A second open question is: Why are mathematical equations beautiful at all, and further, why are some equations more beautiful than others? Zeki et al. seem to rule out the idea that the perceived beauty of an equation is completely determined to the subject's understanding of the equation (though understanding is certainly necessary, the correlation between beauty and understanding was not perfect). The authors then speculate that beauty may be closely related to truth. In their words, their work, "leads to the capital question of whether beauty, even in so abstract an area as mathematics, is a pointer to what is true in nature, both within our nature and in the world in which we have evolved."

A second stream of neuroscience research, which is closely related in our view, is the neuroscience of meditation. Scientific American's issue of November 2014 has "the Neuroscience of Meditation" as its cover story. Researchers at Dayalbagh Educational Institute have also been carrying out numerous experiments on this front.

Beauty can take many forms:"mathematical" beauty, "visual" beauty of visual arts, "musical" beauty, and so forth. During meditation, meditators may perceive "spiritual beauty", which may involve the perception of beautiful images or sounds (internally). We would like to study the brain activity associated with the subjective perception of various forms beauty across many disciplines.

According to the belief system of the Radhasoami faith, a sect of Hinduism the meditator passes through discrete stages in his or her meditation practice. A key result obtained via studies at Dayalbagh Educational Institute is that stages of meditational practice appear to be correlated with the frequency of electrical activity in the brain, obtained in a series of MEG studies carried out at Dayalbagh and Kalpakkam. Each stage of meditation is associated with a characteristic frequency ranging from 4.5 Hz in the early stages to frequencies as high as 108 and 126 Hz in the highest stages. Higher stages are associated with subjective perception of both truth and beauty.

This robust finding is consistent with the results of studies presented in Scientific American issue mentioned above: researchers at University of Wisconsin-Madison report that, "Buddhist practitioners were able, at will, to sustain a particular EEG pattern" with gamma oscillations between 25 and 42 Hertz: a frequency range correlating with one of the moderately early stages of meditation practice.


Sir Roger Penrose at DEI MEG (2013)

On the basis of these results (as well as Eastern philosophical texts), we hypothesize that the frequency of the brain's electrical activity (perhaps resulting from particular patterns of electrical activity associated with characteristic frequencies) is the key correlate of the subjective perception of beauty (and perhaps also truth) searched for by Zeki et al., with higher frequencies are correlated with "higher" or more "subtle" forms/experiences of beauty (according to subjective reports and or belief/systems).

Definition of the problem

What are the correlates in brain activity associated with the perception of beauty in various forms (including mathematical, artistic, and spiritual)? To what extent do these features of brain activity correlate with the intensity or subtlety of the experience of beauty? Is it possible to say anything about a possible relation between truth and the perception of beauty?

Objective

The primary objective is to test the hypothesis that subjective perception of beauty and truth across all disciplines is correlated with frequency of the brain's electromagnetic activity.

To achieve this objective, we intend to study the frequency of brain activity of various groups of subjects: (1) nursery school children, (ii) class IX students, (iii) college students, and (iv) national and internationally renowned artists, scientists and mathematicians, when they are presented with beauty in various forms, including mathematical equations, visual art, and scientific formulae. Reports of the subjective experience of the subjects will be compiled and correlated with the measured frequency of brain activity.

Sustainability

This research division centers on finding sustainable, green, solutions to our human needs, particularly, clean air, clean drinking water, sustainable agriculture and dairy farming. Much of the research focuses on "Sigma Six Q", a term coined by Prof. Prem Saran Satsangi, to describe the Dayalbagh way of life. Sigma Six Q refers to the six salient qualities that are inherent in the dynamics of this eco village. A summation of these qualities (or facets)lead to synergistically enhanced impact on the system, viz., Innovation,

Air Quality, Water Quality, Health and Education, Agriculture and Dairy activities, and Values, such as duty, beauty, humility, courage, temperance, wisdom, loyalty and justice.

Recent environmental degradation such as surface and subsurface water pollution, air and soil pollution, climate change, depletion of resources, extinction of species and problems of waste disposal are all partly a result of our limited understanding of environmental systems and processes. DEI researchers are trying to understand how the technical, social, and political challenges of implementing potentially costly environmental solutions can be overcome, and how institutions can foster the application of critical thinking, rigorous science and new technology to a given problem.

DEI researchers are collaborating with institutional partners in the private and public sectors to develop technological solutions — such as solar energy and solar fuels, smart micro-grid technology, renewable energy systems and alternative biofuels — as well as forward-thinking ideas to resolve the institutional, behavioural and regulatory issues that must be part of any solution to our sustainable energy challenge. As part of this effort, DEI's campus is being used as a living laboratory to test out new technologies, designs and strategies for behaviour change.

Almost 50% of the developing world's population lack adequate sanitation facilities and millions of people still use unsafe drinking water sources. Air pollution, both indoor and outdoor, is a major environmental health problem affecting developed and developing countries alike. Particulates in the air are not only a health concern at ground level but can also affect cloud formation and climate, contributing to changes in atmospheric processes that are already underway. Today, the global food, air and water quality crises are more pressing than ever. Scholars at DEI are looking at food, air and water issues through the multiple lenses of science, technology, culture, history, art, regulatory frameworks and health.

DEI scholars, educators and investigative teams are collaborating to ensure that physical, mental and spiritual health through the lifespan is at the forefront of the research, education, technology development and social policy agendas, so that people can maintain optimal health and quality of life, whatever age they happen to be.

Research Highlight

AADIGyan

Prof. Sanjay Bhushan, Department of Management

A.A.D.I. - GYAN- Augmenting Action for Disaster Management through Indigenous Knowledge **System Dynamics Base-Model of Humanitarian Supply Chain (HSCM) in Disaster Prone Eco-Communities of India: A Discussion on Simulation and Scenario Results (020816-100232), IJSDA, Volume 6, Issue 3, Article 2, July 2017**.

The project is about the utility of promoting a global scale and commonly shared digital platform for dissemination and enrichment of Indigenous knowledge and practices across eco-communities of India and abroad based on a fully developed and functional web-portal branded - A.A.D.I.GYAN.- Augmenting Action For Disaster Management through Indigenous Knowledge (www.aadigyanproject.in). This portal is a part of digital library initiatives for documenting, preserving and promoting the role of Indigenous knowledge in mitigating natural and man-made disasters, particularly among eco-communities.

It carries an extensive research database covering various states of India and possibly some other countries and their respective hub-locations (eco-community/ tribal regions), with a scope to expand at global scale, containing data and information about indigenous activities related to Agriculture, Medicinal plants, Green technology, Healthcare, Education, Environment Management, Socio-Cultural and Spiritual Practices, Employment, Housing, etc. It entails a shared web-platform facilitating real-time interactions and exchange of ideas, knowledge and information among all stakeholders: community, government, experts, researchers, environmentalists and academicians. It promises to be a very rich database with an innovative structured classification system for the purpose of systematic arrangement, dissemination and retrieval in order to facilitate further research and distribution of information at global scale. It has a project team constituted of environmental scientists, consultants, experts and academicians. The project has revealed several significant and interesting aspects and applications of traditional knowledge for building long term social, economic and environmental capacities in the eco-communities of India.

Geographical coverage (hubs):

- Dayalbagh Agra, Uttar Pradesh
- Rajaborari, Madhya Pradesh
- Murar, Distt. Buxar, Bihar
- Udaipur, Rajasthan
- Roorkee, Uttarakhand

Indigenous / Tribal Groups studied:

- M.P.: Baigas, Gond, Bhuia, Birhars, Katkari, Kol
- Rajasthan: Bhils, Meenas
- Uttaranchal: Bhotias
- Bihar: Birhars, ond, Mundas, Oraons
- U.P.: Khos

Plan:

- To cover other states of India, particularly those inhabited by tribal/ indigenous populations
- To network with other international groups researching in the fields of indigenous knowledge and disaster management practices.
- To facilitate establishing Centre of Excellence of Disaster Management, Sustainable Development and Indigenous Knowledge Resources (DISIRE)

Research Highlight

IEEE Region 10 Humanitarian Technology Conference held at Dayalbagh Educational Institute, December 2016.

In December 2016, Dayalbagh Educational Institute hosted and conducted the IEEE Region 10 Humanitarian Technology Conference (HTC). IEEE, is the world's largest technical professional organization dedicated to advancing technology for the benefit of humanity, with about 450,000 members in over 160 countries.

The focus of this conference was Sigma Six Q & Smart Villages: making sustainability a way of life. The scope of conference papers included, the application/innovation of technology to improve quality in the following areas: Energy, Education Systems, Environment Systems, Healthcare, Agriculture & Dairy, Smart Village and Women Empowerment & Security.

Conference Speakers included Padma Bhushan Dr. V K Saraswat, Former Secretary Defence R&D, Member NITI Aayog; Padma Shri Dr. Ashok Gulati; and Dr. Ajoy K. Bhattacharya, MD, National Green Highway Mission.

Research Highlight

Solar-powered eco-van

Dayalbagh encourages use of alternative energy sources. The residential colony restricts the entry of regular vehicles inside its campus and the tree-lined roads encourage walking or cycling. Residents who find it difficult to do both need ways to move around.

This presented a unique "local" opportunity for innovation. Keeping in mind both, the needs of residents and the global trend towards reduced emissions, Dayalbagh Educational Institute took up the challenge of creating a solar-augmented, battery-operated vehicle for Dayalbagh residents, in a collaborative project between the Departments of Electrical Engineering and Automobile Engineering. An old diesel van, whose use was associated with increasing maintenance costs, fuel consumption and safety issues was converted into a solar electric van by a team of faculty, students and local volunteers. The diesel engine was replaced by a 25 HP electric DC motor powered by a 96 V, 400 A-h battery bank. The van batteries are charged by solar photo-voltaic modules during sunlight hours and by grid power during the night. Roof-mounted solar panels of 1.2 kWP are placed on the roof with a manual single-axis sun-tracking system to optimize

solar energy received. The design and conversion were done in-house in Dayalbagh Educational Institute, including fabrication of parts. The van also becomes a practical guide for the students. This has fueled further innovation and the students have already converted two Maruti vans to battery operation.

Solar-powered eco-van

Research Highlight

Water Reuse at Dayalbagh

Water availability from river flows for home usage, agriculture and industry is no longer sufficient. There are already indications of water wars between nations and water riots in our localities. Further, if we recycle water it increases availability substantially (something that nature anyway does through the water cycle). Recycled water is purified and treated wastewater, so it can be used again for new purposes, primarily non-drinking.

Waste water from domestic use in Dayalbagh falls into two categories. One arises from kitchens, bathing, washing clothes and other household activities. This flows into a network of drains that discharges into open ponds and is used for irrigation and ground water recharge.

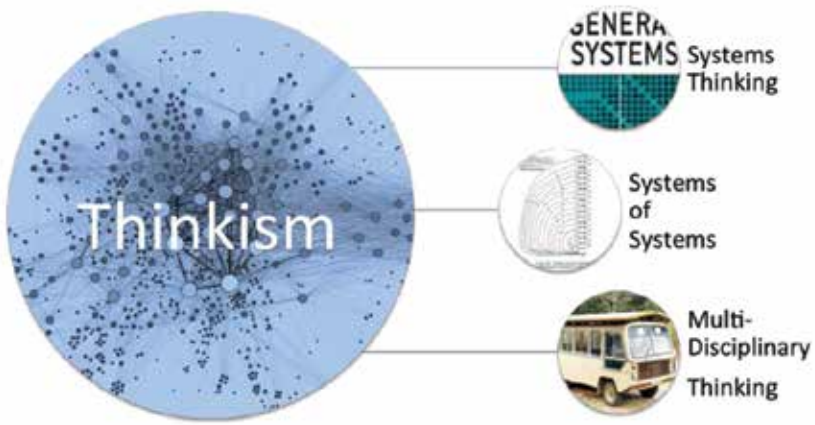
The second category of waste water is from the sewers of toilets of each of the houses and this gets collected into septic tanks behind every house. In these septic tanks due to bacterial degradation the BOD (Biological Oxygen Demand, which is a measure of organic content) is reduced by 60%. The overflow of effluent from septic tanks is led through the sewerage system to a common collection tank. From here the effluent is pumped into an oxidation pond where BOD decreases to nearly 10 ppm as the water is further treated. Such independent processing systems are present throughout Dayalbagh. The treated water is used to irrigate agricultural land.

In addition, effluents collected from a large portion of North Agra are sent to a Sewage Treatment Plant (STP) located at Jaganpur, about 5km north of the Dayalbagh Colony. A 14 MLD (million litre per day) STP was commissioned in 2011 under an agreement between Agra Nagar Nigam and Dayalbagh, where Dayalbagh provided land for setup of the STP at a nominal cost. The plant provides 14 MLD of treated effluent for the agricultural farms of Dayalbagh. Excess water from STP is released to the River Yamuna for downstream usage.

The whole process of recycling of water lowers the demand of water from the Yamuna river and also prevents pollution via the discharge of untreated effluents.

Thinkism

The slightly unconventional research division,Thinkism is based on the General Systems Theory of Ludwig von Bertalanffy. It is an interdisciplinary and overarching research division with overlaps with all the previous divisions, with an emphasis on low cost innovation. Innovative teaching policies and novel forms of pedagogy also fall under this division.



Research Highlight

Data Science

Prof. Gursaran, Department of Mathematics, DEI

Data is increasingly cheap and abundant. We are now collecting new types of data, in real time or near real time. Virtually every business now has access to more data than would have been imaginable even a decade ago. New data is being accumulated at a rate that exceeds the capacity to extract value from it. Furthermore, most data being created today is unstructured.

Unstructured data differs from structured data in that its format varies widely and cannot be stored in traditional databases without significant transformation. The question now is how to use data effectively - not just what an individual organization may have collected for itself, but all of the data that is available and relevant - as this requires new approaches, techniques, tools and architectures to store, organize, extract information and solve problems. Analytics is the discovery, interpretation, and communication of meaningful patterns in data. Applied to the field of education, this takes the form of Learning Analytics where the focus is on understanding and optimizing learning and its environments. To this end the research will focus on developing generic frameworks for collection, organization, information extraction for descriptive, diagnostic, predictive and prescriptive analytics. It will aim at developing software implementations that can benefit all stakeholders. Development of the framework will involve theory encompassing diverse areas such as statistics, machine intelligence, data mining, education technology and pedagogical studies.

It is expected that the outcome from development of frameworks for learning analytics will feed back into the education system leading to possible pedagogical improvements and/or significant changes in the way we approach teaching and learning. It is also proposed to extend ideas from the research in this field to develop generic approaches for analytics in other fields such as social networks.

Research Highlight

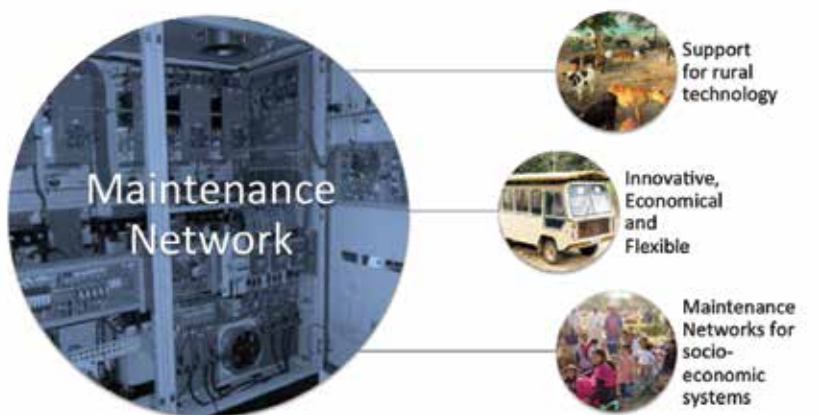
Low-cost Indigenous 3D-Printers and Additive Manufacturing

Dr. Rahul Swarup Sharma

An additive manufacturing (3D Printing) facility has been established in DEI. Additive Manufacturing (AM) provides us a direct way of converting digital data into physical objects. Understanding the advantages and limitations of AM technologies is important for future engineers in developing new engineering systems and identifying emerging opportunities in developing products for mass customization. Practical experience to students is also given through a Lab Course and lab sessions provide hands-on experience. The course prepares the students for careers and entrepreneurship related to advanced manufacturing. We are developing low-cost innovative and flexible Made-In-India 3D printers with open-source software and electronics, and simultaneously training new manpower in this emerging area. We envision a future where 3D-printing is so ubiquitous that every photostat shop in India also contains a 3D printer.

Maintenance Network

Maintenance Network is a larger term encompassing preventive maintenance, residual life prediction and assessment, computer hardware and software maintenance, lean maintenance networks and, at the top, Life Cycle Supreme Systems maintenance. When deploying any technology or rural/socio-economic innovation or system, a Maintenance Network is essential to keep the system from falling out of use.



A sound strategy for this is to empower society/stakeholders by transferring the knowledge to them so that they are not dependent on any external agency to maintain their system. DEI trains users/stakeholders through skill courses who ultimately form the maintenance network for the project.

Research Highlight

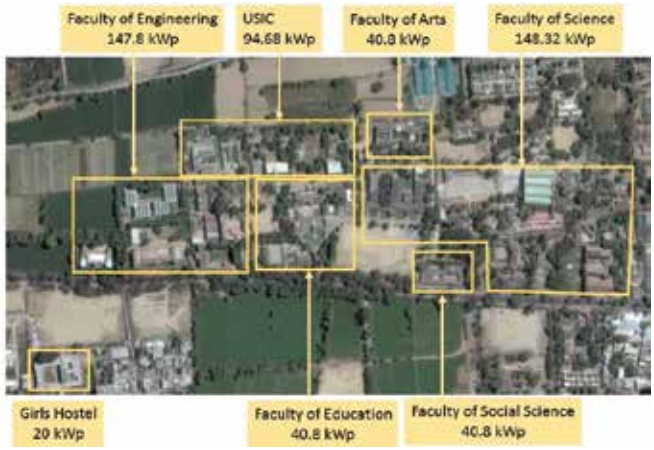
Renewable Energy initiatives at Dayalbagh Educational Institute

Prof. D. Bhagwan Das, Professor of Renewable Energy in the Department of Electrical Engineering.

The deployment of renewable energy in the institute commenced in 2010 in keeping with sustainable development practice aligned to the concept of an Eco-Village.

Solar panels on DEI Administrative Block building

The university campus is powered by 11 distributed roof-top solar photovoltaic power plants aggregating to a total of 668.2 kW (peak). Apart from the Dayalbagh campus of the institute, distributed roof-top solar PV power plants of aggregate 45 kWp capacity have been installed at DEI extension centres (ICT centres) in various cities and a CSR sponsored project of 200 kWp distributed off-grid SPV system is under commissioning in the Dayalbagh Rajaborari Estate of Madhya Pradesh tribal area.



Satellite view of Dayalbagh Educational Institute showing seven of the eleven plants and their coverage (Google Earth image)

The effectiveness of renewable energy micro-grid was evident during the major grid collapse on two consecutive days on 30th and 31st July 2012 in India when over 600 million people (nearly half of India's population), in 22 out of 28 states in India, were without power. Dayalbagh Educational Institute was not affected. Having commissioned the distributed SPV based micro-grid of the institute, the challenge now is to make the system efficient, reliable and economically viable in the face of dynamic loading conditions, weather conditions affecting generation and unreliable power grid. Multi-dimensional R&D activities are in progress to indigenously develop integrated remote monitoring, communication, control and fault diagnosis of all the power plants from a central control station, resulting in a Smart Micro Grid.

Solar thermal cooking systems in hostels

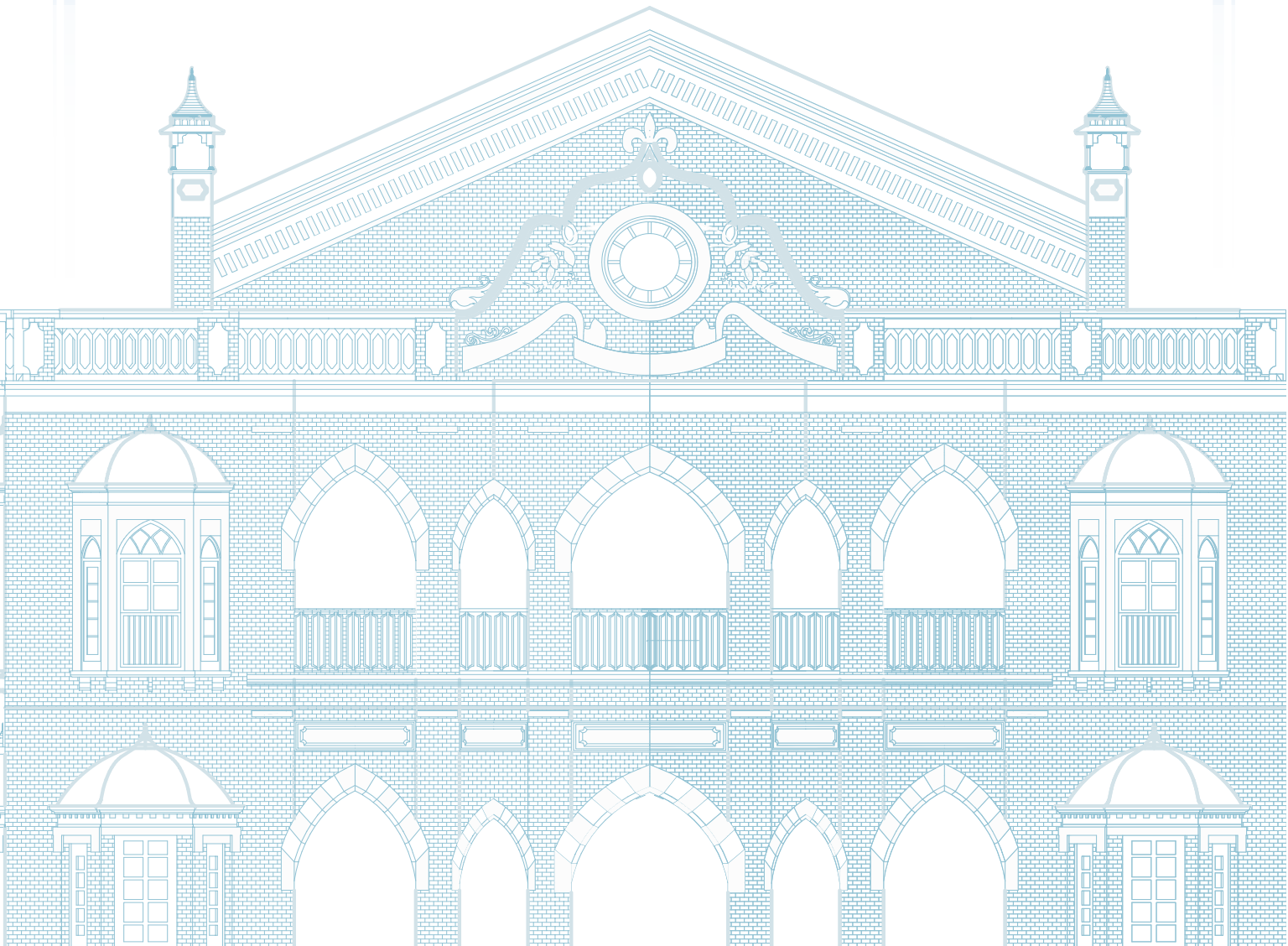
Three solar thermal cooking systems have been installed in the three hostels in DEI. Each system comprises 5 dishes, each of diameter 16sq m, and generating an average of 200,000 kcals/day (equivalent to 19 kg of LPG). The system installed in the Girls' Hostel is also equipped with water heating facility. The cooking systems are used for boiling Amla and decoction of herbs for preparation of Chyavanprash in the Ayurvedic Pharmacy of Dayalbagh. Using conventional boiling process, 80 kg of hard coke were needed with a process time of 12 hours; this has now reduced to 3 hours with no expense on fossil fuels. A pioneer in the field of vocational education, the institute has launched vocational programmes in renewable energy at the Certificate, Diploma, B.Voc., M.Voc. and doctorate levels.

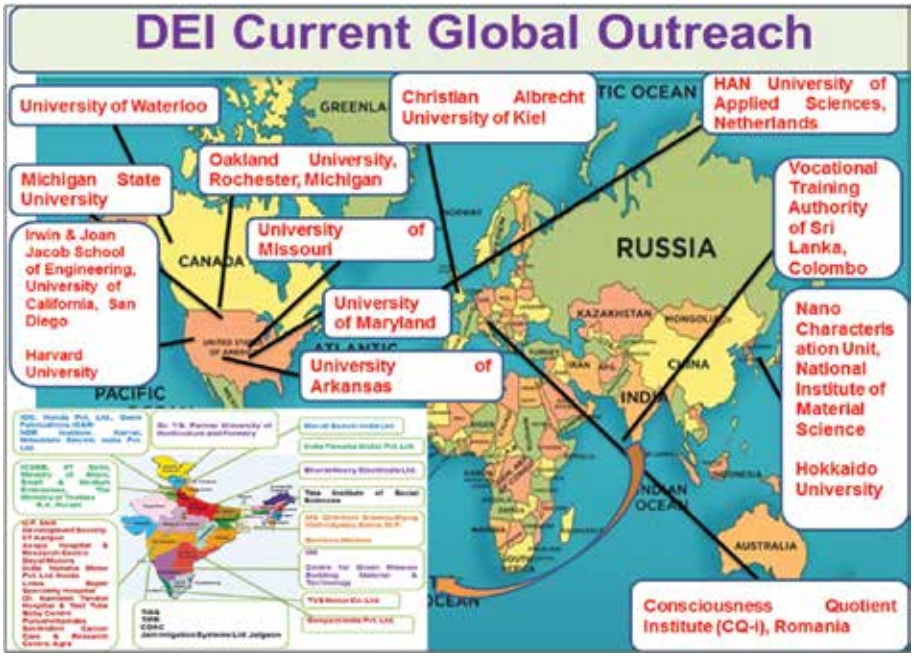
Storage batteries and parabolic mirrors

The Dayalbagh Educational Institute initiative has demonstrated that universities, building intellectual resources through teaching-learning and research, offer a perfect platform for establishing renewable energy micro-grids. In addition to sustainable development through clean energy technologies and self-sufficiency in energy, a university micro-grid is the ideal test bed for conducting indigenous research and development. This ensures quality research with relevance as well as development of skilled man power and intellectual property in the area.

6

Networking and Collaborations





Dayalbagh Educational Institute has been at the forefront of imparting quality education. It has evolved with time to the changing educational needs of society, developing a robust academic system. Right from the start, there has been an emphasis on gaining knowledge from the most competitive sources and amalgamating these with the specific objectives of DEI. In pursuit of excellence in teaching and research, DEI has recruited adjunct faculty from national and international institutes to interact with students and staff for an enriched learning experience.

DEI has entered into several MoUs and pacts of collaboration with eminent universities, research centres and industries in India and abroad to promote a mutually beneficial exchange of knowledge. The MoUs are intended to foster increased interaction between faculty and students engaged in cutting edge research and development in both institutions. All the MoUs are keenly pursued, and links strengthened through research interactions which help in raising the academic level of DEI. The MoUs with IITs and universities in USA and Canada have provisions for DEI students and faculty to work in their labs. There are several research scholars who have registered for Ph.D. in DEI with a co-supervisor at IIT Delhi in Engineering, Science, Computer Science and Management streams. Some MoUs and Collaborations have contributed to the focus areas of the Institute namely:

- Consciousness Studies
- Skill development and Entrepreneurship

The curriculum of various courses has evolved in line with the changing environment, due to digitization as well as DEI's own mandate. Students and faculty have been invited for collaborative work by various International Universities. Curricula have been shared through visits to the DEI campus. Students are encouraged to participate in Summer Research Fellowship Programmes at leading research institutes and laboratories, sponsored by Indian Science Academies. Several students completed Summer Research Fellowships recently, at various Institutes. Research scholars in the Dept. of Management have been appointed as Academic Associates at IIM Ahmedabad and IIM Indore.

A significant focus has evolved at DEI on Consciousness Studies. It has attracted the attention of several international organizations and universities. It is a one of a kind initiative that seeks to understand the physical, mathematical, computational and biological perspectives of consciousness.

In recent times, Agriculture Science has received a major boost, with MoUs being signed with agro-based industries and the National Dairy Research Institute, Karnal. New courses have been started in these areas. The content of these courses has been drawn in consultation with industry experts to ensure high employability of students. Some of these courses are:

- B. Voc. in Dairy Technology
- M. Voc. in Dairy Technology
- B. Sc. in Applied Botany
- B. Voc. in Agricultural Technology

In the coming years, DEI will strive to:

- Create and develop strategic partnerships for societal vitality and Institute development
- Ensure that collaboration is included in planning, developing and evaluating research and education
- Stimulate, co-ordinate and give support to collaboration initiatives
- Encourage and develop incentives for collaboration

DEI has identified some areas of research with a view to develop interdisciplinary initiatives, some of these being: Quantum-Nano Computing, Soft Computing, Multimedia Technologies, Virtual Instrumentation, Microwaves & Photonics, Environmental Sciences, Theology and Entrepreneurial Education. The Quantum-Nano Systems Centre and Research and Technology Park are multidisciplinary centres at DEI with partners at IIT Kanpur, IIT Delhi and IIT Madras, besides several international collaborators. With a focus on the rapidly growing area of quantum physics and quantum information sciences, they provide an environment for scientists and mathematicians to explore the fundamental physical characteristics of quantum systems, devise and implement prototype quantum computers, develop quantum algorithms and novel applications.

Present Collaborations

The Institute has established several international and national collaborations; a list of these Collaborations and MoUs, along with their scope of activities and outcomes is provided in the Annex. International collaborations are discussed separately in Chapter 11.

National Collaborations

Various departments of the institute have active collaborations with some of the most prestigious institutes in India, some of these are listed below.

The National Collaborations of DEI - A Glimpse

Collaboration with TIFR Mumbai and IISc Bangalore

Faculty members in the Dept. of Physics and Computer Science have initiated collaborative projects with TIFR, Mumbai. Several faculty members of TIFR have also visited DEI, including Prof. Shuba Tole (Neuroscience), Prof. Sandip Trivedi (Theoretical Physics), Prof. Shiraz Minwalla (Theoretical Physics) and Prof. Achanta Venu-Gopal (Condensed Matter Physics). An MoU with TIFR was signed in July 2017, following the visit of Director TIFR, Prof. Sandip Trivedi to DEI in December 2016 for the Diamond Jubilee Memorial Lecture. The MoU is intended to promote joint research in areas of physics, biology, chemistry, mathematics and computer science through joint supervision of Ph.D. students, long-term exchange visits and co-op opportunities for faculty and students of both institutes. Collaboration in education, particularly graduate education is envisaged, with some members of TIFR faculty planning to teach short-term courses to Ph.D. students in DEI.

Members of the departments in DEI have collaborations with IISc Bangalore and IIT Mumbai, which have led to several joint publications and theses, besides interaction among the partnering institutes. Details on the publications arising out of this collaborative work can be seen in the Annexes.

Collaboration under the ISRO-Geosphere Biosphere Programme (ISRO-GBP)

The Atmospheric Chemistry group of the Chemistry Department at DEI has been identified as one of the major centres for conducting studies under the ISRO Geosphere Biosphere Programme. The Programme has nine major projects and DEI has, so far, been contributing in two of the projects (Atmospheric Trace Gases-Chemistry, Transport and Modelling (AT-CTM) and Aerosol Radiative Forcing over India (ARFI)). The Atmospheric Chemistry group at DEI is amongst the 15 collaborating groups in the ISRO-GBP Project with an outlay

of more than 1.5 crore. These collaborations have resulted in several joint publications with high impact factor, presentation of papers in several conferences, symposia and workshops and award of a PhD.

MoU with Ministry of Textiles

The Department of Textiles, DEI has signed an MoU with the Ministry of Textiles under the scheme of "Training through Established Institutes". Under this, DEI will run regular training courses in different crafts, to upgrade the skills of artisans and create opportunities for their livelihood. The department is required to train a minimum of 200 people annually and has been provided with capital and training grant towards the same. The total assistance is in the form of grant-in-aid worth Rs. 1.25 crore. 126 students have been trained till now. Some of the students have kept the spirit high by training in their area or joining hands for their start-up, at the incubator cell of DEI. Every month an exhibition is organized, displaying products made by the passing-out batch, whereby students can learn the art of selling, marketing and exhibiting items.The products made by them are sold at DEI 'Quantum' Jugaad under the brand name 'DEI Texstylers'.

Activities under the collaboration with Ministry of Textiles

Collaborations with Industries and Corporates

Several departments of DEI have entered into MoUs with industry and the corporates for mutual exchange and development of expertise, upgrade of training facilities, design and testing of systems, introduction of new programmes and initiatives, co-op internships, placement of students, developing entrepreneurs and so forth.

Collaborations with Industries

DEI's Department of Automobile Engineering has signed MoUs with Maruti Suzuki India Ltd (MSIL), Gurgaon; India Yamaha Motor Pvt Ltd (IYMPL), Surajpur; and, TVS Motor Co

(TVSM), Hosur. These MoUs envision upgradation of training facilities in the department to meet industry requirements, staff and student training, internships, on the job training (OJT) for students, setting up service training centres, co-operative education programmes for diploma holders, Community College Programme (CCP) in sales, service and workshops, industrial visits, and placement of students. Some industries where students from DEI have undergone their co-op internship successfully, include: Asahi Glass Ltd., Delhi Metro Railway Corporation, Defence Research Development Organization, DCM Shriram Consolidated Ltd., ESSAR Steels, FIAT India Ltd., Freescale Semiconductor Ltd., Future Supply Chains, GE Capital, Honda Motors, Honda Motorcycles & Scooters India Ltd., Keysight Technologies India, Larsen and Toubro, Maruti Suzuki India Ltd., Munjal Showa Ltd., New Holland Tractors, NXP India, Philips India, TATA Cummins Ltd., TATA Motors, SRF, Yamaha Motors, Zia Semiconductors etc.

Collaborations with Industries

The Department of Chemistry signed an MoU in October 2014 with Indian Oil Corporation Ltd. to undertake R & D on reactor design for solar-hydrogen generation by photo-electrochemical splitting of water. Joint research is underway to develop a bench scale reactor for solar hydrogen generation. The Department of Chemistry is also associated with SIGACHI Industries Pvt Ltd., Hyderabad, and is working towards the design of novel materials, e.g. nanocellulose, for commercial applications.

Students of Engineering and Management Programmes undertake a 6-month Industrial Co-Op programme in various industries and corporates within the country, while many others work on their PG dissertations in Research Labs.

Collaborations with Corporates

Students of Management, Engineering and Social Sciences undergo 6 months internship and co-op programs at corporates like American Express Bank, HCL Technologies, Headstrong, HDFC Bank, ICICI Bank, TATA Consultancy Services.

The Department of Home Science, DEI has signed an MoU with Northern India Textile Research Association (NITRA), Ghaziabad for joint research in yarn manufacturing, weaving techniques, knitting techniques, non-woven techniques, fabric finishing techniques, pattern making, textile testing, fabric and garment quality issues, garment designing and entrepreneurship programs. The MoU envisages exchange of academic and research staff, joint organization of seminar/workshops/ conferences and collaboration in student entrepreneurship programs.

Collaborations with Medical Research Centres & Hospitals

The Institute has established collaborations with some Medical Research Centres and Hospitals in Agra where the students of Nursing Aids and Companion Help undergo Paramedical training during their course, followed by placement, on completion of the course.

ICT-Enabled Networking Services and Online Courses at DEI

The Department of Physics and Computer Science has generated electronic course content including video, Wiki and Course support webs for its Distance Learning Programme, since 2004. The Institute has a Multimedia Laboratory which houses cameras, projection systems, and video/editing stations amongst other equipment. It provides a central point of content generation for DEI's distance education programmes. This facility is also used on a regular basis to receive and transmit lectures real-time and hold interactive sessions with students in remote classrooms, both in India and abroad.

Vidyaprasar

Vidyaprasar is the Institute's online-collaborative learning, live webcast and content management system. Vidyaprasar provides course web publishing, file storage and sharing facilities through a web connection the Internet, thus ensuring full portability. It provides course material, Wiki for courses in Computer Science and Engineering, live streaming services, interactive seminars, e-books, online self-examination facilities and video-on-demand services. It is sponsored by the National Mission on Education through Information and Communication Technology (NMEICT), being a tri-institute collaborative initiative coordinated by the Indian Institute of Technology, Bombay and the Amrita University.
As part of Vidyaprasar, the following objectives were proposed by the Institute:

Content Generation

It was proposed to upload content for 6 papers per semester in Computer Science and Engineering with the following deliverables:

- Video
- Wiki development
- Web support system development
- Course Notes

Synchronous Delivery

The Dayalbagh Educational Institute has been involved in live streaming of video lectures since 2004. Under its MoU's with Institutes in India and abroad, live Internet-based video streaming (using Windows streaming services or Real media streaming services) has become a routine delivery mechanism for multiple locations. In the current project, DEI offers live delivery of lectures through hardware-based video conferencing, using advanced streaming solutions from Polycom. DEI has offered up to six courses per semester in live delivery mode, since the second quarter of 2011. In a pre-arrangement with other Institutes, students in remote classrooms hook up to the DEI classroom in order to participate in the lectures and discussions, real-time.

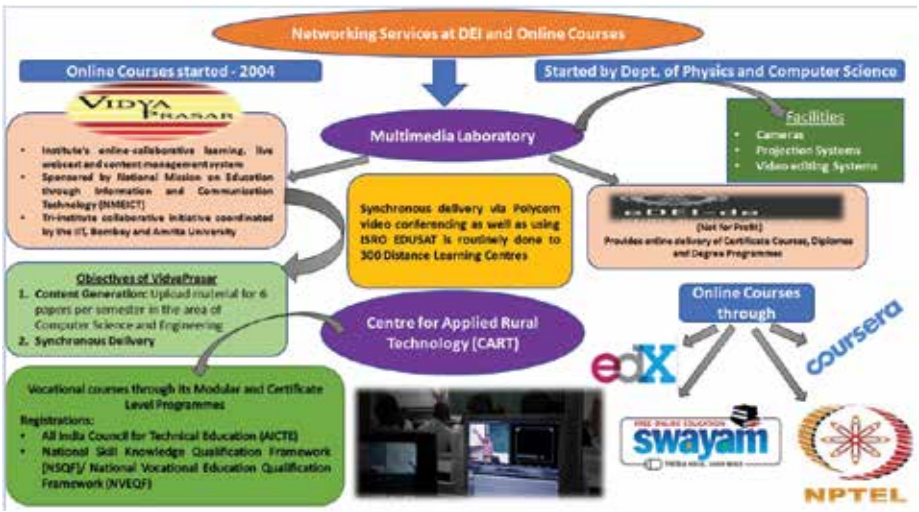
DEI has also developed a Video-on-Demand System. In this system, the video repository on the storage system is completely indexed with keywords. Each video is divided into 4-5 logical sections approximately, indexed with keywords and a one-line description. Google based front end is used to provide search capability. The users can employ keyword-based search, in response to which the system generates relevant links to video sections. The users can playback links to corresponding sections of videos using a player embedded within the browser.

DEI stresses on quality instruction in the classroom with an appropriate blend of the latest

research investigations. Modern electronic classrooms equipped with audio-visual and video conferencing facilities support a synchronous and distributed model of education that caters to wide student audiences, both at the main campus and its ICT enabled Distance Learning Centres. With the Radvision Scopia Conferencing Facility, video conferencing is employed for live classes in the campus on a daily basis and also, for conducting Ph.D. defences. The system is used for transmission of classes to remote Distance Learning Centres in Madhya Pradesh. DEI has also installed an advanced Live Streaming Solution from Polycom, through which it can hold interactive sessions and real-time, one-way web casts. Through the Indian Space Research Organization's Educational satellite (EDUSAT) network, synchronous delivery is facilitated in the Distance Learning Programmes. With National Knowledge Network and leased line connectivity, videoconferencing facilities at ICT enabled centres of the Institutes in Delhi, Madhya Pradesh and Tamil Nadu support a mix of vocational and academic programmes. Special value-based programmes on Indian Culture, Music and Spoken English are routinely transmitted to various centres in India and abroad using Internet based video streaming through National Knowledge Network. Advanced back end storage and front web service facilities provide the necessary infrastructure to support video on demand, live streaming services and course delivery. Under the NMEICT- synchronous Delivery Project "Teachers Empowerment, Students Empowerment, Integration of Tools for Empowerment (Synchronous Delivery)", all content is rendered on the web in accordance with a stringent and well documented procedure.

e-DEI-de

e-DEI-Distance Education (Not for Profit) provides online delivery of certificate courses, diplomas and degree programmes as modules of 2 to 3 weeks duration. The modules are administered in an online format involving standard web delivery components. They demonstrate a unique aspect of online consulting through discussion forums accessible by audio and video conferencing. A student can enrol for any module or course and after completing the same, he/she is awarded a completion certificate. The subjects for certificate programmes range from common skills to highly demanded courses on management, contemporary fields like Nanotechnology to esoteric subjects such as consciousness studies. Gradually, the programme will come to include Diplomas and Degrees in Management, Computer Science and Engineering. For these programmes, personal contact modules will be organized for students of all the disciplines.



Course content is delivered synchronously via Polycom video conferencing as well as ISRO EDUSAT routinely, to various Distance Learning Centres of DEI, many of which are on ISRO's EDUSAT, in the National Beam Extended C Band.

Centre for Applied Rural Technology (CART)

This centre at DEI offers a large number of vocational courses through its Modular and Certificate level programmes. These programmes are employment-oriented and offered at a nominal fee, without any age limit. The Centre is equipped with state-of the-art facilities to train students for good placement. The Centre is registered with All India Council for Technical Education (AICTE) and recognized as Skill Knowledge Provider (SKP) in the automobile and IT sectors, up to level 5 of National Skill Knowledge Qualification Framework (NSQF)/National Vocational Education Qualification Framework (NVEQF).

Online Courses (SWAYAM, Coursera, NPTEL, EdX)

The Institute has participated in SWAYAM, a MOOCs programme initiated by Government of India and designed to achieve the three cardinal principles of its Education Policy viz., access, equity and quality. An India-specific MOOCs programme on Visual Arts has been launched by DEI in 2nd Phase, as a part of SWAYAM. The faculty and students of the Institute also cater to several online courses through Coursera, NPTEL and EdX.

MOOCSKENE BHARAT (Massive Open Online Courses on Skilling and Entrepreneurship Network)

The Institution allows mobility between formal and vocational streams of education to increase employability through a country-wide network of centers, that conduct focused modular programs for short duration across different sectors, to bridge skill gaps and nurture trained manpower. The institute promotes skill-based education through multiple entries and exits, with multiple lateral transitions between vocational and conventional education systems. Provisions are made to promote and develop individual skill and experience as a launch pad for entrepreneurship. This is achieved by

- Certificate Courses for students who are interested in enhancing their skills and getting self-employed after Class VIII;
- Modular Courses which are short (9 weeks) courses for development of complementary and supplementary skills;
- Community Colleges that offer short, focused and modular courses with emphasis on hands-on-training;
- Diploma Courses;
- B.Voc. in Apparel Manufacturing and Food Processing & Preservation;
- Skill development programs at different places in India and abroad, through its strong network of distance education study centers and alumni association.

Links With NGOs Like SPHEEHA (Society for Preservation of Healthy Environment, Ecology and Heritage of Agra)

The Institute works in collaboration with the NGO, SPHEEHA which is committed to preserve the ecology and heritage of Agra region. DEI is collaborating with SPHEEHA on projects aimed at preserving the water table in Agra. SPHEEHA also helps in planting trees in the DEI Campus.

Future Plans and Actions

DEI will continue to strengthen existing collaborations and explore new ones, with renowned universities and organizations in India and abroad. The focus areas will be those that have the largest impact on achievement of the academic and research goals of the institute, fostering both, enrichment and exchange - academic and cultural. These will be achieved as follows:

Academic Enrichment

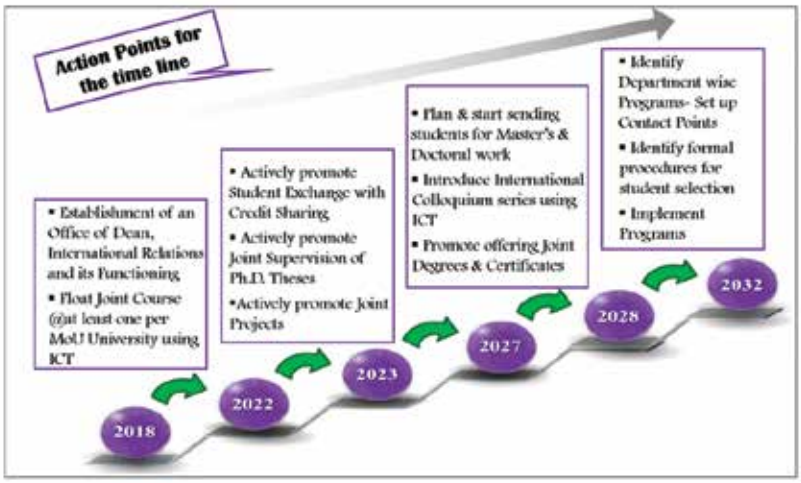
- Strengthening existing MoUs/ Exploring new MoUs.
- Floating joint courses using ICT.
- Promoting student exchange with credit sharing.
- Promoting joint supervision of Ph.D. theses.
- Promoting joint Degrees and Certificates.
- Sending students to partner institutes for Masters and Doctoral Work.
- Introducing International Colloquium series using ICT.
- Setting up formal programmes for UG and PG exchange.
- Identifying and implementing department-wise programmes while setting up central points of execution.
- Identifying and implementing formal procedures for student selection.

Cultural Exchange and Enrichment

- Hosting students at undergraduate level from collaborating institutes and universities under MoUs.
- Promoting Real-life interaction through DEI outreach programme for societal development and tribal welfare.
- Promoting a socio- spiritual way of life.
- Developing talent and links for international placements.

As part of these efforts, each department will promote the exchange of research personnel in the forthcoming years, especially young faculty and advanced graduate students, for short periods of time so that they may become familiar with the facilities, research methodologies and culture of other institutions. Such undertakings would promote interaction and collaboration between faculty, staff and students of both the institutions through visits, exchange programmes, collaborative research projects etc.

The Department of Home Science plans collaborative research with ATIRA designs Pvt. Ltd, SITRA (The South India Textile Research Association), BTRA (Bombay Textile Research Association) and SASMIRA (The Synthetic and Arts Silk Mills Research Association), in the area of Apparel design; and with organizations like Mantra organic foods, CFTRI (Central Food Technological Research Institute), and the Food Research Institute, NARO (NFRI) in food processing and preservation.



Creation of e-Course Books

It is proposed to follow IIT Bombay in generation of books for all courses. For each course, a set of syllabi will be defined, and a broad-based Wiki will be delivered covering all the syllabi identified. A course book providing comprehensive description of the course material will be created for each course. The course books will be generated in PDF. The generation of the on-line Wiki will be a collaborative effort and shall result in a wide coverage of the course-syllabi. It is proposed that DEI will develop textbooks for six courses per semester.

Projected Collaborations

Some of the areas in which the institute wishes to extend and establish collaborations are as follows:

In a brainstorming session organized at the Centre for Consciousness Studies within a core group of 11 researchers from various disciplines; courses, seminars, workshops and summer programmes were planned in the field of consciousness, along with a fortnightly colloquium/ discussion forum for regular interaction between interdisciplinary researchers in the field. A library is proposed at the Centre, with books and journals on consciousness. It will support original research (both theoretical and experimental) in Consciousness Studies, develop interdisciplinary graduate courses in Consciousness Studies, have a web support system (like Vidyaprasar) with online courses, conferences and other resources, conduct lecture series in Consciousness Studies at DEI, promote a dialogue between Science and Religion, and collaborate with other centres doing similar work in traditional or scientific ways. An Undergraduate Lab is planned on Microtubules, where young students can experiment and pursue research. Also planned is the development of a whole-head SQUID system with superconducting magnetic shield for consciousness studies pertaining to the brain and instrumentation facilities like ECG (Electro Cardio Graph), EEG (Electro Encephalo Graph), MEG (Magneto Encephalo Graph), Functional MRI (Magnetic Resonance Imaging) and GSR, (Galvanic Skin Response) for studies of consciousness levels.

It is also proposed to establish a Bio Inspired System Centre, having both national and international collaborations. Collaborative work in this direction is already in progress, some of the institutions being:

■ Wireless networks, cloud computing:	Indian Institute of Technology, Delhi
	University of Maryland, College Park, USA
■ Biometrics:	Michigan State University, USA
■ Bio-photonics:	Harvard University, USA
	Max Planck Institute for Science of Light, Germany
	University of Waterloo, Canada
	Tata Institute of Fundamental Research, Mumbai
■ Massively parallel computing:	University of North Carolina, USA
■ Solar hydrogen production:	University of Maryland, College Park, USA
	University of Cologne, Germany
	Delhi University, Delhi
■ Neuromorphic VLSI:	Indian Institute of Technology, Delhi
	National Brain Research Centre, Gurgaon
	Sur Labs, MIT, USA

DEI firmly believes that quality in education and research receives impetus through collaboration with other institutions and for several years, its MoU's have reinforced this belief. They have generated many opportunities for students through internships and advanced video-conferenced courses. The present MoU's with the University of Maryland, University of Waterloo, Michigan State University, University of Missouri, IIT Delhi, IIT Kanpur, and the Tata Institute of Fundamental Research will be strengthened in all aspects: teaching, research, and exchange of faculty and students. Other MoU's such as those with the Stanford University, MIT, other IITs etc. are on the anvil.

Strategic Plan

DEI has a strategic plan for its Vision 2031 of becoming a global intellectual hub through a dense network of international and national collaborations. In future, the institute aims to leverage and enhance this web of collaborations between educators and researchers to increase its international presence. With this, it aims to reinforce its own priorities of academics and research, besides integrating its educational enterprise with others.

Some action items of this strategic plan are:

- Establish an Office of the Dean for International Relations, to oversee and coordinate all international activities of DEI. It would establish partnerships with countries having interest in common areas of education and research.
- Seek to develop and fortify collaborations with universities, institutions, industries and corporates through well-defined and appropriate MoUs.
- Promote exchange programmes for faculty and students through faculty/student exchange agreements with partner institutions. These partnerships would support collaborative research endeavours, jointly developed courses and foster joint supervision of graduate students. They would also feature well-developed mobility programs for both graduate and undergraduate students, thereby, giving them learning opportunities and exposure to varied cultures.
- Create a strong and coherent online presence through digital technology by creating, collecting and communicating knowledge across the globe through the digital initiatives of DEI.
- Develop educational resources that are available globally.
- Develop an institutional framework for joint, dual and collaborative degrees.
- Work with alumni to leverage their relations in countries/regions of emphasis or interest.

In this ambitious effort our performance indicators are given below

- Measures of research output and impact from international collaborations: publications, patents, citations of the international research collaborations and partnerships.
- Number of new educational partnerships and quality of graduates and postgraduates produced.
- Measuring the quality of international programs as defined by teaching–quality metrics.
- Provide training opportunities with industry partners nationally and internationally.

Over the last 100 years, the Dayalbagh Educational Institute has made phenomenal progress, which has been possible in a large way because of the collaborations nurtured by the Institute over the years. They have had a tremendous impact in enhancing the visibility, identity and diversity of activities on campus. The collaborations with local NGO's like

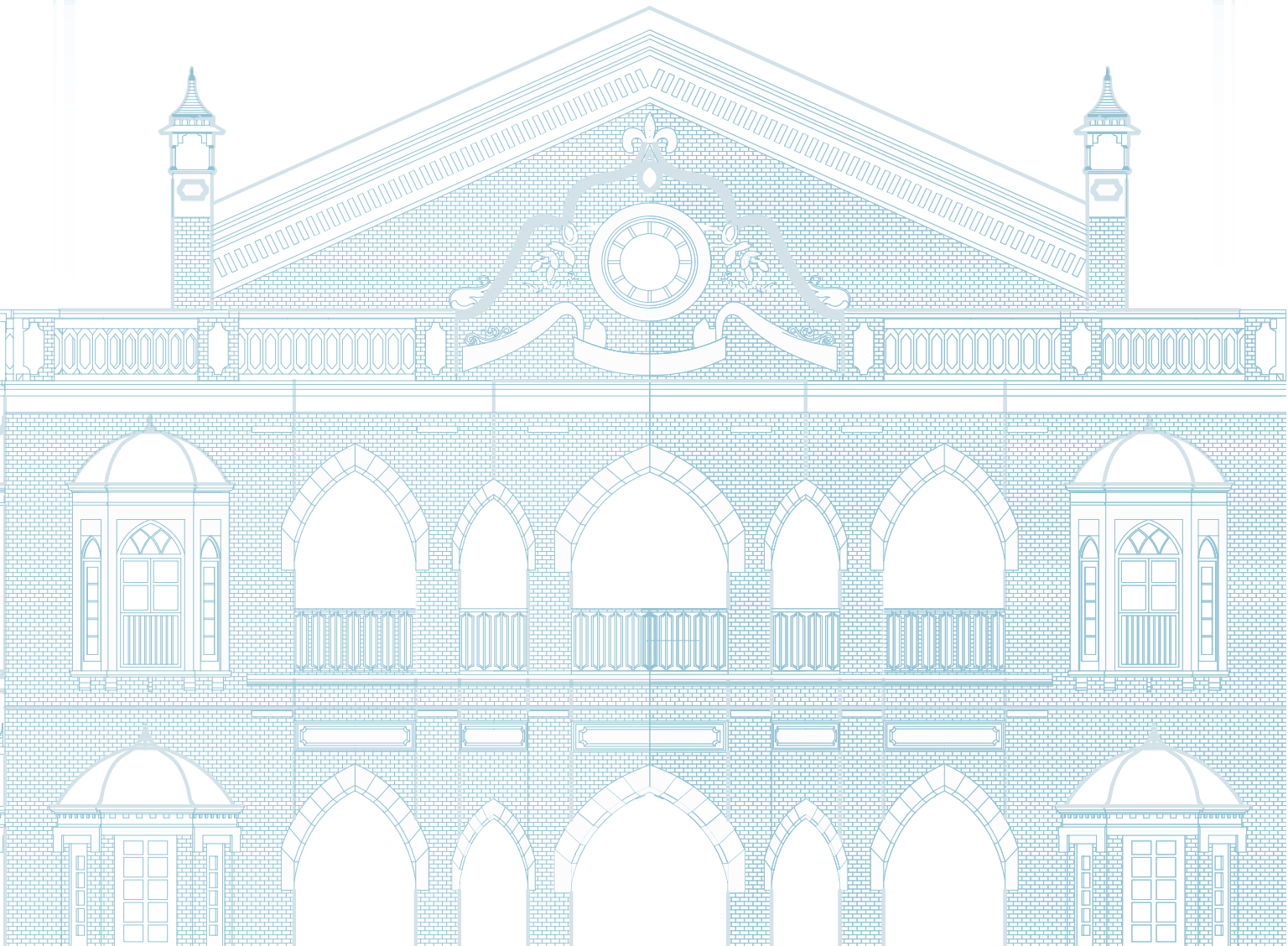
SPHEEHA, hospitals and renewable energy organizations have strengthened the Sigma 6Q model adopted by the institute. They have focused on air, water, health and energy for a sustainable environment and society.

In addition, collaborations with the Corporate Sector and Skill Development Institutes are strengthening the skilling initiatives of the Institute.

It is noteworthy that such collaborative efforts have permeated through all the 6 pillars of education in DEI-namely, university education, skill education, open education, school boards, technical education and entrepreneurial education. Renowned educationists, academicians, administrators and scientists have been impressed with the unique educational policy of the Institute as well as its effective translation, in terms of its curriculum design and successful implementation. The Institute has indeed, carved a niche for itself due to its unique ethos.

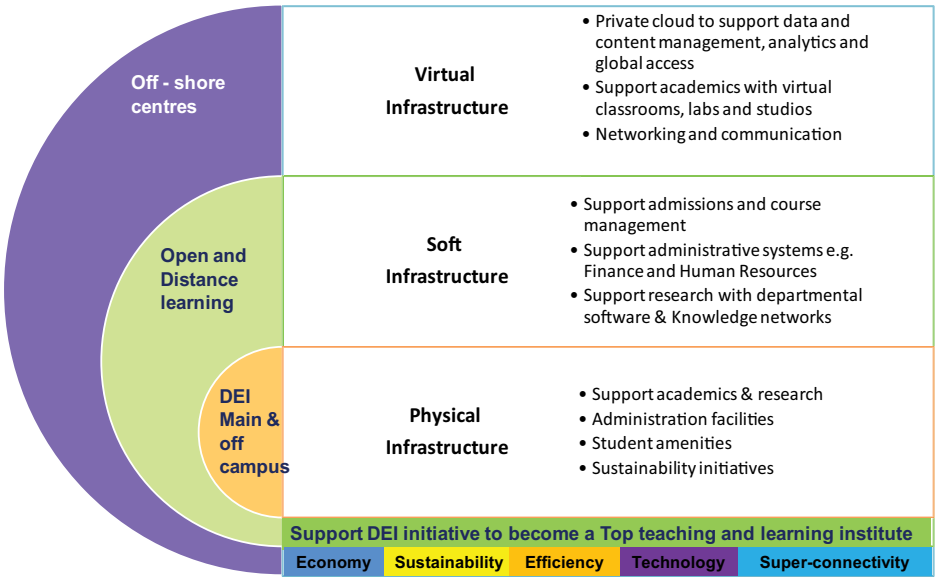
7

Infrastructure



The key infrastructural elements that support core administrative and academic activities consist of buildings, equipment, libraries, laboratories and student amenities, information systems, networking and communication capabilities, data centers, automated administration systems as well as various sustainable systems related to basic needs such as energy, water and waste management.

Key Elements of Infrastructure



Physical infrastructure: This includes the infrastructure to support student amenities such as sports, medical facilities, cafeterias, buildings and equipment related to extra-curricular pursuits as well as academic activities, laboratories, reading and learning environments, facilities for teaching and non-teaching staff, as well as buildings and spaces to support institution administration.

Soft Infrastructure: This involves the human capital, and, institutions that support the hard infrastructure.

Virtual Infrastructure: This relates to aspects such as private clouds, in-campus networking, internet connectivity and leased connections to ICT centers.

Historical Perspective

This section outlines the milestones in the progress of education in Dayalbagh, with respect to the development of physical infrastructure.

Year	Infrastructure Development
1915	Radhasoami Educational Institute (REI Building)
1927	Technical College
1930	Prem Vidyalaya (Girls Intermediate College)
1947	Women's Training College
1950	Engineering College
2004	Women's Polytechnic + Distance Education Programme
2008	DEI-ICT Distance Education Centers MTV Puram (Tamil Nadu) and Soami Nagar (Delhi)
2010	Research and Technology Park The Quantum Nano Systems Centre Centre for Consciousness Studies
2011	DEI-ICT Distance Education Center Bangalore (Karnataka)
2014	DEI-ICT Distance Education Centers Murar (Bihar) and Amritsar (Punjab)

Infrastructure at DEI has grown to support, enable and enhance the work of its faculty, staff and students and continues to create, maintain, enhance and refurbish the institutional, physical and IT environment for academic learning, teaching, research, and development.

Principles for Conscious Infrastructure Planning at DEI

This section describes the philosophy on which the infrastructure plans are based and links with other sections of the plans. The following principles are followed with respect to infrastructure planning:

- Economy: Doing more with less; also the guiding principle for all activities in DEI
- JWINS (just-what-is-necessary-and-sufficient): towards attainment of goals laid out in the plan, the infrastructure support is necessary and sufficient.
- Sustainability: minimization of carbon footprint. Several features of the current infrastructure plan are in line with this principle, for example, *minimal use of air-conditioners*, and their deployment only where it is technically justifiable; promotion and deployment of *renewable energy resources* and reducing use of energy consumption throughout the campus. *Waste management* with a focus on composting of leaf waste in the campus, promulgation of a no-plastics zone, rain-water harvesting structures and a no-motor vehicle zone are all measures adopted as a way of life to reduce the carbon footprint of the DEI community.
- Efficient use of Resources: demonstrated in many initiatives and ways of working throughout the institute, such as:
  - Using class room infrastructure in shifts;
  - Common usage of specialized and costly equipment across the institute.
  - Centralized organization of examinations in time-sharing mode across multiple shifts

- Usage of lecture halls across departments and faculties
- Centralized parking space outside the academic area across multiple shifts
- Establishment of inter-disciplinary research centers which enable research facilities to be utilized by all the researchers in the time-sharing mode.

- Technology: technology is deployed liberally if it enables better outputs. As an example, a paperless administration is enabled by replacement of physical infrastructure with virtual more efficient infrastructure.
- Education for all: DEI uses a blend of technology and connectivity to take education to approximately 400 centers outside the main campus in the form of off-campus, open and distance learning centers and off-shore campus.
- Need-based research: live laboratories have been created for agriculture, agricultural technology, renewable energy, medical applications, consciousness studies, etc.

Future impacts on infrastructure planning

The strategic plan for infrastructure (2018-32) has kept in view:

- Digital transformation

  Dayalbagh has already leveraged the use of ICT technology to reach out to learners in remote and distance centers. In its experience, learning is no longer bound by the physical infrastructure, and, virtual classrooms have been established in various centers. Courses are currently provided in distance or synchronous modes.

  Potential exists for using cloud infrastructure in the DEI education system to deliver education to learners located in multiple locations. The fist steps have already been taken by converting classroom infrastructure from physical space to e-classrooms. A next step is to bring study material, reading and reference materials for students into electronic form which allows the transformation of physical spaces to other digital forms like e-library and connected kiosks, to ensure anytime and anywhere connectivity.

- New frontiers of learning, knowledge and research

  Four themes in the Academic Plan may be considered future thrust areas. These incorporate:

  - Experiential education
  - Entrepreneurship
  - Agricultural sciences
  - Consciousness

- Anticipated growth of student and staff: It is expected that the primary growth in student and staff strength would take place in off-campus centers, open and distance learning centers and off-shore campuses. It is foreseen that the needs of learners in distant areas will be met by virtual infrastructure, backed by automated processes to enhance the efficiency of the institute's resources.
- Continued focus on guiding principles in future infrastructure development

  The infrastructure plan of DEI will continue to adhere to the original guiding principles. Developing sustainable campuses is an integral part of the DEI belief system, aligned with the Sigma 6Q principles. These principles will be used in infrastructure development considerations.

Current Status of Infrastructure at DEI

Physical Infrastructure

Infrastructure to support student amenities

- Sports: DEI believes in the mental, physical and spiritual development of its students and has multiple sports arenas for boys and girls. Students have both, indoor as well as outdoor facilities for sports and games.
- Medical facilities: Out-patient consultations, equipment for ultrasonography, ECGs, ENT and clinical tests and X-rays, an emergency services center, physiotherapy, dental services, eye surgery facilities, dietitian services and a free pharmacy are available for use of students and staff alike. The students also have access to psychological counselors seven days in a week. A 20-bed hospital is available for patients who need to be admitted for observation or treatment.
- Student Accommodation: Overall, 795 students of DEI avail of hostel accommodation across various locations. There are separate buildings which host girls and boys. Each hostel has a mess and a comfortable environment for students.
- IT infrastructure: Approximately 560 computers are available for use by students across different faculties and locations.
- Library Facilities (physical): DEI has one central library and various departmental libraries in the faculties of Education, Commerce, Engineering and Technical College. It has a wide collection of textbooks, theses, magazines, journals, as well as access to e-content via Inflibnet.

Infrastructure to support academics

- Class Rooms and e-Class Rooms: There are more than 100 class rooms and e-class rooms spread across 6,605 sq m.
- Lecture Theatres: There are large lecture theaters available on the main campus to accommodate a large student strength in any course.
- Laboratories and Workshops: Overall, 5672 sq m of space has been allocated for laboratories and another 4673 sq m of space has been allocated to workshops for various courses.

Incubation Cell

The Incubation Cell is currently being developed and it is expected to need more space in the form of fabrication laboratories.

Reliable Power Supply

To ensure regular and reliable power supply, DEI has invested in multiple solar plants at various locations with a total capacity of 660 KWp.

Safety and Surveillance

The DEI security laboratory was created in 2013. It undertakes security surveillance protocols and monitors inputs from around 265 cameras 24 x 7. This is a proactive measure which helps personnel to respond to situations in time and prevent mishaps.

Besides the above, there is also a Seminar Hall and Convocation Hall, each of which can accommodate 300 students, a Guest House which has 16 rooms, and Staff seating space of almost 1900 sq m.

Soft Infrastructure

Admission System

DEI has its own indigenous admission system which handles new student applications, generation of admit cards, checking of OMR sheets, results processing and generation of merit lists, which are finally displayed on the Institution website.

Course Management System

The course management system is an indigenous system which handles student course registration, evaluation and grading as well as generation of mark sheets.

e-Library

OPAC (Online Public Access Catalogue) of all DEI libraries is available and operational with bar code. In terms of access to research tools, the entire campus has e-connectivity through the library website to Inflibnet and databases such as Prowess.

Virtual Infrastructure

The following activities are currently undertaken by Multimedia Lab: Edusat Teaching, Videoconferencing, Video Streaming, Generation of e-content, Video archiving facility, Web-support services, Data center facility and Technology tracking. In terms of infrastructure, DEI has the capability to provide live stream reception for 1000 clients, platform independent HD video conferencing through Polycom CMA software for 100 clients and simultaneous recording for 5 classrooms.

Strategic Plan for Infrastructure: 2018 to 2032

The present section describes the three elements of infrastructure: physical, soft and virtual IT infrastructure aimed at addressing the future needs associated with academics and research, administration and student amenities.

Physical Infrastructure

The present physical and IT infrastructure at DEI is rapidly approaching its optimal capacity. The strategic plan outlines future focus areas, keeping in mind the vision to use soft and virtual infrastructure for meeting the needs of off-campus locations, open and distance learning centers and off-shore centers. On the main campus, the aim is to provide infrastructure for new courses and to upgrade or maintain the existing infrastructure.

Strategic Plan to support Academics and Research

DEI Main Campus

- Enhance the number of technology-enabled classrooms and flexible teaching and learning spaces, keeping in mind new academic courses and the aim of reaching a larger number of under-served learners across multiple locations. DEI will add new e-classrooms, classroom space for new courses and large lecture theatres to accommodate 200 students each.
- Enhance student access and usage of technology through 800 additional computer and peripherals.
- Create infrastructure for enabling students to undertake the journey of entrepreneurship through enablement of ideas in incubation cells and fabrication workshops.

- Establish a student's activity centre, which will allow students to develop their interests in extra-curricular fields such as arts, theatre, music, dance, self-defence, painting, literature, reading; and also enable them to develop various facets of their personality through sessions on yoga and meditation and indoor sports.
- Development of inter-disciplinary labs, multi-disciplinary labs, mobile labs, trans-disciplinary labs, cross-disciplinary and living labs. Details are in the chapter on research laboratories.

Off-Campus Locations in India

At every off-campus location, the following infrastructure will be created to support academics and research:

- Class rooms to enable students to study in dual shift mode
- Spaces for computer labs
- Workshop space
- Library space
- Outdoor sports fields and indoor sports courts and/or student activity centres

Open and Distance Learning centres in India

- Space for conducting examinations.

Off-shore Campuses

Infrastructure based on the same principles as the main campus and in accordance with the rules of the country will be developed with the help of AFDEIs.

Strategic plan to support Institute Administration

This section comprises of infrastructure for student amenities and institute administration.

DEI Main Campus

- Enhance and extend student accommodation facilities for 1200 more students.
- Enhance the medical infrastructure with ambulance services.
- Create a new administrative block to consolidate all administrative departments in a new facility to take care of growing student and staff strength.
- Creation of seminar halls for large gatherings and conferences.
- Double the room strength at guest house (to 32 rooms)
- Addition of a visitor's room in each faculty for visitors.
- Enhance the renewable energy systems in the campus and add another 1 MW of solar energy capacity.
- Add battery-operated vehicles to help those who need transportation within the campus
- Maintain green corridors to ensure maximum green coverage. Landscaping and gardening would continue to be priority in the future.
- Add parking space to accommodate increasing numbers of staff and students, traveling to the institution by their own means (14000 sq m).
- Maintain and enhance surveillance and security measures as per need, to new locations.

Off-campus centers

In the off-campus centers, each center would be developed to have the following infrastructure:

- Cafeteria, hostel and medical center.
- Surveillance and security, similar to the main campus
- Multi-purpose halls at every location
- Landscaping and gardening
- Renewable energy capabilities

Open and Distance Learning centers

- Space to accommodate students for examinations to be held at the Distance centers across India.

Off-shore centers

The present plan requires that international locations be set up in accordance with the rules of the country where they are being established.

Soft Infrastructure

The following aspects of soft infrastructure are anticipated for aiding academics, research as well as administration.

- Enhance the Admissions Management System as per academic needs. The admissions cell will work upon improving web presence in all phases, additionally.
- Enhance Course Management System in line with Institute policies accommodating course delivery modes such as blended, asynchronous, semi-synchronous, synchronous and online mode.
- Introduce wi-fi hotspots at various points for ease of access to digital content by students and staff.
- Introduce automated time table software integrated with course management system. An effort would be made to evolve towards a fully automated time-table over a period of time.
- Introduce an enhanced version of financial accounting system with the ability to upgrade, keeping in line with changes in government policies.
- Ensure data security of students, faculty and various institution departments

Virtual Infrastructure

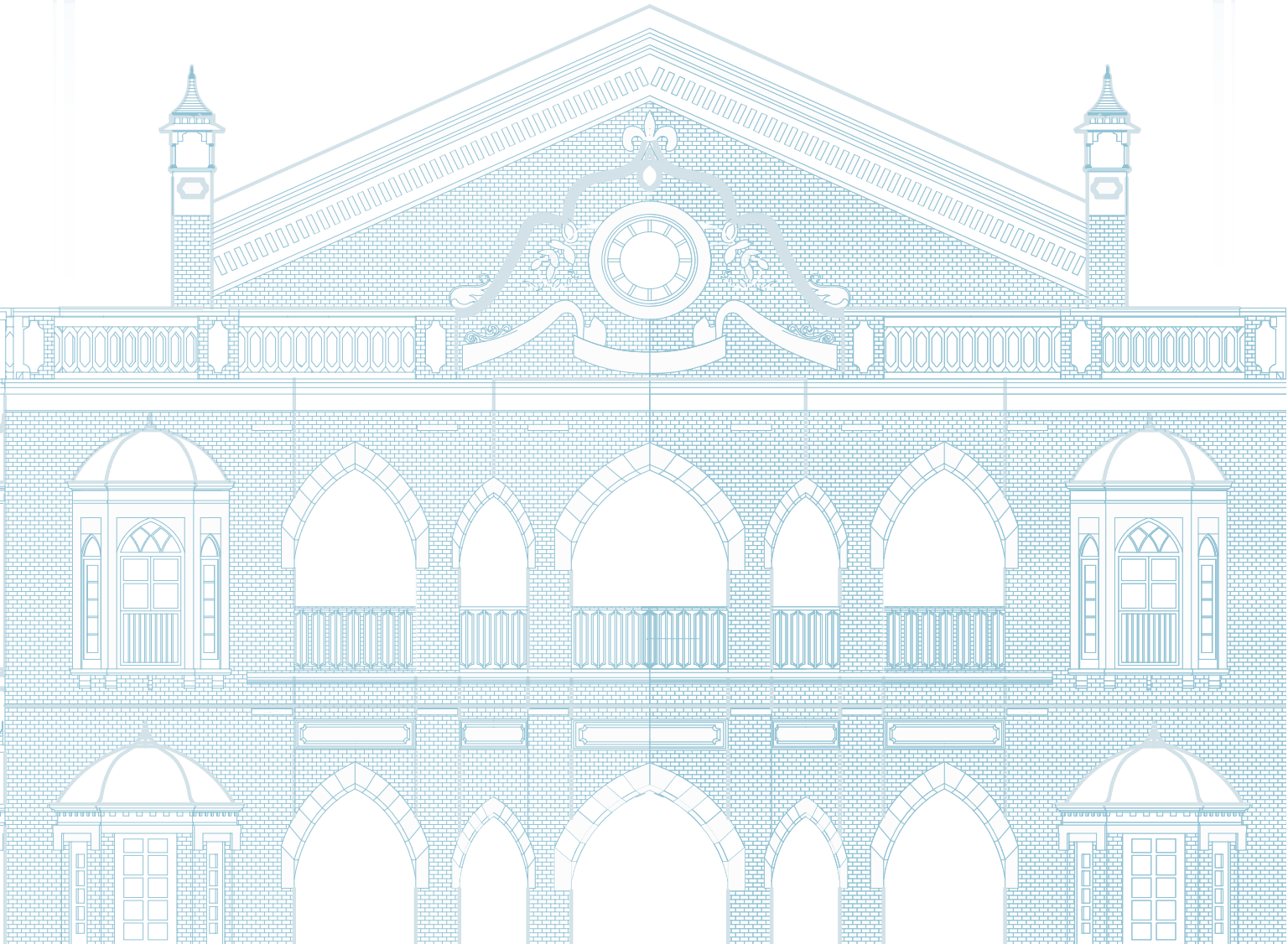
The following initiatives are proposed for development over the next 15 years:

- Enhance computing abilities at all campuses
- Invest in data repository and access tools such as a private cloud to host applications such as Vidyaprasar, research apps and administrative apps, while maintaining data security
- Develop virtual class rooms to reach out to learners
- Continue to develop virtual laboratories. These may be remote triggered, simulation laboratories or measurement-involved laboratories. Approximately 20% of the courses may be expected to use these.
- Continue to develop virtual studios in all phases
- Take the help of IT to make learning available to students and faculty members with vision and other disabilities.

- Ensure that the infrastructure for leased lines to ICT and for open and distance learning are sufficient to enable ease of access to content.
- Ensure security of the data center.

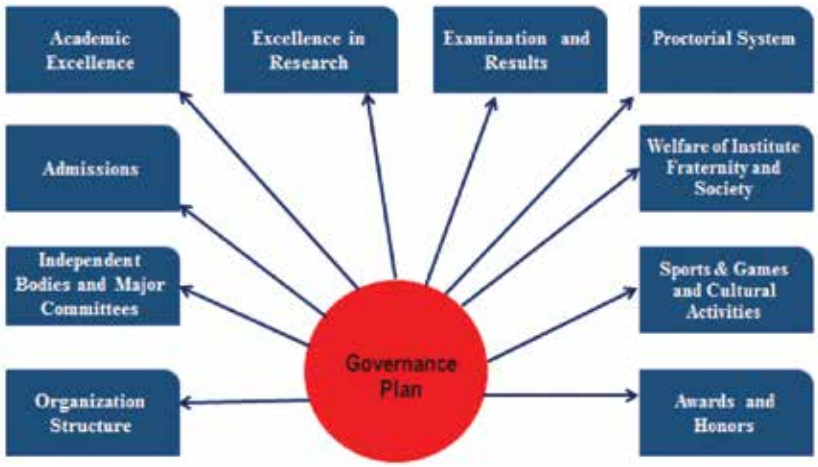
8

Governance



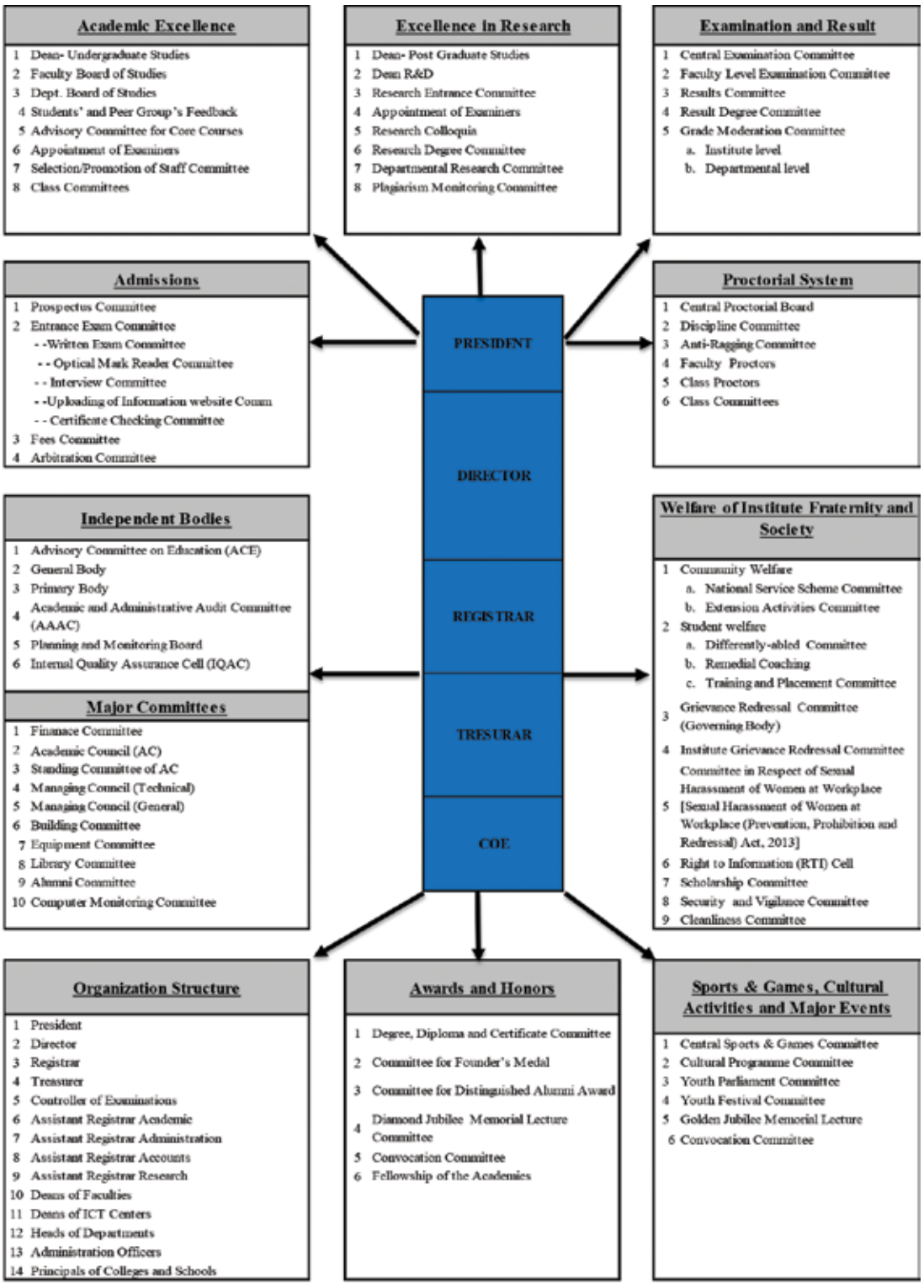
The Dayalbagh Educational Institute has a well-defined, democratic, decentralized, participatory, and inclusive governance system. Based on the Education Policy of DEI established in 1975, the Institute's principles of governance include formulating policies, defining action plans, and monitoring processes, including those for admission, recruitment, award of degrees and diplomas, finances, etc. The governance plan covers administrative, academic, judicial, and financial aspects and comprises committees formed for enhancing academic excellence, discipline, values and other areas of importance to the university. The highest body of the governance structure is the General Body: most of the committees are statutory but some are adhoc.

One of the unique features of the university is the Advisory Committee on Education and also an emphasis on self-governance.



The University's governance plan is part of an evolutionary process compared in the time charts below and showing the current situation and that visualised in its Vision 2031.

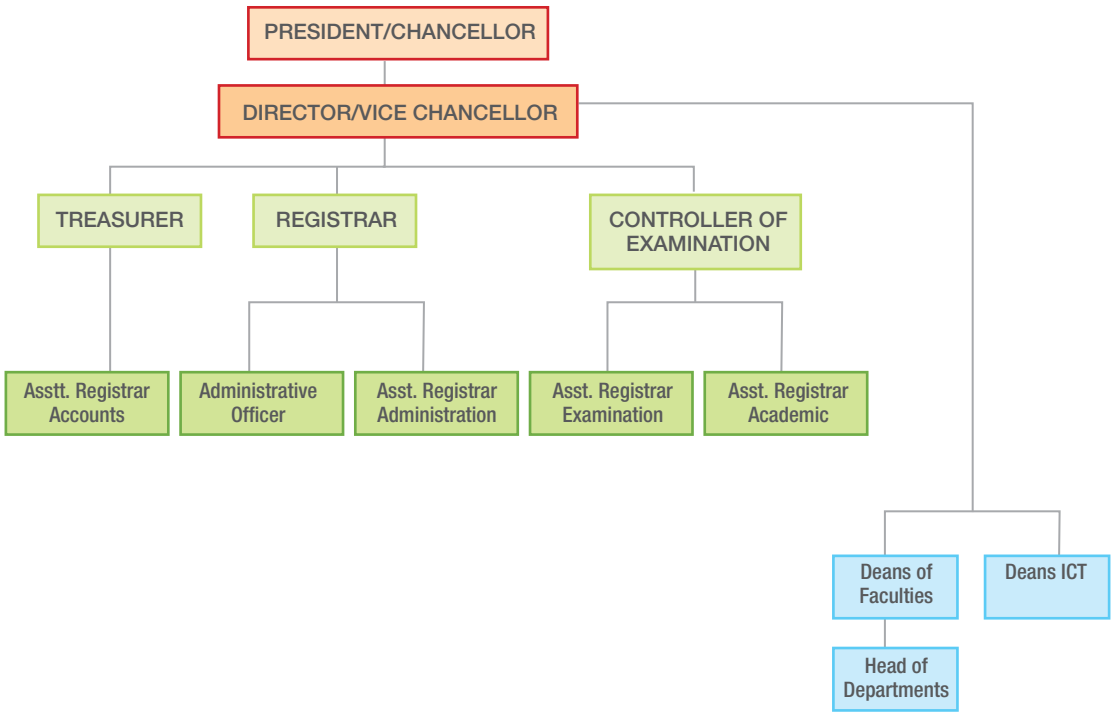
Details are available in the annex.



Overall Governance Structure of DEI

Organization Structure

The organisational structure of the university fulfills the two aims of good governance and implementation of the Academic Plan. Supplementary committees and other bodies provide guidance, feedback, review, allowing evolution and adaptation to the changing educational needs of our society.



Organizational Structure and Independent Bodies

Independent Bodies and Major Committees

Independent Bodies and Major Committees

Advisory Committee on Education (ACE)

The Advisory Committee on Education was founded in 1991 and reconstituted in 2002. Its main objective is to enhance quality of teaching and research in the Institute and its colleges and schools so as to reach to the highest level of educational standards.

This committee is a think tank that suggests, interalia, measures for enhancing the quality of the Dayalbagh Educational Institutions in accordance with the Dayalbagh Educational Policy. Meetings are held every alternate month; the Committee also meets more frequently when deemed necessary.

General Body

The General Body consists of a maximum of thirty members. This committee has the widest membership allowing interaction and feedback on a broad range of issues.

Primary Body

The role of the Primary Body is to constitute the first Governing Body of the Institute; to consider the Annual Report of the Institute and Accounts as submitted by the Governing Body; to review and monitor the act(s) of the Governing Body.

The Primary Body shall not contravene any of the laws, rules regulations or directions, having the force of law prescribed or given by the government, state or central or any legally constituted body authorized to do so(membership details in Annex).

Academic and Administrative Audit Committee (AAAC)

The Academic and Administrative and Audit Committee is a special committee constituted to of provide feedback about the functioning of the university on administrative and academic matters. The AAAC consists of a few senior teachers of the university and senior teachers from other universities. Members are nominated by the Director. The AAAC team meets its objectives by visiting each faculty and department once every year, and meeting each section of the university community, including students and research scholars, faculty members, and office staff, to hear their grievances, if any, and any suggestions for the improvement of academic and/ or administrative matters. The AAAC's report is based on consolidated feedback from different sections of the university and sent to the Director, for further action. This is a unique system and allows each member of the university a way to loop back their inputs.

Planning and Monitoring Board

The Planning and Monitoring Board regulates the implementation of the development programmes approved by the UGC and advises the Governing Body and the Academic Council on any matter which it considers necessary for the fulfillment of the objectives of the institution. The Board meets at least once in every academic session (list of members in Annex 2).

Internal Quality Assurance Cell

The Internal Quality Assurance Cell (IQAC),was constituted in September 1995 based on the guidelines of the National Assessment and Accreditation Council set up by the UGC. The activities of the IQAC envelop every component of the university system including: Admission Criteria; Curriculum Design; Programme Selection; Curriculum Implementation; Evaluation; Employability.

The Cell aims to improve the quality of teaching and research by regular feedback from students; provide inputs for best practices in administration for efficient resource utilization and better services to students and staff; inputs for academic and administrative audits and analysis of results for improvement in areas found weak.

Students and staff can give their feedback and suggestion on teaching and administrative performance by dropping their views in the Suggestion Box located in DEI Computer Centre, or to the Coordinator, IQAC (see Annex for membership).

Major Committees

Board of Management (Governing Body)

The Governing Body's role in the governance system of the Institute is to frame policies for achieving excellence in teaching and research in the Institute. Its main areas of concern are academic, financial, and judicial.

Academic Responsibility

In terms of academics, the Governing Body directs the affairs of the institute and exercises general superintendence and control over it with the aim of:

- formulating the educational policies and programme for the growth and development of the institute and implementing them;
- making bye-laws, amendments or repeals as per the rules;
- create faculties as it may deem fit from time to time, on the recommendation of the Academic Council;
- introducing new courses of study and training in faculties of the institute including non-university educational institutions to raise standards of education;
- conferring or granting degrees, diplomas and other academic distinctions or titles;
- determining the cadre and grades of the staff of the institute;
- creating, suspending or abolishing posts and fixing the emoluments and conditions of services of its employees;
- appointing teaching staff and such other staff, not provided for elsewhere, as may be found necessary;
- constituting selection committees, or terminating the services of any employee in accordance with rules;
- submit annual report of the Institute to the Primary Body.

Financial Responsibility

Opening bank accounts, prescribing the procedure for their operation, considering annual accounts and the institute's budget estimate as submitted by the finance committee; taking such actions within the limits prescribed by the finance committee, appointing auditors for the institute; receiving grants from the University Grants Commission, the Central and the State Governments.

Judicial Responsibility

The Judicial Responsibility is to select the command seal for the institute and to provide for the custody and use of the same; to give suitable directions, to holding trustees of the institute regarding utilization of the properties of the trust; to sanction to file, withdraw, defend or compromise any suit, appeal petition, application or any legal proceeding, civil, criminal, revenue or any other proceeding of any nature whatsoever in any court of law office or department or before any tribunal or to authorize any reference to the arbitrator or arbitrators or reference by or on behalf of the institute and/or authorize person(s) to discharge the above functions, including the authority to sign verify pleading and to engage counsel; to constitute the Managing Councils for non-university educational institutions and assign to them such powers and the functions as a deems fit to constitute a Distance Education Cell and assign to it such powers and functions as deemed fit; to exercise such other powers and perform such other duties, as may be necessary for the proper functioning of the Institute.

Finance Committee

The purpose of the Finance Committee is to examine accounts and scrutinize proposal of expenditure of the institute including those of non-university educational institutions

(members list in Annex).

Academic council

The Academic Council's function is to control and regulate the standards of education, research and examinations in the institute including non-university educational institutions, and to advise the governing body on all academic matters (members list in Annex).

Standing Committee of the Academic Council

The role of the Standing Committee of the Academic Council is to invite such other internal members of the Academic Council as it may deem fit, for its meeting which are convened under instructions from the Director. To advise on equivalence of examinations and such matters as may be referred to it by the Academic Council or the Director. In every case where the Standing Committee disposes of any matter, it is reported to the Academic Council at its next meeting (members list in Annex).

Managing Councils (Technical Education & General Education)

The managing councils have such functions and perform such administrative and academic duties for non-university educational institutions in Dayalbagh, as may be assigned to them by the bye-laws and from to time, appoint such committees/ boards of studies, as may be prescribed by the bye laws (members list in Annex).

Building Committee

The Building Committee's role is to select and recommend sites for construction of buildings, and to accord technical sanctions to the detailed plans and estimates. It approves the construction of new buildings and alterations to existing buildings and invites and approves tenders for the purpose (members list in Annex).

Equipment Committee

The Equipment Committee's role is to scrutinize quotations and approve purchases of equipment (members list in Annex).

Library Committee

The Library Committee supervises the work of the libraries of the Institute (members list in Annex).

Computer Maintainence Committee

This committee includes ten members drawn from the University's departments and faculties three members as experts from industry and premier institutes.

The committee's purpose is to maintain connectivity across DEI's ICT centres,to maintain internet connectivity in the institute, to vet all computer-related purchases, to keep track of technical advancements and create infrastructure for maintenance of hardware and other related items.

Alumni Committee

This committee comprises two to four members from different faculties headed by the Co-ordinator Dean, Alumni Relations.

The major functions of the committee include making direct connections with DEI's alumni, maintaining the yearbook of batches graduating, providing the single point of contact for alumni, publishing and circulating the alumni newsletter and organizing alumni reunions.

Admissions

Overall admissions are under the charge of the committees detailed below.

Admission Committee Framework

The Prospectus Committee is charged with designing the prospectus. This committee includes representative(s) from each Faculty as well as the Central Administration Office. This committee amends the prospectus for each forthcoming academic session.
The Entrance Examination Committee is charged with conducting the entrance exam for which more than six sub committees are constituted (sub-committees in Annex).
The Arbitration Committee is comprised of a Chairman and two members and is responsible for resolving all issues related to admission.

Academic Excellence

Governance Structure for Academic Excellence

Dean, Undergraduate Studies

The Director nominates the Dean of Undergraduate Studies from among the two Deans who are members of the Governing Body, for a term of one year starting from 1st July of each academic session. The Dean of Undergraduate Studies ensures that the quality of UG education is of an appropriate level. The Dean also present the candidates for undergraduate degrees at the Convocation for conferment of their degrees.

Faculty Board of Studies

The Faculty Board for each Faculty consists of all the Professors and Heads of Departments of the Faculty and two external experts, with the Faculty Dean as the Chairman. The recommendations of the Board of Studies regarding revision of syllabus and/or new courses approved by the Faculty Board are placed before the Academic Council of the Institute before implementation. The Faculty Boards meet at least once every year.

Departmental Boards of Studies

The Board of Studies within each Department of the Institute, for each subject or relevant group of subjects, consists of the Head of the Department as Chairperson; all Professors of the Department; two teachers other than Head of Department and Professors by rotation in order of seniority; and up to three persons not connected with the Institute who are nominated by the Director, possessing expert knowledge of the subject(s).

Functions of Board of Studies

- To make recommendations about courses of studies and examinations in the subject(s) with which it deals.
- To initiate proposals regarding new courses of study and propose changes thereto.
- Subject to the control of the Academic Council and the Faculty, to prepare proposals for research work in the subjects assigned to the Board of Studies.
- To advise on any question referred to it by the Governing Body, the Academic Council, the Faculty or the Director.

Students' and Peer Group Feedback

A committee shall be set up to gather feedback from students and peer group, as to the academic aspects of their course. The feedback would be gathered utilizing a variety of methods, including written suggestions dropped in Suggestion Box. The feedback would be used to help provide guidelines for improving students' learning and experience within the Institute. The DEI is a student-friendly institution and encourages maximum student participation, including in self-governance.

Advisory Committee for Core Courses in the Institute

The coordinator for Advisory Committee for Core Courses will be appointed by the Director for a term of three years. The committee will include the following members: Head of the Botany Department, Head of the Mechanical Engineering Department, Head of the Sanskrit Department, Head of the Psychology Department, and staff teaching the core courses, Indian Culture, Comparative Study of Religions, Agricultural Operations, and Rural Development.

Appointment of Examiners Committee

The examiners for end semester examinations are appointed by the Director. For this purpose, the Director may consult the panel of 3 to 5 names prepared by the Head of the department or senior-most teacher of the subject, where there is no department, and forwarded by the Dean/Principal.

Selection/Promotion of Staff Committee

A Selection/Promotion of Staff Committee deals with all matters related to the selection and promotion of staff members.

Class Committee

Every class in each of the departments of the Institute shall set up a Class Committee, usually consisting of 6 members. These members are selected by students from amongst themselves, with the support of their class teachers. The number of members in the Class Committee may vary depending on class size. The functions of the Class Committee are to provide a means of self-governance to the students. The students will be able to go to Class Committee members with any problem they may have, especially concerning academics. Thus, Class Committee members provide a conduit through which problems related to academic issues may be sorted out. These issues are then brought to the attention of concerned teachers and, if needed, the Head of Department. The Class Committee system will train students in self-governance.

Excellence in Research

Governance structure for Excellence in Research

Dean, Postgraduate Studies and Research

The Director nominates the Dean of Postgraduate Studies and Research from among the two Deans who are members of the Governing Body, for a term of one year starting from 1st July of each academic session.

The Dean of Postgraduate Studies and Research is a member of Research Degree Committee of all faculties; is Chairman of RDC in the absence of the Director; take necessary steps to maintain and improve the academic standards in research and PG studies and accordingly process matters through the concerned faculty boards and present them to the Academic Council; present the candidates for research degrees and postgraduate degrees/diplomas at the Convocation for conferment of their degrees/diplomas.

Research Entrance Test Committee

The Institute notifies, department-wise, the number of seats available for Ph.D. Programme before the beginning of each semester. A Research Entrance Test and interview are conducted for determining suitability of candidates for their admission to Ph.D. Programme.
A duly constituted Research Entrance Test Committee is in charge of implementing the entrance test and interview, of the eligible candidates. A person holding the qualifications specified is considered eligible for research study leading to the award of the degree of Doctor of Philosophy under the relevant Faculty of the Institute provided that the Research

Degree Committee (RDC) concerned is satisfied that the candidate possesses the requisite qualifications to take up the proposed research work.

Certain categories of candidates will be exempted from appearing at the Research Entrance Test, including those who have qualified National Eligibility Test as NET-JRF (Junior Research Fellowship)/GATE (Graduate Aptitude Test in Engineering); a candidate who is recipient of National Doctoral Fellowship or other fellowships from government/semi-government organizations such as the Council of Scientific and Industrial Research (CSIR), University Grants Commission (UGC), All India Council for Technical Education (AICTE)and similar national-level organizations awarded through an All India selection procedure conducted by the agency/organization concerned; candidates who have qualified S.L.E.T. (State Level Eligibility Test), recognized by U.G.C.

Departmental Research Advisory Committee

A Departmental Research Degree Committee is constituted in each Department. After admission to the Ph.D. Programme, candidates study the prescribed courses, including one on research methodology, for a minimum period of one semester. The Departmental Research Committee with the Head as its Chairman and the senior staff members as members recommend courses to be covered by the candidate. The Departmental Research Committee will also be responsible for organizing the colloquia and presentations by students.

The candidate submits the topic of her proposed research work along with six copies of synopsis, endorsed by the proposed Supervisor, Head of the Department and the Dean within six months of admission, which are placed before the RDC for consideration.

Research Development Committee

This Committee closely monitors issues related to research work leading to the award of the Ph.D. degree. The RDC consists of the Director of the Institute, the concerned Dean, the Head of the Department, and two external experts in the subject, appointed by the Director in consultation with the Head of the Department and Dean concerned. The Supervisor is a co-opted member of the RDC for his candidate. Should there be any difficulty in procuring presence of external experts in RDC, their opinion may be obtained by correspondence out of which at least one is available for consideration during the meeting. The RDC must satisfy itself that the subject offered is one which can be profitably pursued in the Institute and that the candidate possesses the requisite qualifications. The RDC then approves, amends or rejects the proposal. The date of submission of a synopsis which has been approved is considered as the date of registration of the candidate. The recommendations of the RDC are reported to the Academic Council at its next meeting.

A candidate may request changes in the topic of his thesis with the approval of the RDC within one year from the date of registration.

Other issues relating to the research, not provided otherwise in rules, may be decided by the Director on the advice of a Committee consisting of the concerned Dean, Head of the Department and the Supervisor.

Appointment of Examiners Committee

On finalization of the panel of examiners by the RDC, the Director appoints two external examiners from the recommended panel of external examiners, at least one of which should be from outside the state. External examiner(s) can also be appointed from outside the country. The Supervisor and the Co-Supervisor, if any, are collectively treated as one examiner, as internal examiner, and they submit a joint report.

If an examiner fails to submit his report of a thesis within a period of two months from the

date of receipt of the thesis, steps may be taken to send reminder before considering recall of the thesis and appointment of another examiner.

Ethics and Plagiarism Monitoring Committee

The DEI has established an Ethics and Plagiarism Monitoring Committee, to enhance awareness about responsible conduct of research and academic activities, promotion of integrity and deterrence from plagiarism.

The Committee will be responsible for holding seminars/ awareness programmes and trainings every semester on responsible conduct of research, project work, assignments, thesis, dissertation, promotion of academic ethics and integrity, for students and staff. It shall instruct students, faculty and staff about proper attribution, seeking permission of the author wherever necessary, acknowledgment of source compatible with the needs and specificities of disciplines and in accordance with rules and regulations governing the source. Cardinal principles of academic integrity and elements of responsible conduct of research and publication ethics are included as compulsory course work for M.Phil. and Ph.D. scholars; and in Orientation and Refresher Courses organized for faculty and other members of academic staff. The student, faculty, staff and researchers will be trained in the use of plagiarism detection tools and reference management tools. Students, faculty, staff and researchers will be encouraged to register on international researcher's Registry systems. The Ethics and Plagiarism Monitoring Committee has put into place software which will detect plagiarism in theses, dissertation, term papers, reports, and other publication. Every student submitting a thesis, dissertation, term paper, report or any other such document will submit an undertaking indicating that the document has been prepared by him or her and is his/her original work and free of any plagiarism.

A Zero Tolerance Policy will be followed with respect to plagiarism in the core area: the core work carried out by the students, faculty, staff and researchers must be based on original ideas.

Examination and Results

Dayalbagh Educational Institute has an elaborate and detailed system of examination ensuring that students are graded by regularity in classes as well as daily performance. It focuses on evaluating the academic growth of the student throughout the year. The examination system has a Central Examination Committee, Faculty Level Examination Committee, Results Committee, Result Degree Committee and Grade Moderation Committee both at the Institute level and Departmental level. These enable a ground level analysis of the academic performance of the students, ensuring that the students are encouraged to give their best bringing about their all-round development.

The structure of the examination system is described below:

Central and Faculty Examinations Committees

The Examinations Committee, at both central and faculty levels, will be responsible for appointment of examiners and conduct of examinations.

Appointment of Examiners

The examiners for end-semester examinations are appointed by the Director. For this purpose, the Director may consult the panel of 3 to 5 names prepared by the Head of the department or senior most teacher of the subject, where there is no department and forwarded by the Dean/Principal.

If, during an examination, an examiner becomes unable to act as such or when an examiner is not available, the Director appoints another examiner to fill the vacancy.

Conduct of Examinations

There Examination Committee oversees conducting examinations in the Institute including its non-university educational institutions consisting of the following members: all deans and principals, the registrar, as convener. The Registrar prepares and duly publishes a programme for the conduct of the end-semester examinations specifying the date of each examination and the deans and principals conduct the examination in their respective faculties/institutions accordingly.

Results Committee

A Results Committee consists of the Director (chairman), all the deans and principals, registrar (secretary).

The function of the Results Committee is to prepare the results of the examinations after satisfying itself that the results conform to expected standards. In any case where the result is unbalanced, the committee will take action.

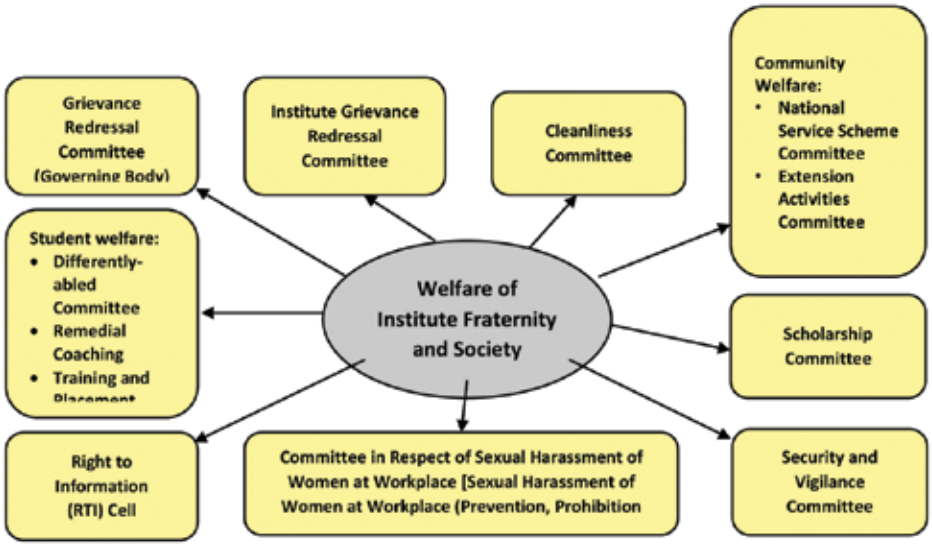
Cases where the use of unfair means in examinations is reported by the Dean/Principal concerned along with the report of the invigilator(s)/member(s) of the flying squad and the Centre Superintendent and the report of the Examiner are also examined by Results Committee of the Institute.

Grade Moderation Committee

Each Faculty constitutes a Grade Moderation Committee which normalizes the grades assigned by the course instructor. The Committee scrutinizes the marks assigned by each of the course instructors and identifies natural gaps and clusters so as to assign the appropriate grades to all the students. The Grade Moderation Committee comprises members nominated by the Head of Department concerned.

Welfare of the Institute Fraternity and Society

The Institute is committed to ensuring welfare of all members of the university fraternity. The following mechanisms are already in place and these will continue to function with suitable amendments and value additions as and when required.



Framework: Welfare of Institute Fraternity and Society

Community Welfare

There are several committees which are formed in the Institute to ensure the welfare of community at all levels.

National Service Scheme Committee

Objective of NSS scheme is "Personality development of students through community service". Student volunteers and Programme functionaries are engaged in constructive and productive programmes involving students in various awareness drives, shram-daan, social reform, communal harmony projects, production of assets for community, for relief work, blood donation, environmental protection, literacy programme, health education, campaign etc. Each volunteer contributes 240 hours of community work over 2 years.

Administrative Structure at institute level:

- NSS unit: Institution is allotted NSS unit as per the strength of the students, by the Programme Coordinator (P.O) in consultation with NSS Regional Directorate and State NSS officer considering the demands of the institution.
- Enrolment of NSS Volunteers: At college level the NSS volunteers are enrolled from first and second year degree-class students. Students belonging to minority communities, scheduled castes and scheduled tribes are encouraged to participate in NSS. They are given due representation where more students desire to join NSS. In co-educational colleges the girls are also motivated to join NSS.
- Programme Officers: The Programme Officers are responsible for the organization of NSS unit, implementation of NSS programme under the supervision and direction of Principal of the college or Head of the institution. One P.O. is incharge of one unit only. Only those belonging to the teaching faculty are considered for appointment as P.O. The P.O. is responsible to carry out instructions issued by the Programme Coordinator of the University, NSS Regional Directorate and State NSS Officer for the implementation of NSS activities as per the NSS Manual, programme guidelines and administrative and policy directives.

Extension Activities Committees

The Institute is engaged in service to society in the form of work for the weaker sections of society, literacy missions, empowerment of women, welfare of the divyang, agricultural operations, teaching underprivileged children, etc.

Students Welfare

The following Extension Activities Committees are concerned with Student Welfare:

- The Committee for Differently-abled is meant to create an environment at the institute level to enrich higher education learning experiences of differently-abled persons. Creating awareness of the capabilities of differently-abled persons, constructing facilities aimed at improving accessibility, purchase of equipment to enrich learning etc., are the broad categories of assistance under this scheme.
- Remedial Coaching Committee Remedial coaching aims to improve the academic skills and linguistic proficiency of students;to raise their level of comprehension of basic subjects; to provide a strong foundation for further academic work; to provide career guidance and psychological counseling for capacity-building to those who are in need of such counseling.
- Training and Placement Committee The Institute has a Training and Placement Cell at central and faculty levels to counsel and help place students in jobs. Companies are invited for students' placement, co-op training and internship in programmes of study across the university.
- Students Grievance Committee Members: All deans and principals. Any student having complaint about any matter related to any issues can file a written complaint to the chairman of the committee. After receiving the complaint, an enquiry committee is set up to find the facts. Then an appropriate decision for fixing the penalty (if any) is taken by the committee.

Institute Grievance Redressal Committee

The Grievance Redressal Cell consists of a senior faculty member as the Chairperson, Third Party members and the Convener. The cell deals with grievances received in writing from students about academic matters, financial matters, issues related to the library, accommodation, conditions of sanitation, preparation of food, availability of transport, etc. Its primary functions are:

- To make all necessary arrangements for receiving representations/ complaints/ grievances from students relating to general administration, examination and evaluation and any other problems relating to the functioning of a student in the college.
- To examine the grievances
- To make necessary recommendations to the Chairperson
- To handover the grievances related to examination and evaluation to the Registrar (evaluation)
- To do all such things as may be assigned by the Convener.

Grievance Redressal Committee for Sexual Harassment of Women at Workplace [Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013]

Female students and staff of the Institute who feel aggrieved or harassed on any account may address their grievances to the Convener of the committee. The committee consists of a Chairperson / Special counselor, Third party members and Convener.

Right to Information (RTI) Cell

The RTI Cell was set-up in the Institute since the inception of the Right to Information Act, 2005, so as to provide necessary information about admissions, recruitments, the governance system, results, curricula and evaluation, etc. The information is furnished by the Public Information Officer within the stipulated time. Also, the appeal of the applicant is heard by Appellate Authority of the Institute in case, the applicant is not satisfied by the reply provided by the PIO.

The main objective of the RTI Cell is to ensure the transparency in the functioning of the Institute and to respond to queries of the applicant.

Composition of RTI Cell:

- Appellate Authority: Registrar of the Institute
- Public Information Officer: Administrative Officer (Computers)
- Delegation of Power: The director of the institute reserves the right to resolve and furnish the information.

Scholarship Committee

The Institute has a Scholarship Committee which looks after government scholarship matters. The constituents of the committee are Chairman (of the rank of professor), programmer, accountant and two more members. The committee ensures the fulfillment of all government norms for attaining the scholarship falling in various categories.

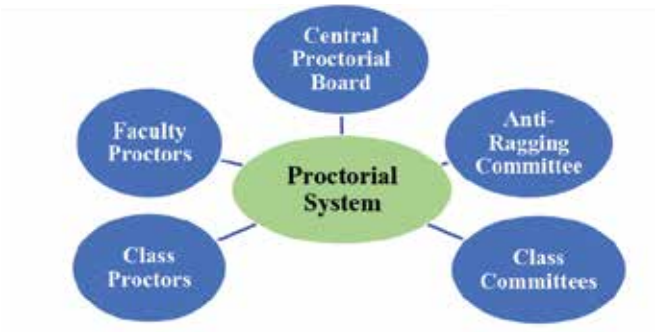
Security and Vigilance Committee

The security of every student is of prime importance in the Institute and it has adequate arrangements for the security of its students on the campus. A student requiring help regarding any issue concerning security may contact the class proctor, dean of the faculty or principal of the college. This committee comprises Security Officer (male) and Security Officer (female) at the institute level.

Canteen Committee

The committee provides for student needs during the Institute's working hours and also provides hospitality to Institute guests as and when required. The committee comprises of the members of the staff of the institute as well as students belonging to the B.Voc programme.

Proctorial System



Central Proctorial Board (Discipline Committee)

The members of the proctorial board are the chief proctors of the faculties and look after the general welfare of the students; they are also authorized to check any student on disciplinary grounds.

There is a Students' Welfare and Discipline sub-committee at the Faculty/ college level. The faculty representatives in the Students' Welfare and Discipline Committee are the ex-officio Conveners of the faculty committee, and the Dean is its Chairman, who will also nominate other members in the sub-committee. It comprises of a Chief Proctor separately for male and female students at the Institute level as well as at the Faculty level along with the sub-committees formed by the members at the faculty level.

Anti-Ragging Committee

Structure: The Chief Proctor of the Institute along with the proctors and Chief Wardens of hostels constitute the Anti-Ragging Committee; the Director is committee's Chairman. Anti-ragging squads consisting of the Chief Proctor and Faculty Members may patrol the campus during the mid-day break, and at the start and end of the day. The committee counsels the senior students with a view to curbing ragging.

Faculty Proctors

They constitute the authority above the class proctors, at the faculty level.

Class Proctors

Students are distributed class-wise in groups to each Class Proctor. They ensure discipline with respect to uniforms, presence at the morning assembly, and associated activities.

Class Committees

The Chief Proctors and the Proctors at faculty level are in charge of these committees. Their task is to understand and resolve students' problems, referring them to higher authorities if solutions do not emerge. The committees are made up of Chief Proctors at faculty level, Proctors (forming sub-committees) and students.

Sports & Games, Cultural Activities & Major Events

The DEI system of education emphasizes sports and games, as well as on cultural activities, deeming them necessary for the integrated development of students. The system of governance thus includes the following committees:

Central Sports and Games Committee

There is a central Sports and Game Committee for supervising and training students of DEI. The Committee consists of the following members: The Director: Chairman; Convener: Nominated by Director; Secretary: Sports Officer; Coach and Organizing Secretary: Sports Officer; two or more faculty members from each faculty nominated through the Dean / Principal; Faculty in charges for sports nominated through the Deans/ Sports Officer.
The committee is responsible for organising sports events, a march past on special occasions, athletic meets, marathons on days of national importance and also to help students prepare and participate in games at the zonal/state/national level.

Cultural Programmes Committee

The Cultural Programmes Committee consists of a cultural advisor nominated by the Director, a cultural coordinator nominated by Director, one cultural coordinator and co-co-ordinator from each faculty nominated by the cultural advisor and cultural coordinator with the consent of the Deans/ Principals. Its functions include:

- To organise the cultural activities
- To evaluate the students' overall performance
- To enhance cultural skills
- To nurture students' talents
- To organise the cultural/ literary/ fine arts competitions among different faculties.

Youth Parliament Committee

DEI actively participates in the Youth Parliament competition at various levels.
The objectives are:

- To strengthen the roots of democracy
- To enhance the habits of critical thinking and expression
- To develop tolerance and good citizenship
- To learn how it may be possible to become good politicians
- To explore new ideas and visions for development

Youth Festival Committee

The following members are the members:

- Advisory committee: One member nominated by Director
- Convener: advisory committee nominate the convener of Youth Festival
- One faculty member from each faculty in preparation team

The objectives are:

- To provide platform to the students where they can show and share their talents
- To provide training for enhancing students' skills in various activities
- To identify talent among students at DEI level for inter-college and national Youth Festival competitions.

Awards and Honours

Distinguished Alumni Award

The Dayalbagh Educational Institute confers the Distinguished Alumni award at the Convocation to DEI alumni who have attained positions of eminence in any walk of life, or made outstanding contributions to society in academic, professional or social fields and

whose achievements have brought laurels to the Institute. The award consists of a plaque and a citation.

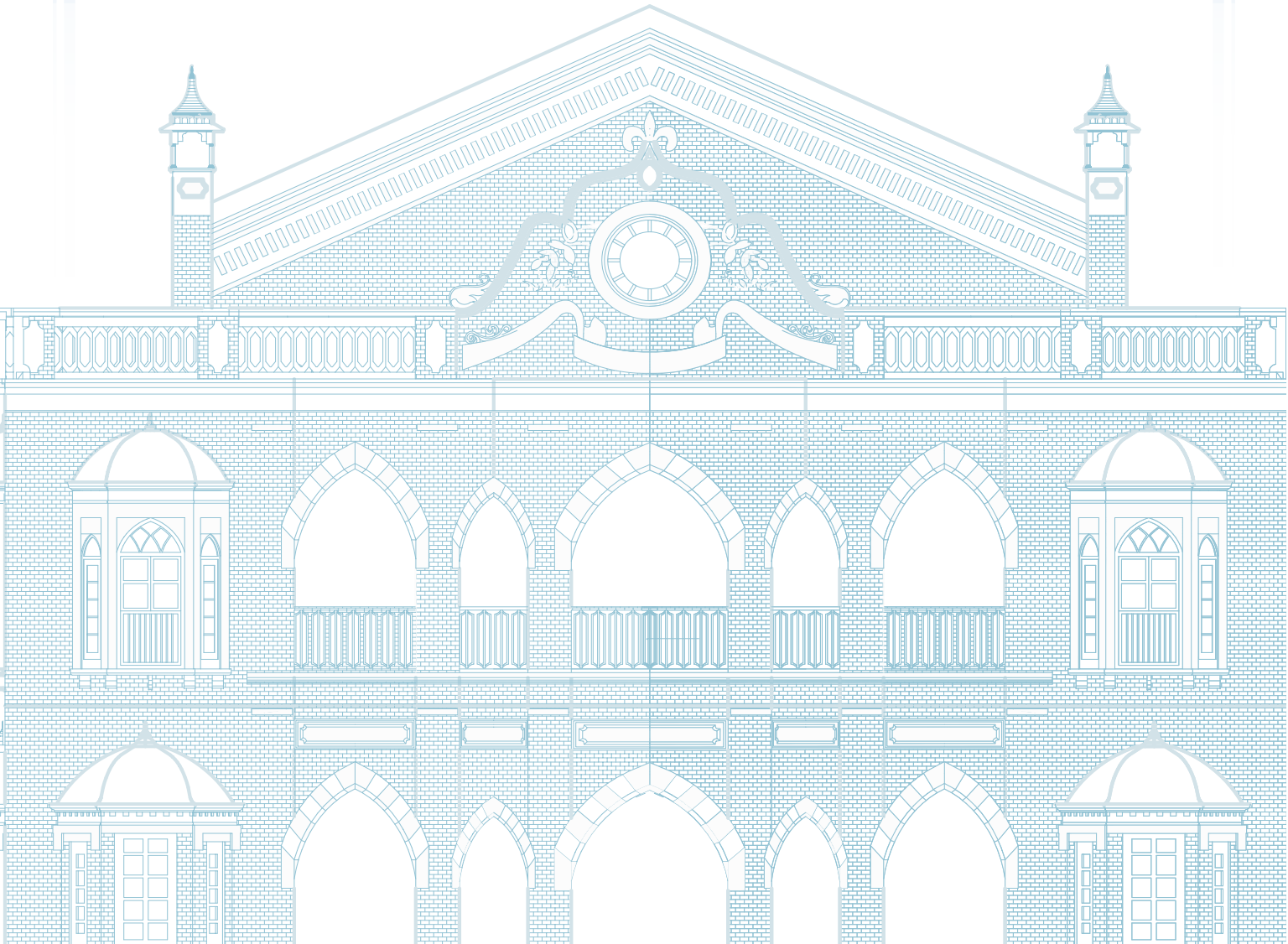
The Selection Committee consists of the following members who shortlist a few names and submit them to the President, Dayalbagh Educational Institute:

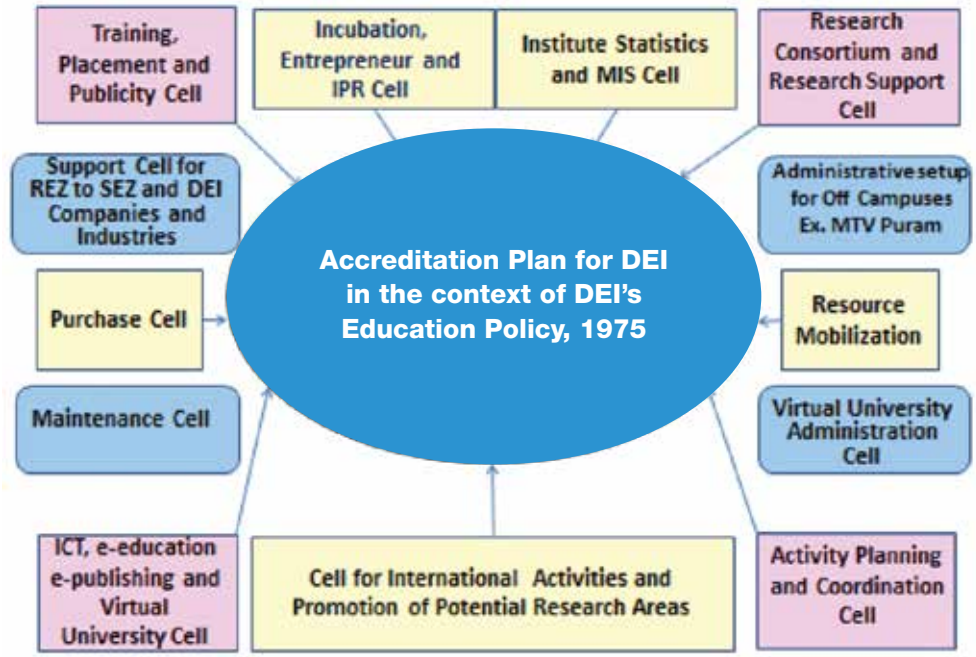
- Director, DEI - Chairman
- Registrar, DEI - Member Secretary
- One nominee of the President, DEI - Member
- The President, The Association of Alumni of the Dayalbagh Educational Institutions (regd.) - Member
- One nominee of the Governing Body - Member

The President, DEI recommends/proposes none, one or more from this list for consideration of the Academic Council and the Governing Body.

9

Accreditation Plan





An Overview of the Accreditation Plan for DEI

DEI's accreditation plan is based on the creation and expansion of supporting mechanisms such as administrative cells and peer committees to support research and teaching at DEI, as well as outreach activities in agriculture, entrepreneurship, consciousness and others. A unique feature of this plan is that it seeks to develop strengths to meet the rating criteria used by National and International agencies (such as QS etc.) for evaluating universities, in addition to enhancing it.

The World University Rankings (QS and Times Higher Education) are some of the most reputed, global university rankings that measure the performance of universities using a range of indicators. Parametric scores are combined into an overall score that is used to determine the university's rank. For example, the QS ranking system uses six indicators: academic peer reviews, employer reviews, faculty-to-student ratios, citations per faculty member, proportion of international faculty and proportion of international students.

It is important to note that the criteria used by these rating agencies is evolving continuously and may change considerably over the next 15 years. As an instance, humanities played a much smaller role in the ranking system earlier, as compared to today. DEI must therefore, focus on the intrinsic quality of teaching, research and outreach, in line with its unique vision, while ensuring that all activities have a measurable impact on the rating mechanisms employed by international agencies.

DEI argues for holistic criteria consistent with the qualities and values embodied in the 1975 DEI Education Policy. It believes that a world-class Indian university in the 21st century must focus on entrepreneurship and job creation for the ever-increasing population of low-income youth. It must also develop sustainable solutions for national priorities related to water quality and supply, food quality and security, access to health-care and access to education.

The administration of DEI intends to forward this perspective at a global level based on rating trends by national and international agencies.

Specific objectives of the accreditation plan are :

- Continually monitor the rating criteria of international agencies and optimize DEI's teaching and research activities to maximize its rating, while adhering to its defining Education Policy.
- Maintain high ratings and improve them further. Some targeted rankings are by NIRF, NBA and NAAC, three important national-level rating bodies; besides others.
- Create new, holistic criteria based on DEI's Education Policy, specifically emphasizing the combination of excellence with relevance to contemporary societal needs. Efforts would be made to promote these criteria amongst leading rating agencies.

Creation of Administrative Support Cells

The primary focus of DEI's strategic plan is to create supporting cells for activities of the institute that help improve its international ranking and support the implementation of the DEI Education Policy of 1975. DEI plans to form/expand the following cells during the first five years of its strategic accreditation plan:

Training, Placement and Publicity Cell

This cell will facilitate work experience for students during their education through the cooperative education programme and internship opportunities. The cell, together with DEI's alumni network will support DEI's graduates in their search for employment. It will also develop the institute's public and media profile.

Incubation, Entrepreneurship and Intellectual Property Rights Cell

This cell will help create an environment for entrepreneurship and provide assistance with patents to both, students and faculty. The cell will assist and encourage micro-entrepreneurship at all socio-economic levels, primarily for the lowest and least empowered members of society. It will help DEI alleviate youth unemployment and poverty by placing students in jobs and producing job-creators via sustainable micro-entrepreneurships.

Research Consortium and Research Support Cell

This cell will promote interdisciplinary research and aid the transition of traditional departments to multi-disciplinary research divisions. It will also promote DEI's activities in agriculture, entrepreneurship, etc., through journal and conference publications or other forms of outreach.

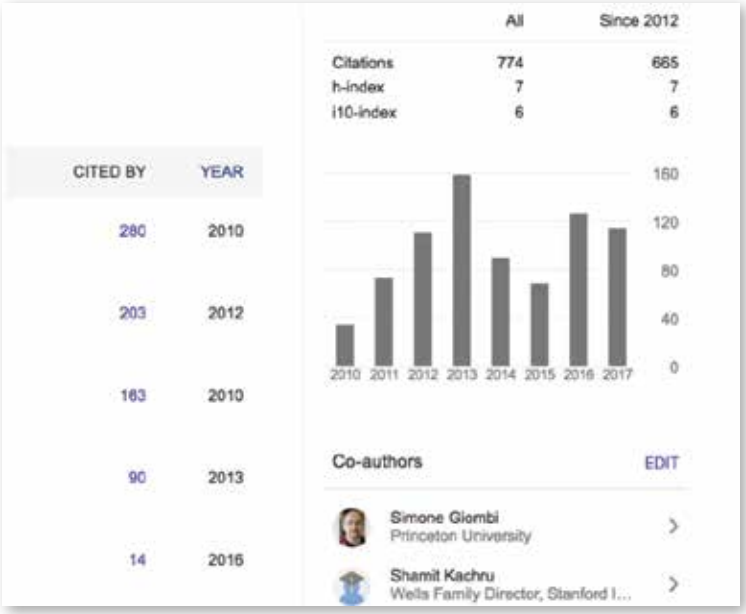
Purchase Cell

This cell will assist the procurement of state of the art instruments, building equipment and soft infrastructure at low cost, enabling the faculty to focus on its primary duties.

Institute Statistics and Management Information System (MIS) Cell

This cell will collect and maintain data pertaining to students (admissions, examinations, placements, fees, competitive examinations, publications, patents, sports and cultural

activities, etc.), staff (salaries, training, research funds, grants from government, consultancy, publications and citations, patents, awards, etc.), institute finance (unit costs, building costs, maintenance costs, infrastructure, etc.), peers, employers and Friends of DEI (public perception, peer perception, employer perception, etc., as required by ranking agencies) for data-mining, data-analysis and report generation.



A snapshot of citation data from one of DEI's younger faculty members - The Institute Statistics and MIS Cell will collect and facilitate the presentation of such data for improving the international ranking of DEI

Resource Mobilization Cell

This cell will support the creation of funds from skill programs, corporate social responsibility projects, agricultural operations, personnel, etc. These funds will be used to sustain education and research programs.

ICT, e-Education (e-DEI), e-Publishing and Virtual University Cell

The cell will support teaching in the synchronous mode; help in conduct and evaluation of examinations; maintain connectivity between the staff, mentors, alumni, employers and Friends of DEI; and assist in interdisciplinary research, project funding, outreach, employment, video conferencing, preparation of e-book / e-study material, e-DEI courses, etc.: the elements to ready the foundation of a future virtual university.

A videoconference between DEI and Michigan State University on Nano-technology - This illustrates the use of ICT, which the Virtual University Cell will support

Support Cell for REZ to SEZ

Development of an innovative ecosystem is proposed to support rural economic zones. DEI aims to transform students into young men and women who will generate ideas and invent technologies that are useful for society, in line with the national policy of "Make in India". The innovations will be translated into viable products and services with the help of innovation partners, translational research partners and industrial partners to meet the needs of the society at large. This support is important in progressing from Rural Economic Zones to Special Economic Zones, besides helping DEI address the problem of youth unemployment in a sustainable manner.

A student teaching an unemployed woman sewing, as part of a micro-entrepreneurship initiative

Maintenance Cell

Proactive maintenance of systems and energy sources is necessary for frugal and cost-effective utilization of resources. A maintenance cell will look after the soft and hard infrastructure as well as instruments and research facilities in the institute.

Virtual University Administration Cell

A futuristic university should have a global presence, not necessarily in physical form: this new administrative cell will cater to the needs of local communities virtually.

Administrative set up for Off Campuses (such as at MTVPuram)

An off-campus of DEI is proposed at Melathiruvenkatanathapuram (MTV-Puram), a fairly remote village in Tamil Nadu. This will be an educational, research and innovation campus designed to augment the efforts of DEI towards promoting entrepreneurship, micro-entrepreneurship and nano-entrepreneurship in rural areas. Connectivity, skilling and incubation will be the main features of this and other off-campuses which this cell will support.

Cell for Promotion of Potential Research Areas

This cell will promote and publicize research activities in key areas related to Sigma-Six-Q such as Agriculture, Dairy, Air Quality, Water Quality, Education, and Healthcare, as well as other emerging areas, such as neuro-theology. It will promote niche research areas globally, to help secure international recognition. The cell will also promote the use of e-learning tools in Sanskrit (and other Indian languages) developed by DEI's language laboratory, (i-c-n-c)-TALL across the globe.

The cell will be responsible for promoting the rating criteria in national and international ratings agencies that reflect the values of the DEI Education Policy (1975) through all forms of outreach and publicity.

Activity Planning and Coordination Cell

The plan includes coordinating the academic session and activities in 380 information centers, nine off-campuses in India and seven abroad, as also on the main campus. This cell will be the center for activity planning and monitoring of all activities of Dayalbagh Educational Institute.

Vision Cell

This cell is planned to work directly under the guidance of the Advisory Committee on Education (ACE), with Director of DEI as Chairman.

Peer Committees for Ranking and Monitoring

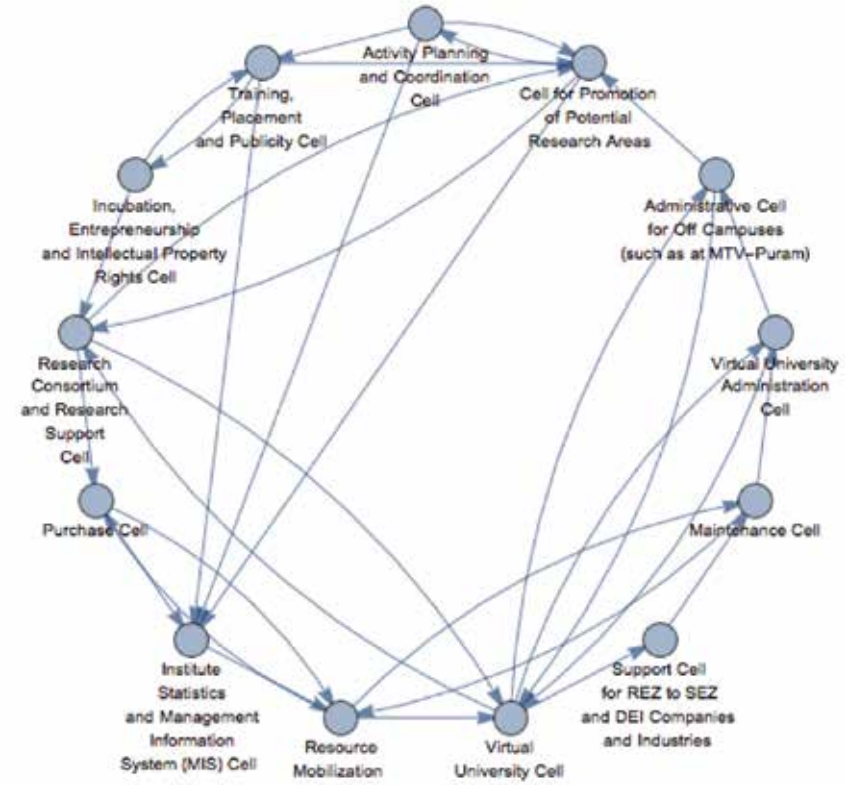
DEI plans to create several peer committees that will monitor its activities and review their impact on its ranking. These include:

Committees for every national and international ranking agency

The chairpersons of these committees may be co-opted in ACE meetings for effective implementation of procedures and adoption of new ways to obtain better rankings. Each committee will be charged with developing new criteria that reflect DEI's vision of combining excellence with relevance to contemporary societal needs and promoting arguments in favor of adoption of these criteria by different rating agencies.

The Academic and Administrative Audit Committee (AAAC)

This body shall be made more effective by granting it executive powers. The existing proctorial system will be strengthened by making it work under the guidance of AAAC.

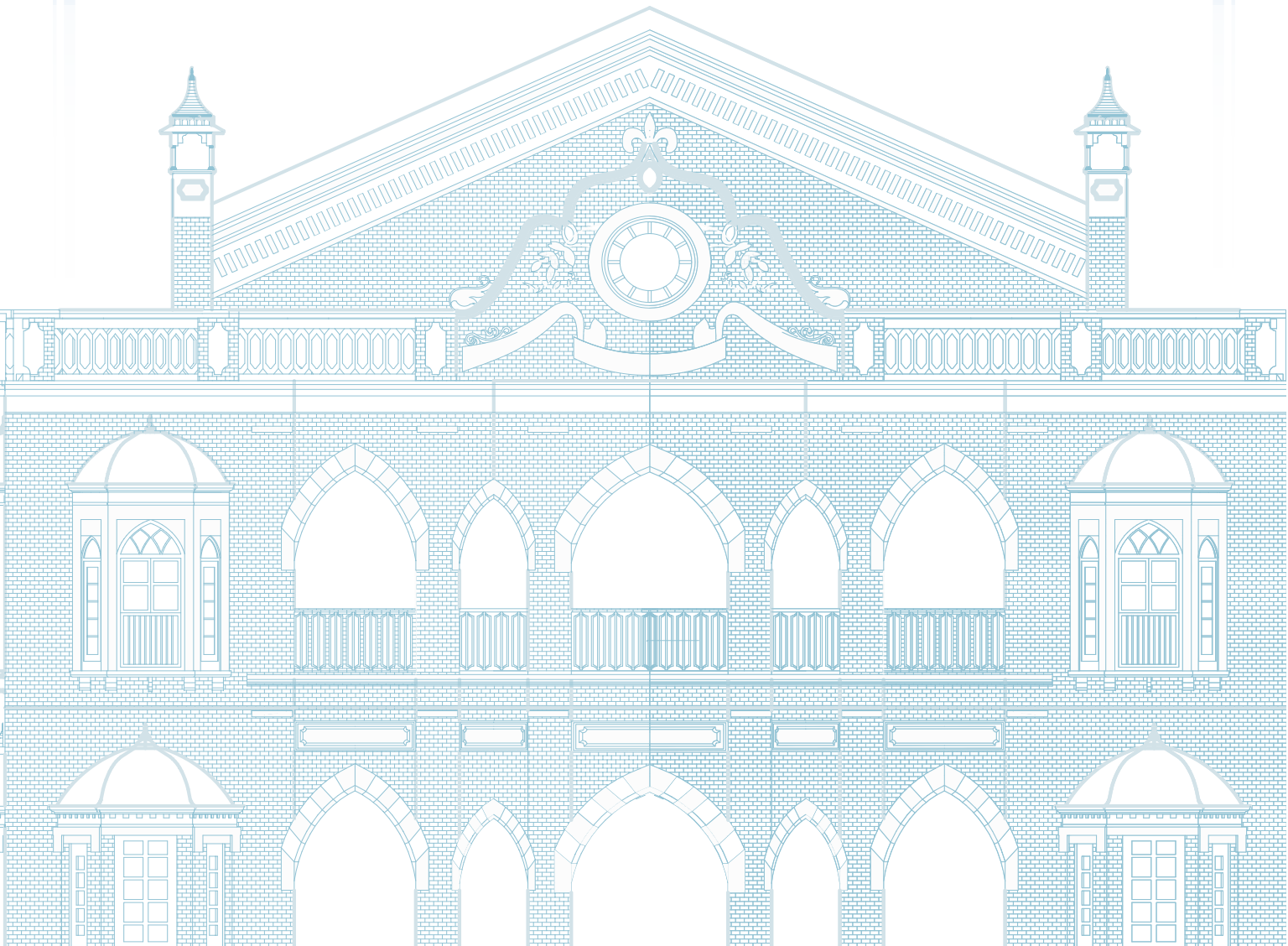


A graph depicting the simplified, hierarchical relationship between the administrative cells

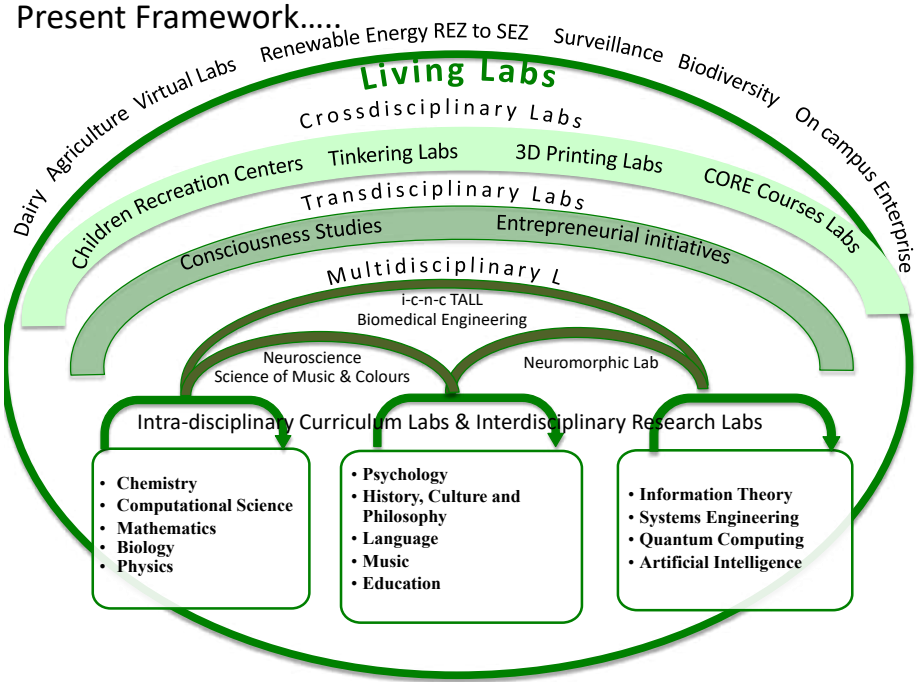
It is clear from the description of these structures that they exist only to support the activities of DEI's faculty, staff and students and not to govern or restrict their activities. Ultimately, the administration hopes to evolve towards a self-governance or minimal-governance policy, whereby DEI will become transformed into a virtually leaderless collection of independent scholars working for the benefit of the society in a spirit of cooperation and selfless service.
The objectives of DEI's accreditation plan include maximizing the score obtained by the institute according to criteria in use by national and international agencies, along with proactive engagement of rating agencies to modify their rating criteria to reflect the needs of developing countries such as India, and the unique strengths required of institutes that aim to satisfy them.

10

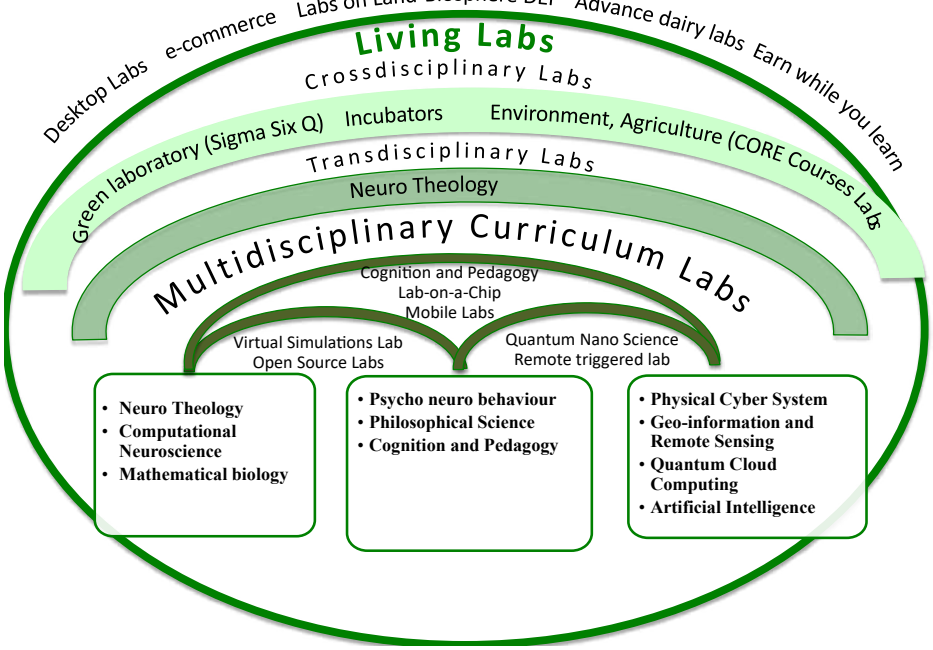
Laboratory Development Plan



Present Framework.....



Future Initiatives



Interdisciplinary Laboratories

Quantum and Nano Science

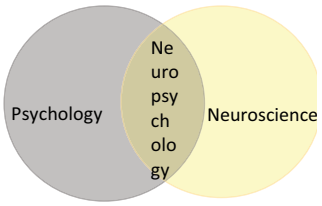
The Quantum Nano Systems Center acts as an interdisciplinary nodal center to promote quantum science. The in-house multi-channel SQUID-based MEG provides measurements for experiments carried out in various fields like psychology, physics, language, music and education in a magnetically shielded facility.

Shielded room at Quantum Nano Systems Center

Quantum Cloud Computing

SQUID-based Magneto-encephalography is done here through Quantum Cloud Computing to demonstrate quantum teleportation.

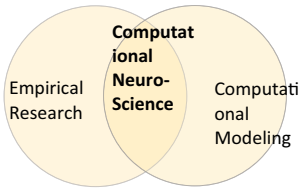
Neuropsychology Lab



Concept of the Neuropsychology lab

This laboratory envisages the utilization of several neuropsychological and neurophysiologic methods including quantitative electroencephalography (QEEG) and electrooculography (EOG), electromyography (EMG), and other behavioral measures.

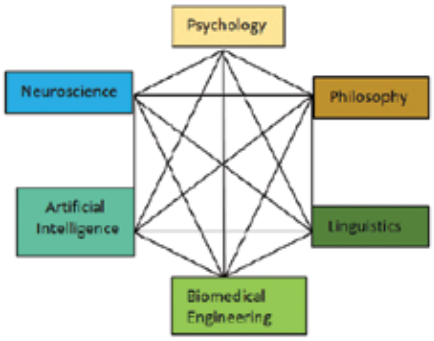
Computational Neuroscience



Concept of Computational neuroscience laboratory

Cognition Science laboratory

The laboratory is actively used in the course on cognition, which involves the scientific study of the mental processes, perception of tasks and performance. The "Information, Communication Neuro Cognitive Technologies Assisted Language Labs" (i-c-n-c TALL) facilitates cognition, neuro-linguistics and consciousness studies.

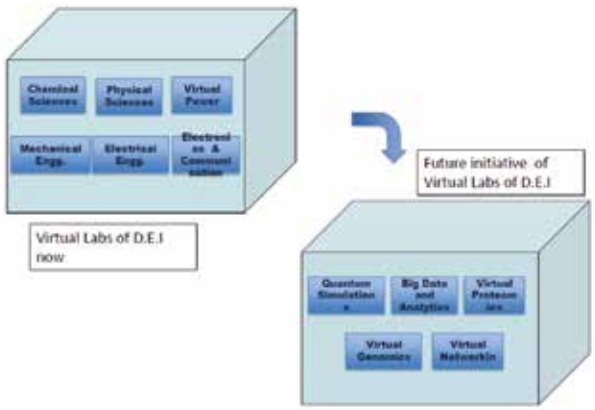


Concept of Cognition Science laboratory

Multidisciplinary Laboratories

Virtual Simulations Laboratory

It showcases a unique connection between the lab bench of the past and the experiments for the future. Addition of new dimensions to the virtual labs has been visualized, in near future.



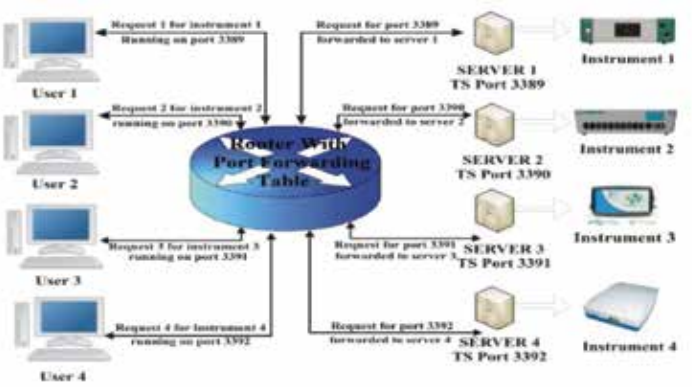
Present and future initiatives of Virtual Simulation Lab

Remote-triggered Laboratory

These are an important aid in realizing DEI's vision of education for all, the least, the lowest and the lost.

The advantages of a remote triggered lab are:

- easy access to real and costly equipment
- real-time access and with consistent reproducibility
- minimized maintenance because of handling by limited personnel



Set up of the remote triggered lab at D.E.I

Lab-on-a-Chip

Lab-on-a-chip technologies are being developed, which will allow operations in chemistry, physics, engineering and complex cell biological labs which normally require an elaborate laboratory; on a much-miniaturized scale, within a portable or handheld device. This will include micro fluidics, nanotechnology and material synthesis.

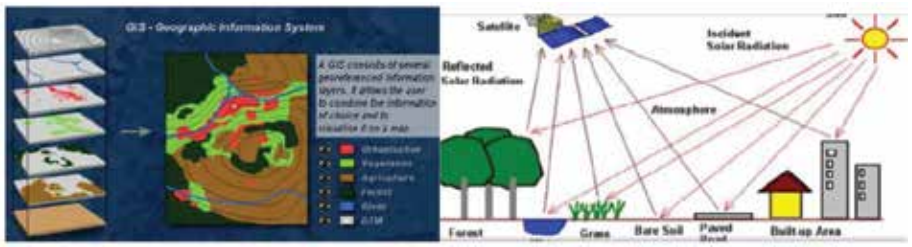
Lab-on-a-Chip

Mobile Labs

The mobile laboratories would serve as tools to disseminate scientific education in remote areas and enable on-site testing of air,water and soil quality.

Geo-information and Remote sensing Laboratories

DEI emphasises agriculture as a way to provide entrepreneurial and skilling education. Good agricultural outputs call for precision farming in which the GIS and Remote sensing laboratory has a vital role. The potential applications of remote sensing in precision farming include assessing the type and stage of plant growth, geographic areas, etc.



Concept of Cognition Science laboratory

Transdisciplinary Laboratories

NeuroTheology

The Center for Consciousness Studies facilitates the unprecedented, trans-disciplinary research at DEI which integrates neuroscience with the Science of spirituality. This emerging field is termed neurotheology.

This lab will facilitate investigation into the scientific basis of Super consciousness-ultimate reality and is a step towards "Sustainable NeuroTheology". The laboratory will include quantum cloud computing, quantum teleportation, neuroimaging, neurolinguistics and neurophysiological techniques.

Concept of Transdisciplinary Neuro Theology Lab

Cross-Disciplinary Laboratories

Green Laboratory (Sigma Six Q)

The main campus at D.E.I has zero carbon foot print. A sustained green campus will require the development of

Renewable Energy Laboratory

The DEI Campus runs solely on solar energy. Solar power is provided to class rooms, laboratories, hostels, residential and all other facilities linked to DEI. This includes the transport vans also, that are indigenously converted from fossil fuel to transport system dependent on solar energy.

Case Study

DEI is a 100 % Solar powered Campus.

DEI has received recognition from the Uttar Pradesh Electricity Regulatory Commission for its exemplary work in harnessing solar power and spreading awareness in students about saving energy. The university has been successful in meeting a major portion of its electricity demands and distributes its surplus energy to local colonies in Dayalbagh. In 2012, a solar power plant was set up on the campus. With constant upgradation of the system, the university now produces 700 kilowatts of energy. By 2018, the university aims to increase its capacity to two megawatts. On a daily basis, DEI produces between 2,500 to 2,800 units of electricity. The varsity has a grid tie-up with Dakshinanchal Vidyut Vitran Nigam to whom it sells its surplus energy.

For long-term sustenance, DEI plans to develop renewable energy labs that can explore modes of renewable energy such as wind and biogas to facilitate sustainable infrastructure at DEI.

Air and water quality laboratory

Air and water quality are two very important parameters for a sustainable model of good living standards. Exclusive testing facilities and mobile labs shall enable better and faster

onsite monitoring of the same.

Waste management laboratory

"Zero waste" is the target. The laboratory will work on innovative composting methods, recycling of waste and novel means to minimize waste.

Case Study

"Zero Waste" and "Zero Carbon footprint" at Radha Nagar Colony, Dayalbagh, Agra.

The project strives for maximum recovery from waste, through composting, recycling and reuse. The aim is to make Radha Nagar a zero-waste community. The long-term objective is thus, to reduce the environmental degradation caused by solid waste. Efforts are on to develop Radha Nagar as Resource Recovery Center (RRC), a decentralized facility for managing all community waste.

Waste segregation by DEI students

Resource Recovery Center

Incubators (Laboratories for canonical innovation) and Open Source Laboratories

Timeline

Proposed Laboratory Facilities and expected time frames

Esoteric Art & Science	Digital Life	Thinkism	Life & Mathematics	Sustainability	Maintenance & Network	Classical Studies
Neuro-Theology Quantum Nano Science Neuropsychology Computational Neuroscience Cognitive Science & Neurolinguistics	Virtual Simulations Lab-on-a-Chip	Virtual Simulations Open Source Lab	Mathematical Biology	Labs on Land Biosphere-DEI Mobile Lab Green Laboratory Renewable Energy Waste Management Air &Water Quality Lab Earn while you learn	Labs for Canonical Innovation 3D printing E Commerce	Open Source Lab
2018-2022						
Quantum Cloud Computing	Geo-information and Remote Sensing			Remote triggered Lab		
2023-2027						
2023-2032	State of the Art laboratories will continue to develop concurrently with the UG PG courses and the research divisions					

Mathematical Biology Laboratory

This cross disciplinary lab incorporates mathematical approaches to address problems pertaining to biology. Currently efforts are being made to provide solutions to the flow of vascular blood and maintain a four-channel data acquisition system equipped with a multi-channel flow meter with flow sensors.

Multi-channel data acquisition system for blood flow measurement

This laboratory has both, theoretical and practical applications in biological research. This can describe systems in a quantitative manner, implying that the biological processes will be simulated and properties predicted. That may not be evident while performing real experiments which require precise mathematical models. This laboratory will integrate mathematics with life involving concepts of topology and quantum theory.

3D printing

In near future, research will be aimed to refine, optimize, standardize and indigenize (Bhartiya Swadeshi) FDM based 3D printing technology. This incorporates:

- Setting up an experimental test bench facility for conducting experiments using 3D printers.
- Pilot demonstration of low cost Bhartiya Swadeshi 3D printer, by optimizing process parameters.
- Facilitating the adoption of 3D printing technologies in domestic manufacturing to increase competitiveness through the development of the low cost and high-performing Bhartiya Swadeshi 3D printer.

Indigenous 3D printers

Some items created by students using indigenous 3D printers

Students of DEI working on 3D printers

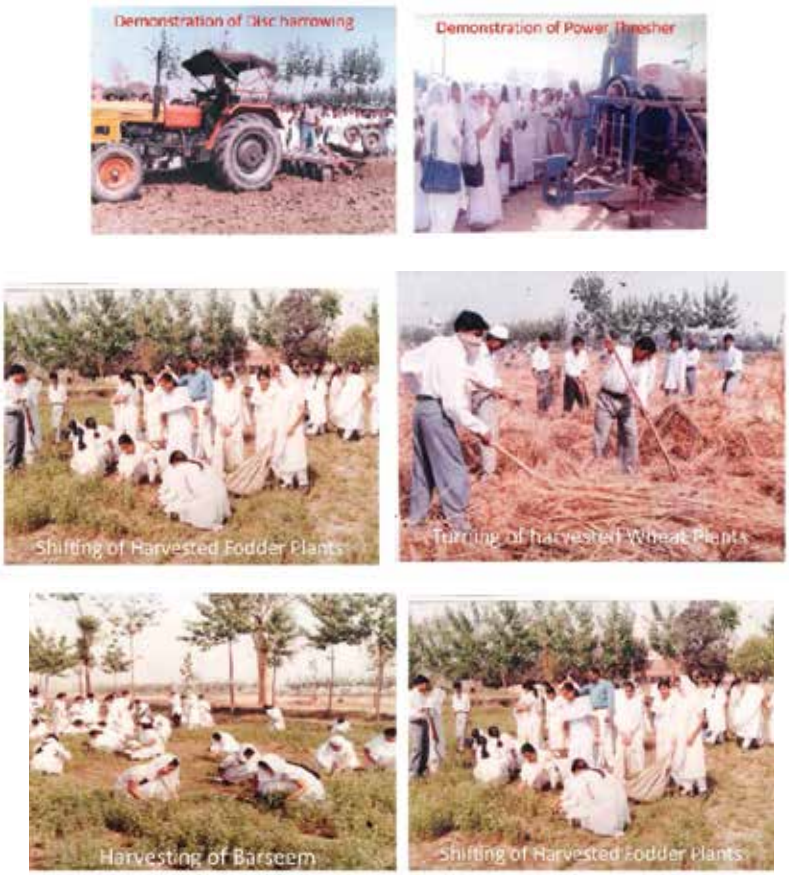
Living Laboratories

Laboratories on Land-Biosphere DEI

The Dayalbagh Educational Institute has decentralized Labs on Land. This includes the Dairy Campus, fruit orchard at the Seminar Hall Complex, Biodiversity Parks at Solan and Rajaborari.

Agriculture operations

Under this course, information on modern crop production technologies for resource conservation, farm management and quality products is disseminated.



Agricultural Operations

DEI herbal garden

The Herbal garden in dairy Campus contains plants from the families such as Asteraceae, Acanthaceae, Bombacaceae, Convolvulaceae, Poaceae, Rosaceae, Oleaceae, Cactaceae, Geraniaceae, Liliaceae, Lamiaceae, Plumbaginaceae, Poaceae, Rutaceae.

Important medicinal plants such as Giloy, Ashwagandha, Safed Musali, Bacopa, Dragon Fruit, Olive, Rose, Tylophora, Shatavari, Vashaka, Sadabahar, Aloevera, bajradanti, Chitrak, Mulethi, papaya, Bhringraj, Turmeric, Stevia, Sarpgandha are cultivated.

Five varieties of Tulsi and five of Mentha are maintained in the garden. These medicinal plants are used for the treatment of throat infections, bleeding, piles, fever, cough and cold, blood dysentery, diarrhea, leucorrhoea, hair loss, burns, skin diseases, intestinal worm infestations, muscular pains, diabetes, blood impurities, general weakness, hypertension, jaundice, malaria, vomiting, inflammation, etc. Plant products are supplied to the pharmacy on regular basis.

Aloe Vera **Turmeric**
Medicinal plants at REI

DEI has two polyhouses that provide a controlled environment. The polyhouse conditions can be controlled remotely, from a laboratory.

Polyhouse at Dairy Campus

Biodiversity Park at REI and Multi Fruit Orchard at Seminar Complex

DEI has established a biodiversity park to protect the environment by conserving many plant families endangered by urbanization. It is expected that this will positively impact the conservation of local flora and fauna. DEI has taken the initiative of conserving plants and trees of Agra and a semiarid region for which seven acres of land at the REI Intermediate College has been converted into a biodiversity park . The Biodiversity Park consists of almost 1500 plants and trees representing 150 different species collected from Haldwani and Jodhpur.

Agri-entrepreneurship program

The program provides multi-level training to students in commercial plantation, natural product extraction and marketing; a program on agri-entrepreneurship is being developed on a 10-acre land near Chandmari-ka-teela. Rosa damascene (Damascus rose), olives, medicinal plants will be planted on a commercial scale for this purpose. Students will be operating this program under aegis of Agriculture Operation.

Students planting saplings during the Agriculture Operation class at Seminar Complex Garden

Initiatives by DEI at village Pradahan, District Sirmour, HP

Orchard and Medicinal plants at Sirmour, HP

e-Commerce

The ICT centers of DEI in the urban and rural areas act as resource centers for incubation of commercially viable ideas, building startups, counseling and mentoring. Last mile connectivity of the artisan to the international market and help with getting the direct benefits of their labor and creativity is part of this endeavor.

Advanced dairy

The Dayalbagh Dairy was established in 1931and equipped with up-to-date machinery from England, Denmark and America.

Pasteurized flavored milk products at DEI Dairy

ADyNaM(Agri Dairy Nano Processing of Multi-products) foods

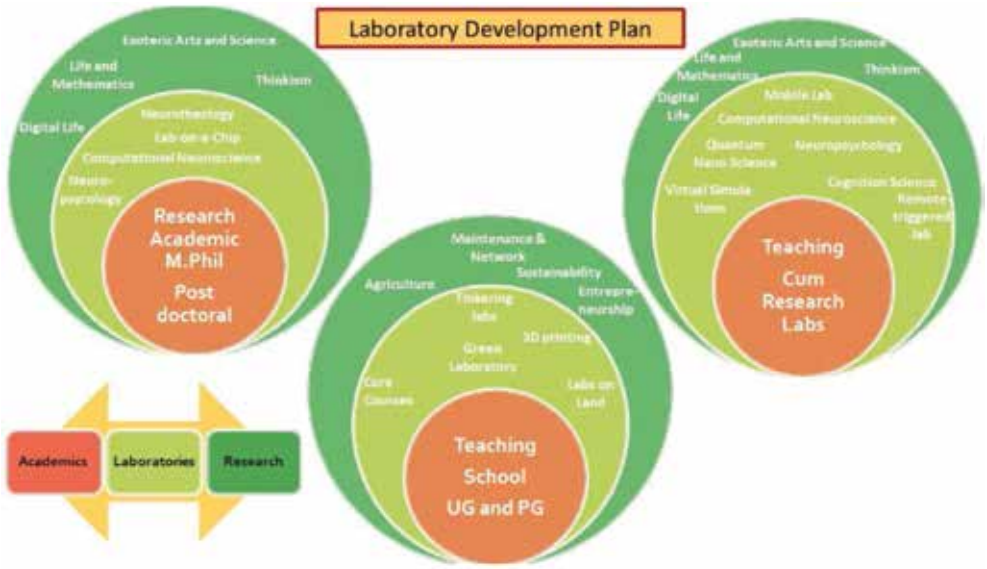
The ADyNaM project facilitates the processing of agricultural and dairy based raw produce to make secondary products. Women are trained on production of pickles, chutney,amla candy and squashes. Recently, a Level-1 food testing laboratory has been setup to implement quality control and comply with food safety standards.

Food processing activities in tribal areas

Mapping of laboratories onto research divisions

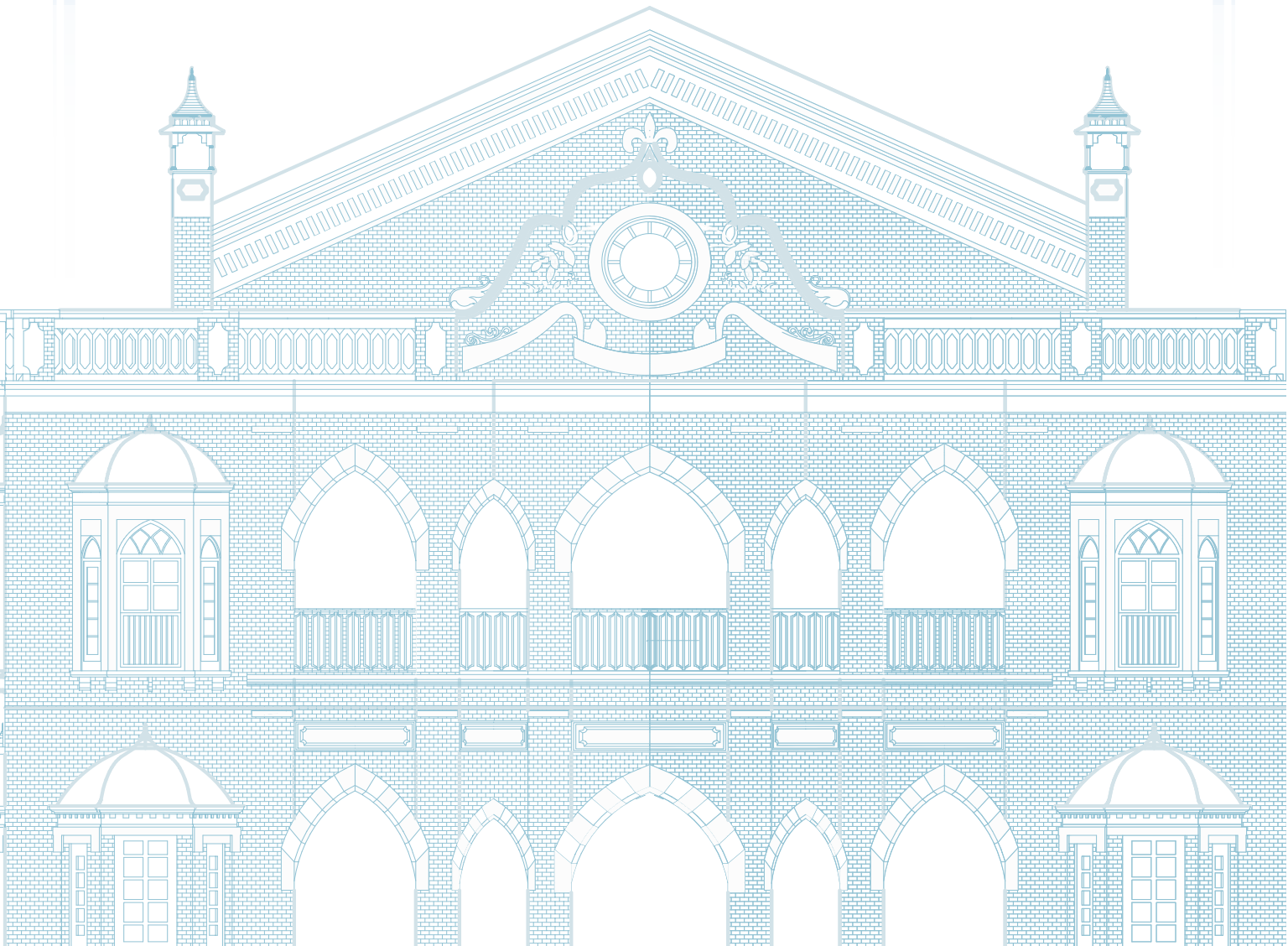
Levels Research Divisions	*Interdisciplinary*	*Multidisciplinary*	*Trans-disciplinary*	*Cross disciplinary*	*Living Labs*
Esoteric Art and Science	○ Quantum Nano Science ○ Neuropsychology ○ Computational Neuroscience ○ Cognitive Science & Neurolinguistics ○ Quantum Cloud Computing	Remote triggered Lab	Neuro Theology		
Digital Life		○ Virtual Simulations ○ Lab-on-a-Chip ○ Geoinformation and Remote Sensing			
Thinkism		○ Virtual Simulations			
Life & Mathematics				○ Mathematical Biology	
Sustainability		Remote-triggered Lab Mobile Lab		**Green Laboratory** ○ Renewable Energy ○ Waste Management ○ Air &Water Quality Lab **Labs for Canonical Innovation** ○ 3D printing	○ Labs on Land ○ Agricultural Science ○ E Commerce ○ Earn while you learn
Maintenance network				Labs for Canonical Innovation ○ 3D printing	
Classical Studies		Virtual Lab		Open source Labs	

A plethora of laboratories are proposed to support the undergraduate, postgraduate and core courses. They will have a pivotal role in fostering excellence in academic research in the chosen (key) areas, as laid out in the vision and mission document.



11

International Students, Programs and Partnerships



In 2011, DEI laid down its vision for the next twenty years i.e. from 2011-2031, outlining the path towards becoming a top international university. Vision 2031 identifies potential for excellence in broad, trans-disciplinary areas, skilling and entrepreneurship. India is growing rapidly and undergoing a technological revolution. In this interconnected world, there is a need for students to understand and work with global diversity. Towards this end, DEI has been collaborating with the best Universities in the world through exchange programs and research collaborations.

DEI has already established International collaborations and MoUs with several Institutes in Asia, America and Europe. These are listed in the Annexure, along with details of the area of research and collaboration, the scope of activities and benefits. These collaborations have led to joint conferences/seminars and workshops, exchange visits of faculty and students, shared projects, publications, training of manpower and common curricula / courses.

Modes of Internationalization

The Institute has adopted a multi-modal, three-pronged approach for extending the benefits of its programs to the global audience, besides catering to its own students through interactions with international students and faculty.

- Technology interventions
  - Already in use, to be expanded
- Exchange programs
  - Principle of economy
  - Principle of reciprocity and even exchange
  - Credit equivalence and transfer
- International off-campuses
  - 9 proposed in strategic plan

Modes of Internationalization of Education at DEI

Technology Interventions

DEI uses technology as a great enabler for interacting globally. The first formal, joint course was offered to the University of Maryland, College Park in 2006. There have been multiple agreements with various universities since then and technology interventions are used regularly for learning and collaborative research.

Joint research and international courses based on technology interventions

- Joint course with the University of Maryland
- Discussion on expansion of collaboration with Michigan State University
- Research discussion with Stanford University

International Courses and Research based on Technical Interventions

International Off-campuses

The Institute has six off-campuses (known as ICT campuses) with a special focus on education of rural and tribal population. It is proposed to develop nine International off-shore campuses under a 15-year strategic plan.

Exchange Programs

Joint activities have been undertaken with several international partners to exchange scientific knowledge and cultural traditions at the global level. Within the agreed fields, the partners exchange faculty and students for research, teaching and study; exchange of scholarly publications and other information in areas of interest to both parties, including library collections and services; joint research activities; and participation of scholars in seminars, conferences and other academic meetings.

Zero-economic liability and a need-blind system of education is one of the cardinal features of DEI. This is also reflected in the international programs and student exchanges, where the fee terms require the students to pay for tuition at their home institute, based on the principle of even exchange. International students at DEI can also avail of the several models of subsidized education available to home students, such as industry co-operative programs, entrepreneurship, earn-while-you-learn and the like.

Credit Equivalence and Credit Transfer

The Institute offers a flexible, choice-based credit-based system, where the students have the liberty to choose courses based on their program requirements, academic performance, preferences and completion of pre-requisites.

The coursework is graded on a relative, 11-point scale that is at par with existing international standards; with an easy translation to other systems of grading (such as percentage, 4-point CGPA system, etc.).

The institute is reputed for its open and welcoming culture, at all levels. Students who have completed program requirements at some other institute partially, are able to transfer their credits to the DEI system for completion of courses.

Academic Programs

Several academic offerings at DEI are of tremendous interest to international students. The institute offers short-term, modular and diploma courses on Consciousness and Theology, Yoga and Meditation, Ayurveda, Renewable Energy, Music (Vocal: Classical & Folk, Sitar, Tabla, Dance, Fine Arts), Creative Writing, Sanskrit, Hindi and other regional languages. These courses reflect the essence of Indian culture.

In future, the Institute may offer winter courses in Textile Designing and Printing, Hindi, Sanskrit and other Indian languages. The admission of international students to academic programs would be fair and transparent. While the Institute does not propose to restrict admissions to any program, it is expected that students from developing economies would be attracted to the local, need-based skilling programs while specialized programs on eastern civilization studies should be of considerable interest to students from developed economies.

Research Collaborations

DEI has several international research collaborations and interdisciplinary research divisions (Agriculture, Entrepreneurship, Classical Studies, Digital Life, Life and Mathematics, Esoteric Arts and Science, Sustainability (Sigma Six Q),Thinkism and Maintenance Network) which are expected to invoke significant international interest.

The Complete Spectrum: Rural and Tribal to International

DEI caters to a complete spectrum of education by providing an enriching exposure of rural and tribal life to an international audience.
The educational institutions in Dayalbagh, with over a hundred years of service to humanity and a deep commitment towards ensuring accessibility of education regardless of social, financial and geographical barriers, have developed model solutions towards the cause of equal opportunity. Dayalbagh Educational Institute has been contributing to social upliftment actively through education, healthcare, vocational training, agriculture, financial support, social reform, and technical assistance. This work is backed by collaborations with some of the leading universities in the world.

The Strategic Implementation Plan

Plan Period	2018 – 2022	2023 – 2027	2028 – 2032
International Off-Campuses	**2**	**4**	**9**
Gross Engagement of International Students	**1600** (10% of total)	**3500** (~15% of total)	**8000** (~25% of total)
Expected International Students at Main Campus	200	400	500
Expected International Students at International Off-campuses	600	1500	4000
Expected International Students at Domestic Off-campuses	100	100	200
Expected International Students in Exchange Programs	100	300	800
Expected International Students in Technology Intervention Programs	600	1200	2500
International Partnerships	**30**	**65**	**100**
Office of International Affairs	**An on-campus office and offices at off-campuses**	**Offices at new off-campuses**	**Offices at all off-campuses and a Central International Liasoning Center**

The Institute plans to create nine international off-campuses at Atlanta, Chicago, New York, San Francisco, Toronto, London, Sri Lanka, Dubai and Nepal. The complete strategic plan in two 5-year phases, along with the implementation plan for the next five years is as follows:

Strategic Implementation Plan for Phase – I (2018 - 2022)

The Institute envisages to expand its global outreach by strengthening of existing partnerships with several world-class institutions and forging new partnerships with leading institutions around the world. The Institute already has student exchange programs with several international partners, including the University of Kiel, Germany and the University of Maryland, College Park, USA.

- **2018:** Dayalbagh Educational Institute has already received an expression of interest from several universities for collaborative partnerships, including the University of Hong Kong and the University of Calgary. By the end of 2018, the number of formal international agreements would be 15. The Institute already

has a significant reach in Si Lanka which will be strengthened and expanded by offering additional programs to meet local needs. The main campus would also be open to admission of international students.

- **2019:** The first international off-campus of DEI would be established in Colombo, Sri Lanka, which is already a site of several activities in that country. The Institute would open admission and engagement for international students at the remotely located campuses of the Institute. Academic and research activities would also be strengthened in Nepal. An office of international affairs would be set up on the main campus.
- **2020:** DEI has been ranked at grade 'A' by the National Assessment and Accreditation Council (NAAC), which is recognized by most countries. The Institute would seek accreditation from other internationally reputed bodies to facilitate a reverse transfer of credits, including those earned through technology enabled programs.
- **2021:** The second international off-campus of the institute would be established in Nepal, a neighboring country with economic and academic conditions very much like rural India.
- **2022:** The number of formal international agreements by the end of this year would be 30, and several international partners for this have either been identified or are under consideration. The total population of international students at the end of this phase would be 1600, spread over the main campus, domestic and international off-campuses through exchange programs with partner institutions and enrollment in technology intervention programs.

Strategic Plan for Phase – II (2023 - 2027)

In the second phase, the number of international students is expected to grow to 3,500 (break-up provided in the table). Off-campuses during this phase would be set up in San Francisco and New York, with a branch of the office of international affairs at each one of the off-campuses. The number of international partner institutions at the end of this phase is expected to be 65.

Strategic Plan for Phase – III (2028 - 2032)

An increase in the number of courses, interdisciplinary & trans-disciplinary research offerings, coupled with a strong international reputation would make the programs of the institute even more attractive for international audience. During this phase, off-campuses would be set up at Atlanta, Chicago, New York, Toronto, London and Dubai. The institute already offers certification programs at these locations. The number of international students in various modes, as detailed in the table, is expected to grow to 8,000 and the number of international institutional partners would grow to 100. A central office would be set up for international liaison by coordination between various international off-campuses and other centers of learning.

International Partnerships

Dayalbagh Educational Institute has a long history of partnerships with leading Institutions worldwide. The design and implementation of an internet-based distributed video streaming network at the Multimedia Laboratory, DEI pre-dates many of the existing well-known technology enabled learning platforms. As a result, besides being a center for research on content distribution and media technologies, the Multimedia Laboratory is a central location for accessing and disseminating course content globally. This facility is also used for reception and transmission of live lectures and interactive sessions with students in remote classrooms, both in India and abroad on a regular basis. Details of some international partnerships between DEI and other institutes are as follows:

University of Maryland, USA

The University of Maryland, College Park, USA (UMD) is the longest serving international partner of DEI. Through technology enabled classrooms, students at DEI can participate in two-way, interactive video-conferencing courses from the UMD, along with their peers from that University, as in courses on operating systems and computer networks. Students from both Universities also participate in a course on Information Centric Design, which is offered jointly by UMD and DEI.

DEI and UMD have completed a DST–NSF Collaborative Project on "Transition Metal Oxide based Nanoarchitectures for Photoelectrochemical Hydrogen Generation"successfully, under the Material World Network Program. Under this Collaboration, there have been 9 exchange visits and five publications in journals of repute.

Graduate Students in Computer Science from DEI participating in Summer Term, 2013 with Prof. Ashok Agrawala, University of Maryland, College Park, USA.

University of Waterloo, Canada

An agreement between DEI and the University of Waterloo, Canada (UW) was signed in July 2008 in a unique, video-conferenced ceremony. There has been considerable progress under the umbrella of the MoU, in the form of joint research, publications, faculty and student visits, joint colloquia and conferences, joint authorship of books and undergraduate student exchange in the form of internships, co-operative visits and entrepreneurship.

DEI and UW initiated the Indo-Canadian Research Colloquium, UW and DEI: Education and Research in Dialogue in summer 2016 and summer 2017 respectively. The colloquia elevated the relationship between the Institutions.

Indo-Canadian Research Colloquium in Summer, 2016 UW and DEI: Education and Research in Dialogue

Michigan State University, USA

Dayalbagh Educational Institute signed an agreement for academic cooperation with the College of Engineering, Michigan State University (MSU), in 2012. The agreement has led to collaborative projects of social value, multiple exchange visits by faculty, students and delegations; cooperative supervision of research; collaborative projects of social value and joint publications. A new research project on developing pathogen sensors has also been initiated recently, towards which two joint proposals are being submitted for funding. A list of collaborative activities with MSU has been provided in Annexure. The agreement was renewed in 2017. It also includes the College of Agriculture and Natural Resources and the College of Education.

Kiel University, Germany

Kiel University, Germany (CAU) and DEI have a long history of partnership, even though a formal agreement between the Universities was signed in 2016. The details of the collaborative activities in Engineering, Sciences, Humanities and Languages have been provided in Annexure.

Faculty and Student Exchange with Kiel University, Germany

The collaboration between the two Universities also percolates down to pre-University level. Department of English Studies, DEI, successfully organized the "DEI- KIEL Faculty –Students Exchange Programme" from March 9 to March 28, 2015 as an initiative towards the internationalization of English language and literary studies. The visiting team from CAU comprised of a faculty member and two students of MA (English). During the three-week exchange program, the visiting faculty conducted three workshops for the students of MA and PhD on themes of contemporary relevance in literature which include "Hermeneutics: Cultures of Making Sense", "Poststructuralism: The Function of Literature". The visiting students

attended classes, presented seminars and conducted a 3-day workshop on "Learning English Through Personal Maps: Biographies Sketched" at the (i-c-n-c-) TALL for the students of eighth grade of the Prem Vidyalaya Girls' Intermediate College.

DEI intends to collaborate with Prof. Anand Srivastav and Dr. Lasse Kliemann at University of Kiel on difficult optimization problems of engineering design and process optimization and with faculty of humanities (Prof. Bober from Theology) at University of Kiel on personality modelling with soft computing techniques (Artificial Neural Network, Fuzzy and Neuro-Fuzzy modelling) and correlation to professional competence, including modelling of consciousness integrated personalities with qubits and validation through psychological instruments and meditational practices.

University of Arkansas, USA

The Department of Botany, DEI and the University of Arkansas, USA have recently entered into an agreement, whereby the two institutions have started working towards programs for exchanging academic, research and other educational resources. This includes research reports, reprints and other publications. Information about faculty specialties and program offerings are also made available to each other. The agreement entails programs for student exchange, either by reciprocation of benefits or through fee for participation in specific programs. The institutions are also exploring avenues to develop financial resources to support educational activities, including joint grant proposals. As a first step in this collaboration, students from the University of Arkansas visited DEI in December 2016, followed by another visit in December 2017.

Oakland University, USA

Oakland University (OU) entered an agreement with DEI in 2015. The institutes have organized three conferences jointly: ICAM 2014 at Oakland University, ICAM 2015 at KNIT Sultanpur and ICAM 2017 at IIT BHU, Varanasi in December 2017. A collaborative research project is also under consideration.

Stanford University, USA

Stanford University has research collaboration with DEI in Physics. The two institutions also partner in programs of social relevance, with a special focus on rural and tribal population in India, particularly related to frugal innovation. The frugal science project aims at nurturing curiosity and scientific temperament in students from economically challenged settings, as a practical extension of the Sci-High program. The two institutions also use technology interventions routinely, for research collaborations and discussions besides reaching out to the marginalized population.

The "Frugal Science" Project with Stanford University USA for nurturing curiosity and promoting scientific temperament in rural and tribal areas

University of Hong Kong, Hong Kong

The University of Hong Kong, one of the highest ranked universities in the Asian continent, plans to conduct joint exchange programs with DEI. These programs would be of tremendous interest to students from the western continents who want to learn about the eastern civilization and philosophy, Asian studies, oriental culture etc. This partnership would showcase a full spectrum to the western audience, with expert faculty as well as immersive programs specializing in both south-east and central Asian traditions. Following initial discussions, the Vice President and team of the University of Hong Kong visited DEI to see various departments and facilities, and hold sessions with students, faculty and administration to finalize the details of the pilot exchange program.

Administration and Faculty from The University of Hong Kong discussing a proposal for exchange programs with the Management at DEI

Princeton University, USA

The research group at the Department of Physics and Computer Science, DEI working on String Theory and Quantum Field Theory has strong ties with Princeton University, with a recent joint publication (See Annex).

Hokkaido University, Japan

Collaborative research work by the Dept. of Physics and Computer Science, DEI and Hokkaido University, Japan involved theoretical and experimental studies on low-power, all-optical switching with pharaonisphoborhodopsin (ppR) protein, based on nonlinear excited-state absorption at different wavelengths. The research work was published in the journal, IEEE Trans. Nanobiosciences. Details of the publication can be seen in the Annexes.

Harvard University, USA

Collaborative research work by the Dept. of Physics, DEI and Computer Science, Harvard, involved theoretical and experimental studies on low-power, all-optical switching with bacteriorhodopsin protein coated silica micro resonators and its application to the design of all-optical computing circuits. The research work led to 3 publications and 2 presentations in international conferences. Details can be seen in the Annexes.

Washington University, St. Louis, USA

Work involving studies on biomass/fossil fuel combustion, emission and control has been initiated recently between Department of Chemistry, DEI and Department of Energy, Environmental and Chemical Engineering, Washington University in St. Louis, USA under the scheme of UGC Raman Fellowship.

Bertolon School of Business, Salem State University, Massachusetts, USA

Members of the Dept. of Management, DEI have collaborated with the Bertolon School of Business, Salem State University, Massachusetts, USA, in examining the role of academicians and Institutions of higher learning in developing students. The collaboration has led to papers being presented in Conferences. The details can be seen in Annexes.

Arizona State University, Arizona, USA

Investigators from the Department of Chemistry and Department of Physics and Computer Science, DEI have been authorized to work on the Indo-US Project entitled 'Semiconductor chip/chiplet based novel approaches for efficient Solar-Water Splitting: A. Photoelectrochemical Hydrogen Generation; B. Photocatalytic Hydrogen Generation' by UGC, under the '21st Century Knowledge Initiative Scheme' with Prof. A.M. Kannan, from Arizona State University, Arizona, USA. Details are provided in the Annexes.

Some activities under the Indo US Collaboration of the Chemistry Department, DEI

Other Partnerships

DEI has several other active collaborations and partnerships with premier universities globally, including joint supervision of research with the National Institute for Materials Science, Japan and similar academic partnerships with University of Missouri, USA; HAN University of Applied Sciences, Netherlands and the University of British Columbia, Canada. Specifically, DEI is initiating steps to an establish academic exchange programme with the International Centre for Theoretical Physics (ICTP) at Trieste, Italy and Perimeter Institute, Canada. These organizations offer excellent training opportunities for students in physics and offer a platform for research.

International Programs

International School on Quantum and Nano Computing Systems

The Annual International School on Quantum and Nano Computing Systems and Applications (QANSAS) organized by the DEI towards the end of November every year since 2008 attracts some of the most acclaimed researchers in the fields of quantum and nano-computing from across the globe, including Nobel Laureates. This school also features a 'Special Forum on Consciousness: Integrating Eastern and Western Perspectives'.

The International School on Quantum and Nano Computing Systems and Applications has been organized at DEI annually since 2008

East-West Integration Forum at Consciousness Conference

At DEI, a center for Consciousness Studies was established in 2011, in which several student activities including a quiz competition on consciousness, focusing on the role of microtubules in the brain were organized. since then, the Centre has been hosting luminaries in the field from across the world such as Prof. Stuart Hameroff, University of Arizona; Prof. Jack Tuszynski, University of Alberta and Prof. Elizabeth Behrman, Wichita State University.

The Centre for Consciousness Studies at DEI has carved out a niche for itself in the annual conference of consciousness researchers all over the world, the 'Toward a Science of Consciousness' (now called 'The Science of Consciousness') (TSC) series. The tradition in the TSC-series has been to organize it in alternate years at Tucson, Arizona, USA and every other year, somewhere else in the world. Soon after visiting DEI in 2011 for Quantum-Nano School QANSAS 2011, Prof. Stuart Hameroff, the chief architect of the TSC-series decided to hold the TSC 2013 conference at DEI, and invited participation on behalf of DEI in the then forthcoming TSC 2012 at Tucson, Arizona. DEI rose to the occasion and organized the highly successful Eastern Philosophy Forum in TSC 2012 at Tucson by video-conferencing, which confirmed its bid for organizing TSC 2013. The Center hosted the Twentieth International Conference from March 3 to March 9, 2013 with over 400 leading scientists and researchers from the world over. The East-West Integration Forum has been organized by DEI at TSC conferences regularly since 2012. It was conducted at Tucson, Arizona, USA in 2012, 2014, 2016, 2018 and at Dayalbagh Educational Institute in 2013; Helsinki, Finland in 2015 and San Diego, California, USA in 2017.

The East-West Integration Forum at the Consciousness Conference has been organized by DEI jointly, since 2012

Programs in Sri Lanka

In December 2010, the first move was made to explore the possibility of starting Distance Education in Sri Lanka. An exploratory team surveyed the region and by early May 2011, the concept started materializing. Two one-year-certificate-level vocational programs were identified for launch. One was the Motor Vehicle Mechanic (Four-Wheeler) (MVM) course and the other was the Modern Office Management and Secretarial Practice program. In summer, 2011 the draft of an application for the registration of DEI Study Centre in Colombo was finalized in Chennai and filed before the Tertiary and Vocational Education Commission (TVEC), Government of Sri Lanka for the session 2011-12. Mentor and facilitator teams were set up and trainers were groomed for both programs, at MTV Puram and Chennai under the novel Training-the-Trainers (TOT) program.

Through the sustained efforts of the Sri Lankan team, several MoUs were signed. These included two premises: one with the Arul Study Circle, which has since moved to its own premises and the other with the Vocational Training Authority of the Sri Lanka Government for imparting practical training to the students of MVM. The DEI Study Center was inaugurated later in summer, 2011 and the MVM program was launched in the autumn of the same year. Starting winter 2012, the vocational program in modern office management and secretarial practice has been running successfully. The Government of Sri Lanka has approved the programs run by DEI.

With a view to promote links with the industry abroad, DEI has entered into an agreement with Lanka Ashok Leyland, thereby offering programs in Telematics and renewable energy.

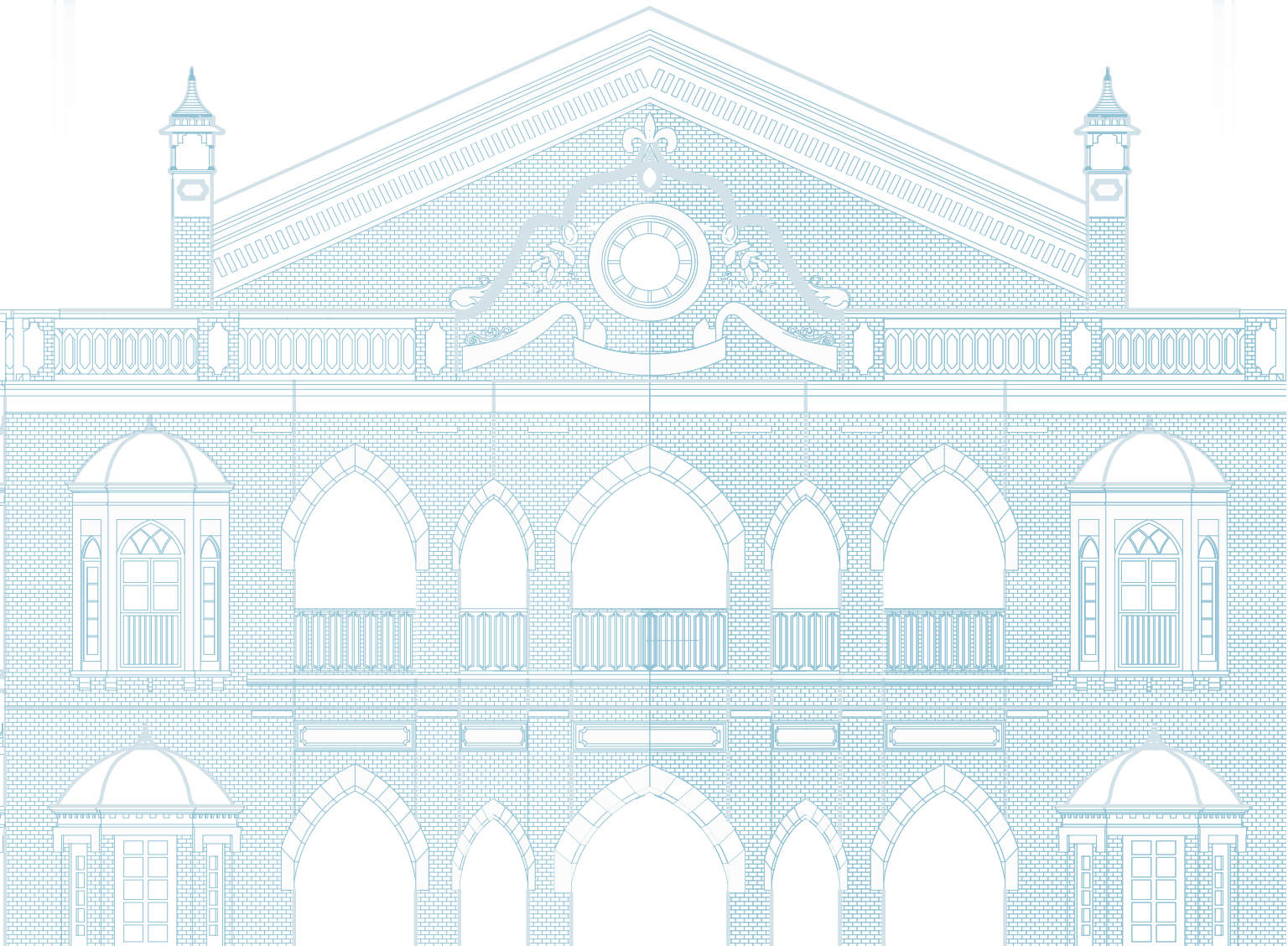
Other International Programs

The institute offers programs in hybrid mode through technical interventions, to several international centers of North America, Europe, Australia and the Middle East in Indian music, Indian culture, various skill development courses (e.g. textile design and printing, apparel design), along with certification and post graduate diploma programs in theology and consciousness studies. In future, DEI aspires to continue to provide high quality education to students of various academic streams and offer opportunities to its members, that are aligned with the current national needs and emphasis.

The benefits of the system of education at DEI extend beyond the barriers of geographical separation. The institute aims to provide affordable and accessible education to entire humanity, without discrimination or distinction. One of the major aims enlisted in DEI's Vision is to become a globally renowned institution offering courses that are relevant to the international community, with emphasis on academic excellence and holistic development.

12

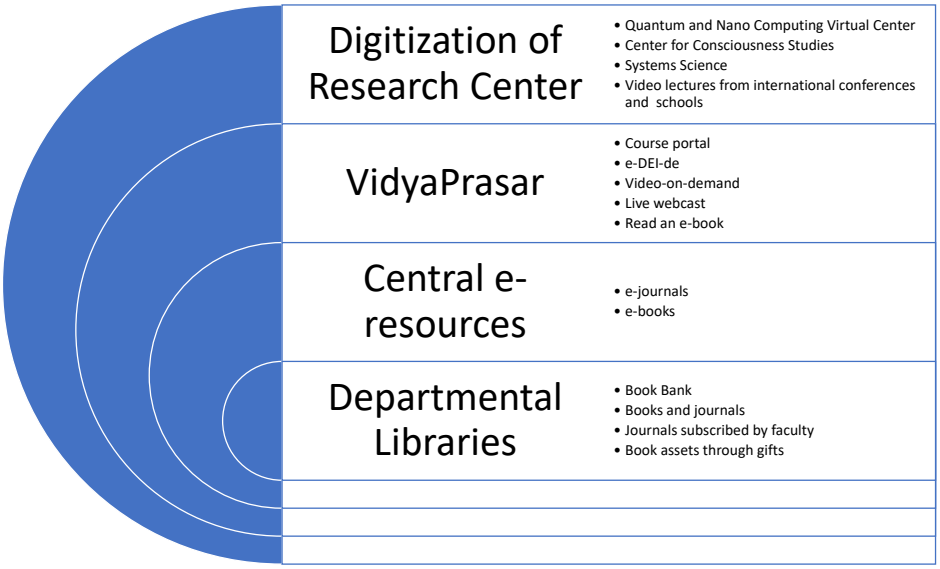
Library



The libraries of Dayalbagh Educational Institute combine conventional and technology-based methodologies of learning.

They are spread across the campus at central, faculty and departmental levels with the latter providing a book bank facility to students. The campus provides special access to differently-abled students. They are spread across the campus, off-campus, ICT centers and the distance education centers.

The library facilities are classified in the figure below:



A Library Committee is responsible for management and gets requirements from the faculty, students and other mentors for the degrees, diplomas, certificates and modules running in the institute.

Technology Interventions for Access to E-Resources and Databases

The web-based portal Vidya Prasar is the Institute's on-line collaborative learning, live web cast and content management system. It provides course web publishing, file storage and sharing facilities through a web-based connection to the internet, ensuring portability. The central e-resource runs an open source software named NewGenLib and maintains the OPAC (Online Public Access Catalogue) for all DEI libraries along with barcoding.

The physical and digital journals available in SHTEMC, (Science, Humanities, Technology, Engineering, Management and Commerce) cater to school teaching, Technical, University, Open, Vocational, Skill and Entrepreneurial education, thereby, making way for "border-less" and cross-border learning and research.

Library on Wheels: Kiosks and Interactive Library Portal

The campus will be connected to the central e-library through kiosks and mobile libraries. These facilities shall be the new technologies replacing the traditional library cabins. The library on wheels would be the physical extension of books, Vidya Prasar, MOOCSKENE BHARAT and other e-portals.

Access to Libraries of Collaborating Partners

DEI has collaborations with national and international institutes of eminence and industries. The libraries of the collaborating partners can be accessed through appropriate channels, providing a seamless access to faculty, researchers and students.

Local Library Resources at Off-Campuses and Off-Shore Campuses

The traditional library cabins have been replaced now with virtual libraries which are accessible in off-campuses and off-shore campuses.

Knowledge flows from international repositories to various ICT/IC Centers such as Rajaborari (the distance education center in Madhya Pradesh), MTV Puram (education center in Tamil Nadu), Murar (Bihar), Amritsar (Punjab), Bengaluru (Karnataka).

Creating the Repository, Open-Ware, Freeware, Software and Tools

Services such as provision of references, reprographic facilities and inter-library loans are available to students and faculty. The Multi-media Center and Central Library acquire, and supply resources based on the user's demand in all formats such as print, digital and visual e.g. institutional repositories, online databases, multimedia information resources.

With new technologies creating advancements in learning, the library caters to the needs of not only the present academic community, but also of the community which the institute aspires to create in future. As "laboratories that learn," the library spaces are designed to be re-configured easily, in response to new technologies and pedagogies. These learning laboratories are emerging in the form of IT-enabled labs in all faculties.

Technology Intervention for MOOCSKENE Bharat and E-Courses

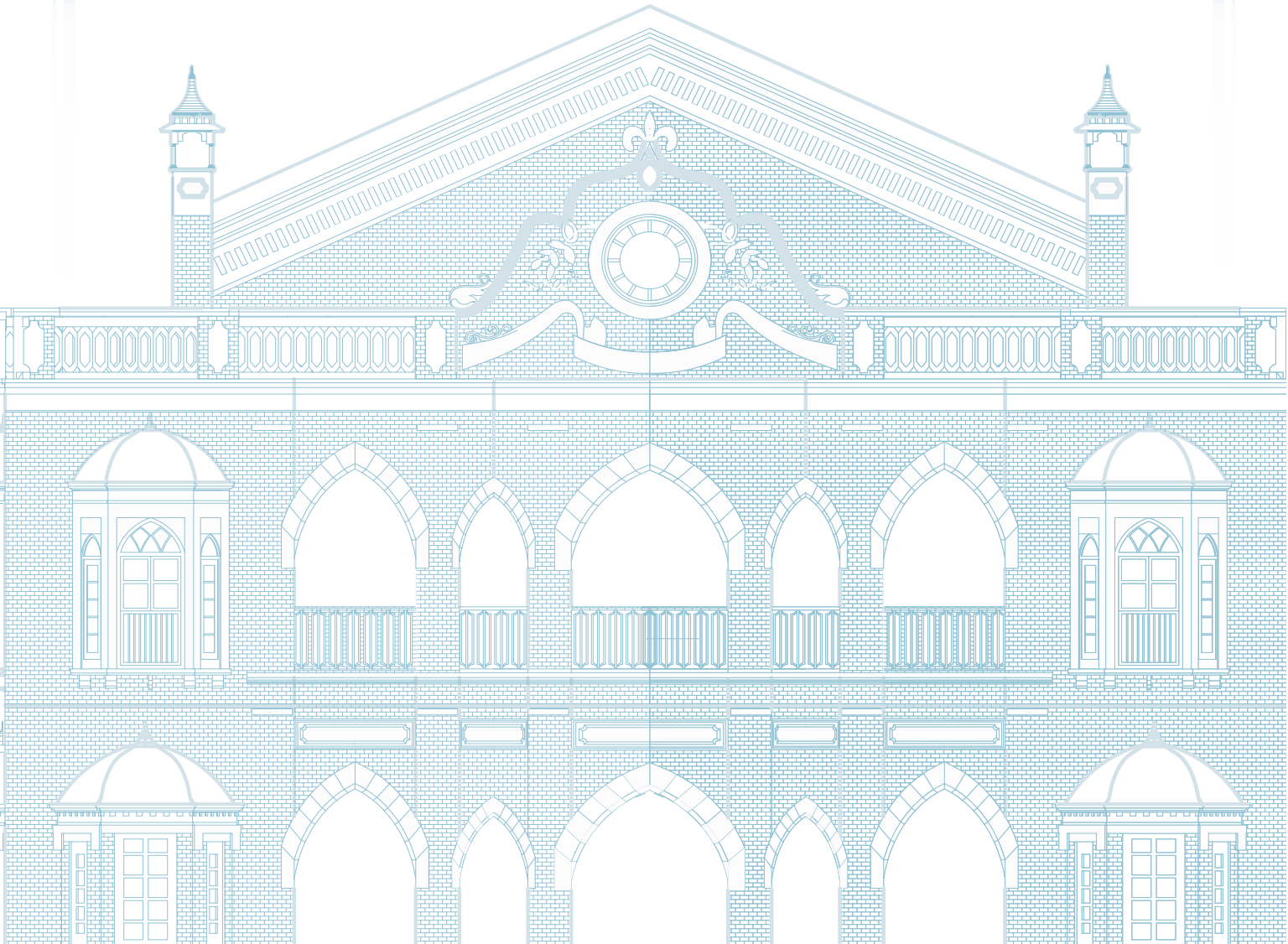
E-connectivity across the campus enables access to the library website having more than 4740 e-journals and 9 databases of 18 internationally renowned publishers under e-Shodhsindhu Project through Inflibnet. In addition, the Library has procured 2 Databases viz. "ProQuest - Dissertations & Theses, A & I" and Prowess.

DEI library is also a member of DELNET. Virtuality enables libraries to penetrate into learning and research spaces for design, picking and reorganizing virtual content as well as e-services. DEI is one of the partner institutes in a nationwide free online education platform launched by Government of India. Called the Massive Open Online Courses on Skilling and Entrepreneurship Network (MOOCSKENE BHARAT), it is an open source for uploading study material related to skill programs and entrepreneurial activities at DEI.

The Institute has moved from the single departmental library model towards a more flexible array of services, designed to address new information seeking patterns in its faculty and students and the increasingly inter / multi-disciplinary nature of academic inquiry.

13

Societal Contribution



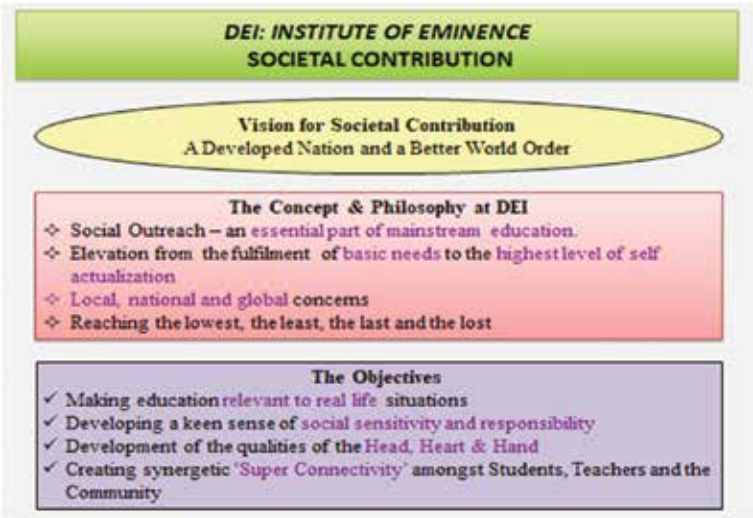
Societal Contribution is a distinguishing objective of the educational framework of DEI. Connecting to the community is not a short-term welfare activity, it is an integral part of the learning experience which enables students to develop the qualities of the *Head, Heart* and *Hand*, thereby integrating academic excellence with social relevance. DEI aims to empower society to progress from socio-economic well-being to the highest level of moral and spiritual evolution.

There are two means by which the Institute seeks to fulfill its societal mission. The indirect means is by developing (through its and quality and value-based education system) 'Total Quality Persons' or 'Super Persons' who act as powerful agents of social transformation.

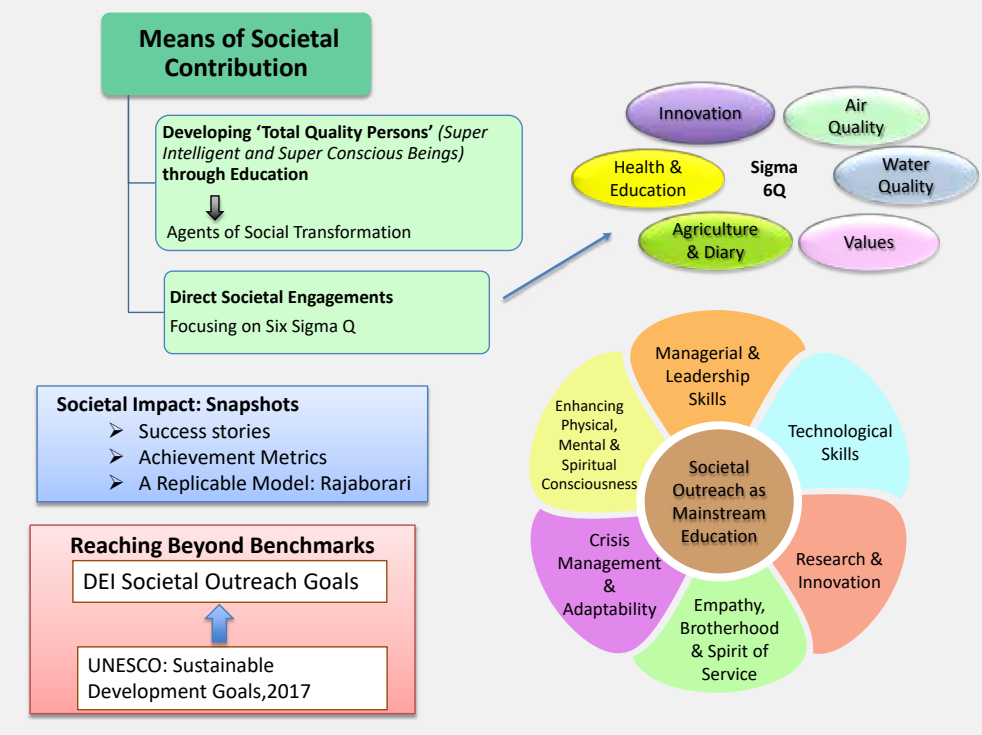
The second approach is through direct social engagements in the six key areas of "Siqma Six Q" way of sustainable living viz. Innovation, Air Quality, Water Quality, Health and Education, Agriculture and Dairy, and Values with emphasis on Women's Empowerment. Innovation at DEI is extensive and wide-ranging with achievements in the areas of skilling and entrepreneurship, renewable energy, ICT and education. The second and third areas concern two issues of national and global concern - Air Quality and Water Quality. The Institute and its surrounding communities practice, research and continuously implement effective measures of addressing these issues. In the third area, Education and Healthcare, DEI has rendered exemplary service by making quality Education and Healthcare accessible to all socio-economic groups by harnessing technology through its wide network of more than 100 Open and Distance Learning Centres and Off Campuses spread throughout the country and abroad. The cause of promoting Values and Women's Empowerment is being promoted by the value-based educational system to provide sound moorings to the students.

The impact of our societal outreach is increasingly visible through a number of success stories. An authentic role model of rural and tribal community development in the tribal village cluster of Rajaborari located in the forest heartland of Madhya Pradesh.

The vision and strategic plan for the future is to expand, diversify and intensify the social outreach efforts of the Institute from the local level to the global through expansion of its network of outreach centres from the existing 100 to 400 in a period of 15 years.
The Societal Contribution of DEI is equipped to meet international benchmarks such as those in the UN's sustainable development goals.



Vision and Objectives for Societal Contribution at DEI



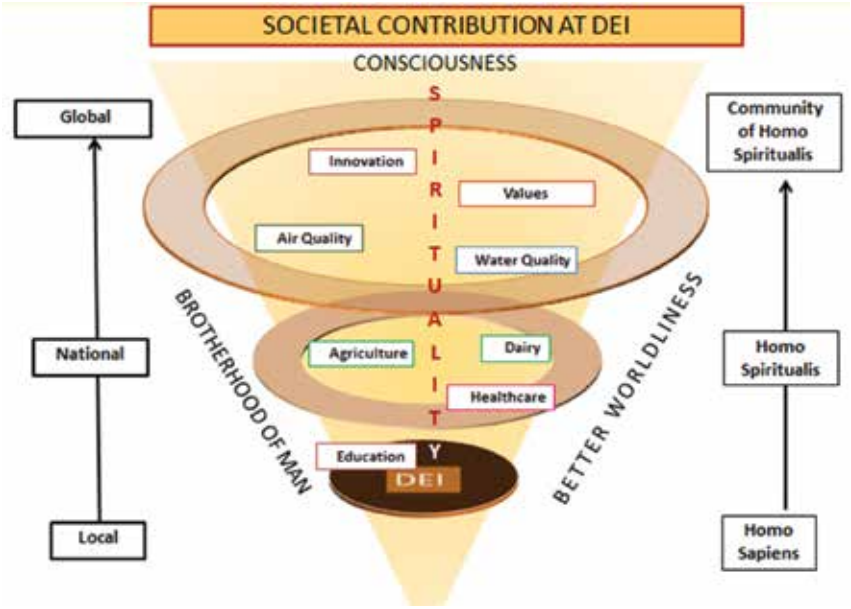
The Concept and Philosophy of Societal Contribution at DEI

At DEI, social service is a regular component of the undergraduate programme. It is implemented through the NSS scheme and wide-ranging activities from healthcare to computer literacy to cultural-moral value development. It is also carried out through special educational programmes on entrepreneurial and skill development or teaching internships in remote and backward areas. Research activities in DEI are planned for societal benefit in renewable energy, education of specially-challenged learners and air and water quality management, to name a few.

Societal contribution at DEI has the following features:

- It is a mainstream process and not a separate outreach activity.
- A high level of engagement is practiced through in-group volunteering (by working and, often, living amongst the beneficiaries, rather than by offering facilities from outside).
- It facilitates communities in their native surroundings keeping cultural roots intact.
- It aims to connect with the Least, the Lowest, the Last and the Lost.
- It focuses on wealth creation in the community and not monetary contributions.
- It focuses on developing self-sustainability rather than depending on external assistance.
- It aims to create an abundance of social, moral and spiritual wealth in the community along with material well-being.

The concept of societal contribution at DEI can be graphically represented as follows.



The DEI Concept of Societal Contribution

Societal Contribution is identified from the perspective of both, education and society. From the educational perspective, the aims are:

- Making education relevant to life
- Preventing the alienation of students and teachers
- Developing in them a keen sense of social sensitivity and responsibility
- Expanding the teacher's expertise by application of theory to real-life situations
- Fuller development of the qualities of the Head, Heart and Hand
- Nurturing a synergetic 'Super Connectivity' amongst students, teachers and the community
- Fulfilling the role of education as a developing, perfecting and emancipating venture.

Aims from the social perspective are:

- Economic independence through skilling and entrepreneurship
- Holistic health: physical mental and spiritual
- Environmental conservation
- An inclusive and egalitarian society
- Women's empowerment
- Value-based quality education for all
- Reaching the Lowest, the Least, the Last and the Lost
- Evolution from Homo Sapiens to a community of Homo Spiritualis: a Super-conscious and Super-connected society.

The Means of Societal Contribution

There are two broad strategies at DEI, the first being developing Total Quality Persons to serve as agents of social transformation of the highest order. The second is direct societal engagement in areas of Six Sigma Q.

1. The aim of the DEI system is to develop the Total Quality Person, or, the Complete Person, endowed with Super Intelligence, Super Consciousness and a high sense of Social Sensitivity and Values. A spirit of brotherhood and commitment render him a powerful agent of social transformation.

   In order to achieve these aims, the process of development is an evolutionary one, starting from the age of three months through formal schooling to higher education with a variety of supplementary inputs in music, culture, languages, social work, to name a few. The main rungs of the educational ladder are:

   - Early Childhood Programme (3 months -3 years)
   - Pre-School (3-5 years)
   - Primary (Classes I-V)
   - Upper Primary (Classes VI-VIII)
   - Secondary (Classes IX-XII)
   - University (Graduation and beyond)

   The complete range of competencies developed in a student through the Institute's policy of innovative and value-based system of quality education is realized through the curriculum, the co-curriculum, and the hidden curriculum.

2. Direct societal engagement in areas of sustainable living: the Sigma Six Q Approach
   This second approach of direct societal engagement, besides being a unique societal welfare activity, also acts as a core learning experience for our students. To ensure a sustainable model of societal development the DEI follows the *Sigma Six Q* Approach, which aims at achieving excellence through Quality, Value, Innovation and Creativity, in the following areas:

   - Innovation (for societal well-being)
   - Air quality
   - Water quality
   - Agriculture and dairy activities
   - Education and health
   - Value-education and women's empowerment

The Multiple Dimensions of Societal Contribution

Viewed from the perspective of *Six Sigma Q,* the current status of societal contributions of DEI are described below.

Dimension 1: Innovation

Dayalbagh Educational Institute has always followed a visionary approach in introducing relevant and timely innovations since its inception. It has believed that innovation should not be confined to laboratories and research reports but lead to social transformation of the community. Innovations at DEI encompass all the six fields mentioned above. Some key efforts in this direction are described here.

- From skilling to entrepreneurship through innovative *karkhanas*
- Start-up incubators: REZ to SEZ
- Renewable energy
- ICT-based initiatives: networking, surveillance, biometric identification, etc.
- '*Jugaad*' (frugal) innovations
- Business advisory clinic

1. From Skilling to Entrepreneurship through Innovative *Karkhanas*

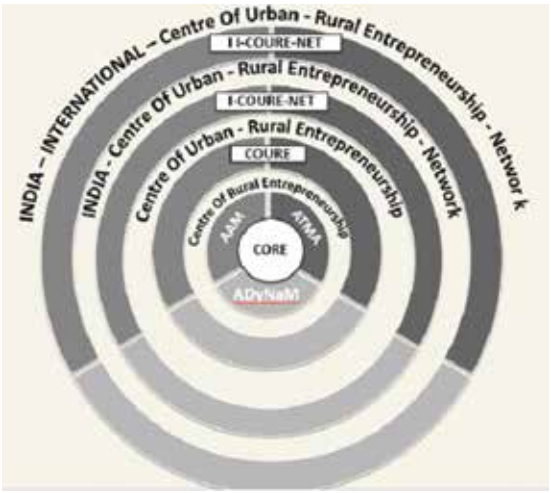
Economic self sufficiency is a pre-condition for societal progress. Training and finding gainful employment for India's vast young population is a national challenge towards meeting which DEI has launched the *Household Entrepreneurial Model* in the form of three innovative *karkhanas* or workshops for training and providing entrepreneurial skills to the youth, especially among women and other weaker sections of the society. These three *karkhanas* are:

i. ATMA (Apparel and Toy-making Association)
ii. ADyNam (Agricultural and Diary Nano-Processing of Multi-Products)
iii. AAM (Automotive and Multi-skilling Garage)

2. Start-up Incubators: REZ to SEZ (Rural Economic Zone to Special Economic Zone)

DEI has designed the following three models for promoting entrepreneurship in remote areas:

Model 1: Supply of raw materials and marketing are done by DEI, and processing is done *by adivasis*. In this model, they pay a rental charge or processing fee to DEI.



REZ to SEZ Model

Model 2: Supply of raw materials, processing and marketing – all three managed by *adivasis.*

Model 3: Supply of raw materials and processing are managed by *adivasis,* but marketing is done by DEI.

The household entrepreneurial model was introduced through ATMA, AAM and ADyNaM at Rajaborari. Efforts are being made to link the local producers to the regional national and international markets through the REZ to SEZ Model (Rural Economic Zone to Special Economic Zone).

The household entrepreneurial model for tribal and rural folk, especially women, at present, runs under CORE or the Centre of Rural Entrepreneurship programme. This Centre is connected to the urban market through the COuRE (Centre of Urban and Rural Entrepreneurship) programme. Further scaling up of the model is by means of ICT networking to the International market Zone through IiCOuRE (India international Centre of Urban and Rural Entrepreneurship) or Special Economic Zone (SEZ).

3. Renewable Energy

Efficient, economic and reliable end use of renewable energy is very important for sustainable development of the marginalized population and their inclusion into the mainstream. With 68% population of India residing in villages, the importance of using renewable energy sources cannot be overstated.

In the adopted villages of Rajaborari, Timarni and MTV Puram, solar power plants have also been erected to generate electricity for running water pumps, anti-theft electric shock fencing and a hooter alarm system. To sensitise the *adivasis* to energy conservation, LED lights were distributed to them.

The Institute has taken steps to initiate the production of other renewable sources of energy such as biogas used for lighting, and has also assisted the local government in installing windmills in the village of MTV Puram in Tamil Nadu.

4. ICT-based Initiatives

i. **Providing a safety net: Digital surveillance**

The Dayalbagh Educational Institute Security Lab was created in December 2013 in response to the overall situation prevailing in the country, and in compliance with the UGC's directives.

The services of video surveillance are not just confined to the campus but have been extended to the neighbouring communities too. The DEI security lab is coordinating with the adjacent residential area of Dayalbagh as part of its social responsibility in organizing a Security Surveillance Network that will exploit latest IC technology, contributing to the concept of Smart Agra. DEI proposes to take up research on security surveillance protocols with this network as a real-life open laboratory.

ii. **Communication Networks**

Partnering with BSNL, optic fibre networks, LAN connectivity, cloud computing, wi-fi enabled campus are some recent initiatives which have tremendously boosted the connectivity of the main campus with the more than 100 ICT/ Open and Distance Learning (ODL) centres and off campuses. This has made the expertise available at DEI main campus available to these Centres and their local community. In the next 15 years the Institute plans to expand the high speed dedicated connectivity to the targeted 400 ODL centres and 23 off-campuses in India and abroad.

iii. **Biometric Identification of Infants and Toddlers**

In collaboration with Michigan State University, USA the Physics Department of the Institute has developed technology for biometric identification of young children who are not covered under the Adhaar identification scheme of the Government of India. This technology will be of immense help in providing identity to infants who can be traced in cases of child abduction, human trafficking or missing children. Saran Ashram Hospital at Dayalbagh is also a collaborator in the project.

Volunteers at the Biometric Identification Camp

5. Jugaad Innovations at DEI

DEI promotes an innovation culture coupled with economy of inputs. Some of the resulting frugal innovations are presented here.

i. **Jugaad Innovation of e-vehicles at DEI**

Students of the Technical College and staff have designed and assembled battery-operated vehicles to aid in mobility of the elderly or physically challenged persons. These vehicles are now plying on the campus roads and will soon be converted to solar-operated vehicles.

ii. **Jugaad Innovation in Green Constructions at DEI**

DEI has launched innovative green constructions on the campus such as security check posts and a creche. These are also being expanded to its off-campus centres and will be extended to the community. These are low-cost, environment-friendly innovations with scope for development.

iii. **Jugaad Innovation in 3D Printing at DEI**

The revolutionary potential which Additive Manufacturing (AM) technologies hold, has prompted DEI to take up programs for its widespread adoption. The Institute has initiated *Jugaad* Innovative AM (Additive Manufacturing) methodology involving students to build their own 3D printers using open access technology.

This approach targets skilling youth in STEM (Science, Technology, Engineering and Management) fields by providing them hands-on experience We aim to develop a sustainable ubiquitous LUMINOS (Learners, Users, Manufacturers, Innovators, Operators and Serviceman) ecosystem that not only facilitates but encourages action-based learning, exploration and innovation.

6. Business Advisory Clinic

The DEI Department of Management operates a Business Advisory Clinic which has been offering professional advice to entrepreneurs in the local community.

The business advisory services at DEI aim to provide holistic advice in a variety of entrepreneurial cases - the start-up phase, the growth stage and the winding-up stage.

7. Partnering with Govt. for SKILL INDIA Mission

Universities can provide a common platform for the Government funding agencies and industries with CSR interest to converge for the cause. DEI has partnered many government Ministries and Departments including the Ministry of Textiles, Ministry of MSME, UP Skill Development Society, etc. to provide skill training in various sectors. It is providing skill to Indian youth under the following Govt. schemes:

i. DDU Kaushal Vikas Kendra (Vocational Degree Programmes)
ii. Uttar Pradesh Skill Development Mission (Modular Courses)
iii. Prime Minister Kaushal Vikas Yojna
iv. Training Through Established Institutions (Under HRD)

Such partnerships are a boon for the skill acquisition and certification of the underprivileged youth of the society. (Please refer to the chapter on 'Skilling' for details)

8. Partnering with Industry for Social Outreach

The Industry has an obligation to spend a fixed percentage of their turnover in Corporate Social Responsibility activities. They have substantial funds to invest and are looking for useful social avenues for their outreach programmes. DEI has initiated partnerships with industry for its societal contribution activities and can extend the venture to provide a common platform for industry and society to come together for mutual benefit.

The partnership of the Institute with Microsoft and the Maharashtra Government is a case in point where the Institute is providing ICT skill based programme (which is one of the skill based courses offered) at no cost to locals of Harisal (a village in Maharashtra) with the objective of developing Harisal as a digital village.

Microsoft is also partnering with DEI to provide ICT support in the area of school education for providing online Tablet-PC based interactive learning to the school children at Rajaborari in Madhya Pradesh. Partnership with Honda Motors has resulted in setting up of Skill-Training Garages-AAM for Rural/Tribal youth in MP. The institute has been actively forging such partnerships for training and research with the following companies:

i. India Yamaha Motors Pvt. Ltd.
ii. Maruti Suzuki India Ltd.
iii. TVS Motor Co. Ltd.
iv. BHEL
v. IOC

DEI proposes to carry out live projects in the needy villages, resulting in relevant R&D as well as infrastructure development. CSR funds of PSUs and private companies can be tapped to supplement MNRE/DST/UGC research funding to come up with a meaningful research and development.

Dimension 2: Air Quality

Air quality has become a critical issue affecting the lives of millions. A similar crisis is being faced in Agra and the surrounding areas.

The Institute regularly monitors the air quality on the basis of SPM (Suspended Particulate Matter) once a week. This is being undertaken by the faculty and research scholars of the Chemistry Department as follows:

i. Monitoring of PM (particulate matter) twice a week as part of lab and research work.
ii. Coverage includes rural and crowded city centres.
iii. Appropriate controlling measures are suggested to the sponsoring authorities for follow up as the readings signify a consistent rise in impurities suspended in the air

We discourage motor vehicle use, waste burning, industries around the campus, and use of coal/cow dung for heating and cooking purposes. Solar heating plants have been installed in hostels for heating water and cooking.

In collaboration with the NGO, SPHEEHA (Society for the Preservation of Healthy Environment and Ecology and Heritage of Agra) measures to control air pollution have been taken (tree plantation, solar powered modes of transport/e-rickshaws etc.).

Dimension 3: Water Quality

The Institute regularly checks water quality parameters such as bacteria, calcium and fluoride levels. Rain water is harvested with pits and channels interconnected for the collection of water. This exercise has helped increase water levels allowing improved water availability throughout the year.

The Institute has extended a helping hand to the civic bodies by giving land for the construction of a sewage treatment plant (STP) under the Ganga Water channelization project. Treated water from the STP is used for irrigation. The department of Chemistry has applied for a patent for water quality improvement (*A Process for Decontamination of Toxic Heavy Metals Polluted Water*) which has cleared the final hearing and is awaiting registration. The method will be applied to detoxification of water not only on campus and the neighbouring community but is also expected to serve wider societal interests as a preventive healthcare measure.
Measures to reduce soil pollution include proper disposal of waste, segregation at source and use of non-toxic cleaning agents are being practiced in the neighbouring community with active student participation.

Dimension 4: Education and Healthcare

Two sub-dimensions of human resource development, education for societal transformation and healthcare for a vibrant society, are discussed here:

Education for Societal Transformation
The DEI ethos has been expressed by the words of its Founder Director, Dr. M.B. Lal "……..We should try to see that modern trends become only supplements and not substitutes of our basic concepts of education. We do not like to put the clock back but would certainly do well to introduce a more humane and realistic approach in education to meet the present day needs of our society."

DEI's educational mission is being implemented at many levels and in varied sectors as listed below:

i. Providing affordable quality education for the masses
ii. School internships as a means for educational upliftment of remote and backward areas
iii. Harnessing technology to take education to the last mile
iv. Flexible, open and distance learning system for greater social inclusion
v. Network of Information and Communications Technology (ICT) Centres
vi. Skilling India online, everywhere: MOOCSKENE Bharat
vii. Research in areas of societal concern

viii. Promoting urban slum literacy and life-long learning
ix. Generation of e-content
x. Initiatives and experiments in education

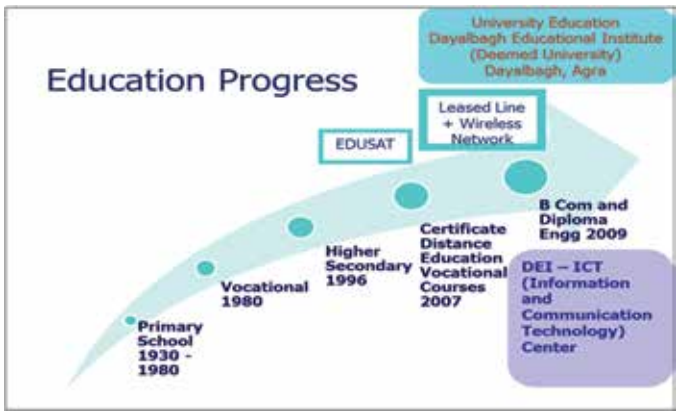
A description of some these points follows:

Providing affordable, quality education for the masses

DEI seeks to reach the masses by offering its wide array of value-based quality educational programmes in general, vocational and professional areas at minimal fees. It is also about to initiate a need-blind admission policy where an applicant's ability to pay for education will not be a factor in deciding his admission so that access to 'good' education is within the reach of 'the lowest, the least, the last and the lost' in society.

Access and expansion to all levels especially targets underprivileged sections of society promoting equity and inclusion without compromising on quality and excellence.

In the past five years more than 56 new courses with the above principles in view, were started including certificate-level vocational courses; diploma and postgraduate diploma level courses; M. Phil. and postgraduate courses and innovative integrated programmes.
In the adopted villages of Rajaborari and Timarni (in Madhya Pradesh), progress is clearly visible in education from primary to tertiary including vocational education. The following figure gives a snapshot of the progression from primary level to university level. Both general and vocational education continue to expand and diversify.



In these villages, education is closely connected to the local culture, but provides exposure to current developments in knowledge. It follows the pattern of DEI schools with a holistic framework including the physical, intellectual, moral, emotional, social and spiritual domains. Some glimpses are shown in the photographs below.

School internships as a means for educational upliftment of remote and backward areas

The Faculty of Education has put three types of internships in place for the benefit of remote and underserved pockets in the country. These are: visiting internships by B.Ed. trainees; online teaching internships by B.Ed. trainees; train-the-teacher internships by M.Ed. students.

These programmes have been in place since the 2015-16 session in the tribal village belt at Rajaborari and its sister institution at Timarni both located in Harda district of Madhya Pradesh. Batches of B.Ed. students travel to schools in these remote places for their internships, taking regular and tutorial classes supported by technology and also try to bring about holistic grooming by organising a variety of cultural and literary activities and workshops for soft skills development.

Yoga training programme by Education Faculty during internship programme in Rajaborari, a remote tribal village in Madhya Pradesh

Interns who are unable to visit these places reach out via a customized system of SCOTLS (Student Centric Online Teaching Learning System) schools in Rajaborari, Timarni (MP), Melathiruvenkatanatha Puram (Tamil Nadu) and to other locations.

To help improve quality and empower local teachers, the Faculty of Education conducts train-the-teacher programmes through its M.Ed. students. They visit the remote schools in Rajaborari and Timarni and work in collaboration with the rural/ local teachers to upgrade their pedgogical skills by preparing resource plans, lesson plans, audio-visual teaching aids and organising workshops and demonstration lessons according to their needs, especially in spoken English.

Harnessing technology to reach the last mile

ICT has enabled DEI to offer low-cost, quality education in a wide variety of vocational and mainstream courses that are run in the synchronous, asynchronous and blended modes. Taking quality education through ICT to the doorstep of the learner has been made possible in DEI through its wide network of 100 Learning Centres and 6 off-campuses in India. The learning centres and off-campuses are planned to grow to 400 and 23 respectively by 2032.

Recently, experiments were conducted on virtual classes integrated with Learning Management Systems accessed by school students on mobile devices such as tablets.

Flexible, open and distance-learning system for greater social inclusion

The Institute follows a flexible credit-based system which will soon be made into a choice-based credit system offered on campus and through the wide network of ODL and ICT centres coupled with a low fee structure. The educational services of DEI are designed to be inclusive of all social classes.

Distance Education using the blended mode of teaching has been launched in nearly 100 centres all over India with over 2000 students, especially aimed at weaker sections, tribal population and women who constitute its major enrolments.

Network of Information and Communication Technology (ICT) Centres

In 2009, DEI established an ICT Centre at Rajaborari which was connected through EDUSAT link provided by Indian Space Research Organisation, leased line connectivity between Dayalbagh and Timarni, and a wireless link between Rajaborari and Timarni. ICT has enabled DEI to offer low-cost, quality education, routed via its Distance Education and ICT Centres, in a wide variety of vocational and mainstream courses that are run in synchronous, asynchronous and blended modes.

Skilling India online, everywhere: MOOCSKENE Bharat

DEI's proposed 'Skillpedia' in regional languages, called Massive Open Online Courseware Skilling and Entrepreneurship Network for India (MOOCSKENE-BHARAT) which offers free online learning in multiple languages through ICT-based instruction across the country.

The innovative venture will help to extend the benefits of the DEI's innovative and flexible educational model that integrates regular education from the school to the university level with skilling, vocational and technical education, with emphasis on entrepreneurship, to all sections of society.

Research in areas of societal concern

The DEI has identified some thrust areas for research, closely linked to social concerns and include:

i. Sigma Six Q: Earth and Atmosphere, Infrastructure, Community Life, Global Warming, Water, Renewable Energy
ii. Application of Systems Thinking, Multidisciplinary Thinking, Sustainability of Human Life, Jugaad/ Frugal Thinking to societal problems
iii. Cyber Security, Values and Ethics
iv. Development, Conservation and Enrichment of Community Culture, Religion, Languages, Linguistics, Literature, Human Development

Promoting urban slum literacy and lifelong learning

The DEI runs non-formal classes in the local slums to spread literacy upto class 5 among school dropouts and non-school goers. It also conducts regular training programmes to enhance artistic and vocational skill training among children and adults from these under-privileged areas of the urban slums.

The Department of Life Long Learning and Extension aims to empower individuals and better the living conditions of people in surrounding villages by making available a comprehensive range of appropriate and effective opportunities to its participants, raising opportunities for self-employment and economic independence, and generating awareness, about protection and conservation of the environment.
Some of the programmes run by this department include:

i. Non-Formal Education Centres or Bal Shiksha Kendra in an urban slum, Nagla Haveli, in the neighbourhood
ii. Awareness campaigns in areas of social, political, health and financial matters
iii. Skill-training courses
iv. Workshops and training especially for women empowerment

Generation of e-content

A large volume of e-content has been generated for undergraduate classes under the e-*Pathshala* project of the Government of India. Different faculties have produced e-lecture videos for courses which are being used for distance learning centres, with the expertise available on the main campus. Recently B.Ed. trainees have started generating e-content based on prescribed school textbooks for the benefit of students of remote and under-staffed schools. M .Ed. student interns are developing e-teaching resources in collaboration with local teachers under the train-the-teacher programme. Once completed, it will be put up as open source material for the benefit of the teaching-learning community.

Initiatives and experiments in education

Revitalizing science education

DEI believes science education is essential for all-round progress. It has initiated some creative schemes on campus and in remote areas to kindle an interest in students for science. These include:

i. Si-Hi: A summer school in science for high school students has been started on a regular basis.
ii. Virtual laboratories, under the Ministry of Human Resource Development, have expanded the access to laboratory experimentation in remote areas.

iii. Frugal science experiments, especially those in collaboration with Stanford University, USA, have infused a spirit of enquiry and creativity among school-going students. The very successful *Foldscope* (a paper folding real microscope @ $1) developed by Manu Prakash a young researcher from Stanford, has been widely used by children of Rajaborari, Delhi and Agra, to explore the hidden secrets of their surroundings.

Foldscope and training in the use of Foldscope

iv. Hole in the Wall, a Computer Literacy programme for underprivileged children is organised regularly by the DEI faculty as an extension of the Medical camps, mentioned in the following sub-section.

Computer literacy among young learners

v. SCOTLS: A system of online teaching for remote schools
The SCOTLS (Student-Centric Online Teaching-Learning System) is a customized system of Online Teaching designed at DEI in which a teacher at one end can teach online a number of remote students at diverse locations in an interactive manner. This has been launched initially as part of B.Ed. and M.Ed. internship programme and is extendable to all levels of education. It has two benefits: first, it provided a quality learning experience to the under-resourced masses, and, second, exposure to prospective teachers as to how the latest technology tools can be integrated into pedagogy. Recently, the system has been made more interactive by providing tablets to individual students with an aim to intensify interaction between the teacher and the learners.

Healthcare for a vibrant society

Holistic health care and well-being is provided through healthcare centres and initiatives;

DEI has taken up three essential kinds of healthcare measures:

i. **Lifestyle changes**

- Clean and sanitary living conditions (general cleanliness, toilets, drainage, waste disposal and recycling). The students and faculty of the Institute frequently go on cleanliness drives to raise awareness and promote cleanliness in the campus and neighbouring localities under the NSS programme (photographs below).

Clean Surroundings Campaign

- Healthy consumption habits
- Yoga and meditation centres, where training in yoga and meditation are conducted.

ii. **Preventive measures**

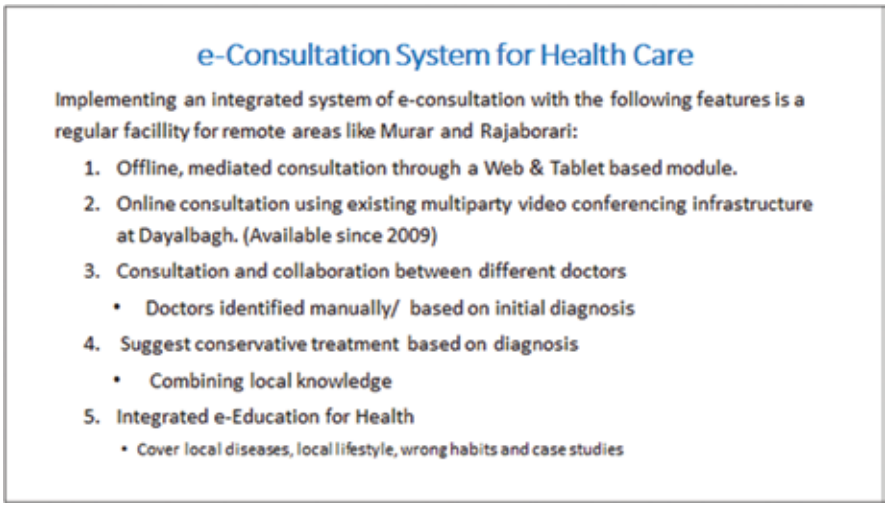
- Public health measures and preventive medicine
- Air and water quality monitoring
- Organic farming and dairying
- Nutritional supplements for growing children (mid-day meals)

iii. **Therapeutic measures**

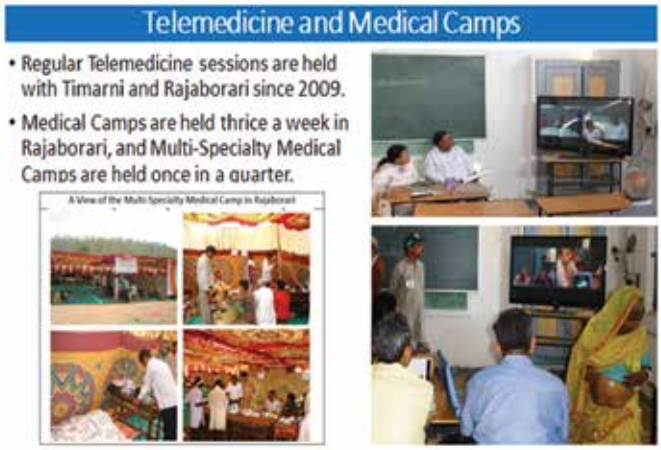
- Access to hospitals and healthcare centres with AYUSH facilities
- Mobile dispensaries
- Tele-medicine
- Multi-speciality medical camps
- Neuro-psycho-cognitive counselling

The proposed Faculty of Integrated Medicine (AYUSH) at DEI looks at the use of alternative therapeutic methods for a strong body, mind and soul. The objective is to provide the best health care, and research in integrated and alternative systems of medicine, and to provide medical services to the needy and community at large. This includes a rehabilitation unit, physiotherapy, a pathology laboratory and diagnostic services, homeopathy telemedicine

and yoga. Dietary consultations and neuro-psycho-cognitive counselling at the hospital facilitates better living and thinking.
Telemedicine and e-consultations provide access to specialized experts for people in remote areas. Some of its features are listed below.



- **Multi-specialty medical camps**
  Societal outreach includes Multi-Speciality Medical Camps in surrounding adopted villages under the National Service Scheme. These offer free medicine distribution and consultation services, physical examination: ultrasonography, blood tests, dental treatment, etc., open to all.
  These are organized regularly in rural neighborhoods locally, and in centres all over the country at the following locations: Noida, Gurgaon, Chennai, Bengaluru, Mumbai, New Delhi, MTV Puram, Rajaborari, Murar, Timarni, Agra.



Medical camps and tele-medicine facilities

In Dayalbagh area, medical camps are organized by the NSS wing of the university, usually on alternate Sundays. The villagers have developed confidence in the personnel so much so that children walk up confidently without their guardians to the desk of the concerned doctors.

Dimension 5: Agriculture and Dairy Farming

Rural life, agriculture and allied vocations are the soul of Indian culture and the economy. At DEI, there is a sustained effort to connect students to this aspect of Indian life not only through varied curricular programs, but also through intensive community outreach programmes. Some of our significant efforts and achievements in this direction are summarized below.

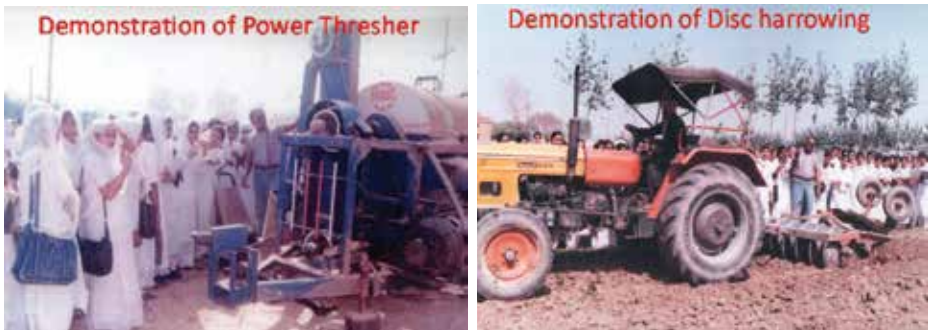
Community agricultural activities

As part of their daily schedule, residents of their day by performing *Seva* or *Shramdaan* (service) in the community agricultural farms. Students at all levels from DEI participate in these activities, especially when the wheat and paddy crops are harvested on a faculty-wise rotation basis. Thus, they literally 'till and toil' with their hands and connect to their agrarian roots getting a rare exposure, perhaps not available in any other university.

DEI students participating in agricultural work with the local community on a Sunday morning

Core course on Rural Development

Besides the regular theory classes, this core course provides opportunities to all undergraduate, diploma and certificate students to work and learn while contributing to the community agriculture activities (sowing, weeding, transplanting and harvesting seasonal crops).



Activity during Agriculture Operation: A pictorial representation

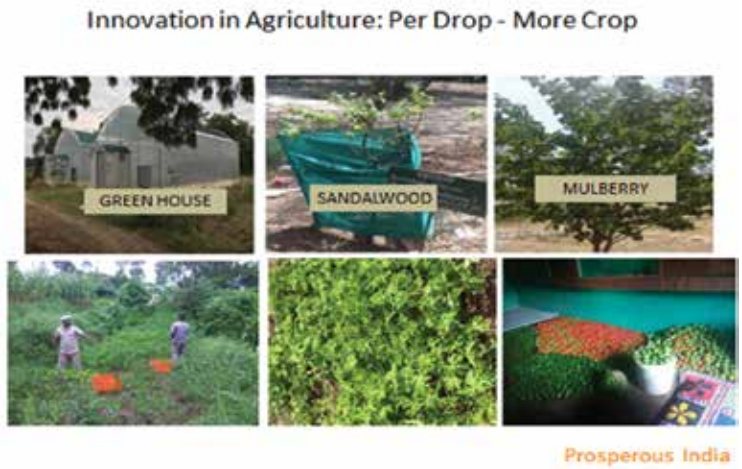
DEI has been awarded the status of a Deen Dayal Upadhyay Kaushal Kendra in Dairy Technology. As part of their practical courses the, students learn to produce a variety of milk products which are in great demand not only in the neighboring community, but are also provided to the university and available to all students.

Extension of consultancy and support services to remote tribal villages

Experts from DEI and Dayalbagh provides their expertise in modern techniques of cattle-rearing including breeding, nutrition, healthcare and treatment, to the tribals of Rajaborari. The aim is to improve breeds, increase the milk yield and reduce the mortality of cattle. Using ICT services, online e-counseling and e-consultation services are provided to *adivasis* who are engaged in cattle-rearing and dairy farming.

Some other highlights of our initiatives in agriculture include:

i. Precision agriculture for 'more crop per drop'



ii. Organic cultivation

iii. Composting

iv. Forest conservation: The following activities formed the focal strategy for making Rajaborari an eco-forest area:
   - Improved afforestation and re-afforestation
   - Enhanced protection for plantation and natural regeneration
   - Provision of fuel wood and pasture land for villagers
   - Community-based forest protection and conservation
   - Generating mass awareness on the need of forest conservation
   - Advocacy for environmental protection
   - Enhanced protection for plantation and natural regeneration

v. Bio-diversity parks for protection of endangered plant species and other purposes including pharmaceuticals.

Initiatives in the area of Dairying

i. Scientific processing of milk products: 36 milk products have been produced.

ii. B. Voc. course and milk collection facilities at Timarni, Rajaborari, Amritsar.

iii. International standardization and export of milk products: The DEI Dairy has acquired FSSAI certification as well as other international quality certifications for the sale of milk products in India, and export to other countries including USA.

iv. Skilled students in international trading

v. Innovation and research in manufacturing of new products.

vi. Cooperative milk collection centres

vii. Animal husbandry: special rearing practices from birth to death

Dimension 6: Values

The Philosophy, Policy and activities of the Institute are driven by a system of individual and social values since its very inception.
The Education Policy of our Institute is based on the inculcation and nurturing of values through quality education.

This is being achieved by the cultural and religious bearings, value-based education model and efforts of various councils and committees such as-IQAC (Internal Quality Assurance Cell), AAAC (Administrative and Academic Audit Committee) and the apex 'Think Tank' of the Institute – the ACE (Advisory Committee on Education)

The values to be developed amongst the students are developed through two chief means:

i. Value-based quality education
ii. Imbibing from a value-rich environment and heritage of a model community around the DEI main campus and the network of ICT Centres and Off Campuses

The attempt to nurture Higher Order Thoughts (HOT) among students and faculty to raise their level of consciousness is an ongoing strategy through various activities of the Institute. Thus, it is hoped that a culture of values, higher order thinking, and higher consciousness will be developed not only among the inmates of the Institute and its far flung off campuses/ centres but the entire neighbourhood and the society at large.

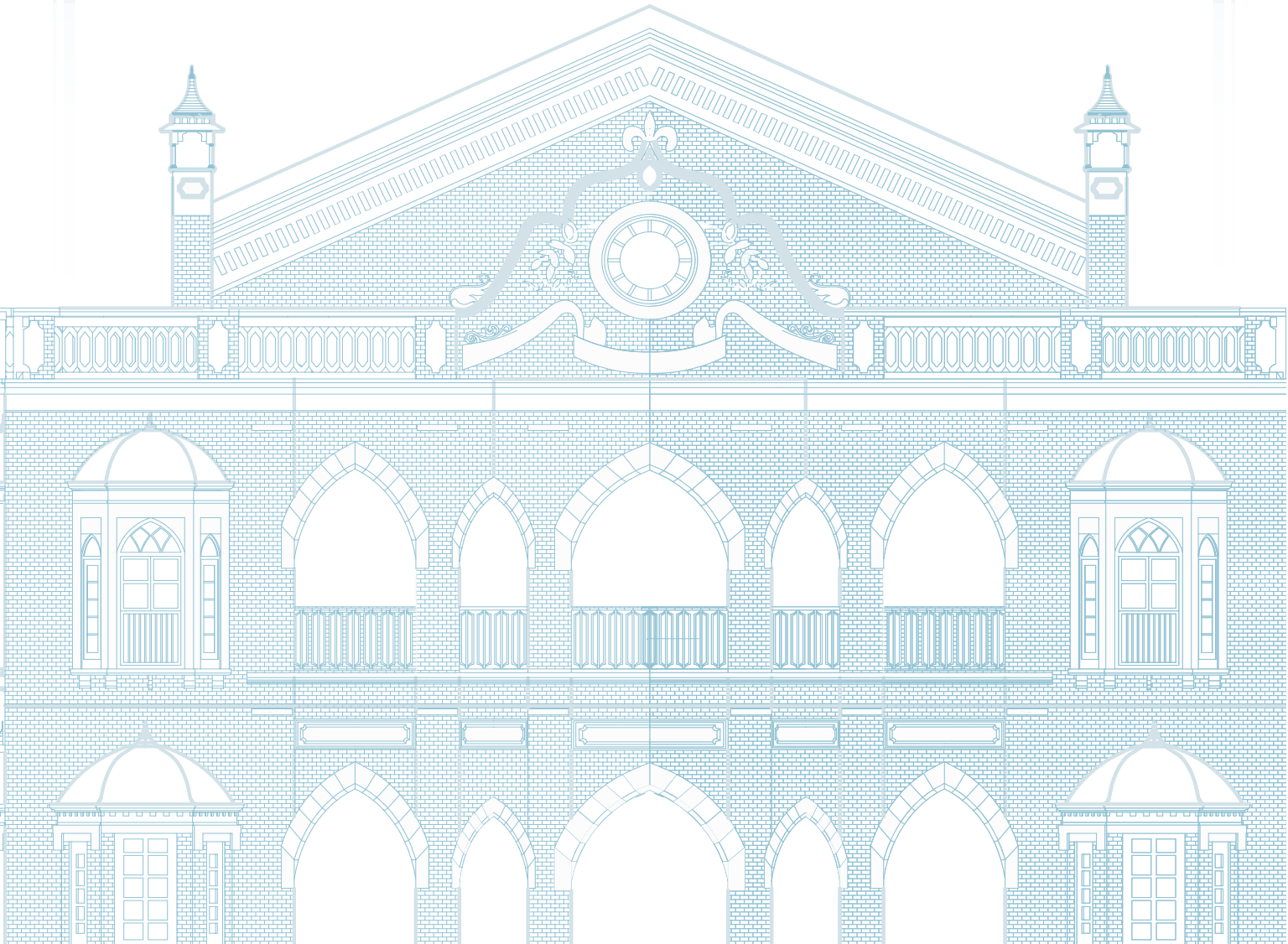
Reaching beyond Benchmarks

The UNESCO has declared a set of 17 Sustainable Development Goals (SDG), including removal of poverty and hunger, environmental conservation, education. It is a matter of satisfaction that DEI has been able to initiate programs to meet all these goals in its sustained, holistic and futuristic societal outreach plans.

Thus, the Institute is carrying out its mission for the moral and spiritual upliftment of the society through its educational and other outreach programmes, with a clear vision and dedicated implementation.

14

Skill Development to Entrepreneurship



Skill development and entrepreneurship are integral to the Academic Program of DEI, since inception in 1917. In recent years, DEI has launched several vocational courses, in sync with one of the primary objectives of the Government of India: producing a highly skilled workforce for nation building. DEI now is one of the single largest skill providers in the country. DEI has also been recognized by the MHRD and the Government of UP as a key public sector agency for vocational training. The Sector Skill Council of Green Jobs has certified DEI as the best Solar Skill Training Institute, nationwide.

Skilling at DEI begins as early as the pre-nursery level. Tinkering, living and mobile labs allow school children to engage through play while learning. At senior levels, students pursue different vocations through a variety of modular programs, along with their regular courses. Crafts such as carpentry, spinning and weaving, leather work, smithy, molding, gardening, printing, tailoring are taught to senior pupils, and simpler things like paper cutting, clay modeling, brush-work, gardening, fretwork, takli, to small children. Factories, workshops, mini industries, the dairy and agricultural lands serve as laboratories for field work, experimentation and team-work at DEI. The industrial associations of DEI secure financial resources for the educational institutions and usher in employment opportunities for their alumni.

DEI strives to develop respect for soiled hands and uphold the dignity of labor in its students. Unique schemes for student welfare like 'Earn while you Learn' have sown the seeds of responsibility and self-reliance in the pupils of DEI.

DEI took a quantum leap in the arena of entrepreneurship development through well-established laboratories and Skill Parks in various fields, viz. Automotive Workshops, Apparel and Toy Manufacturing, Agro & Dairy Business, Consciousness Studies etc. An intelligent marketing network was established, connecting rural and tribal zones to global economies. Setting up e-Portals and Business Advisory Clinics has also opened novel avenues for entrepreneurship to the students of DEI.

Skill Framework of DEI: 1917-2017

DEI offers Bachelor's in Vocation programs in 9 disciplines. It has been ranked as topmost Skilling University in the country.

The nine B. Voc. programs offered by DEI

DEI also has the distinction of being the country's first Community College to turn out a batch of students with Vocational Diploma in Automobile and Vocational Diploma in IT under the National Vocational Education Qualification Framework (NVEQF) of the AICTE.

First batch of NVEQF students receiving certificates from the minister of Human Resources Development

Students of B.Voc. in Food Processing prepare articles of food and sell these through kiosks in the campus. Similarly, students of Dairy Technology prepare many items of consumption from milk, such as flavored milk, butter, shrikhand, dark chocolate etc. and sell them in the campus and outside. Dairy products have the distinction of possessing FSSAI and HACCP certification , besides the export permit to USA and some other countries. Thus, the students not only get to know the processes involved in the manufacture of various milk items, but also the conditions for acquiring relevant certificates and export permits.

Similarly, students of Apparel and Textiles and Textile Designing and Printing prepare and sell items in kiosks and exhibitions. This offers them an opportunity to earn while they learn and they become self-reliant even while studying.
The students of Renewable Energy become well conversant in installation and maintenance of solar plants. DEI won the Championship Trophy at the National Solar Skill Competition, 2017 for the Best Solar Skills Training Institution by the Skills Council for Green Jobs. This was possible since DEI is completely solar powered by a 750 kW power plant, offering hands-on practical training to the students. Similarly, students of other B.Voc. programs acquire practical skills in their respective fields.

Team DEI receiving the Champions Trophy at National Solar Skill Competition, 2017

Skill development in DEI started in 1927 by the way of Technical Schooling, followed by the introduction of a compulsory, work based core course in 1976. The current Vocational Skill Framework of DEI is aligned to the National Skills Qualifications Framework (NSQF), which is a competency-based framework of the Ministry of Skill and Entrepreneurship Development (India) that classifies educational qualifications into levels, based on difference in knowledge, skills and aptitude.

Skill development at DEI from pre-nursery to university level

Skill Level	NSQF Level(s)	Salient Features
Pre-Nursery to Primary		Young learners (3 to 10 years) are introduced to structured play way activities for identifying their interests and strengths. Children's Recreation Centers (CRC) have also been established in all the Primary Schools. The School of Art and Culture builds creative skills in children besides imparting knowledge pertaining to traditional folklore and heritage, art, craft, acting, music, dance etc.
Middle School (Classes 7 & 8)	-2, -1 & 0	Tinkering Labs promote the idea of 'TOD-MOD-JOD' (break-bend-join) for inculcation of hands-on skills. The School of Languages and Music fosters cultural mooring and holistic brain development. Several Modular courses of short duration (2 to 3 months) are run under DEI and its distance learning centers at more than 80 cities in India.
High School	1 & 2	Structured Discovery Labs help students develop a scientific flair. Several Modular Courses of short duration (2 to 3 months) and Certificate Courses of one to two-year duration are run by DEI. (ref. Appendix 15 B – List of Modular Courses and Certificate Courses)
Intermediate	3 & 4	**Modular and Certificate Courses are run for school dropouts and students with special abilities (ref. Appendix 15 B – List of Modular Courses and Certificate Courses)**
Diploma	3, 4 & 5	A unique facility of lateral transition from vocational to regular education is provided by 1-2 year certificate courses e. g. Students studying Modern Office Management are eligible for lateral admission to B. Com. on course completion.
University Level		
Under-Graduate (Diploma, Advanced Diploma, B. Voc)	5,6 & 7	DEI has launched B.Voc. programs in the following trades - Apparel Design, Textile, Food Processing, Dairy Technology, Automobile, Renewable Energy, Water, Sanitation, Waste Management and Internet of Things. The B.Voc. Program provides multiple entry and exit points to students. The Institute awards a certificate on successful completion of each year of the course. The curriculum is designed in accordance with the roles identified by Sector Skill Council (SSC) in respective areas; certificates are awarded by SSC after evaluation of relevant job roles.

Skill Level	NSQF Level(s)	Salient Features
Post Graduate (M. Voc.)	8 & 9	The Institute runs M.Voc. programs (three Semesters, along with a Summer Term) in several disciplines such as Apparel Design, Textile, Food Processing, Dairy Technology, and Renewable Energy. This program serves the following categories of students: 1: Who have already acquired NSQF certification Level 7 in some industrial sector and opted for admission to skill based courses under NSQF in the same trade with similar job roles 2: Who have acquired NSQF certification Level 7 but intend to change their trade (with a skill bridge course in the first or second semester) 3: Who have acquired the Bachelor's degree from a recognized university, in second division or higher
Research (Ph.D)	10 onward	The Institute conducts doctoral programs in diverse fields of research such as Arts, Commerce, Education, Management, Science, Social Sciences, Technology, Consciousness etc.

Skill Centers in DEI

DEI is home to several skilling centers like the Centre for Applied Rural Technology(CART) and Deen Dayal Upadhyay Kaushal Kendra (DDUKK), which have executed some unique vocational schemes.

Center for Applied Rural Technology (CART)

CART imparts skills at pre-university levels through several certificate-level vocational programs, standalone modular programs and courses specifically designed for women at a nominal fee. The curriculum of most of these courses covers the NCVT prescribed syllabus for ITIs. The All India Council for Technical Education recognizes CART as a Skill Knowledge Provider (SKP) for students of the three-year Vocational Diploma in Automobile and Information Technology. The Center offers an "Industry Oriented Course" to the students of second year Diploma in Mechanical Engineering. Education & training is also provided to the final year students to make them committed for the development of the Nation through exposing them to rural environment and the various rural development schemes. Also, CART runs the "Automobile Service, Repair & Training Centre" to train the students of B. Voc. (Automobile) and Diploma in Automobile Engineering, in addition to the students of Motor Vehicle Mechanic Program.

Deen Dayal Upadhyay Kaushal Kendra (DDUKK)

The DDUKK was allotted to DEI in 2015-16. It imparts skills at university level with industry participation. DDUKK skills students at NSQF levels 5, 6 & 7 as Diploma, Advance Diploma and B. Voc. respectively, NSQF level 8 & 9 as M.Voc. and NSQF level 10 as Ph.D. Several well equipped, state of the art laboratories under DDUKK, implement the concept of living labs and fundamental incubators. Students also run enterprises with community outreach in sectors like agriculture, dairying, garments, food, textile and IT services.

Quantum '*Jugaad*'

Jugaad is a colloquial Hindi word which means "An innovative fix; an improvised solution born from ingenuity and cleverness".The Quantum *Jugaad* Centre, DEI utilizes frugal resources for innovation. This center tries to solve problems by system integration approach.

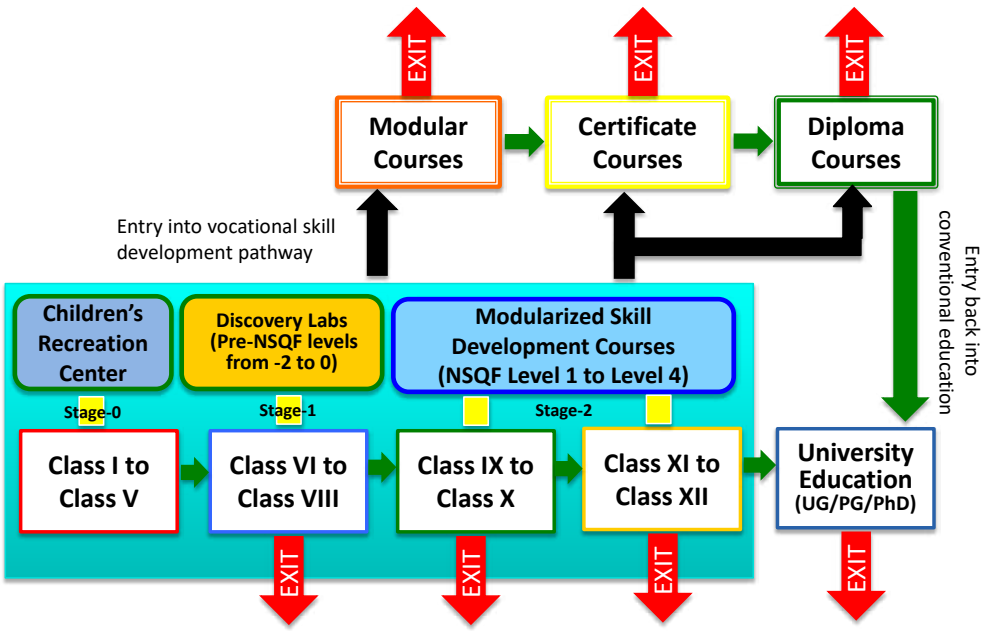
Wastage of energy, material and manpower is reduced, besides reemploying them suitably, to improve system-efficiency. The center aims at devising ingenious solutions for socioeconomic problems of the world.

Skill Enhancement

Lateral & Diagonal Transitions (Lateral Entry Schemes)

Skill based learning in DEI involves lateral as well as vertical mobility. The program offers multiple exit options, wherein a candidate can exit the course with a Diploma in a specific skill-set or move to a related degree course. After earning a B. Voc. degree, one has two options viz. starting a micro enterprise or moving to a master's course followed by research in the relevant area.

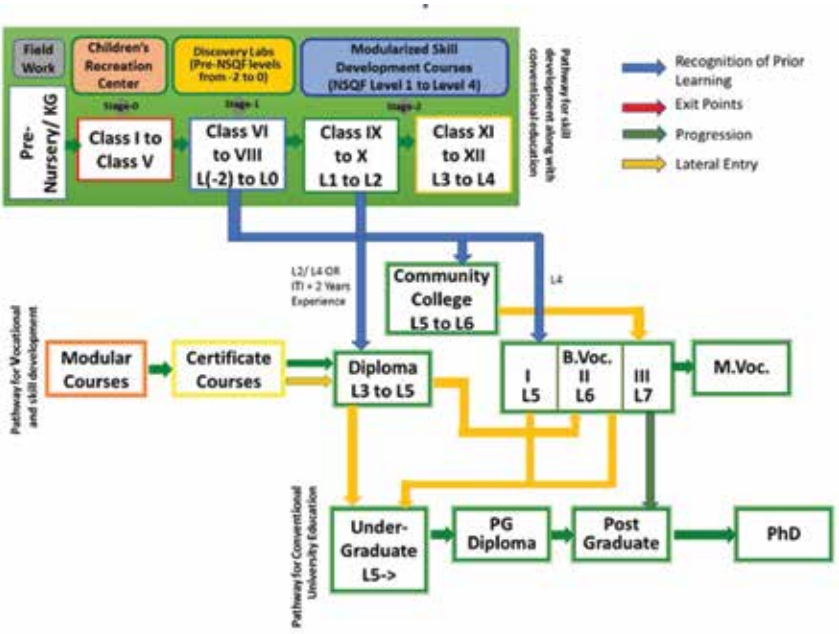
Meritorious students may be admitted to higher study programs through lateral entry, after clearing requisite tests, at appropriate stages of the Certificate/ Diploma/ B. Voc. Programs.



Educational Pathways for Vocational Skills along with Regular Education

Recognition of Prior learning (RPL)

RPL refers to the mobility between vocational and general education is achieved by alignment of degrees with NSQF.



Lateral Entry and Recognition of Prior Learning at DEI along with NSQF Levels

Rise of Entrepreneurship by Sector

Agriculture

- **Agriculture Operations**

  Through the core course of "Agricultural operations", students are equipped with the scientific know-how of modern crop production technologies, resource conservation, farm management etc.

- **DEI Herbal Garden**

  The Botany department has established a "Herbal Garden" in dairy premises. Medicinal plants grown here are used for treatment of various diseases. Plant products are supplied to pharmacy on regular basis. On demand, plant saplings are also supplied to the visitors.

- **Protected Cultivation**

  Two poly-houses have been set up to facilitate protected and off-season cultivation along with remote controlled acclimatization of plants that are either developed through tissue culture or need transplantation to remote locations.

- **Biodiversity Park at REI**

  A Biodiversity Park has been established by DEI on a seven acre land at the REI Intermediate College. Student camps are held regularly for maintenance of the park. It consists of almost 1500 plants and trees, representing 150 different species collected from Haldwani and Jodhpur.

- **Fruit Orchard at Seminar Complex**

During the monsoon of 2016, over 9000 plants and trees were planted here by students. The park is lined with bougainvilleas on the outside and shrubs inside. The third layer consists of tall trees which serve as wind breaks. The park has been designed to protect the plant extremes of heat and cold, thus creating a micro-climate congenial for cultivating delicate fruit plants like guava, pomegranate, lemon, mango, mulberry, jack-fruit etc. Five ponds have been dug for rain water harvesting. For the first time in U.P, olive plants were planted for academic research.

- **Agri-entrepreneurship program**

  To train students in commercial plantation, natural product extraction and marketing; a program on entrepreneurship is being planned on a 10 acre land near Chandmari-ka-Teela, Agra. Damascus rose, olives, medicinal plants will be planted on a commercial scale here.

- **Smart Agriculture at village Padahan, District Sirmour, HP**

  In Padahan, Sirmour District, Himachal Pradesh, medicinal plants such as Ashwagandha, Shatavar, Ruta, Jatamansi and Celery are cultivated. Vegetables like tomato, capsicum, chillies, colocasia (arbi), maize and ginger are also being grown. In the coming years, it is envisaged that this site would see state-of-the-art, smart agriculture employing precision and remote-controlled systems.

- **Proposal for utilization of land for bio-diesel**

  It is proposed to develop twelve acres of land near Chandmari-ka-Tila, Agra for specific projects such as a 1 MW Photo-voltaic Plant, River Bank Water purification Plant (sanctioned by DST) with a facility for water testing and *Jatropha Curcus* cultivation for bio-diesel.

Dairying

A training program was launched in 1994 by DEI on Dairy Products. In 2015 DEI, became the first Deen Dayal Upadhyay Kaushal Kendra in the country with Vocational Programs in Dairy Technology. Since then, Programs like B. Voc, M. Voc. and PhD have been launched in Dairy Technology by DEI. Skills in the areas of Dairy Farming, Dairy Technology, Dairy Microbiology, Dairy Chemistry, Dairy Management and Dairy Engineering are imparted through state-of-the-art laboratories/facilities.

DEI is privileged to have the first students' run mini dairy plant with FASSAI license, HACCP certification, export permit from Export Inspection Agency, Government of India and commercial permit from US Department of Agriculture for the import of flavored milk and butter in the whole of North India. The mini Dairy plant provides students with a much needed exposure to entrepreneurship in Dairy Sector.

The Dairy plant receives pure cow milk from RSS Gaushala, Dayalbagh, which is utilized for the production of a variety of dairy products such as flavoured milk, shrikhand, kalakand, basundhi, misti dahi, salted butter, probiotic yoghurt, chocolates, etc. The products are free from artificial flavours, colors and preservatives, besides having minimal fat and sugar.

Textile Manufacturing

DEI has been a pioneer in employing ICT for teaching the subject of textile manufacturing through 91 outreach centers in India and 7 abroad, via realtime lectures.

Renewable Energy

For sustainable development, DEI has taken some initiatives towards harnessing renewable energy through solar thermal and solar photovoltaic (SPV) power plants. The institute has solar thermal cooking systems in all the hostels. The university campus is powered by 9

distributed roof-top solar PV power plants. The micro grid is being converted into a Smart Micro Grid with centralized monitoring and control through a DST CERI R&D project. There are plans to increase the capacity from 658.2kWp to 1.5 MWp. Besides the Dayalbagh campus of the institute, a total of 40kWp of power is generated by ICT Distance Educations Centers in various cities. DEI was given the Excellence Award and Certificate of Appreciation for using the CST system for Community Cooking in the Institution and second prize in UP State for Energy Conservation measures adopted in the Institute, on 29th April.

Internet of Things

For the first time in the country, DEI started a B.Voc program on Internet of things (IOT) in 2017. Skills are imparted in the fields of embedded systems, micro-controller programming, mobile application development, web application development, software development, testing and data analytics using state-of-the-art facilities. DEI has advanced labs for 1G - 5G Networks, Multimedia and Instrumentation besides system labs for mobile and web application development. Entrepreneurial exposure is provided to students through internships, 'Earn While You Learn' schemes and the Incubation facility.

Outstanding Initiatives

Some outstanding illustrations of DEI's innovative enterprise for the underprivileged sections of the society are its ATMA (Apparel and Toy Manufacturing Association), ADyNaM Foods (Agro& Dairy Nano-processing of Multi-products), and AAM (Automotive and Multi-skill) *karkhanas* in the rural and tribal belt of Rajaborari Estate in Harda District of Madhya Pradesh. With these programs, DEI has been able to reach out to the last, the least, and the lost.

ATMA (Apparel And Toy Manufacturing Association)

Through the Associations of ATMA initiative, DEI has been training rural women around Dayalbagh and 10 villages of Rajaborari (District Harda, MP). The activities of ATMA include skilling rural and adivasi women in apparel manufacture, making toys, pillows, cushion covers, bags and home furnishings. Tribal men too, are trained in *karkhanas* in bamboo processing, shoe and bag manufacturing, etc. Learners are paid on the basis of the quality of their products. Exhibitions are organized in neighboring cities and village fairs to sell the products.

Under ATMA, women are trained in manufacture of apparel, toys, bags, and home furnishings

ADyNaM Foods (Agro& Dairy Nano Multiprocessing Foods)

Under the ADyNam initiative products such as amla murabba, squashes, candy, pickle, supari, mango candy & pickle, jackfruit pickle, lemon pickle and chilli pickle are produced regularly. ADyNaM aims to skill tribal and rural women in processing locally cultivated, raw agricultural produce. Tribal women from all age groups are trained under the ADyNaM *karkhanas* by DEI faculty, who visit the Rajaborari Estate regularly. During the training,

learners are provided with the raw materials, machines etc., and given a small stipend. A Food Testing Lab has been established by DEI to ensure hygiene and superior quality of the food products prepared by the tribals. This model of entrepreneurship, which is also an "earn-while-you-learn" scheme, has empowered the local women greatly by providing them earnings throughout the year.

Processing of raw material and sale under AdyNaM

AAM (Automotive And Multi-Skill) *Karkhana*

The AAM *karkhana* imparts basic skills in repair and maintenance of farm equipment, pumps, solar lanterns, and 2-4 wheelers. Many young men trained here have opened their own vehicle repairing businesses. DEI has also signed MoUs with industries such as Yamaha Motors to train and place tribal students.

Earn While You Learn

There are various opportunities for students in DEI to earn some money along with their regular programs of study. and get paid for their workmanship in cash or kind, the latter is in terms of daily needs such as grain, pulses, oil, clothes, school uniforms, provided at extremely low subsidized rates. They are paid on an hourly basis for such services. Some of them are:

- Running canteens
- Working at DEI Dairy
- Providing uniforms to students
- Driving e-vehicles within the campus
- Monitoring CCTV live feed
- Repair and maintenance of automobiles
- Making soft toys and clothes
- Electrical maintenance and repair in Dayalbagh colony, of distribution substations, backup generator stations, overhead lines etc.
- Operating the e-classrooms for relay to ICT centers
- Assisting the admission clerks
- Helping with civil and architecture work in the institute
- Repair and maintenance of instruments related to Science and Engineering faculties
- Working in the students' mess

REZ &SEZ : Education Through Vocation

A vocational training center was established in 1980-81 in the Rural Economic Zone (REZ) of Rajaborari, MP, a tribal area predominantly, to impart training in handloom weaving, manufacturing canvas goods, carpentry, tailoring and embroidery. Certificate programs offered by DEI also include textile designing and printing, motor vehicle mechanic, garment manufacturing, plumbing, electrician etc. Soft skills such as spoken English and personality development are included in the program.

DEI has partnered with BSNL in rolling out telecommunication services in Rajaborari which has hence, become a smart and connected tribal economic hub, with access to markets.

Villagers are trained in bamboo technology, who have since, made a slew of bamboo products including music speakers. The government of Madhya Pradesh has signed an agreement with DEI to promote bamboo technology in Rajaborari.

Tribal women using telecommunication services in Rajaborari, MP

Business Advisory Clinics

DEI acknowledges that it has a major role to play in Management Education as well as assisting Micro Small and Medium Enterprises (MSMEs). Through its Business Advisory Clinic (BAC) initiative, DEI offers free advisory services to MSMEs who cannot afford the services of professional management consultants. At the same time, by working on real-life case studies, the management students of DEI get exposed to practical issues facing the Indian MSMEs.

Roadmap

Broad Objectives

- Integration of cultural skills with the National Educational Framework
- Parity of skill based vocational learning with conventional education
- Motivation of students for high performance in skill-based courses.
- Incubation of original ideas
- Creation of employment avenues for rural learners and globalization of rural economies
- Woman empowerment
- Conservation of traditional skills and heritage in rural clusters
- Technical support for rural innovations

Short-Term Objectives (5 Years)

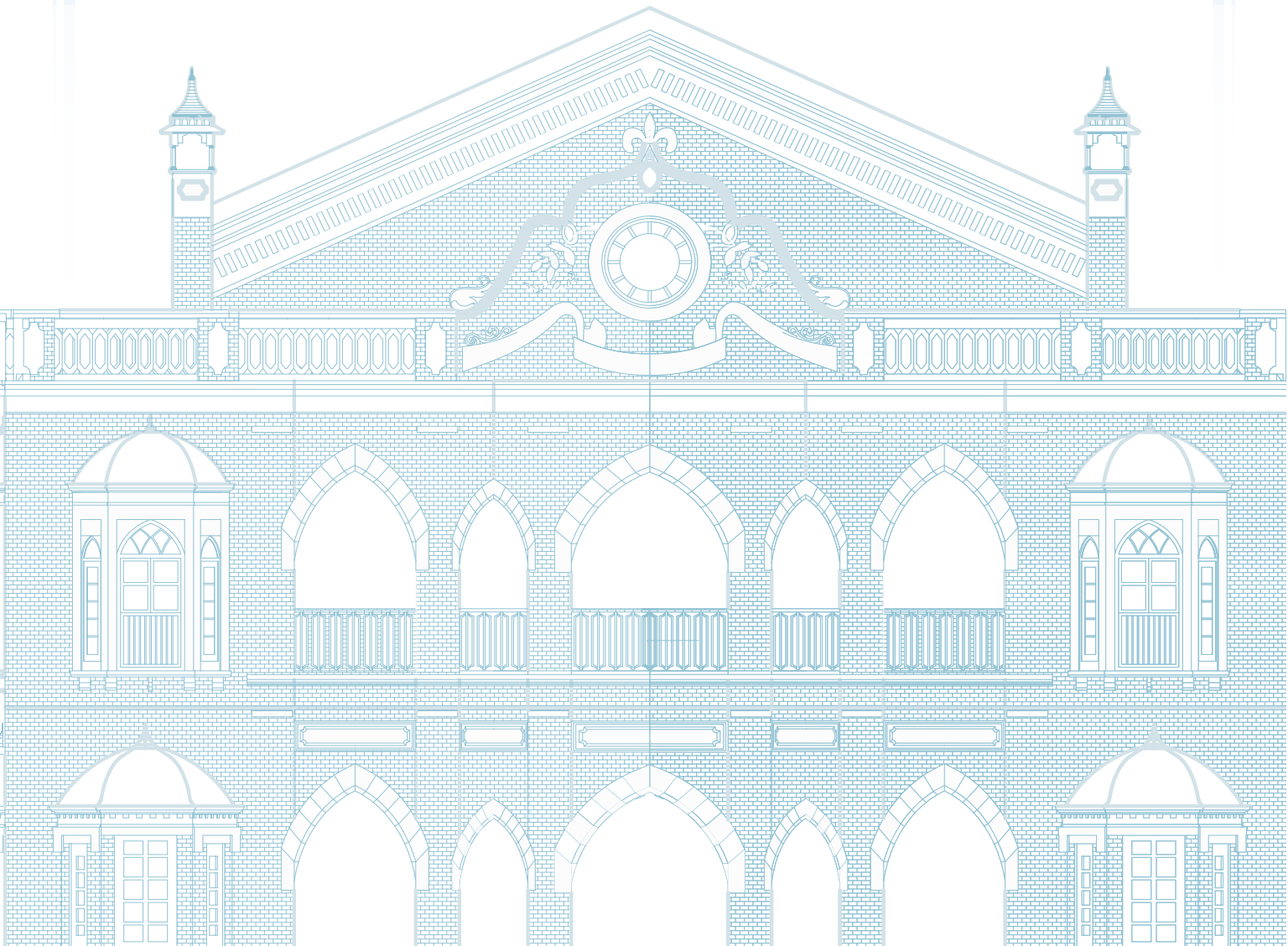
- Increase the number of modular programs on Employment Skills
- Provide on-line courses for all the skill-based programs
- Develop state-of-the-art infrastructure for skill development.
- Create a separate School of Vocational Education
- Establish an Entrepreneurial Cell to promote start-ups

Long-Term Objectives (6-15 Years)

- Provision of vocational courses to every student in line with his preferences
- Enhancement of mobility between vocational and regular education by alignment of degrees with NSQF
- Provision of courses to students with intrinsic and cross sector progression pathways
- Obtaining standardized, consistent and acceptable outcomes from training as specified in NSQF
- Quality training for achieving international equivalence of NSQF.
- Recognition of Prior Learning (RPL) to permit transition from informal to organized job markets
- Development of a Learner Support Center for global Skill Development.
- Development of a Skill Park for DEI, an Entrepreneurial University

15

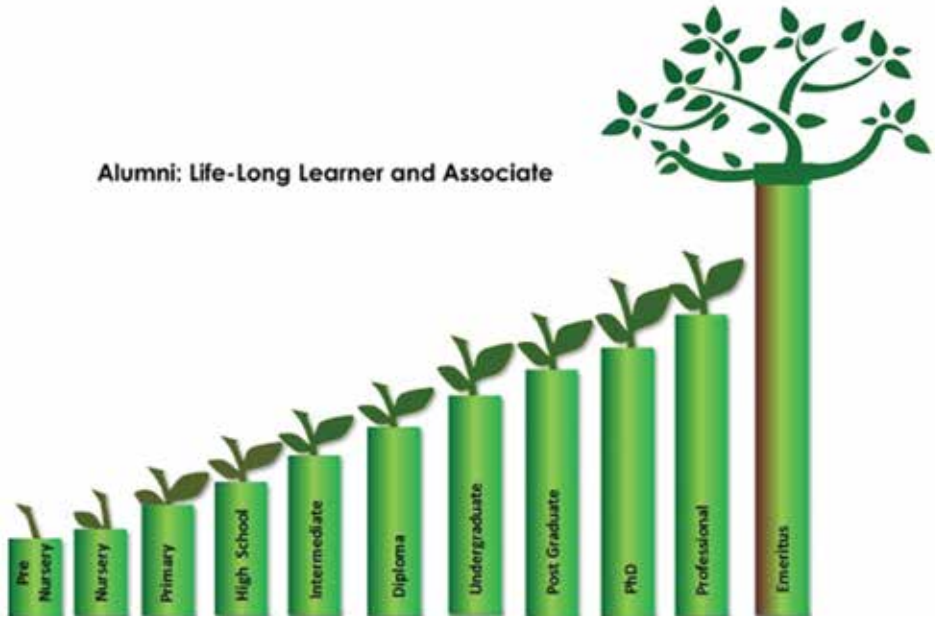
Role of Alumni



Alumni relations have played an important part in the growth and evolution of Dayalbagh Educational Institute, to its present status. The alumni of the Institute have served as brand ambassadors, loyal supporters and credible agents of its alma mater. Going forward, DEI has set milestones which the Institute aims to achieve through its partnership with alumni in coming 5 years. It has formulated a 15-year strategic roadmap to be an 'Institute of Eminence', with support of its alumni.

A unique feature of the Alumni Association of DEI is its broad and holistic perspective. The alumni have been associated with different departments and faculty levels actively, and their interactions have yielded the successful organization of alumni meets on a regular basis. For instance, 'Management Interaction for Learning Assisting, Nurturing Generation Next (MILAN)' is one such regular alumni event organized by the Department of Management. Similar events are hosted at Faculty of Engineering, Faculty of Science and DEI Technical College.

Besides the work through alumni associations, the alumni have contributed tremendously to various initiatives of the Institute. DEI- Volunteer Group (DVG) is one such group of alumni and friends, which has partnered with DEI since last few years. A large number of alumni and friends of DEI are supporting its off-campus activities also, in various capacities.



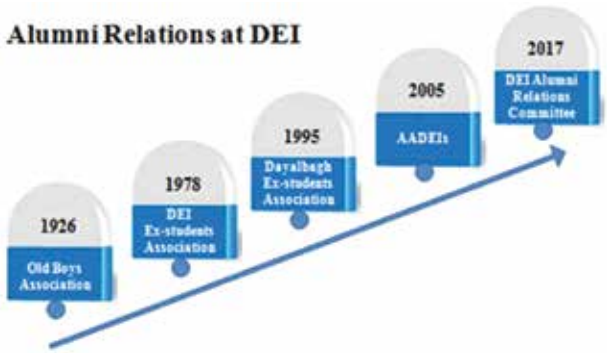
Differentiating feature of the Role of Alumni in DEI

Education at Dayalbagh begins at pre-nursery stage,continuing up to post-graduation and beyond. The Institute considers all students who have been associated with the institute at any level, at any point of time, since 1917, as its alumni. This provides DEI with a significantly large pool of alumni,compared to most Institutes. The Institute announces its 'Distinguished Alumni Award' annually, at the time of Convocation to honor one or more alumni of the Institute, who have achieved positions of eminence in different walks of life or made outstanding contribution in academic, professional or social arena, bringing laurels to the Institute. Students who have passed out from the Institute after 1917 are eligible for the award.

Some distinguished winners of the Alumni Award

History of Alumni Association at DEI

The history of alumni association at Dayalbagh Educational Institute is as old as education in Dayalbagh. It is noteworthy to mention here, that the first alumni association was formed within nine years of DEI's existence, in the year 1926. The name of the alumni association then,was 'R.E.I Old Boys Association'. This association was established to foster active participation and continued interest of the ex-students in the affairs of their alma mater. The association took the help of young boys in building up the institution as masons. This association made significant progress within five years of its inception and its first formal office was constructed in the year 1931. After nearly 50 years, the Old Boys Association became defunct. The D.E.I. Ex-Students Association was formed in the year 1978, which was reconstituted as Dayalbagh Ex-Students Association in 1995. After 10 years of its existence,this Association got dissolved as well, and The Association of Alumni of Dayalbagh Educational Institutions came into being in 2005. This association continues to partner with the Institute through vigor and passion. DEI has also promoted the concept of "friends" of DEI, to motivate others towards joining the alumni in their efforts, thereby increasing the pool of talent and support to DEI's mission.

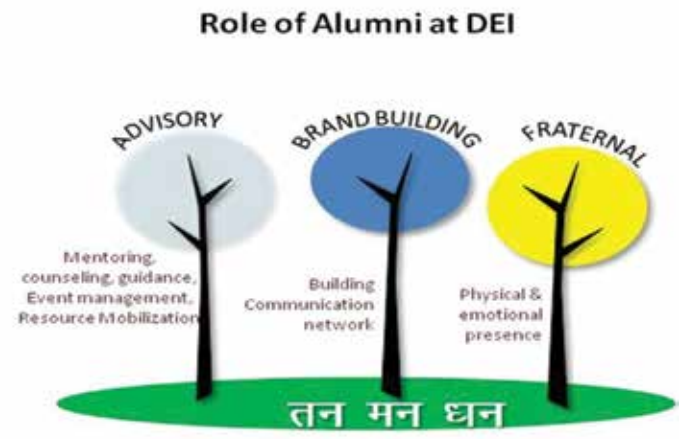


Photograph of the R.E.I. Old Boys Association, 1928 soon after its formation. The group was taken in front of the University Block of the then College Hostel.

The Patron going round after lunch and meeting hundreds of old boys assembled from all parts of the world

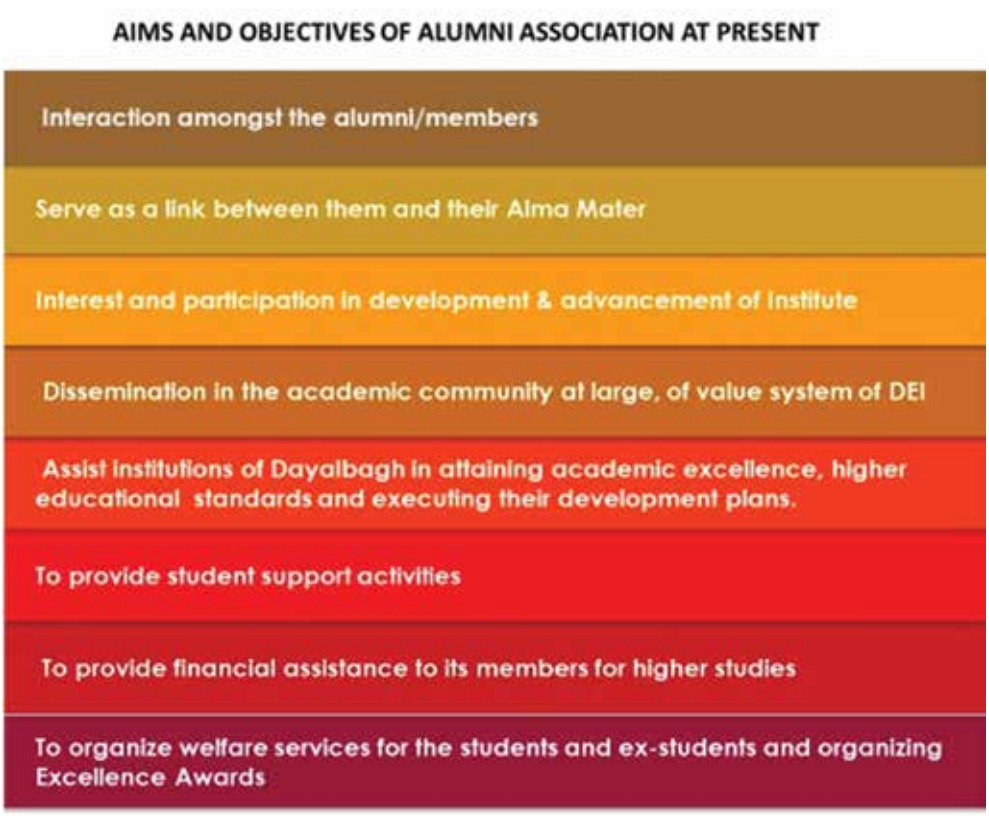
Role of Alumni at DEI

Since the formation of the alumni association in 1926, the alumni of the Institute have partnered with the Institute physically, emotionally and financially (तन,मन,धन). They have contributed through three main functions, namely, advisory, brand-building and fraternal. Under advisory functions, the alumni support the Institute by providing student services like mentorship,counseling, guidance, governance, event management and resource mobilization. Under brand building, the alumni strengthen communication with all the stakeholders of the Institute, and the outside world. Fraternal functions of the alumni association include physical and emotional presence for the institute and its members.



Aims and Objectives of the Alumni Association

In order to help the University achieve its goal, the alumni of the Institute formed The Association of Alumni of Dayalbagh Educational Institutions (AADEIs) in the year 2005, in a meeting held at Dayalbagh, Agra. It was formally registered under Societies Registration Act, XXI of 1860 on December 28, 2005.



Activities of the Alumni Association at DEI: Present Status

The alumni association of the Institute supports its mission and objectives actively through advisory, brand building and fraternal functions,besides providing financial support. Some of the initiatives of the alumni association in last 5 years are as follows:

- The Alumni Placement Assistance Cell (DEI-APAC)works closely with the Placement Officer of the Institute for campus placement. In the recent years,DEI-APAC was able to ensure placement for 90% of Engineering and 70% of MBA students. DEI-APAC has regional committees in four regions of the country and maintains links with the alumni for placement support. Job fairs are organized in these regions,time and again. Reports on placement support are submitted by regional committees annually.

- DEI-APAC helps in arranging co-op internship for the students. It also arranges to oversee such training by linking students to alumni working in corresponding organizations. A unique mentorship program run by DEI-APAC assigns expert alumni to guide the final year engineering and management students in their projects in distance mode.

DEI Placement Assistance Cell (DEI-APAC)

Campus Placements, Job Fairs, Internships, Industry Feedback

- DEI-APAC works closely with the Institute-Industry Partnership Cell (IIPC) at DEI and conducts regular surveys to collect feedback from prospective employers about their manpower requirements. Feedback is also gathered for designing and developing the curriculum of the institute. This feedback is put up before the Board of Studies, Faculty Board, Academic Council and the Governing Body of the Institute. Courses (including vocational and work experience courses) are modified to suit the needs of the industry. For instance, a specialization course in B.Tech. Engineering was introduced in line with such recommendations.
- The alumni association arranges for short courses/lecture sessions to prepare students for interviews, improve their communication and resume writing skills etc. A cell is run by the association for guiding and mentoring students for national tests like GATE/NET/SLET/IAS etc.
- The alumni association offers short-term courses on spoken English, personality development and interview skills, resume writing, elementary computer courses, Tally, ERP 9, advanced computer courses on networking (etc.) in campus on a regular basis, not only for students, but for alumni as well.
- The alumni association helps in the development of instruction manuals for vocational courses under the Distance Education Program of DEI. It also helps in designing courses for various subjects including MBA, in online mode through its network of subject experts.
- The alumni association identifies the learning needs of advanced learners and responds to them. As part of the Under Graduate Research Awards (UGRA) scheme, the Institute,supported by the alumni association, has initiated a few awards to encourage bright students at the UG level from science and engineering streams,to undertake research projects.
- The alumni association supports the multimedia laboratory of DEI in monitoring the trends and issues pertaining to developments in the Open Source Community, for the benefit of the university's educational processes.
- In order to facilitate the visit of eminent researchers to campus as adjunct professors, the alumni association supports DEI in inviting such people to stay and work in DEI for long duration. The alumni association runs a scheme for providing funds to pay honorarium to persons of eminence who hold Chairs of Excellence in various departments. The department of Music is one such example.

- The alumni association helps DEI in organizing national and international alumni meets to establish contacts with individuals at senior positions. This helps increase the number of job enablers for co-op education in engineering and management programs of the institute. Every year on January 1, the Institute and the Alumni Association, jointly organize an international, alumni meet. It is more popularly termed as 'Shiksha Diwas'. This meet is organized with a view to spread the alumni network across the globe. It helps in identification of academicians,industry professionals and entrepreneurs who can contribute towards the vision of the Institute.
- The alumni association supports DEI in its outreach programs. One such example is the organization of a bi-monthly, free, medical camp for locals, under the aegis of the NSS wing of the Institute.
- The alumni association supports DEI in developing AYUSH courses by arranging for visiting faculty and helping in syllabus-updation.
- The alumni association publishes a periodic newsletter to showcase its contribution towards the development of the Institute and community at large.

- **Wealth Creation by Alumni**: The alumni association has been promoting distance education and development of ICT facilities, in addition to the corpus of the Institutesince the last five years. Details of such contribution in the last 5 years are as under:

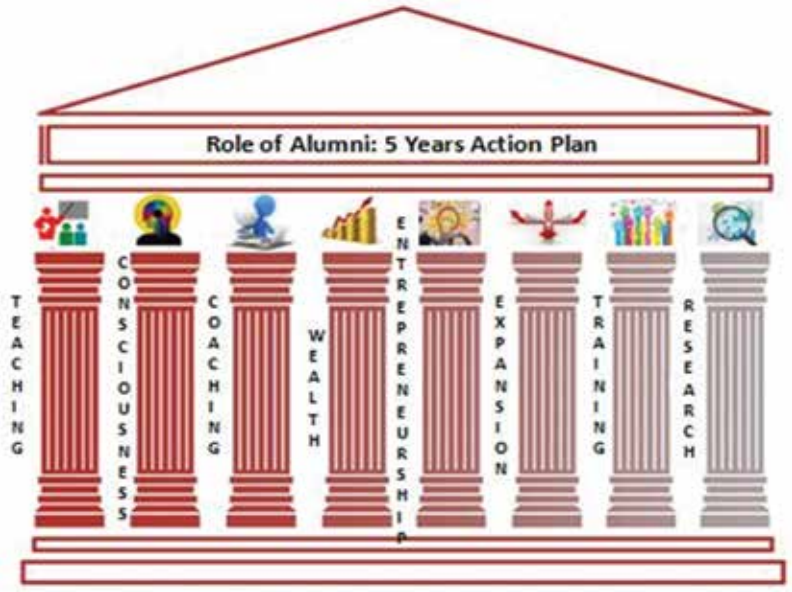
  - The alumni association provides funds for Under Graduate Research Awards (UGRA) to encourage undergraduate students to pursue research projects. So far, approximately INR 27 lacs have been provided by the association under this head.
  - The alumni association has funded the installation of EDUSAT facilities at 57 study centres. It has funded the development of ICT Centres at Delhi, Dayalbagh and Bangalore, as well. Approximately INR 7.8 crores have been contributed by the association under this head.
  - Alumni association also provides funds for the development of Multimedia Lab and e-class rooms at DEI. Nearly INR 2.3 crores have been provided by the alumni association under this head.

- The alumni association has provided seed funds for initiating research in the area of Astro Particle Physics, which eventually matured into an MoU with TIFR. It created a Chair of Excellence in some departments of the University. INR 6.3 lacs were contributed by the association under this head.
- The alumni association provides financial support to students and staff of DEI for foreign visits, to attend conferences, establish academic contacts with other educational institutes of eminence, etc. For example, every year, the alumni association provides travelling assistance to DEI contingent for attending the Science of Consciousness Conference organized by the University of Arizona, USA. In the last 5 years, the alumni association contributed INR 60.3 lacs approximately, under this head.
- The alumni association provides financial support for the purchase of laboratory equipment in the institute. Under this head, the alumni association has contributed INR 2.5 crores, approximately.
- The alumni association helps DEI in obtaining quality / standard certifications. Under this head, INR 6.5 lacs were contributed towards ISO 9001 certification.
- The alumni association aids campus development. A furnished guest house has been made available by the alumni association for the Institute.

Resource Augmentation at DEI: 5 Year Action Plan

In addition to the ongoing pursuits of the alumni association, the Institute expects enhancement in the role of alumni, towards the following initiatives in particular:

- Assistance will be sought from alumni in teaching specialized courses. Apart from the existing courses taught in regular and online modes, the alumni association is expected to become an active partner in AYUSH courses, proposed to be offered by the Institute in near future.



The alumni association is expected to partner with DEI in imparting education based on its consciousness model and research initiatives of the Centre for Consciousness Studies. It would support all the education initiatives of the Institute and partner in periodic evaluation of techniques for quantifiable measurement of

student-development across all age groups, from pre-school to Ph.D.

- Each alumnus will adopt an identified student of the Institute under the proposed 'Each One-Coach One' scheme and groom the student through various stages of his/her career such as training and final placement. This contribution will be rendered on the dimensions of तन and मन, rather than धन in line with the ethos of the Institute.
- Besides the training and development activities of the Institute, the alumni association is expected to establish another wing of DEI-APAC, namely DEI-A Entr-AC (DEI-Alumni Entrepreneurship Assistance Cell). DEI-A Entr-AC will focus on providing skill training, consultancy service, entrepreneurship counseling and mentoring programs to facilitate entrepreneurial pursuits of students at DEI, and the community at large. It will also encourage students to take up entrepreneurship as a career.
- The scope of alumni-supported employability skills training will be enlarged to include entrepreneurial skills. Short term courses on communication, analytics, negotiation skills, venture capital, risk management etc. are proposed to be offered.
- In coming 5 years, the alumni association shall focus on providing industrial as well academic expertise to the Institute, in the most effective way possible. It will support the expansion programs of the Institute,including development of off-campuses in India and abroad.
- The alumni association is planning to establish an 'Alumni Research Wing' in the Institute. This will facilitate industry relevant research in the Institute through active support of the alumni, along with financial assistance for the same.
- The alumni association plans to establish an 'Alumni Entrepreneurship Cell' in the Institute. It also plans to provide financial support by the way of seed money for indigenous entrepreneurship opportunities, explored by students of the Institute.

Role of Alumni in Providing Resources for the Institute: Strategic Plan for 15 Years

The Institute has already embarked upon an ambitious plan to achieve its Vision for 2031. It plans to undertake scalable expansion to provide affordable and quality education to the *least, last and the lost*. The number of students in DEI is estimated to go beyond 30,000, by the year 2031-32. This will require considerable resources in terms of faculty, industry mentors and learning associates, not only in India, but abroad also. The alumni of the Institute are committed to shoulder this responsibility along with the Institute. Apart from supporting the global expansion plans of the Institute, the following broad areas are being examined by the alumni for partnership with the Institute:

- **Global Expansion of Quantum Jugaad Model:** The Quantum Jugaad model of DEI is built on the cornerstone of economy and flexibility, at both nano and macro levels. The Institute has already demonstrated a robust beginning in this pursuit with the production of a variety of items like dairy products, garments and soft toys, etc. In the next 15 years, the Institute will aspire for the global expansion of this model with the help of its international alumni base.
- **Global Expansion of Quality and Value Model:** Total Quality Management (TQM) is firmly embedded in the education policy of DEI. This concept emphasizes on 2 key aspects, namely, quality orientation and value-based education. The quality value model renders itself readily to affordable and quality education. The benefits of this model need to be shared with global stakeholders, particularly those in the developing countries. This provides a potentially successful example of South-South co-operation. The role of alumni is perceived to be crucial in this endeavor.
- **Global Expansion of Sigma Six Q Model:** Sigma Six Q is a sustainability model that adopts practices based on six qualities, for better worldliness. These qualities are innovation, air quality, water quality, education and healthcare, agriculture and dairying and values. The Institute has embedded these qualities in its education policy. It also aims to achieve massive scalability of this model. The alumni of the Institute are expected to demonstrate active partnership in coming 15 years to help DEI accomplish this objective.
- **Global Expansion of Theology, Consciousness and the Scientific Exposition of Spirituality:** One of the salient strengths of DEI lies in the area of theology, consciousness and scientific exposition of spirituality. Indicators across the globe point to the increasing demand and popularity of this field, mainly due

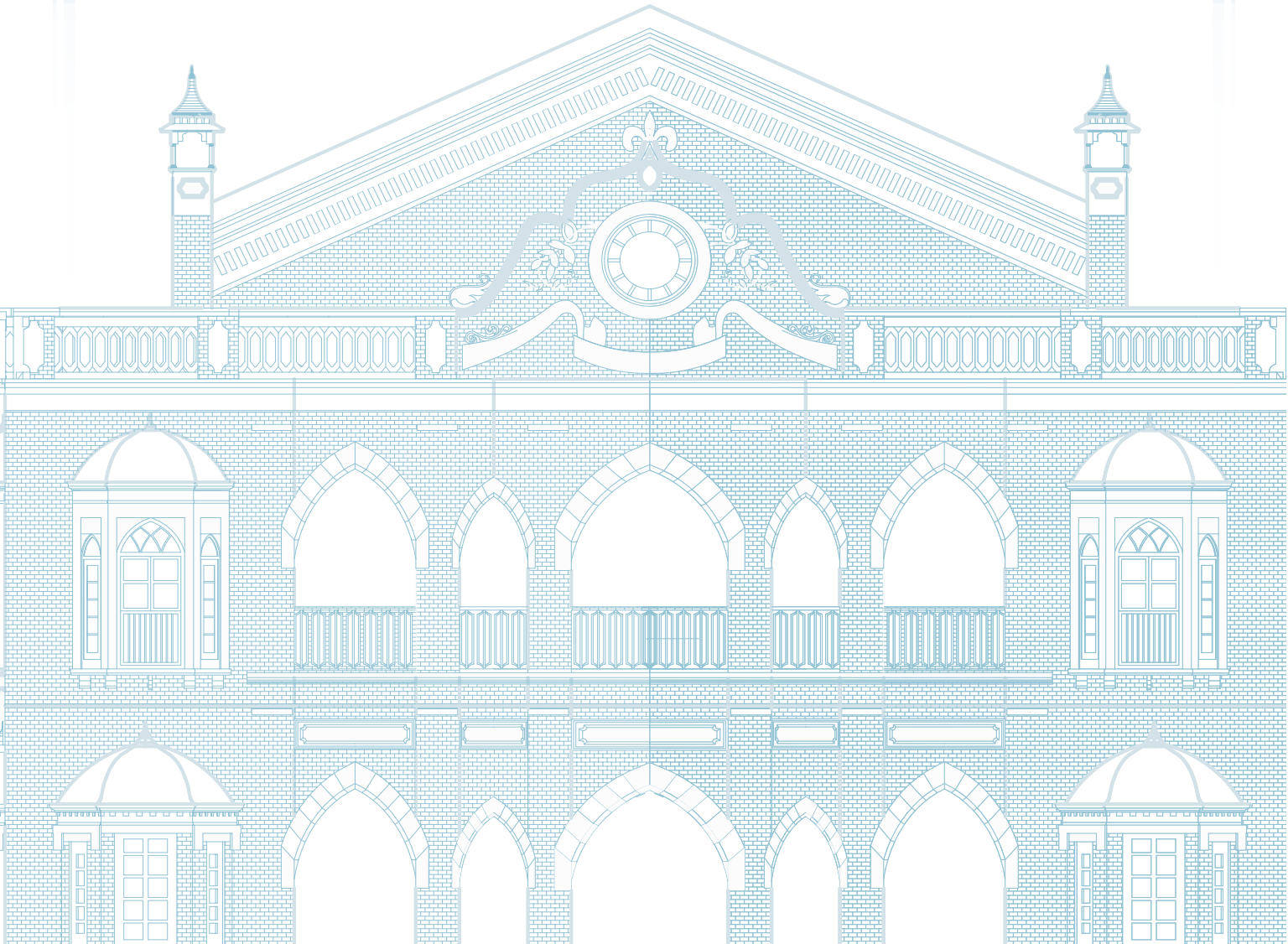
to reasons like the rise of terrorism, civic disorder and religious bigotry. DEI has taken initiatives to provide a scientific outlook to the field of consciousness and spirituality, which hitherto, remained confined to the domain of religion. A large number of alumni of the Institute, in both India and the West, have shown keen interest in the Post Graduate Diploma in Theology course, offered by the Institute. Alumni have also been active in research in consciousness studies. A large number of alumni participate in The Science of Consciousness, an international conference hosted by the University of Arizona, USA. The Institute has also started a blog on DEI Quantum Nano and Consciousness Centre. A large number of followers (of the blog) are from Western countries like Germany and USA. In the next 15 years, such pursuits are bound to increase, and alumni are expected to play a crucial role in dissemination as well as convergence of Eastern and Western philosophies.

- **Global Expansion of Alumni Associations from Partnering Institutions:** An increasing and desirable trend in various educational institutions within India and abroad is collaboration of alumni associations with partnering institutions, particularly, those institutions which share a large proportion of the common alumni-base. In the next 15 years, DEI would like to forge such relationships with its MoU partners such as the IITs, IIMs, TIFR, University of Waterloo, University of Maryland etc.
- **Global Wealth Creation:** In coming 15 years, Dayalbagh Educational Institute intends to strengthen its partnership with the alumni association to support its broad goal of imparting holistic education. The Institute is not interested in monetary contributions; rather, it looks forward to "wealth" creation by the alumni. The connotation of wealth in this context refers to creation of opportunities for the Institute,specifically aimed at entrepreneurial pursuits. This is especially important for the benefit of students at research, internship and vocational fronts. Additionally, the term wealth refers to the strength of value and quality attributes in the Institute.

The alumni of Dayalbagh Educational Institute play an active role in supporting their alma mater. The alumni imbibed high values as students during their formative years; they feel indebted to their alma mater and try to support it as much as possible today. Since 1926, they have been contributing towards the enhancement of the quality of education being imparted to the students. DEI, as the Institute of Eminence, is looking forward to the continued support of its alumni in achieving its mission and objectives.

16

Technology Interventions



At Dayalbagh Educational Institute (DEI) technology has been harnessed and deployed in education, collaboration and community development. DEI has made significant investments in infrastructure, developed innovations in education with technology interventions to reach the lowest and last sections of the Society. Dayalbagh Educational Institute (DEI) uses Technology for effective communication of teaching thus improving the teaching-learning process.

Current Status

Listed below are Technology Interventions at DEI which have already been implemented. These are detailed in the subsequent sections.

Technology Interventions	
	SWAYAM (MOOCS)
	Vidyaprasar
	eEnabled Vocational Courses
	Digitization of Courses
	Virtual Laboratories
	Quantum & Nano Computing Virtual Center
	(i-c-n-c)Tall
	2G to 5G & IOT Labs
	EdRP Software
	Library Automation
	Student Centred Online Teaching-Learning System (school Level)
	Rapid Prototyping Laboratory and 3D Printing Center
	Surveillance System
	Rural Communication Network
	ICT Centers
	Telemedicine & Hole in the Wall Experiment
	Open and Distance Learning

SWAYAM @ DEI

SWAYAM (https://swayam.gov.in/) is a programme initiated by Government of India and designed to achieve the three cardinal principles of Education Policy viz., access, equity and quality. An India specific MOOCs (Massive Open Online Courses) in Visual Arts has been launched in 2nd Phase as a part of SWAYAM (https://swayam.gov.in/) to which DEI is contributing with 16 papers. Presently this course includes 2 papers (1. Portrait Study and 2. Landscape Study).

Vidyaprasar: The DEI Open Course Portal

DEI launched Vidyaprasar (www.vidyaprasar.dei.ac.in), an on-line collaborative learning, live web cast and content management system on its Founder's Day (January 31) in 2011, to provide students with state-of-the-art learning resources. In its present state of development, Vidyaprasar provides course web publishing, file storage and sharing facilities through a web-based connection to the Internet thus providing full portability. Vidyaprasar presently hosts course websites and material,with learning resources such as indexed lecture videos,

lecture notes, question banks, quizzes, long tests and Wiki for 32 courses in Computer Science and Engineering. Vidyaprasar can be accessed through the DEI Web site www.dei.ac.in.

The courses have been developed as a part of the project sponsored by the National Mission on Education through Information and Communication Technology (NMEICT) of the MHRD.

Vocational Courses e-Enabled with delivery through ICT and Conversion to Regional Languages

The Center for Applied Rural Technology (CART) has embarked on a programme under the National Mission on Education through Information and Communication Technology (NMEICT) of the MHRD, in which e-Content is to be generated consisting of Video Lectures, Course-Wiki, and On-Line Consultation. A pilot project on Textile Designing and Printing has been completed using the using the four-quadrant approach. Besides English, they have been translated into Hindi and Tamil. Complete programmes have also been developed for internal use for the following Certificate Courses:

- Motor Vehicle Mechanic: Two-Wheeler and Four-Wheeler
- Textile Technology
- Wireman/ Electrician

Digitization of Courses

Under this initiative, The Department of Management, Faculty of Social Sciences, has digitized almost all its courses. For each of the courses the following resource material is available: Syllabus, Lecture schedule, Video Lectures, PPTs, Transcript/Notes, Self-Test questions/Question Bank etc. The material is available on a dedicated e-domain for wider dissemination and access.

Virtual Laboratories

Govt. of India, under its objective of Right to Education initiated a National Mission on Education through Information & Communication Technology (NMEICT) with an aim to use Information and communication technology (ICT) to bridge the divide of educational resources available in the country. The impediments in this aim lie in the fact that education not only involves instruction but also hands-on training such as that available in laboratories. The question remains: Can these be delivered through ICT? In this regard the Ministry of Human Resources (MHRD) floated a pilot project on Virtual Labs in May 2009 with an objective as to how a laboratory experience can be delivered to a remote student who has no access to any form of laboratory facility. Ten institutes that include eight IITs, Dayalbagh Educational Institute and Amrita University were chosen amongst those who volunteered to take up this challenging assignment with little or no precedent available to them.

DEI has established the following Remote Triggered Laboratories that have been indigenously designed to enable students to conduct advanced experiments:

1. Chemical Sciences

- Virtual Analytical Chemistry Laboratory
- Virtual Chemistry Laboratory

2. Physical Sciences

- Virtual Microwave Laboratory

3. Electronics & Communications

- Virtual Advanced Lab for Design and Test in Electronics

- Virtual Advanced Lab for Interactive Design and Test in Electronics
- Remote Triggered-Analog Communications Electronics (RT-ACE)
- Remote Triggered-Signals & Systems Lab (RT-SigSys)
- Remote Triggered-Fiber Optic Communication (RT-FibCom)

4. Electrical Engineering

- Virtual Power Systems Laboratory

5. Mechanical Engineering

- Metal Forming and Solid Mechanics Laboratory

Quantum and Nano Computing Virtual Center

The Quantum-Nano Centre is a multidisciplinary Centre at Dayalbagh Educational Institute, Agra set up under MHRD National Mission on Education through ICT (NMEICT), with partners such as IIT Kanpur, IIT Delhi and IIT Madras, besides several international collaborators.

With a focus on the rapidly growing area of quantum-nano computing and quantum information sciences, the Quantum-Nano Centre provides an environment for scientists and mathematicians to explore the fundamental physical characteristics of quantum systems, to devise and implement prototype quantum computers, and to develop quantum algorithms and novel applications. Through a vigorous program of lectures, seminars, and workshops, the Centre stimulates intellectual exchange among students, faculty, and academic partners. Videos of all the lectures/ Conferences/ Seminars/ Workshops are available at http://www.dei.ac.in/dei/quantumNano/index.php/videos.

iNFORMATION-cOMMUNICATION-nEURO-cOGNITIVE-) Technologies Assisted Language Lab, (i-c-n-c-) TALL

Dayalbagh Educational Institute has established (iNFORMATION-cOMMUNICATION-nEURO-cOGNITIVE-) Technologies Assisted Language Lab, popularly called "(i-c-n-c-) TALL" to facilitate the teaching and learning of various languages, and also to encourage interdisciplinary research in the realms of consciousness, literature and languages. The endeavor is to develop it as a central teaching cum Research Center of the Institute. It functions in conjunction with the Centre of Consciousness Studies DEI.

2G to 5G and Internet of Things Laboratory

This new laboratory has been set up in the Department of Physics & Computer Science with an objective of grooming graduate students towards the upcoming technology trends in communication. This laboratory presently has 2G live test bed and a 3G-trainer kit. This lab also provides students a ready to use platform to play around with their imagination and design their own applications to connect and control machines, devices, vehicles and appliances. As our next mile, we propose to include a live LTE setup with real-time hardware development for 5G.

Educational Resource Planning (EdRP) Software

The Institute has successfully implemented and installed the following as a part of the NMEICT project funded by the MHRD

- Admission System

  (http://admission.dei.ac.in:8088/admissionform/account/getApplicantLoginScreen.htm)
- Course Registration, Examination and Result Processing System.

This automates the entire progression from student registration to enrolment to capturing evaluations to result and degree generation.

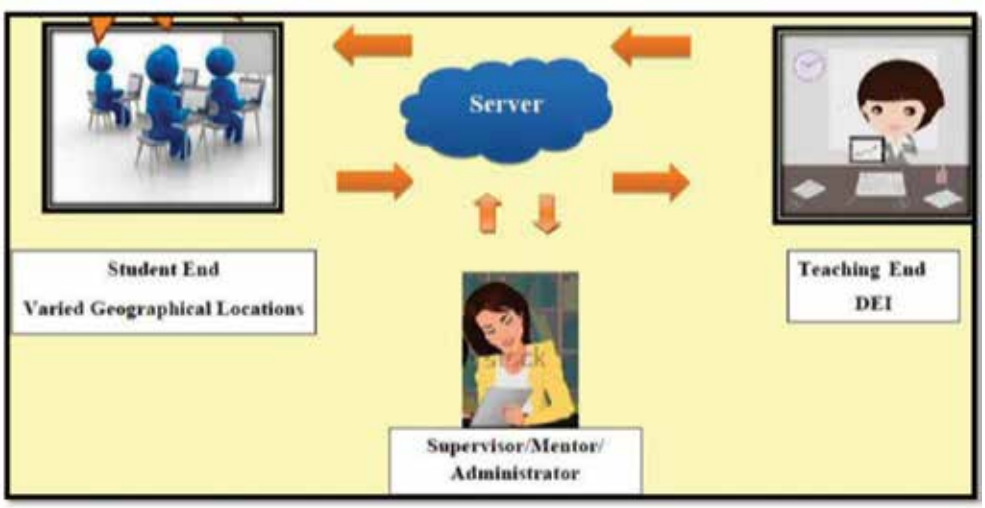
- Optical Mark Recognition (OMR) Evaluation System
- Online Quiz System
- Project Planning System

Library Automation and e-Journal Services

Book Accession and Loans at the DEI Central Library has been fully automated today with the NewGenLib integrated library management system. The Library is also equipped with the latest e-journals by the UGC-INFONET Digital Library Consortium, accessible through campus-wide LAN. In addition to providing basic library services, both in traditional and digitized forms, the library also provides Digitization Services, Shodh Ganga (http://shodhganga.inflibnet.ac.in/) Access, Plagiarism Checks and other services such as Internet Access to students and staff.

Student Centered Online Teaching-Learning System (SCOTLS)

The SCOTLS is a system of Online Teaching designed at DEI in which a teacher at one end can teach a number of remote students at diverse locations in an interactive manner. This has been launched initially as part of B.Ed. and M.Ed. Internship Programme. It is to be extended in future to all levels of education. It has two-way benefit - (A) providing quality learning experience to under-resourced masses (B) exposure to prospective teachers to the integration of latest technology tools with pedagogy. The simplified representation of the model is as shown in figure below.



Additionally, the model will be used to expose and train the teachers of the remote schools in innovations in teaching-learning leading to sustained quality enhancement in these schools. This will be done with the help of prospective teacher educators. Hence the programme will run at two levels:

- B.Ed. interns teaching school children
- M.Ed. interns teaching school teachers

This initiative further progresses the institution's goal of providing education at the last mile coupled with relevance and excellence. The Dayalbagh Education Institute (DEI) has been working on this mission for the last hundred years. The recent partnership of the Institute with the Microsoft and Maharashtra Government is a case in point where the Institute is

providing ICT skill based programme (which is one of the skill-based courses offered) at no cost to locals of Harisal (a village in Maharashtra) with the objective of developing Harisal as digital village.

Rapid Prototyping Laboratory and 3D Printing Center

Recently an Additive Manufacturing (3D Printing) facility has been established at DEI. Additive Manufacturing (AM) provides a direct way of converting digital data into physical objects. Understanding the advantages and limitations of AM technologies is important for future engineers in developing new engineering systems and identifying emerging opportunities in developing products for mass customization. Practical experience is given through a Lab Course.

Surveillance System

Dayalbagh Educational Institute set up an Open Security Laboratory, to design its own unique solar-powered surveillance solution system. This involves students and faculty in creating and implementing their independent surveillance solutions. The students were given an opportunity to build an integrated security system, which also provided them with hands on training. Initially, the project was implemented on a small scale to understand its capability and later, extended to a comprehensive fibre optic based network video solution enabling Real-time monitoring of the campus, residential facility and administrative offices.

Telemedicine

DEI has helped in implementing telemedicine initiatives wherein expert medical opinion is available via e-consultation in video conferencing mode. These have been extended to places like the Rajaborari Forest Area in Madhya Pradesh and Murar in District Buxar in Bihar. These sessions are integrated into the multi-disciplinary free medical camps that are organized in the villages adjoining the DEI campus and in remote and backward areas like Rajaborari in M.P., Murar in Bihar, MTV Puram in Tamil Nadu.

Hole-in-the-Wall

A unique experiment has been designed and implemented to spread computer literacy among village children by providing access to a facility with multimedia computers, big displays, speakers, specially designed /selected computer applications and the right environment for rapid peer learning. The facility with minimal supervision and peer learning environment provides a great opportunity to the children to shed their inhibitions and become conversant in basic Information and Communication Technology (ICT) skills. At present 540 children from the neighboring villages are registered in this programme.

Hole in the Wall Experiment being conducted in Multi-Specialty Free Medical and Assistance Camps

Open and Distance Learning

In 2004, DEI launched a major social service initiative and outreach programme with the objective

"…to extend the benefits of vocational training via distance mode of education to remote and backward areas for empowerment of economically weak persons especially women who did not have access hitherto to quality education at affordable low cost or even free of cost"

(Prof. P.S. Satsangi, Systems Movement: Autobiographical Retrospectives in International Journal of General Systems, vol.35, No 2, April 2006).

The initiation was marked by the launch of the Certificate programme on Motor Vehicle Mechanic at Melathiruvenkatanathpuram (MTVPuram), a remote village in Tamil Nadu with rampant unemployment and economic backwardness. Today, the initiative is providing education and has become a mission to skill, empower and create entrepreneurs amongst the underprivileged. Spread around 100 Centers in India and abroad and in readiness to be extended to 400 centers, the objectives are in harmony with the Skill India Mission.

A. Aims and Objectives

The main objectives of the Open and Distance Education Programme of DEI are:

- To extend the benefits of the innovative, value-based and comprehensive education to all sections of society.
- To provide need-based education at low cost.
- To train weaker sections of society in vocational skills to make them employable.
- To facilitate empowerment of women.
- To cater to students who cannot afford the cost of education away from their homes.

B. Programmes on Offer

a. One-Year Certificate Level Programmes:

- Motor Vehicle mechanic (4-Wheeler)
- Dress Designing & Tailoring
- Textile Designing and Printing
- Modern Office management and Secretarial Practice
- Wireman
- Electrician
- Textile Technology
- Cutting and Sewing
- Office Assistant cum Computer Operator

b. Three -Year Undergraduate Level Programmes:

- B Com (Hons.)
- BBM (Hons.)

c. One–Year Post Graduate Diploma Programmes:

- Theology
- Computer Science and Applications
- Journalism and Mass Communication

d. Postgraduate Degree Programmes:

- M. Com. (2 years)
- MBA (3 years)

e. 9-week Modular courses

- Block Printing
- Tie & Dye
- Screen Printing
- Sewing Operations
- Children's Clothing
- Hand Embroidery
- Industrial Painting
- Welding
- Basic Electronics & Repair of Inverter, UPS and Stabilizer
- Bamboo Application Technology
- Operation & Maintenance of Solar Power Plants

Beginning with enrolling class 8 dropouts (with age no bar) and unemployed youth at the certificate level, the DEI model of education provides multiple entry and exit points enabling a student to move seamlessly, vertically, from the vocational to the academic stream and vice-versa. AICTE selected DEI as the first Institute in the country under the NVEQF framework.

C. DEI Information Centres

DEI offers its programmes in the Distance Mode through multiple Information and ICT centres. The DEI Information Centres are located in 19 states of the country and abroad. Regular six days a week classes are an intrinsic to the distance education programme. Since the programmes are skill-based and employment-oriented, labs/ workshops attached to the class rooms are also provided. A Centre with rooms of adequate size is a pre–requisite for any programme to start.

Each Centre conducts between 1 to 10 programmes and has students numbering from 5 to 200.

STATISTICS ON THE CURRENT STATUS OF DISTANCE EDUCATION PROGRAMME AND THE INFORMATION CENTERS

Programmes on Offer	16
Number of Centres	94
Programmes in Centres	246
Students	~3000
Mentors & Facilitators	834
Visiting Faculty	251

GLIMPSES FROM INFORMATION CENTERS AND ICT CENTERS

Dress Designing & Tailoring

Textile Designing and Printing

Edusat Class in Progress

Motor Vehicle Mechanic Practical

D. Student Support Service

Extensive support is provided to the students through the following ways:

- Self-instructional print material in the form of books for students and e-lessons which are supplied to the students.
- Personal contact programme at the main campus.
- Financial assistance: Stipend is provided on merit cum means basis by the three societies to 20% of the students in each programme.
- Career Guidance/ Counseling / Placement Assistance provided by a network of Training & Placement officers of Alumni Placement Assistance Cell (DEI-APAC).

E. Modes of Delivery

At DEI, different modes of programme delivery have been adopted. For some of these, such as the blended mode, DEI has been a pioneer.

Synchronous Learning:

A learning event in which geographically distributed students are engaged in learning at the same time. Synchronous learning is enabled and facilitated via video/ web conferencing tools with which students listen to a lecture while simultaneously taking part in the discussion.

At DEI, diploma, degree and higher-level programs are offered in synchronous mode through information and communication technology at different ICT Centers. The rural ICT Centers are at Murar (Bihar), Melathiruvenkatanathpuram (Tamil Nadu) and Timarni-Rajaborari (Madhya Pradesh) whereas urban ICT centers are located in Amritsar, Bengaluru and New Delhi. The courses offered at these ICT Centers in the synchronous mode include degree courses, like B.Com. (Hons.), BBM (Hons.), BEd, MBA, MCom, MTech, and PG Diploma courses in Theology, Journalism & Mass Communication and Computer Science & Applications.

Semi-Synchronous Learning:

Learning in which some part of the course content/ interactive sessions may be in the form of synchronous learning, and all other lectures are available in an encoded format at a server for one-way streaming. Interactions are not possible with one-way streaming, but the videos can be viewed anytime, anyplace. At present the Post Graduate Diploma in Theology programme is offered in this mode.

Blended Learning:

In blended learning, students are provided with course booklets while lessons recorded on DVDs are played back to the students. Classes are held in the presence of qualified mentors who clear doubts and guide students. Since centers have either Edusat or Internet connectivity, two-way interaction with course coordinators at DEI Dayalbagh supplements the student's education. Blended learning combines delivery of instruction material via videos that are played in the classroom, face-to-face mentoring and local hands-on laboratories/ workshops.

Online Learning:
Online learning is the newest and most popular form of distance education today. Also known as eLearning, it is learning that takes place over the Internet and is the fastest growing mode of distance education today. DEI has launched the e-DEI-Distance Education programme and participated in the MOOCs initiatives launched by the Government of India. The VidyaPrasar portal (http://vp.dei.ac.in:8081/vp/) hosting 32 courses that includes video lectures was launched. These lectures can be accessed over the public web but do not offer any certification.

Strategic Plan

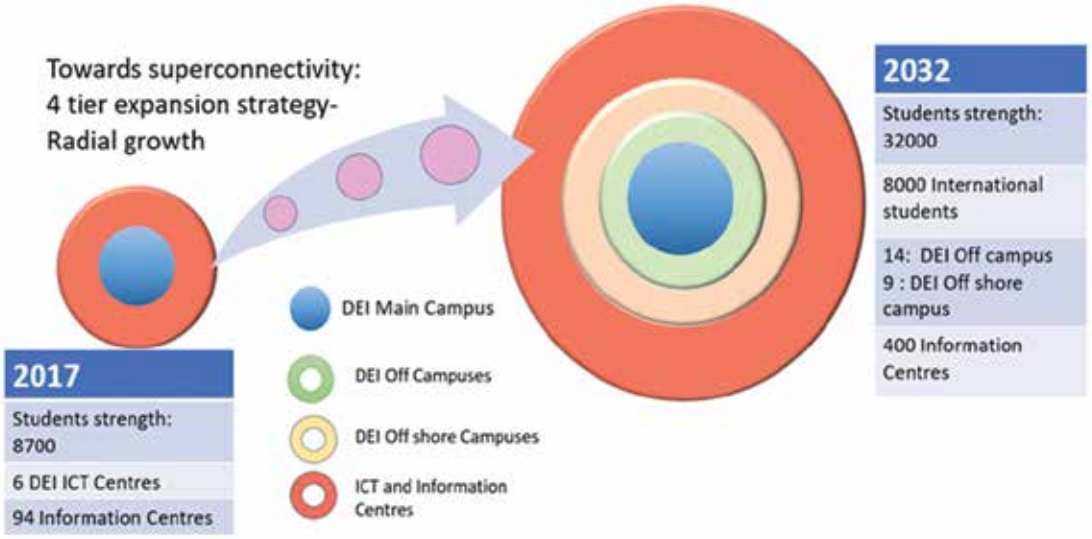
Keeping in view the requirement to educate the masses and to provide skilling at a cost affordable to the underprivileged, the following plan of action is envisaged.

Expansion of Information Centres, Off Campus and Off-Shore Campus

Expansion of Information Centers to support an estimated enrolment of around 32,000 students. The radial growth is achieved by expansion of three tiers: DEI main campus at the core; surrounded by DEI off campuses and ICT centres; which in turn nurture open and distance learning centres. This expansion will be based on the Requirements Model framed by the Distance Education Cell of the DEI. The model lays down the basic requirements in terms of space, infrastructure, personnel and finances for DEI Information Centers for theoretical and practical-based programmes.

The expansion strategy is depicted in the following Figure, where the expansion from current state (as of year 2017) of around 8,700 students with 6 DEI ICT centres and 94 learning centres to around 32,000 students including 8,000 international students with 23 DEI off campuses with 9 International Off-shore campuses and around 400 open and information centres is targeted in year 2032.

The phase wise expansion plan for DEI off campuses, ICT centres and open and distance learning centres is shown below:



Phase wise growth of learning centres and number of students

	Current	2018-2022 (Phase1)	2023-2027 (Phase 2)	2028-2032 (Phase 3)
Off campus	3300	9300	16000	25000
DEI main campus	5400	6700	7000	7000
Total students	8700	16000	23000	32000
Open learning centres	94	160	250	400

It is proposed to have the following DEI Off campuses in India and Abroad by the year 2032.

In India

- Amritsar
- Bangalore
- Bolarum
- Derhgaon
- Kakinada
- Mirzapur
- MTVPuram
- Murar
- Rajaborari-Timarni
- Soami Nagar, Delhi
- Surat
- Kurnool
- Secunderabad
- Hyderabad

Overseas

- Atlanta
- Chicago
- New York
- San Francisco
- Toronto
- London
- Sri Lanka
- Dubai
- Nepal

The projected national presence by proposed DEI Off site campuses are reflected in two separate maps above, and highlight the urban and rural diversities as well.

Case Studies

Transformation through Academics, Vocation and Entrepreneurship Education

The Rajaborari Estate is a cluster of 10 villages nestled in dense bamboo and teak forests in the hilly terrain of Harda district in Madhya Pradesh. The Estate supports an Adivasi population of over 4655, belonging mainly to the Korku and Gond tribes. It has a total area of 7988 acres, of which 5069 acres is forest land. Several socio-economic and educational activities have been launched by Dayalbagh in this Estate. Basic infrastructure such as dispensaries and schools have been developed. Roads paved, and locally practiced skills were vocationalised. In order to empower all stake holders with concept of self-sufficiency, sustainability (eco-friendliness) and smart technologies intervention, provide quality education that is ICT enabled and communication facilities, adequate communication infrastructure has been setup.

The Communication Network

Information and communication facilities play a major role in imparting distance education, in telemedicine, entrepreneurial activities, procurement of raw materials, marketing of products and reaching out to the outside world.

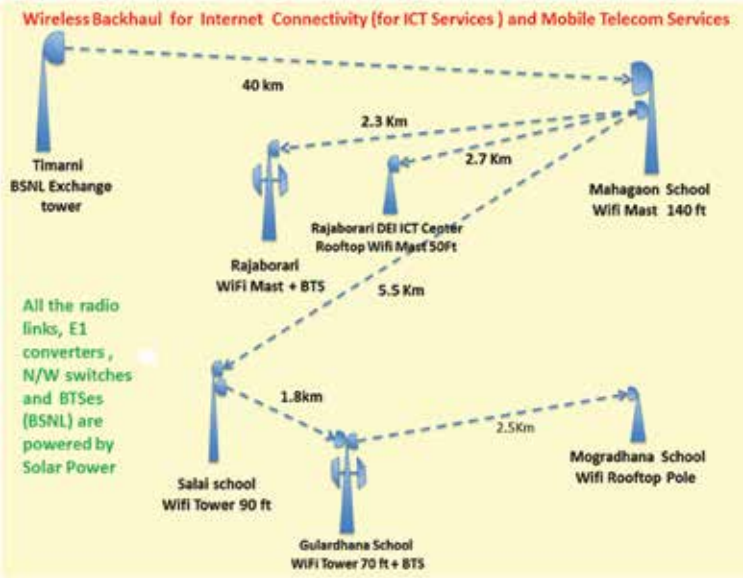
A high-speed wireless backhaul network has been established between Timarni and Mahagoan, and extended to the villages of Rajaborari, Salai, Gulardhana, Temrubahar and Mogradhana. Dayalbagh partnered with BSNL in customizing the technology to take the E1 radio link up to this cluster of villages. Connected to the rest of the world, the local Adivasis use the internet facility for a variety of ICT services like getting information on government schemes, email, applying for jobs, scholarships, registering and applying for financial assistance under various government schemes.

Dayalbagh partnered with BSNL in customizing technology to take the E1 radio link up to this village cluster, with 16 villages in and around Rajaborari gaining mobile telecommunication services. There are about 2,500 mobile connections in these villages with a tribal population of around 8,500.



Base Transceiver Station Deployment at Gulardhana for Mobile Telecommunication Services

ICT Center at Rajaborari-Timarni



In 2009, DEI established an ICT Centre at Rajaborari which is connected through EDUSAT link provided by Indian Space Research Organisation, leased line connectivity between Dayalbagh, Agra and Timarni, and a Wireless Link between Rajaborari and Timarni. ICT has enabled DEI to offer low-cost, quality education, routed via its Distance Education and ICT Centres, in a wide variety of vocational and mainstream courses that are run in synchronous, asynchronous and blended modes. Connectivity also enables access to resources such as the DEI Cloud, High Performance Computing and Virtual Classes from the DEI main campus.

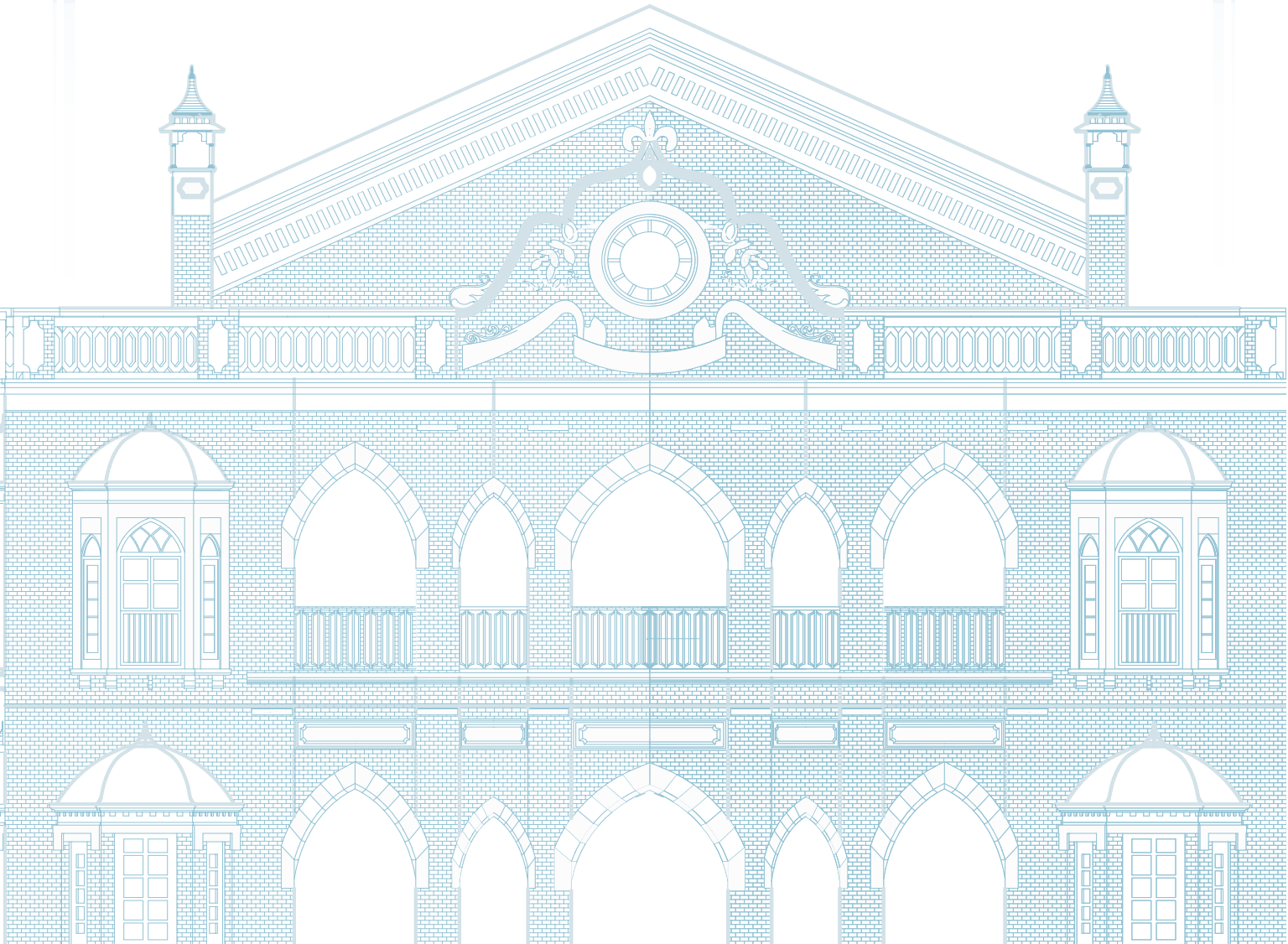
Recently, experiments were conducted on virtual classes integrated with Learning Management Systems accessed by school students on mobile devices such as tablets.

DEI ICT Center Rajaborari

It is only through technology intervention that the goals of education can be achieved. The aim is to provide Education for all including students with little or no means; providing access to education anytime and anywhere; reaching the last, least, lowest and the lost. Technology will play an ever-growing role as an effective enabler. By providing virtual access, DEI will deliver quality education to the doorstep.

17

Innovation & Incubation



The Innovation and Incubation: DEI Quantum Jugaad through अंत:प्रेरणा (ANTHAPRERNA) embodies the spirit of, "Why not?" which seeks to engender within students an intense entrepreneurial drive by fostering innovation with social relevance.

The aim of "DEI Quantum Jugaad", as the Dayalbagh Educational Institute Incubation Centre is called, is both, to help solve socio-economic and ecological problems frugally and flexibly, creating effective, practical, ethical and possibly disruptive solutions,and also to provide each student the option to pursue his/ her calling, irrespective of social and economic status. The Centre aims to provide earn-while-you-learn opportunities. DEI Quantum Jugaad relies on the basic principles of offering a platform to generate wealth that can help an individual to progress in all aspects of growth, body, mind, and spirit.

Quantum Jugaad through the model Antaha-Prerna adopts an inter-disciplinary systemic approach, the initiatives being Institute-wide and crossing departmental boundaries. These initiatives are incubated in-house with the objective of nurturing social entrepreneurs who focus on providing low-cost solutions in the following primary domains: Education (Culture, Values and Quality), innovation in Agriculture and Dairy, Healthcare, Water and Air Quality Monitoring, Renewable Energy, and Women Empowerment. DEI provides all possible assistance to promote creative thinking and an entrepreneurial mindset among the students to help convert socially relevant innovative ideas into market accepted products.

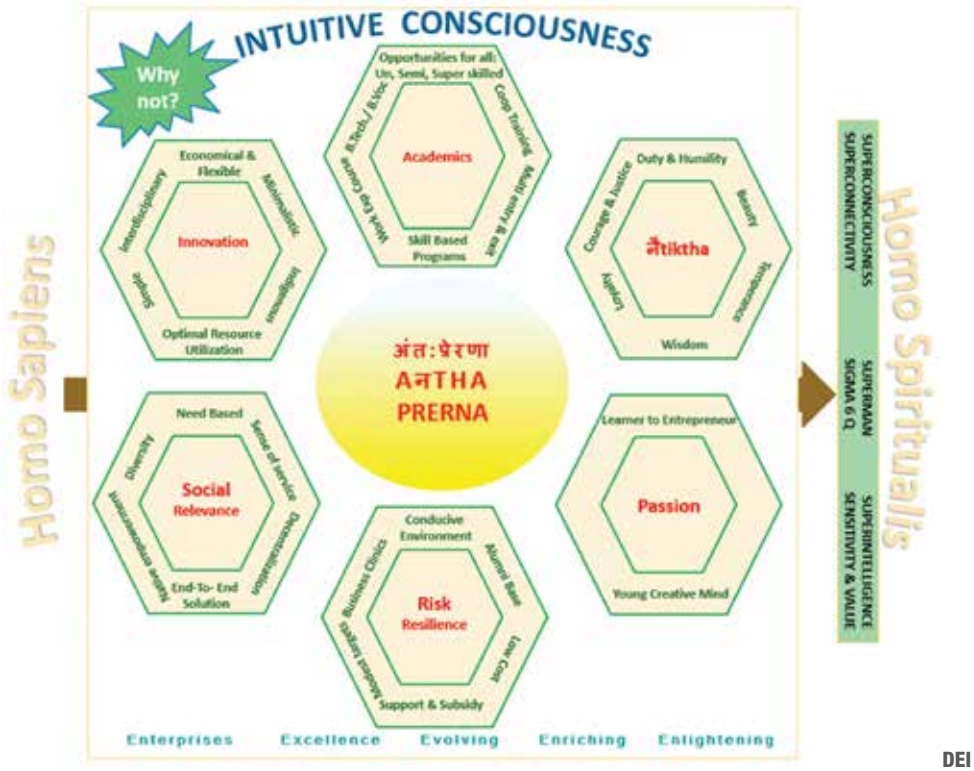
As Quantum Jugaad entrepreneurs, students, live in a real-world laboratory where entrepreneurs identify society's needs and try to meet them, leading to evolution of the student innovator. Quantum Jugaad is also an inclusive approach for two reasons: first, because it includes the final consumer in the co-creation of value and, second, it also includes economically marginalized segments of the population while generating reasonable profits, demonstrating that Jugaad is a profitable business model.

DEI Quantum Jugaad initiatives dovetail with frugal innovation concepts, seeking innovation wherever it may arise amongst all stakeholders involved.

Antha-Prerna Incubation Model

The system of education in DEI offers an enabling platform for entrepreneurship. It provides value-based quality education. It offers work-based training integrated with the curriculum of all programs. This generates inspiration and a desire to work with one's own hands, develops and refines skills, and creates a spirit of self-reliance. Interaction and experience with industries is acquired through internship, apprenticeship, and cooperative education. The desire to think big (or,"why not?") is generated through the intuitive consciousness, which is the driving force for igniting the inner self to achieve the set objectives by performing the right set of actions.

A student who undertakes such entrepreneurship acquires skills to become self-reliant financially and contributes to the eco-system and to the services and the mandates of the Institute towards society. This can be achieved through innovative ideas by creating nano enterprises with low capital and which may entail individuals or a small group of individuals to work towards a specific product, technology or service.



DEI

Model of Entrepreneurship

A (Transformative) Model of Entrepreneurship

Implementation of the "DEI Quantum Jugaad: Innovation and Incubation" Model helps create a robust entrepreneurial environment within the campus with an underlying theme of humanism, a community-based view that promotes "better worldliness" and fosters "universal brotherhood". The model encourages use of Jugaad and Frugal Innovation techniques, helping ensure that the products thus created are both value-rich and affordable. The pillars of the model are:

1. Academics

The academic curriculum provides a sound theoretical footing to the students with a strong emphasis on imparting direct immersive experience and learning of the best practices of the entrepreneurial community of Dayalbagh.

Mandatory core courses provide a foundation for later stage student entrepreneurial activity.

For example, in "Agricultural Operations", the student gets a weekly multi-hour immersion in the community farms, toils with his/her own hands, develops an understanding of our farm-based economy, understands resource scarcity and abundance scenarios in this sector.

The programs are available at all levels from certificate, diploma, degrees bachelors, masters, and doctoral. Some of the other elements, which directly support entrepreneurship, are:

- Work experience-based courses, which give practical and hands-on experience to students in the area of their interest.
- Skill-based programs in modular format at different levels, where a student after finishing the program building on the skilled acquired and honed during the program can start a nano enterprise.
- Special vocational and technical programs such as B. Voc., B. Tech. can be used as a platform to take an activity such as final project to a level where an incubation of the idea can be tested and trialed and eventually be commercialized.
- Industrial internship and cooperative training programs also help identifying a relevant problem with a larger impact to the industry and the society.

As an example, in the B. Voc. courses, the student gets to study and practice the following:

- Theory and Technical Knowledge relevant to the Industry
- Entrepreneurship and Marketing knowledge
- Industry Internship
- Couple of hours of work experience every day in a Manufacturing/ Production Process (for example, the B. Voc. (Dairy Technology) students participate in all aspects of production in the captive mid-scale dairy plant)
- Real-life exposure to processes allied with Production, such as obtaining certification for exports.
- Participation in Entrepreneurial Activity, including brainstorming, ideation, market research, etc.

The academic curriculum gets the student ready with both the theoretical knowledge and hands-on experience to bring their entrepreneurial idea to life.

2. नैtiktha

Typically, most people view the phrase "Ethical Entrepreneur" as an oxymoron. For long-term sustainable development and better worldliness, entrepreneurship must be backed by ethics. Imparting knowledge about values/ ethics is easy but getting students to imbibe these values and display these in their behavior for life, particularly in stressful situations that an enterprise goes through is difficult.

Inculcating these life-long values in students at DEI is done in the following way:

- **Theory**

  The core courses and multiple streams that instill value learning in students. These include mandatory courses such as, Comparative Study of Religion, where the student develops an appreciation of secular values, develops humanism and understands the tenets of different religions.

- **Practice**, practice and more practice in a conducive environment till it becomes second nature

  Students at DEI regularly spend time in community work. Working in agricultural fields gives them first-hand experience of working on the soil, in the dairy, of participating in the process of milking and pasteurization, in the community kitchen, of cooking and serving, in village camps, of teaching and serving the village community, in organizing and running medical camps for the needy.

  The education equips the students to recognize the dignity of labor and impacts their interactions with society at large, enables discipline in work, whether

physical or mental, in firming their belief in "better worldliness" and "universal brotherhood".

3. Passion

Passion with perseverance channelizes the student-entrepreneur's energy and efforts to achieve the intended objectives and helps overcome the underlying uncertainties in entrepreneurship. This comes naturally when students are driven to make a difference.

Initially when they join the Institute, many students are still searching for their passion, drive, interests, and what will give them fulfilment. The modular approach to education provides horizontal and vertical mobility to students through a flexible credit system, for students to make their choices, and then pursue their choices or switch gears and find something else that is of greater interest.

The diverse set of students coming in from different socio-economic backgrounds and striving to prove themselves, sets up many examples, and role models.

4. Risk-resilience

While most entrepreneurs seek funding from outside investors and venture capitalists, the DEI model advocates a frugal, jugaad approach to problem solving, and tries to do more with less. Because of this, the products made are affordable and well-received in the market; their popularity ensures that no separate marketing or advertising budget is required.

The basic philosophy is to engage students where they can contribute to the ideation process of a business and be compensated with a modest remuneration. A new student who enters any program can opt to join a group where an incubation activity is underway and suitably contribute and be rewarded. In addition, DEI can support in terms of providing access to the laboratories and other facilities, which may be necessary for developing the idea.

In addition, DEI provides access to a large multi-city community market where students can market their end products, get feedback, further innovate and smoothen product edges and then launch it in other markets.

DEI also provides a large dedicated set of Alumni Entrepreneur Leaders, who are ever ready to help the student-entrepreneurs from conceptualization to production.

5. Social Relevance

We want our students to think big and generate substantial impact and wealth. DEI's Entrepreneurship Model also encourages them to learn from the example of DEI itself to take a community-based view. We attach great importance to using entrepreneurship to bring about "better worldliness", a moderate approach where entrepreneurs look to profit and not to profiteer, where entrepreneurs look to use their profits for community causes and where entrepreneurs look to solve community problems.

Preference is for these Nano and Micro enterprises that use local resources, provide local employment embracing indigenous solutions, solutions that are not dependent on scarce resources. These enterprises will partner with DEI Research for quicker and economical and affordable commercialization of research.

Many incubated Nano and Micro enterprises will be mini-clusters for revival/ rejuvenation of traditional, artisanal, village and tribal industries providing affordable and quality products. These enterprises will provide employment opportunities and will be self-sustaining upfront. Some Nano enterprises will be service units, providing services to the Institute; services being run by the students for the students and providing earning

opportunities to economically needy students. These services will include Institute canteens, Institute dress-making, apparel and textiles, Institute internal technology systems development and support.

The effort is to address the needs of the people who are deprived and underprivileged – the lost, the least, the last, and the lowest, and cause a change in their lives.

6. Innovation

Innovation is inherent to the education at DEI, with focus on frugal innovation, where both the cost of the innovation and the cost of the end product are kept to the minimal. This also stems from the overall DEI thinking, where the principles of "being economical" and "waste nothing" are deeply embedded in the working.

It relies on the concept of Jugaad that offers economical and flexible, innovative and ingenious solution to effect a quantum transformation.

The unique features of innovation are:

- Keeping the idea simple
- Economical and flexible
- Minimalistic in terms of requirements
- Harness an interdisciplinary approach
- Optimal utilization of resources maintaining the desired quality
- Encouraging a do-it-yourself for an indigenous solution

This sums up the अंत: प्रेरणा (Aन्तTHA: PRERNA - Intuition) Incubation Model.

Operational Plan

The holistic approach to education in DEI promotes a culture with a conducive environment, where the desire to be an entrepreneur may manifest itself at all levels of education and in daily life. The operational plan includes an Institute-wide initiative to incubate in-house nano and micro enterprises in various domains that may include education, agriculture

and dairy, healthcare, water and air quality monitoring, renewable and clean energy, and theology. There are three types of units proposed to begin with: Skill, Technology Business, and Service Units. These are described below.

Vocation Skill-based Units

These are nano and micro enterprises based on the skills that are being developed through the specializations like the vocational courses including B. Vocs. specializing in the areas of Agriculture, Food and Beverages, Textile and Apparel, etc. These enterprises help develop local economy and provide local employment, create mini-clusters for revival of traditional and village industries. These enterprises further get support from various Government Schemes.

Technology Business Units

These enterprises are for commercialization of the technology that is developed in the R&D laboratories of DEI or for innovative ideas of students. The areas of focus are in non-renewable energy, renewable energy, green technology, education, health, water and waste. These again are supported by various Government Schemes.

Service Units

These are enterprises, setup to cater to Institute Services, something in the form of, "By the Students, For the Students". The areas here include services for Institute canteen, Institute uniform-making, apparel and textiles, university internal technology systems development and support. They have minimal startup costs, are a good earning model for needy students which is supported through a self-sustained upfront revenue model.

Current Status

DEI has set up a Quantum Jugaad Incubation Center (QJIC) that has been helping budding entrepreneurs (students) to get their ideas assessed and in transforming these ideas into commercially viable business models. Incubation is a common ground where the domains of innovation and entrepreneurship intersect. The QJIC aims to adopt an inter-disciplinary systemic approach, whereby initiatives will be institute-wide, without regard to departmental barriers with the objective of nurturing social entrepreneurs. The QJIC at DEI has identified six areas (SIGMA SIX Q) for enhancing the quality of life and for inclusive growth. These areas are Agriculture and Dairy Innovation, Healthcare, Water and Air Quality Monitoring, Renewable Energy, Education and Women Empowerment. Scaling up of QJIC at DEI will create a virtuous cycle of job creation, university-industry collaboration, and revenues for local businesses and for governments with tangible benefits of academic and social "impact". The QJIC will provide all possible assistance to promote creative thinking and an entrepreneurial mindset among the students to help convert socially relevant innovative ideas into market accepted products.

Products / innovations developed

- Innovative agricultural methods of farming are developed for the community farming activity.
- Developed a sensor network for tracking cattle and their health for a local dairy comprising 800 cattle.
- Supported BSNL in customizing mobile network and extending the same to the remote tribal Zone in the middle of the Satpura forest range in Madhya Pradesh.
- Developed indigenous online admission and examination system.

- Developed and deployed smart solar energy control and management system. Now actively working on smart grid conservation and management of energy.
- Developed a low-cost 3-D printer. Intensive work on spreading vocational education: online self-learning educational contents are developed in regional languages and are widely disseminated.
- Solar-operated van for transportation, battery-operated carts for transportation within the campus.
- Virtual Labs (www.vlab.co.in, www.vlabs.ac.in)
- Business Clinics

Contribution of Dayalbagh Educational Institute to Nation-Building:

At DEI we strive to groom socially-connected and responsible citizens by synchronizing our action plans with the agenda of national development.

a. LAB on LAND

To make students understand the abstraction of academics enclosed within the physical boundaries of books and discipline, it is necessary to connect this abstraction with realism. LAB on LAND is the hall mark feature of the DEI's teaching methodology, with many such LABS on LAND working in collaboration with community owned real-life systems. This collaboration makes the university a part of social development, gives an opportunity to transform a successful experiment to a real test bed and help the local community to reap the benefits of scientific advancement. A few examples of LAB on LAND at DEI are:

Renewable Energy

DEI runs on solar power on a clear day. Nine distributed roof-top solar PV power plants, aggregating to a total of 558.2kWp ensure uninterrupted power supply in the university campus. This live working laboratory opens up opportunities for innovation and make solar power a cost-effective and equitable technologies.

Dairy Technology

DEI has been awarded the Deen Dayal Upadhyay Kaushal Kendra in Dairy Technology. DEI is collaborating with Dayalbagh Dairy having more than 600 cattle to create an understanding on the operations and management of livestock. The Faculty is also helping the local Dairy with implementation of scientific methods of animal husbandry. DEI has recently signed an MoU with NDRI Karnal, to concretize efforts in this direction.

Bringing Industries to create Labs on the Campus:

For exposing students to the cutting-edge technologies and the latest technology trends, the DEI has partnered with Yamaha motors, TVS Motors, Maruti Suzuki to develop an in-house test bed. Through this active collaboration students of DEI are skilled on various aspects of this trade.

Security and Surveillance Network

As part of DEI Campus Security, we undertook a project that deals with: Healthy IT solutions that employ open interface standards to encourage interoperability, flexibility and competition, while allowing wide broadband remote access and high levels of privacy and security; Cloud computing offerings that furnish strong methods for knowing the physical location and for monitoring and verifying permissions for data movement among cloud servers. An important spinoff will be extension of the IP network to remote ICT centers associated with existing DEI Intranet, especially those that exist in deep tribal localities of MP and Bihar where public utilities such as mobile or internet connectivity are missing.

Smart Villages

In a remote village, deep in the forests of Harda district in Madhya Pradesh, DEI has partnered with BSNL to provide mobile connectivity. DEI has also created 'karkhanas' around the skills and needs of this region, which have become a thriving hub of activity, giving opportunities to men and women alike for enhancing skills and generating incomes. These centers are connected. Now artisans and craftsmen are being trained to trade their products online.
These Smart villages are helping faculty and researchers of the campus to understand the social interconnects, culture and lifestyle and create solutions that are tailor-made for the community.

Biodiversity Park

Agra region is rich in its biodiversity of fauna and flora. However, the city has lost many of its plant and animal species due to urbanization. Since the initiation of the project in December 2013, more than 1200 plants including tree and shrub species indigenous to semi-arid region of Agra and adjoining Rajasthan have been planted. This Biodiversity Park is a living laboratory for teaching as well as research activities and is expected to develop into a Biodiversity Education Centre.

Food Processing, Garment and Apparel Manufacturing

Students of B.Voc. Food Processing cater to the campus canteen and serve hygienic and nutritious snacks to the students and staff of the campus. This living laboratory is also a business launching pad for students. Students enrolled in the Apparel and Garment manufacturing course hold exhibitions and sales of their products also making products on order.

b. Rural Development and Empowering Rural Women

Educating and empowering women and making them equal economic partners is essential for the holistic progress of the rural sector. A pilot study has embarked on a new educational pedagogy of engaging and educating/skilling rural women: in a remote tribal Zone of Madhya Pradesh three karkhanas (workshops) have been created with necessary infrastructure for training and production.

ATMA (Apparel and Toy Manufacturing Karkhana)

In this karkhana experienced faculty from the DEI visit and train rural women on garment stitching and soft toy making. Rural and tribal women now regularly stitch ready-to-wear female uniforms for DEI students. The products made while training will be marketed by DEI and labour cost / stipend will be given to the rural / tribal learners.

ADyNaM(Agri Dairy Nano Processing of Multi-products) Foods

ADyNaM has facility for processing of the agricultural and dairy-based raw produce to make secondary products. Women are trained on production of pickles, chutney,amla candy and squashes. Recently, a Level-1 food testing laboratory has been setup to ensure quality control compliance with food safety standards.

AAM (Automotive and Multiskill) *Karkhana*

This *karkhana* is aimed at developing skills in repair, maintenance of two-wheelers, tractors, farm equipment and solar systems.

c. 3-D Printing

Rural India can focus on manufacturing in quality products that can be designed and produced at village level with accuracy and that are aesthetically satisfying and having international acceptability. This can be achieved by3-D and 4-D printing at low-cost, affordable by masses. This can generate employment for creating IPR and designs even from home. The dream of realizing Rural Economic Zone to Special Economic Zones for manufacturing can become a reality. Students of the faculty of engineering have developed a low cost indigenous 3-D printer which is a ready-to-scale-up prototype.

d. Intelligent Transport System

Intelligent Transportation Systems describes a world in which profound technological shifts in advanced intelligent electric drive vehicles and transportation networks reshape the automotive industry fulfilling consumers demand like intelligent electric and hybrid drive vehicles which are low-cost, low-maintenance, safe, secure, reliable, rugged and eco-friendly. DEI's automobile department is working towards smart and energy-efficient vehicles with inbuilt intelligence.

e. Air Quality Monitoring and Control

The Dayalbagh Educational Institute has been monitoring air pollutants and engaged in atmospheric chemistry research over the last two decades. The Institute offers a number of UG and PG courses related to environmental pollution and control.

f. Quantum-Nano Systems Centre

The Quantum-Nano Systems Centre is a multidisciplinary Centre set up with the objective to train and expose students to research problems and recent developments in Quantum-Nano Computing and promote collaboration between theoretical physicists and theoretical computer scientists. Current research is to test the validity of the proposed Graph Theoretic Quantum Systems Model of the Human Brain. Exploring the possibility of applying graph theoretic modeling to the Hard Problem of Consciousness based on a quasi-crystalline language of "primitive units of consciousness" in quantized space-time. The application of Quantum System Modeling to develop a Theory of Many Things that spans diverse kinds of systems, including natural systems, physical systems, abstract systems and human-activity systems.

g. Centre for Consciousness Studies

Consciousness is the final frontier of science. Research has been undertaken in the following major inter-disciplinary research in Experimental-Experiential Studies. Measurement of Environmental Correlates of Consciousness. The Centre has scientifically measured the environmental correlates of consciousness, using various techniques that include non-invasive, non-intrusive, Magneto-Encephalography (MEG) using a Superconducting Quantum Interference Device (SQUID), cooled to a temperature of less than 4 kelvin, to measure very weak magnetic fields in a Magnetically Shielded Room (MSR). It has been demonstrated that specific electromagnetic frequencies are produced under various conditions. This highlights the potential for the measurement of environmental correlates corresponding to the consciousness level of an individual or group of persons.

Strategic Plan

Some of the activities intended to scale up QJIC are:

- To organize university-wide competitions to promote the ideation process in the domains of "SIGMA SIX Q" within each existing mode of education:
  - Conventional Education;
  - Vocational Education; and
  - Electronic / Distance Education
- To provide mentorship to potential student entrepreneurs through industry support.
- To establish an Intellectual Property Rights (IPR) and Patenting Cell within the umbrella of the QJIC.
- To establish a state-of-the art in-house multiple incubation facility that will nurture and facilitate the entire idea-to-startup activity.
- Rural entrepreneurs wanting to transform a frugal innovation or a skill-based practice into a high-yield technology will be given preference.

Proposed ideas for incubation

- **Education** (With a theme on preservation and inculcation of Culture, Values, and Quality)
  - Conservation of cultural heritage
  - Learning and practising of values
  - Developing sensibilities for a classless and casteless society
  - Low cost education aids: for better employability and cooperation, for nurturing innovation.
- **Energy**
  Development of:
  - Energy audit kits for household use
  - Smart micro grids
  - Green buildings
  - Solar-agri farms
  - Zero-energy buildings
- **Health**
  - Low cost, ultra-fast urine, stool and blood test kits
  - Non-invasive blood sugar measuring devices / production of low-cost glucometers
  - Low-cost devices to detect iron and calcium deficiency in women
  - Mass production of herbal drinks (such as amla squash, panna and aloe vera juice) to replace soft drinks and colas
  - Recycling systems for hospital waste as an alternate source of energy
  - Technology for production of low cost herbal drugs on mass scale
- **Water**
  - Low cost micro-irrigation systems
  - Low cost water purification systems
  - Low cost recharging of ground water
  - Low cost solutions for recycling and reuse of waste water
  - Low cost rainwater storage reservoirs
  - Detection and removal of harmful microbes, chemicals and heavy metals in water
  - Low-speed windmills to lift water
  - Utilization of evapo-transpiration for water use
- **Waste Management**
  - Waste disposal for energy production and use
  - Recycling of expired medicines
  - Local waste segregation and management
  - Simple tools to do away with manual scavenging
  - Local or immediate energy generation from solid degradable waste.

Selection for incubates

Students of the university will be inducted into the process of innovation through monthly idea generation workshops that will be conducted by the QJIC. These workshops will also acquaint students with essential skills of pitching, presentation and business planning. A strict selection procedure for new incubates will have the following steps:

- Wide publicity will be made to invite potential ideas with commercial value.
- Ideas will be pre-vetted by internal committees. The training and support team of the incubator will curate shortlisted ideas.
- Shortlisted incubates will submit their business plan with financial forecasting for further review. A committee of internal and external members will review these ideas. Proposals with sound business plans and commercial viability will be shortlisted.
- Then prospective incubates will pitch their ideas before a committee comprising internal members, representatives from industry, investors and policy makers. Proposals shortlisted at this step will be admitted into the incubator.

Mentoring and training efforts

The Institute has a team of professional experts and also can bank on its alumni to mentor, counsel and train incubates. Short-term and long-term training programs will be organized to impart hands-on training. Training at DEI will be given at three phases:

- i. Pre-incubation stage

  Ideation, pitching, feasibility analysis, business planning and financial forecasting.
- ii. Incubation

  Networking, branding, intellectual property, business management, fund management, fund raising.
- iii. Post incubation

  Marketing, exit planning, licensing

Prepare towards Life 4.0 and beyond

The mission of 'Prepare towards Life 4.0 & beyond' is to familiarize young people with digitization and its impact on the economy, on industry, on technology and on people's lives. This is not only a subject for elites but concerns people from all socio-economic sections which is why we want to provide insights into how exciting the future of society will be. For this one has to adapt the educational system and infrastructure accordingly.
Physical (human world): Autonomous technology (Smart Vehicles), 3-D printing to 4-D printing, new materials, etc.
Digital (technosphere):Cloud Computing, Smart Sensors, IoT, Virtual assistants and Intelligent agents, Big Data, New teaching/ business models, etc.
Biological (natural world): Consciousness understanding (Initiatives like: EU Brain project, US Brain initiative)

Quantum Jugaad Solutions for meeting the UN SDGs

DEI QJIC will help meeting the UN SDGs by setting up e-networks for health: rural tele medicine, Experiential Medical Expert System. Ultimately, QJIC innovation could boost collaboration between emerging and advanced economies, enabling them to co-create affordable and sustainable health solutions that benefit everyone and e-networks for education: Experimental schools will be attached to a University Level College to provide facilities for innovations.

Outcomes

(Phase-I 2018-2022)

- Development of Entrepreneurship Lab for reverse engineering and hands-on experience.
- Design and offer refresher courses to fill gaps of expertise.
- Enabler for education for informal entrepreneurs
- Enabler for admission to all including the 4Ls ("The Last, The Least, The Lowest, and the Lost" among mankind
- Working on incubation themes
- Product / Technology / Services to be developed in numbers - 20
- Micro/Nano incubators to be developed in numbers - 100
- Student Involvement in QJIC - 1000
- Inter-Intrapreneurship for all through apprenticeship
- Offering courses on:
  - Frugal Innovations
  - Rural Startups
  - Innovative Businesses and Breakthrough Technologies

Phase – II (2023-2027)

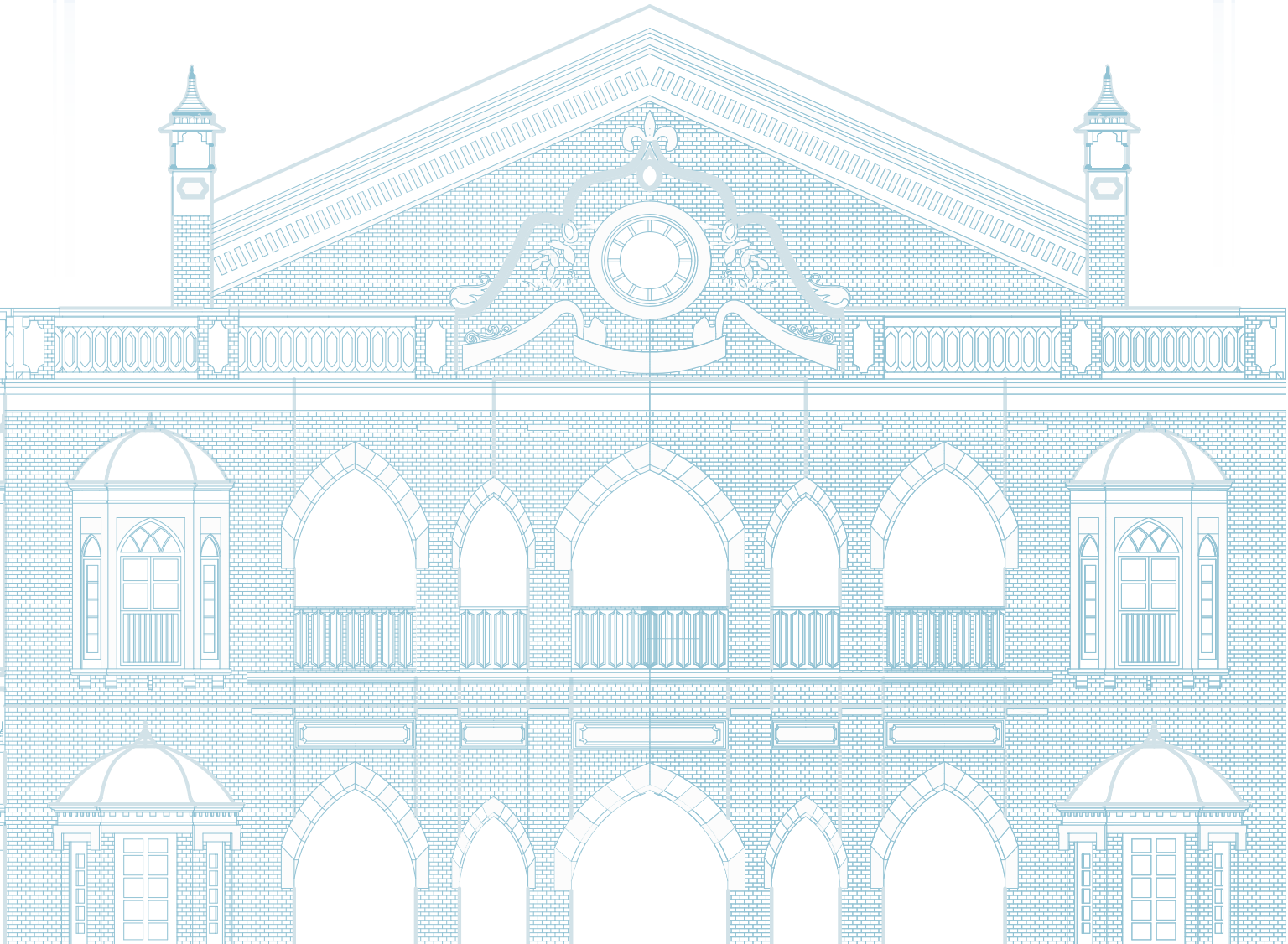
- Development of comprehensive evaluation and assessment system by measuring impact of Quantum Jugaad - Human, Social, Intellectual, Technological, Financial, Institutional, and Consciousness Capital.
- Consolidation based and possible expansion of Incubation themes
- Scale-up in numbers:200 Micro/Nano enterprises, Involvement of 2000 students
- Geo-diversification to reach all centres

Phase – III (2028-2032)

- Review, consolidation and expansion
- Every student as a potential entrepreneur
- Expansion of Incubation themes

18

Central Facilities



Central facilities are amenities which help all students, staff and visitors to work efficiently. Since its inception, DEI has developed many modern amenities and essential fixtures like the Central Administrative Office, Examination, Multimedia, Medical and Health Care, Counseling and Guidance Cells, Life Long Learning and Extension, Commutation, Games and Sports, Networking, Canteen, Parking, Maintenance and Works Department, Placement Cell, Seminar Hall Complex and Guest House, Surveillance and Security, Girls' and Boys' Hostel etc. They can be categorized into skill units, technology business units and service units that are self-sustained and cater to the current needs of the institute.

An underlying concept of ANTAH: PRERNA is applied in terms of innovation, social relevance, passion, risk resilience and ethics to various stakeholders so that they can support the mainstream functions. The institute proposes the addition of new services in the system like Media Interaction Cell, Student Activity Cell, Industry Institute Partnership Cell, International Affairs Office, Patent Cell and Public Relations Cell. It endeavors not only to introduce new value-added services but also blend the two to generate need-based synergy.

Objectives of Central Facilities in DEI

- Provide value added services to generate synergy for improving employability skills and entrepreneurial education.
- Create opportunities for students and staff to advance their knowledge and service in contemporary domains, to meet the changing needs of the Institute and the society at large; thereby adhering to high academic and ethical values for uplifting the consciousness of individuals.
- Improve the operational efficiency via digitization of the institute to attain Sigma Six Q based on synthesis of Values and Quality.
- Provide students the opportunity to serve in multidisciplinary settings, to help them face real-life challenges and develop entrepreneurial skills.
- Benefit the stakeholders of the institute in terms of better worldliness, resulting in the formulation of Homo Spiritualis.

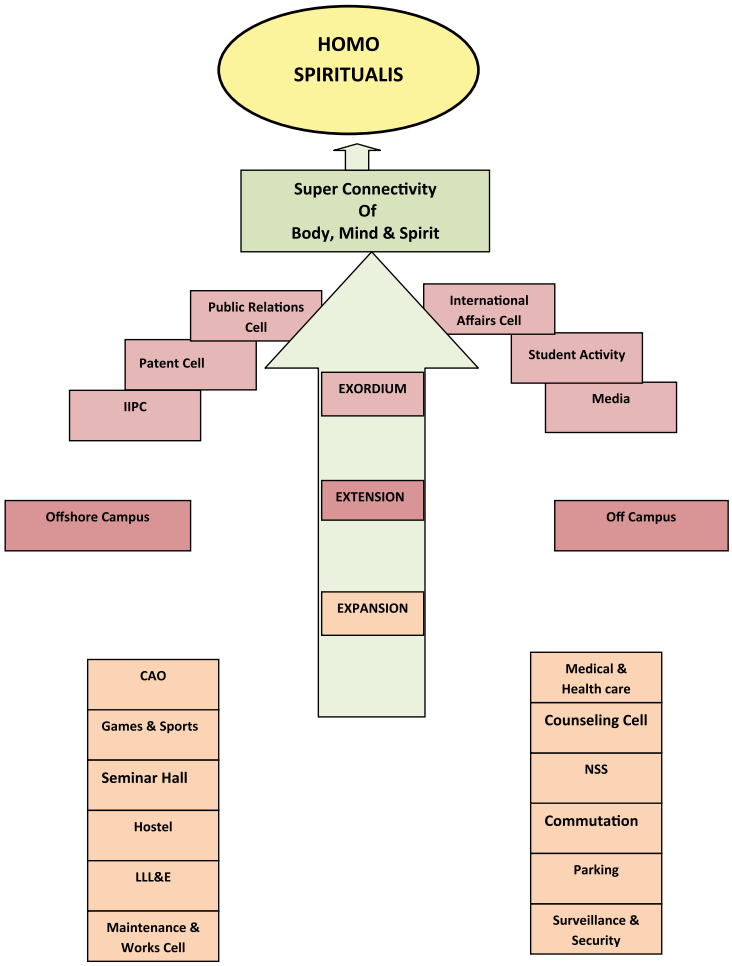
As part of Vision 2031 a strategic plan has been formulated to ensure that Central facilities support the Vision of the institute.

Central Facilities: Strategic Plan (2018-2032)

Facilities	Phase-I (0-5 Yrs.)	Phase-II (5-10 Yrs.)	Phase-III (10-15 Yrs.)
CAO	Implementation of TQM Approach in the Examination Section.	Implementation of TQM Approach in the Accounts Section.	Implementation of TQM Approach in the Establishment Section.
Seminar Hall Complex	Space utilization through academic activities.	Use of Expenses Recovery Model	Expansion of internal services as per requirement.
Commutation	Availability of access points for physically disabled students and staff. More eco-friendly transportation.	Establishment of Network based Travel Services, to be managed by Students Association.	Initiation of Bus service

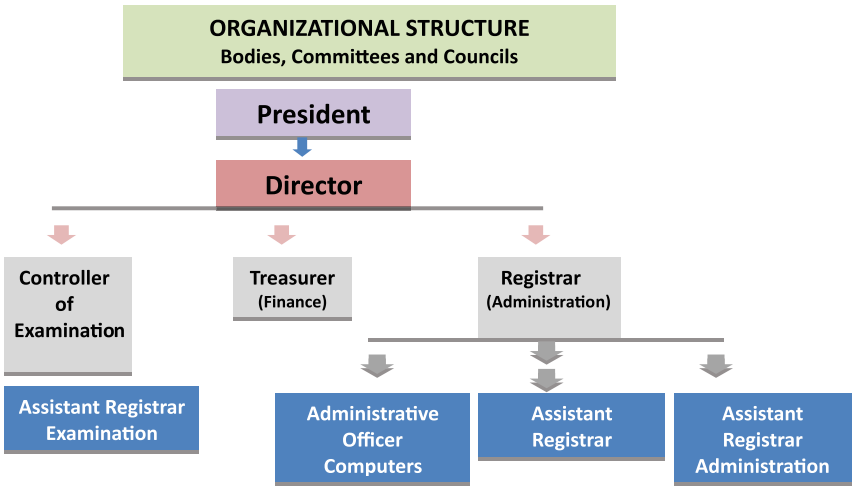
Cloud-based Smart-Parking system	Development of a network architecture based on the Internet-of-Things technology and CCTV surveillance.	Expansion of Parking space Utilization of space by introducing multi-story mechanical parking facility	Construction of underground parking
Hostel	Green gas connection to all hostels Hiring buildings/houses in the neighborhood for increasing accommodation	Construction of additional rooms Utilization of unused open space for outdoor and indoor games. 24-hour transport facility	Construction of new hostels equipped with all amenities
New facilities for dissem-ination of information	Media Interaction Cell Student Activity Center	Industry Institute Partnership Cell Public Relations Cell	International Affairs Office Patent Cell

Core Focus of 15 Years Strategic Plan for Central Facilities - A Glance



Central Administrative Office (CAO)

Dayalbagh Educational Institute has an eminent central administrative office which comprises administrators, officers and authorities which deal with policy formulation and govern the issues pertaining to recruitment, financing and examination. The current structure is as follows:



Administrative Hierarchy of the Institute

All the functional departments of Central Administrative Office work together to achieve the mission of the Institute. The functional departments are classified majorly, into three subheads as Examination, Finance and Administration. The heads of the three functional areas report to the Director of the Institute and further, to the President.

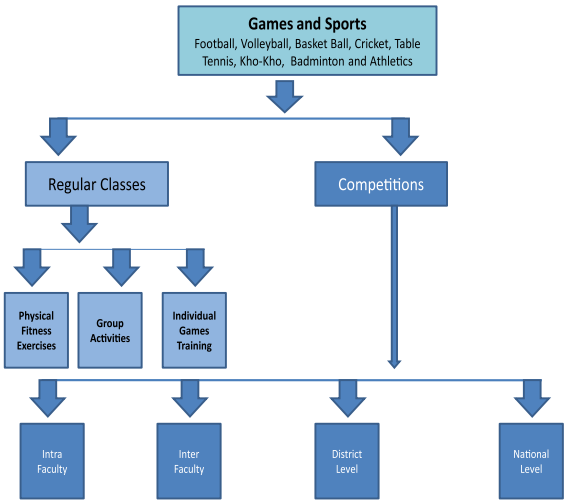
Games & Sports

Games and sports are an integral part of the Institute curriculum. Physical fitness is of prime importance to bring out the best in every student.

The Institute has several playgrounds for athletics and outdoor games, to fulfill the requirements of the present strength of the Institute. Friendly matches of the alumni, district authorities are also organized in the campus. Games and Sports in DEI are a part of its regular course curriculum since inception.

The curricular aspects of Games and Sports are as follows:

- The department organizes different activities for students.
- Intra-faculty tournaments
- Inter-faculty tournaments
- Regular coaching for Football/ Volleyball
- Winter and marshal art camps for women
- Games and athletic meets for disabled (Divyang) athletes
- Participation in inter-university tournaments



The curricular aspects of Games and Sports in DEI

In DEI, sport means teaching lessons on life to students, like developing a sense of responsibility, self-confidence, accountability, team work and discipline; apart from ensuring physical fitness. Games as a regular part of the syllabi of all courses, helps the students improve their cognitive abilities such as attention, memory, decision making, creativity etc., and brings the students together to create a sense of belongingness, leading to a cohesive community.

Seminar Hall Complex & Guest House

For the smooth organization of educational activities like organization of Seminars, Conferences, Faculty Development Programmes (FDPs), Management Development Programmes (MDPs), meetings etc. at a large scale, DEI established a well-equipped seminar hall in the year 2013 with all modern amenities. It is used for organizing academic and extra-curricular events, besides boarding and lodging the invitees, guests and delegates.

The Complex provides food to the guests staying in the campus also. Currently, it has a seating capacity of 400 people. It is equipped with facilities like multimedia and video conferencing, solar power supply, CCTV, Wi-Fi connection, dining hall, reception, workers' quarters, office store etc. to support the organizing of national and international events.

Girls' and Boys' Hostel

Dayalbagh Educational Institute has four hostels currently: two each, for boys and girls. Each of these hostels can accommodate about 200 students. The hostel provides basic facilities to students like a mess, a reading room with internet, library, areas for in-door and outdoor

games and medical facilities. Students from all over India come and stay here to pursue their education.

The hostel promotes a simple, disciplined and studious life, in harmony with other inmates. Students are recommended for hostel admission on the basis of merit and availability of seats, but admission to the Institute does not guarantee a seat in the hostel. Only vegetarian food is served in the hostel. Alcohol, drugs and other intoxicants are strictly prohibited in the campus. Currently, the hostels are equipped with amenities like: a dining and serving area, solar cooking, internet facility, library and reading room, telecom, visiting doctors etc.

The hostel accommodation provides a spiritual atmosphere with a close view of nature, and nutritious food to lead the students towards Simple Living and High Thinking. The hostel culture inculcates Better Worldliness in students through a blend of ethical values for evolving super human beings.

Medical and Health Care

Dayalbagh Educational Institute has a community hospital where the students and staff of the Institute are attended by the Medical Officers of the Saran Ashram Hospital, Dayalbagh, and are administered treatment for ordinary ailments without charges.

The Hospital has provisions for pathological testing, diathermy, ECG etc., on payment basis. The Institute provides facilities like AYUSH and Paramedical services, where the students are imparted formal training in treating the injured and sick. The Institute organizes medical camps for providing health services to the nearby rural community, with the help of voluntary support from the medical staff of the Institute.

Counseling and Guidance Cell

Dayalbagh Educational Institute has a Psychological Clinic in the department of Psychology. The clinic can provide Psychological assistance to those who stand in need of its services and help; in terms of Diagnostic testing, Counseling and Therapies. The Department of Psychology is providing different services to the community through the clinic viz.,

- **Psychological testing for diagnosis:** intelligence, aptitude, creativity, personality, motives, anxiety, stress, depression, life style, interests and entrepreneurial talent etc.
- **Measurement of Emotions:** galvanic skin response, electroencephalogram, EMG, blood pressure, pulse, temperature, respiration
- **Therapy for Stress Management:** Jacobson's Progressive Muscular Relaxation therapy, Cognitive Restructuring Therapy, Behavior Modification
- **Counseling:** Student and career counseling, family counseling, marital counseling, counseling for adolescent problems, geriatric counseling etc.
- **Meditation:** Intervention through OM Chanting, Yoga etc.

Life Long Learning And Extension (LLLE)

The Department of Life Long Learning and Extension was reinstated in 2009 by the governing body of the Institute. Currently, it is organizing Life Long Learning Activities in accordance with the XI Plan Guidelines of the UGC. The Department aims at empowering individuals for betterment of the masses. Activities are being organized by the department for achieving the following objectives:

- To make available a comprehensive range of appropriate and effective opportunities for life-long learning to the participants
- To raise opportunities for self-employment and economic independence.
- To generate awareness towards environmental protection & conservation, national integration, healthy living conditions, small family norms, gender equality, social evils and career consciousness. Extension activities such as awareness campaigns, exhibitions, discussions, lectures, projects, seminars, teaching and training programmes etc. are organized by them to improve the living conditions of the participants and inculcate a sense of self-reliance, economic independence and empowerment.

National Service Scheme (NSS)

National Service Scheme (NSS) was started in the Institute in 1969. The silent and sustained social work through innovative and government directed programs, regular NSS activities and seven-day special camps of NSS have always been remarkable and highly appreciated by government officials, medical practitioners, social activists, scientists, dignitaries of NGOs, ministers from the State, ministry of HRD and visitors from abroad. Some programmes organized in the Institute under NSS are:

- Organization of Free Medical and Assistance Camps (FMAC) on fortnightly basis is an innovative program of the Institute. These camps aim at providing a comprehensive package of health, awareness and assistance to people including children, youth, and women of nearby rural areas.
- The NSS wing of the Institute organizes programs directed by NSS Regional Directorate, MHRD, UGC, AICTE and various authorities of the State Government regularly. These programs include celebrating the International Yoga Day, Digital Financial Literacy Campaign, Swachh Bharat Mission Programs etc.

NSS Camp

Commutation

The Institute provides services for commutation to students, staff and visitors. Many eco-friendly (e-Rickshaw) vehicles are available in the campus having enormous potential to reduce the carbon foot-print. Such vehicles are relatively lightweight, presentable, and can be operated easily, even by students. These vehicles are recognized as comfortable and economic modes of transport. Petrol/diesel vehicles are not allowed in the campus for environmental safety. Commutation services are also being offered to the neighboring community by DEI.

e-rickshaw

Girls And Boys Canteen (Mobile Canteen & NRSC)

The Institute runs kiosk facilities at different locations, to provide brunch packs (vegetarian) to students, particularly the day scholars. The students of the institute (B.Voc., Dairy Technology) offer Chaach, low fat milk, butter, srikhand, flavored curd, basundi, chocolates etc. at no profit, no loss basis; maintaining high quality and hygiene. The Institute owns a Mobile Canteen for providing small meals to the students and staff at different places in the campus. The canteen facility focuses on skill-based training of the students and serves the concept of 'earn-while-you-learn'.

Canteen Services

Maintenance And Works Department

DEI has its own Maintenance and Works Department. Both the departments possess three sections viz. Electronics, Mechanical, and Glass Blowing. These centers undertake repair, maintenance, design fabrication and up gradation work for the entire Institute. These centers also offer training programmes on Computer and Peripherals and Basic Scientific Glass Blowing to the students and staff through regular short-term courses and advanced work experience courses. Presently, a virtual instrumentation facility is also being developed at the centers.

Parking

The institute has two slots for parking bicycles, two wheelers and four wheelers. One parking area is inside the campus, near the administrative block, while the other parking area is situated in the adjacent space, outside the campus. The parking ensures safe and secured lodging of vehicles belonging to students and staff. The vehicles are housed systematically by the parking in charge, who is employed on contractual basis.

Surveillance & Security

DEI Security Lab

The DEI Security Lab was created in Dec 2013 in response to situations prevailing in the country in general and directions from the UGC, viz:

- UGC directive on campus security measures for women, girls, 2013
- UGC Guidelines on safety of students on and off campuses of higher educational institutions, 2014

This Lab operates in an Open Lab format where professors and scholars build, operate & maintain the technology needed for campus security surveillance. It provides an ideal platform for pursuing R&D in video surveillance, access control, and analytics. DEI Security Lab is coordinating with Dayalbagh as part of its social responsibility initiatives, in organizing a security surveillance network.

Future Plans

DEI proposes the expansion of existing central facilities in a phased manner, keeping in view the proposed increase in strength of students in the next 15 years - (0-5 Years: 16,000), (5-10 Years: 23,000) and (10-15 Years: 30,000). **The fortification of existing facilities will enable individuals and the institute to move towards technological innovation, optimization of resources, skill development, quality management and super consciousness.**

Fortification of Existing Facilities for Integration of Value Education

The core focus of the future is realizing the concept of **Super Connectivity, Super Intelligence, Super Human Being, Sigma Six Q, Super Sensitivity and Super Consciousness** by fortification of existing facilities and facilitating value-based education.

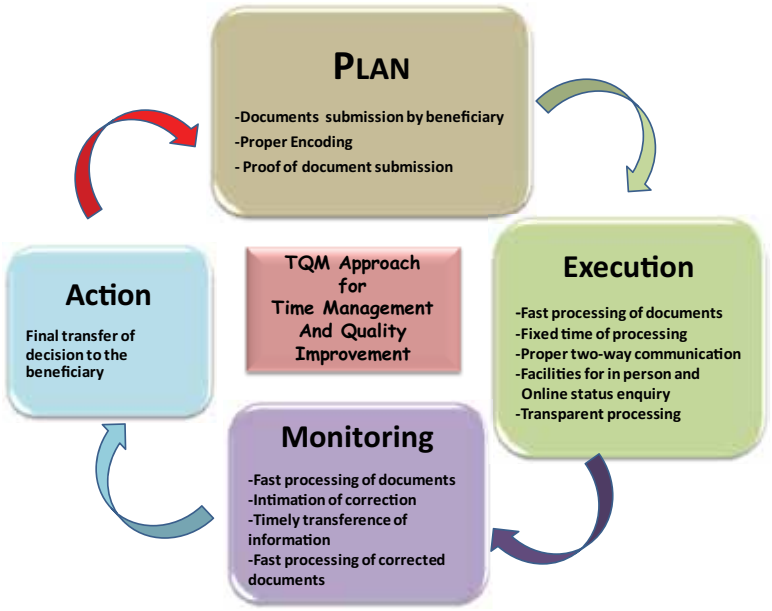
The action plan aims to extend and improve the services of the following central facilities in the Institute:

Central Administrative Office (CAO)

Continuous improvement is proposed in the services of the Central Administrative Office (CAO) of the Institute by implementing Total Quality Management (TQM) approach in its processes.

Phases	Central Administrative Office (CAO)
Phase-1 (0-5 Yrs.)	Implementation of TQM Approach in Examination Section
Phase-2 (5-10 Yrs.)	Implementation of TQM Approach in Accounts Section
Phase-3 (10-15 Yrs.)	Implementation of TQM Approach in Establishment Section

Phase-wise Action Plan for CAO



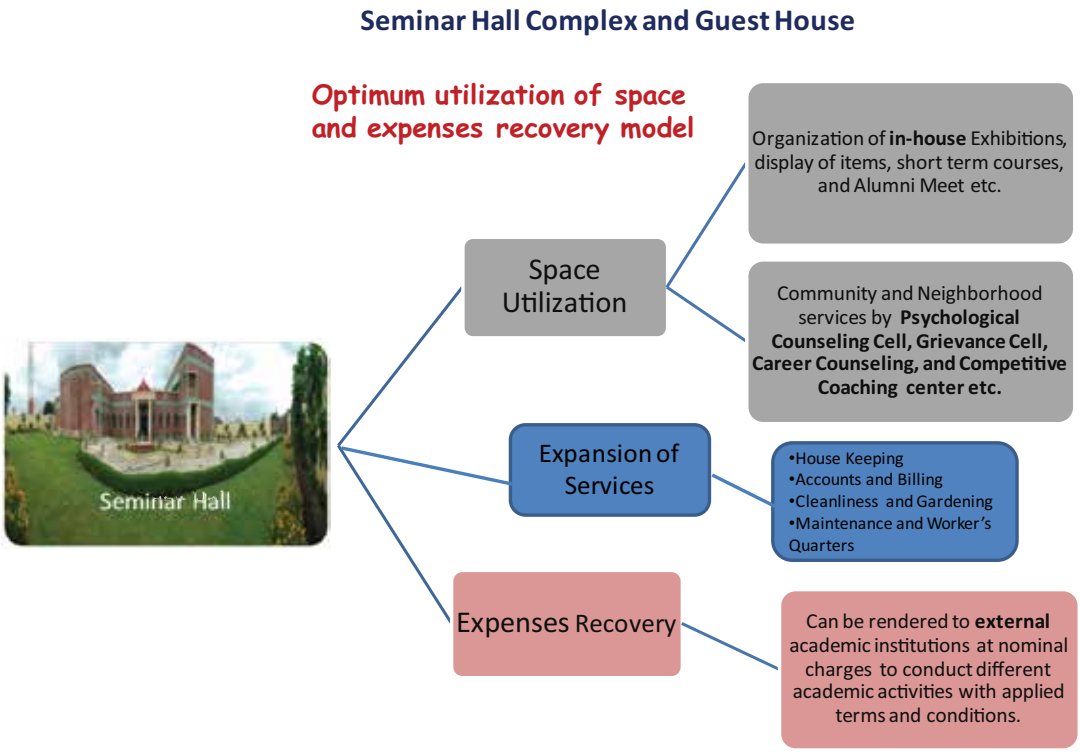
TQM Approach for Time and Quality Improvement

Seminar Hall Complex & Guest House

The Institute proposes a model for enriching the services of the Seminar Hall Complex and Guest House, based on the principles of space utilization, expansion of services and expense recovery in a phase-wise manner.

Phases	Seminar Hall Complex
Phase-1 (0-5 Yrs.)	Space utilization by organizing in-house exhibitions, display of items, short term courses, alumni meets etc.
Phase-2 (5-10 Yrs.)	Expense Recovery Model for academic institutes
Phase-3 (10-15 Yrs.)	Quality Improvement in line with the proposed expansion plan for infrastructure

Phase-wise Action Plan for Seminar Hall Complex



Model of Optimum Space Utilization and Expense Recovery for Seminar Hall Complex & Guest House

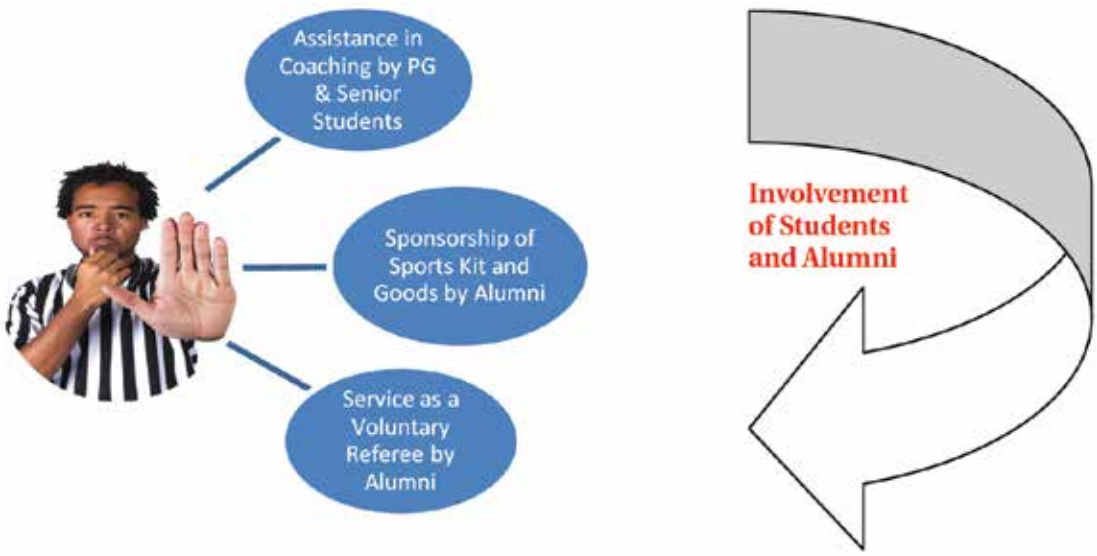
The figure above, shows a model based on economical and optimum utilization of resources while providing the best of services to all the stakeholders.

Games & Sports

It is proposed to have a greater involvement of the students' community in organizing games and sports in the Institute leading to cost effectiveness, skill development, and growth of decision-making aptitude in students. The following table shows the phase wise plan of enhancing facilities for Games and Sports in DEI in the next 15 years to support Institute vision 2013, towards the attainment of Super Consciousness.

Phases	Games and Sports
Phase-1 (0-5 Yrs.)	• Provision of flexibility in examination for outstanding performers in national level sports • Assistance in coaching by PG and senior students • Voluntary service as referees and sponsorship of sports kits by alumni • Establishment of a well-equipped gymnasium
Phase-2 (5-10 Yrs.)	• Establishment of a yoga center, martial arts center and a Taekwondo center • Establishment of a badminton court, table tennis hall and a room for the promotion of indoor games, particularly for specially abled students
Phase-3 (10-15 Yrs.)	• Establishment of a stadium for conducting national tournaments

Phase-wise Action Plan for Seminar Hall Complex



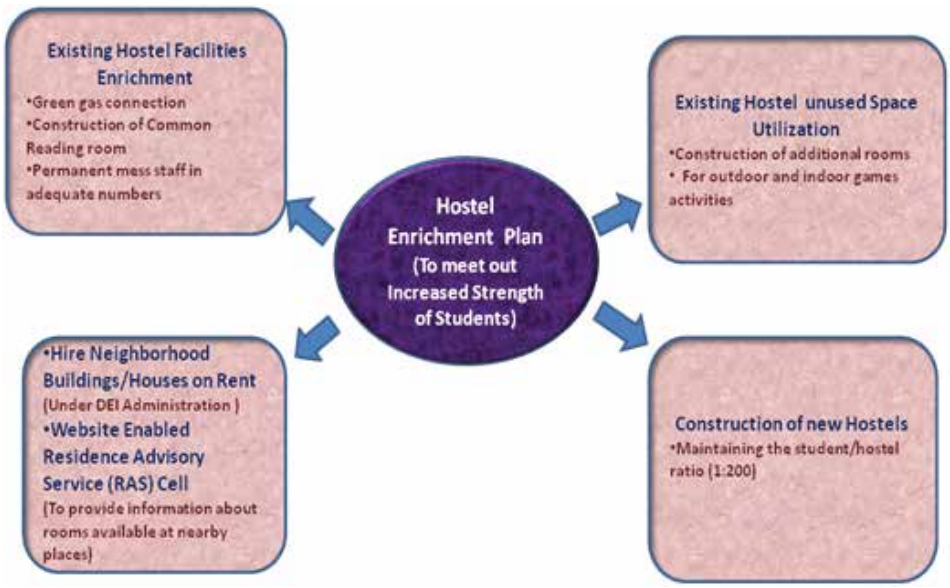
Model for involvement of Students and Alumni in organizing Games and Sports in the Institute

Girls' and Boys' Hostel

The plan of action for improving and expanding the facilities of the existing Girls' and Boys' Hostel, are as follows:

Phases	Girls and Boys Hostel
Phase-1 (0-5 Yrs.)	• Construction of a common reading room with at least 10 PCs, and a library for boarders • Green Gas connection in all hostels • Permanent mess staff in all hostels (approx. 04 in each) • Hire neighboring buildings / houses on rent for increasing accommodation
Phase-2 (5-10 Yrs.)	• Construction of additional rooms in all the existing hostels (approx. 05 rooms with dual capacity) annually, with sufficient beds to accommodate additional students • Utilization of unused space for outdoor and indoor games by constructing Table Tennis, Badminton and Basket Ball courts etc. • 24 hour transport facility to meet emergencies • Website enabled Residence Advisory Service (RAS) Cells (to provide information about rooms available at nearby places)
Phase-3 (10-15 Yrs.)	• Construction of a new hostel for both girls and boys to accommodate an additional strength of 200 students each

Phase wise Action Plan for Girls' and Boys' Hostel

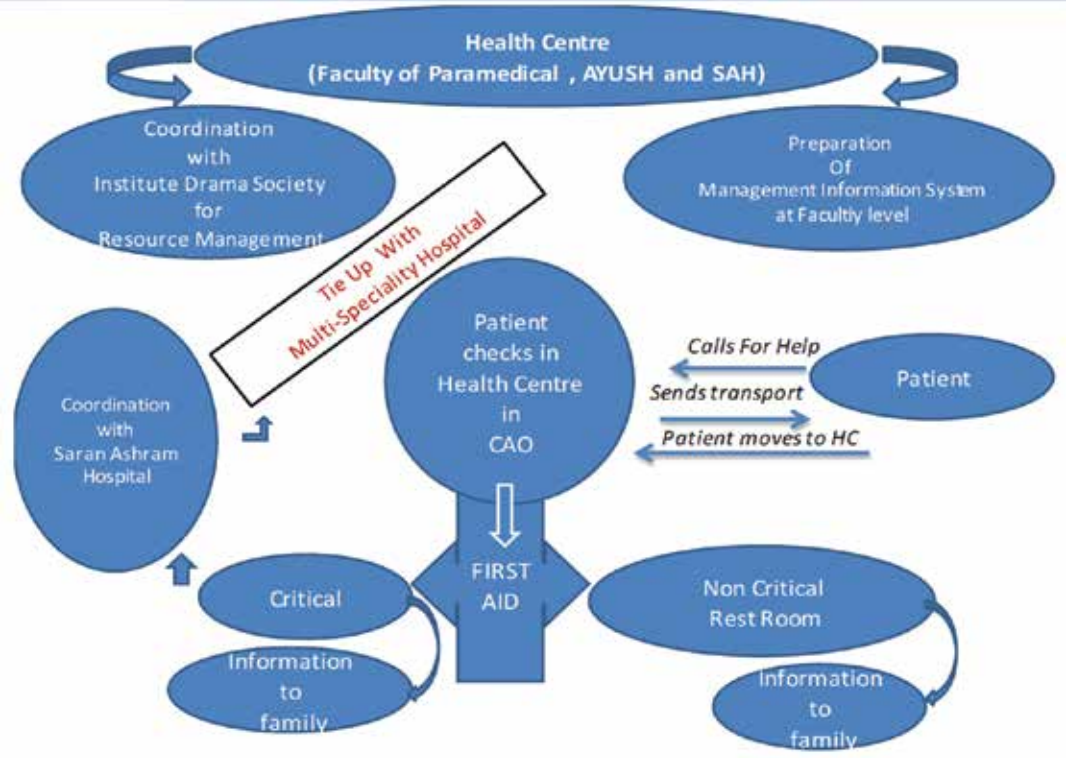


Proposed Model for Enrichment of Hostel Facilities

Medical and Health Care

Phases	Medical and Health Centre
Phase-1 (0-5 Yrs.)	• Establishment of a health centre with Paramedics, AYUSH and Saran Ashram Hospital (SAH) representatives in the staff • Preparation of faculty level MIS • Coordination with SAH • Acquire an ambulance
Phase-2 (5-10 Yrs.)	• Resource management with co-ordination of Institute Drama Society (Charity shows) • Organize transport for easy and quick pick up of patients
Phase-3 (10-15 Yrs.)	• Tie-up with multispecialty hospitals • Transport Network for emergency service

Phase wise Action Plan for Medical and Health Care

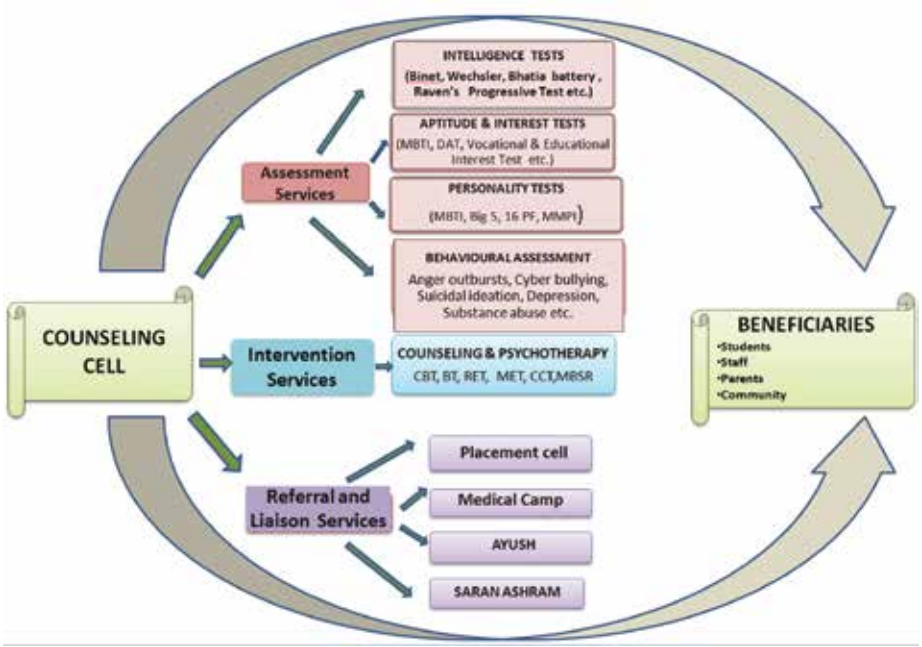


Model Proposed for Establishing a Medical and Health Centre in the Institute

Counseling and Guidance Centre

Phases	Counselling and Guidance Center
Phase-1 (0-5 Yrs.)	• Launch a counselling and guidance center with the help of faculty and students • Strengthening of the cell (above) by starting a course specialized in guidance, counselling and clinical psychology • Utilizing the services of skilled students by giving them opportunities for entrepreneurship, involving psycho-metric assessments, awareness programs etc.
Phase-2 (5-10 Yrs.)	• Liaising with interdisciplinary centers like a I-C-N-C Tall, AYUSH, Saran Ashram Hospital and different NGOs for training and placement • Expanding the use of advanced psychometrics in the areas of neurocognitive and clinical psychology • Tele-counselling, involving clinically skilled students on hourly payment • Establishment of daycare centers
Phase-3 (10-15 Yrs.)	• Collaboration with psychiatric asylum and AYUSH for rehabilitation

Phase Wise Action Plan for Counseling and Guidance Centre

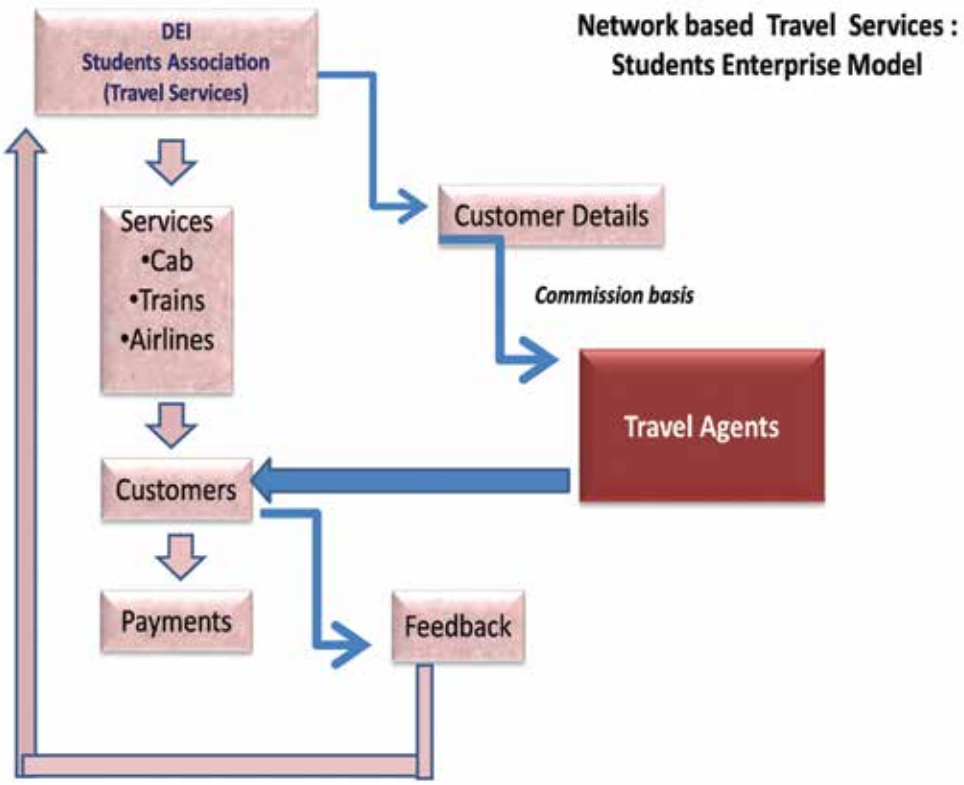


Model Proposed for establishing a Counseling and Guidance Cell

Inside and Outside Commutation

Phases	Inside and outside commutation
Phase-1 (0-5 Yrs.)	• Availability of access points for specially abled students and staff • Availability of eco-friendly transportation system for: - Visitors like examiners and experts - Medical assistance, linking the faculty first aid to medical centre /SAH and further, the multispecialty hospitals
Phase-2 (5-10 Yrs.)	• Network based travel services run by students association, for providing employment to students and conveyance facility to staff
Phase-3 (10-15 Yrs.)	• Availability of bus service: - For local students and staff - For excursion studies and industrial visits

Phase wise Action Plan for Commutation



Model proposed for establishing Network based Travel Services

Canteen Facilities (Girls and Boys)

Phases	Girls and Boys Canteen	Campus Canteen and Mini Restaurant
Phase-1 (0-5 Yrs.)	• Setting up a Canteen Committee with student representation • Daily segregation and measurement of waste with disposal to Gaushala • Improving and benchmarking hygiene • Self-service model in serving food • Student participation in cleanliness drives, once a week	• Setting up B.VOC (Food Processing) Enterprises • Daily segregation and measurement of waste with disposal to Gaushala • Concept of Today's Special (mini meal/ sprouts / fruit cocktails / beverages/ low calorie foods) • Introduction of cashless, meal voucher based canteens • Improving and benchmarking hygiene
Phase-2 (5-10 Yrs.)	• Involvement of local community for utilizing semi-finished food (dough, chopped vegetables, buttermilk, pickles etc.) • Enhancement of the canteen facilities (Green gas, deep freezer, dishwasher, hot- water casseroles)	• Enhancement of canteen facilities (Microwave/ freezer, hot-water casseroles) • Putting CCTV in Canteen for surveillance
Phase-3 (10-15 Yrs.)	• Outsourcing canteen services through alumni assistance	• Introduction of mobile canteens

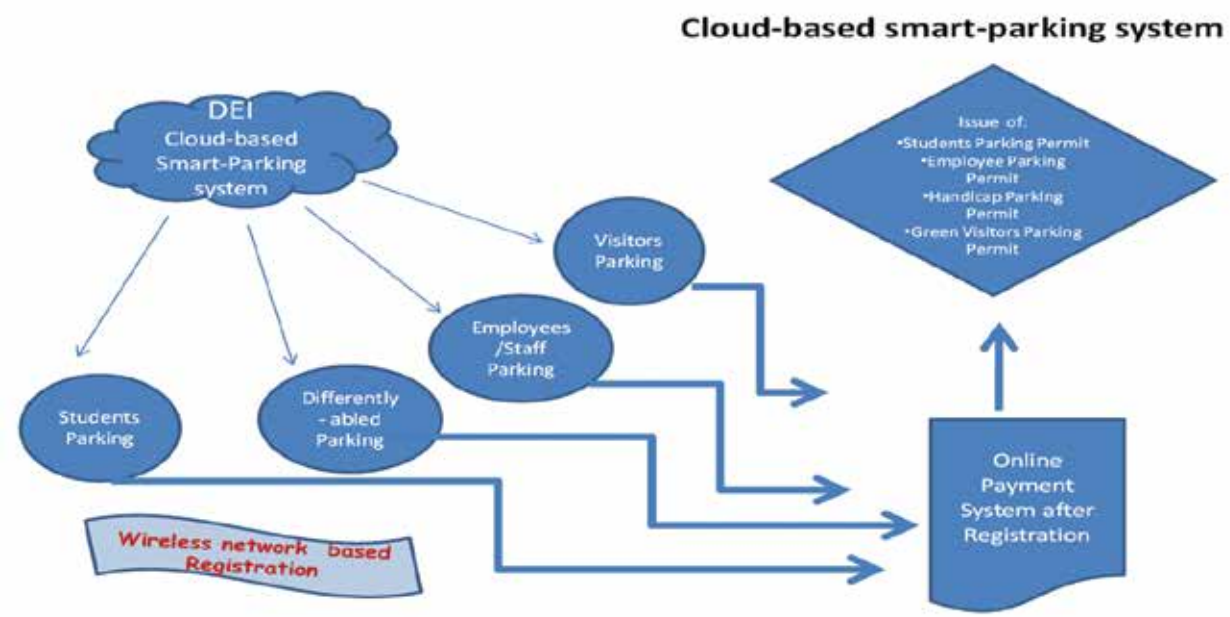
Phase Wise Action Plan for the Canteen Facility in the Institute

Model proposed for improving the Canteen Facility in the Institute

Parking Facility

Phases	Cloud based Smart Parking System
Phase-1 (0-5 Yrs.)	• Development of network architecture based on the Internet-of-things technology to increase the efficiency of the current parking system and minimize the user wait time • Design of 'Online Registration Forms' • Issue of parking and permit cards to staff, students and visitors • Installation of CCTV cameras
Phase-2 (5-10 Yrs.)	• Expansion of parking space • Optimum space utilization by introducing multi-level, mechanical parking facility
Phase-3 (10-15 Yrs.)	• Construction of underground parking

Phase wise Action Plan for establishing Cloud-based Smart parking



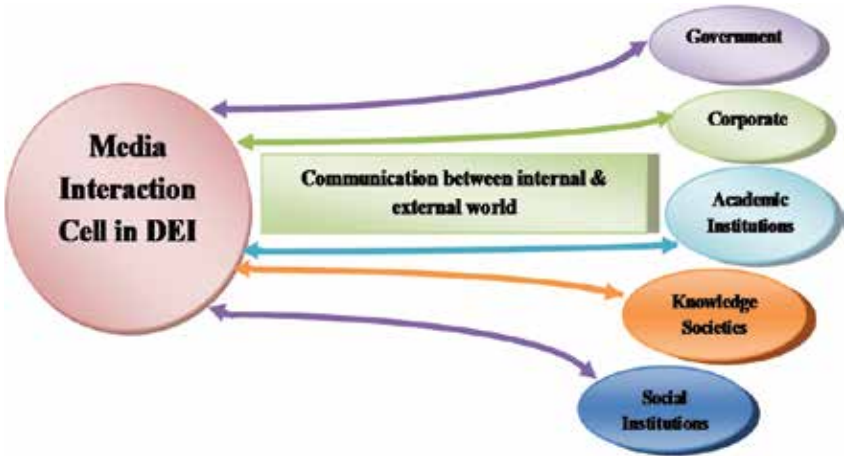
Model proposed for establishing Cloud based Parking in the Institute

Evolvement of Additional Facilities for Dissemination of Information

Media Interaction Cell

The need of the hour is to have a premium media center to deal with the rapid pace of growth in knowledge and skills, changing attitudes and scientific advancement, keeping pace with the frequent paradigm shifts in this dynamic world. In this context, Dayalbagh Educational Institute proposes to establish a media cell (print & electronic media) which will be managed by staff and student representatives of different faculties. The prime objective of the media

cell would be facilitating communication with the external world, notably the corporate and academic / social institutions, network communities and the government.



Model proposed for Media Interaction Cell

Student-Activity Cell

It would be a center where the students would congregate to conduct meetings, discussions and functions pertaining to academic, cultural, political and other creative activities along with the business of clubs and societies. It would host events and meetings regularly, to promote the spirit of team work, cultural harmony, independent thinking and introspection. This would allow the students to weave a pattern of life which would equip them to stand up to the many pressures of community living, train them in making useful inferences in everyday situations, help them derive an insight into their personal relationships and arouse in them a sensibility of aesthetic experience, permeating the feeling of universal brotherhood.

International Affairs Cell

Dayalbagh Educational Institute aims to enhance its participation in international activities by developing a full-fledged strategic cell to address the academic and non-academic needs of the Institute in this regard. The cell will look after promoting and strengthening academic collaborations through invited lectures, technical interactions, joint academic and research projects with foreign faculty, student's internships in foreign universities, interaction with foreign industries, etc. The cell will assist in identifying competent resources and help in networking, facilitate the formulation and execution of MoUs between DEI and other institutes, etc. It will also assist in completing all the formalities and proceedings of various international ranking agencies and maintain much-needed records pertaining to the same.

Patent Cell

DEI would soon have an IPR cell that would work primarily, in the direction of formulation and preservation of knowledge created by the members of the Institute. It will help the staff in understanding the legal issues involved in the development of knowledge assets and study their impact on society. IPR Cell will also ensure the modification and up-gradation of the existing patents; copyrights etc. to meet the industry requirements, besides assisting in identifying commercial partners. The cell will act as a mentor for development of intellectual assets and remove the hurdles involved, therein. Further, the IPR cell may market products along with commercial partners.

Industry Institute Partnership Cell (IIPC)

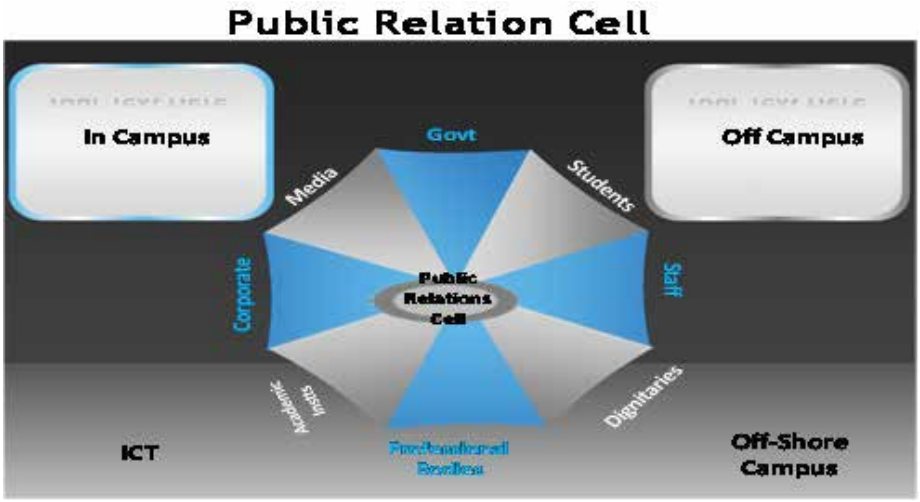
The Industry Institute Partnership Cell will be a potential benefactor for the students because of its student centric activities. It would enhance their skill sets and support the learner community by promoting industry-academia interaction within the campus, off campus and offshore campus.

The objectives of IIPC are:

- To cultivate an Industry-Institute connect
- To augment the skill set for creating super intelligence
- To facilitate industrial training, internship programs, and study tour programs for students
- To arrange for consultancy/ training services using institutional expertise, for other stakeholders towards resource generation and brand equity development
- To engage with the industry for supporting academic activities through corporate social responsibility programs.

Public Relation Cell

Dayalbagh Educational Institute intends to have a public relation cell which will engage with the Information Cell as well as the Media and Publicity Centre in the campus, off campus and off shore campus, for disseminating information towards better decision making, leading to effective functioning of the Institute. The cell will work for enhancing the brand image of the institute. The cell will be responsible for answering media queries, sending out press invitations and press releases on a regular basis, besides organizing press conferences and interviews with faculty, students or the institute's functionaries, as and when required. The PR cell will also correspond with national and international visitors and delegations, including heads of states, members of parliament, corporate honchos and other special guests. The said office would be the single point of contact for any media personnel interested in learning about the institute.



Model proposed for establishing a Public Relation Cell

Extension of Central Facilities for offshore campuses

Dayalbagh Educational Institute proposes to have a decentralized education system to enable the students stay connected with the mainstream while residing at their native place. In this context, the role which central facilities can play will be of prime importance.

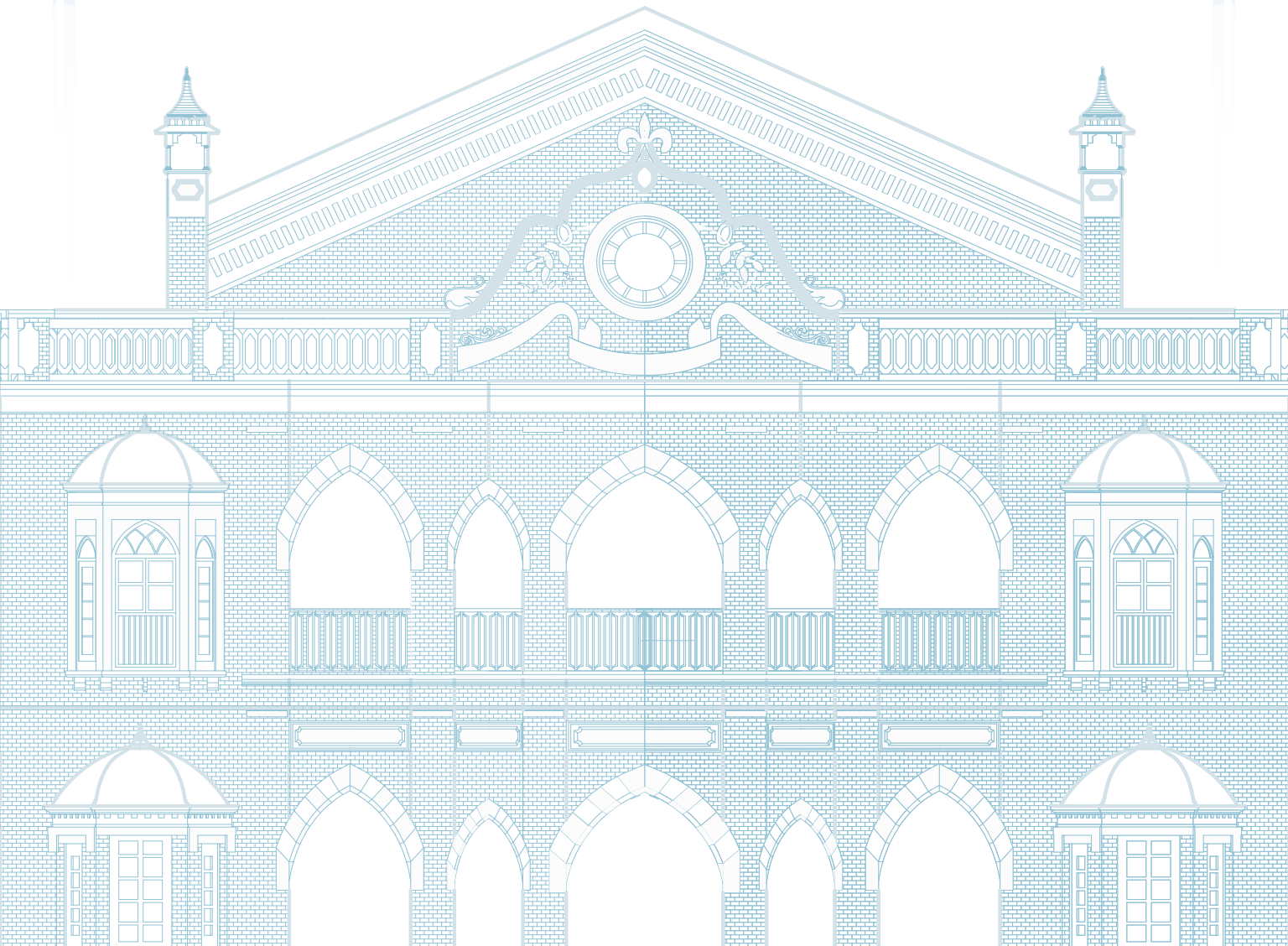
Benefits of Distance and Information & Communication Technology (ICT) Centers

- Students living in remote areas will be able to access education at DEI via Skype and Information Communication Technology while staying at their native place. It will benefit the students of rural areas greatly because they will be able to contribute to their family business /agriculture etc. along with their studies. It will reduce the cost of education as well.
- Guest Lectures can be arranged offline as well as online, by offshore experts. Off campus students can benefit from them.
- The counseling cell of DEI will be able to render psychological advice to the off campus and off shore students in virtual mode.
- The public relation cell will be able to coordinate the students and staff of the institute virtually.

The central facilities of DEI meet the needs of the Institute, at present. For working towards the goal of Homo Spiritualis, a needs-based approach has been adopted in all aspects of growth. Enhancement to existing and additional facilities has been planned carefully. An implementation plan is already in place. This will help the Institute to grow further and achieve its mission of leading the Homo Sapiens to Homo Consciousness, and ultimately, Homo Spiritualis. By enriching and strengthening the central facilities, the institute renews its commitment to provide services to the community at large, upholding the physical, mental and spiritual wellbeing of an individual.

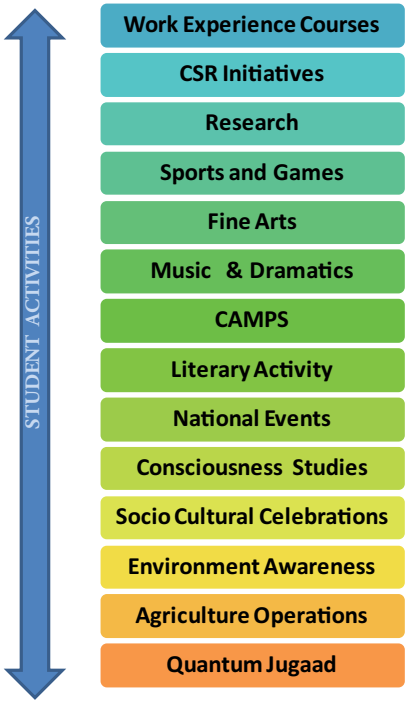
19

Student Amenities



Education for All-Round Development

Education at DEI is broad based, integrated and inter-disciplinary; where students not only learn crafts and industrial techniques, but also, tilling & toiling with their own hands. The manifold ways of learning and diverse activities performed by students are supported by various amenities for seamless and effective learning.



DEI encourages students to actively engage in the activities which are generally designed to Inculcate in them the qualities of **Super Human Being** to achieve **Better Worldliness**

'Adhyan Seva Aur Vayaam'

AMENITIES FOR STUDENTS

Present	i-c-n-c Tall ,Recreation Centre, Music Centre, Earn while you learn schemes, entrepreneurship Cell, Quantum Jugaad, International School on Quantum & Nano Computing System & Application, Agricultural Farms & Dairy, Sports Grounds.
Future	Student's activity centre, Hobby Club, Library Hubs, Kiosks, Tinkering Labs, Amphitheatre Study loans, Swachh Bharat Amenities ,Music & Drama Theatres, Psychological scale for measuring behaviour Counseling & Meditation Centre's, Incubation Centers to support earn while you learn, Sports facilities & Stadium.

Innovative System of Education that is the Hallmark of Values in the Educational System of DEI

Student Activities and Amenities

The following content highlights various amenities provided to students for their development.

Work Experience courses

Practical training is provided to students in operational expertise, related to one of their major subjects. The objective is to create willingness and capacity to work with one's own hands, develop active skills and foster a spirit of self-reliance in the students.

- **Values inculcated:** Creativity and self-reliance
- **Present amenities:** Workshops and Labs on Land.
- **Future amenities:** Computers, sitting areas, well equipped workshops and laboratories, prototype development facilities, commercial knowhow, commercial and service establishments for field experience, etc.



Work Experience Labs

Sports and games

These include all outdoor and indoor games and athletics. Compulsory sport activities are held for all undergraduate classes.

- **Values inculcated:** Team spirit, justice, co-operation and leadership.
- **Present amenities:** DEI has multiple courts for both, boys and girls, where they can play badminton, tennis, lawn tennis, basketball and volleyball. The main campus has three outdoor pitches.
- **Future amenities:** Gymnasiums, indoor courts, outdoor courts, outdoor pitches, athletics tracks, stadiums and full-time staff.

Student competitions

Agriculture & Dairy

The Dairy at Dayalbagh serves as a vehicle for live, experiential observations and skill development for students of dairy technology. The dairy products made by students are being exported as well, for example, to USA. Unnat Bharat, field work and community service are three main aspects of this activity. This initiative helps create an awareness of agricultural processes and rural realities in students, particularly those from purely urban background.

- **Values inculcated:** Dignity of labour
- **Present amenities:** Agricultural farms for field experience and Labs on Land
- **Future amenities:** Facilities to reach out to remote areas and contribute to their social uplift.



Agricultural activities

Music, dance and theatre

Drama and the performing arts serve as means to channelize the creativity in students. This nurtures a high level of self-reliance, confidence, maturity and leadership qualities in students, along with a spirit of team work. Several cultural activities are performed in DEI such as: the Drama Fest - English & Hindi (Inter school and university), youth festivals, music fests -instrumental and vocal, etc.

- **Values inculcated:** Temperance
- **Present Amenities:** Department of Music
- **Future Amenities:** Student activity centre, Theatre and cultural activity clubs.

Music, Theatre & Dance activities

Literary activities

Literary activities have a very significant role in the Educational Policy of DEI. These activities are a gateway to the world's cumulative knowledge. The following are a part of the curriculum: GK, current affairs, youth parliament, student magazines/ newsletters, radio jockeying, debates, poem-recitations, kavi sammelans and celebration of Rashtra Bhasha Diwas.

- **Values inculcated:** Humility, simple living, selfless service and sacrifice.
- **Present Amenities:** Seminar Hall and Convocation Hall.
- **Future Amenities:** Large Halls, online library facilities and a hobby club.

Youth Parliament - National Winners

Environmental awareness

DEI has an eco-friendly campus - it is completely solar powered, tobacco free, liquor free and vegetarian; enforces an absolute ban on the use of plastic carry-bags within the campus;

undertakes rain water harvesting, solar energy management and solid waste management, besides other eco-friendly initiatives. Students are encouraged to become volunteers of an NGO, SPHEEHA (Society for Preservation of Healthy Environment and Ecology and Heritage of Agra) and participate in its initiatives towards ecological conservation.

- **Values inculcated:** Civic Sense, selfless service to society, humility, a spirit of cooperation and last but not the least, dignity of labour.
- **Present amenities:** NSS and SPHEEHA
- **Future amenities:** Environment friendly technologies, tools and implements

Tree Plantation by students

Quantum Jugaad

The innovative skilling initiative in Dayalbagh Educational Institution is based "Quantum Jugaad", a philosophy articulated by Most Revered Prof. Prem Saran Satsangi, Chairman, Advisory Committee on Education. Following this precept, students participate in the entrepreneurial centre, dairy and student canteen to earn while they learn.

- **Values inculcated:** Innovation, the ability to work with one's own hands, creativity and discipline.
- **Present amenities:** Entrepreneurship Cell, Quantum Jugaad, Quantum & Nano Computing System Centre.
- **Future amenities:** Kaushal Kendras, technology business units.

Souvenir shop at DEI, run by students

National events and camps

Few amongst the many events and camps organized at DEI are the Independence Day, Republic Day, National Unity Day, Sadbhawna Diwas; and camps for NSS, Scout and Girl Guides, NCC and Winter Break.

- **Values inculcated:** Loyalty, team work, leadership, humility, discipline, courage, selfless service to society.
- **Present amenities:** Sports Grounds.
- **Future amenities:** Enhancement of Outdoor and Indoor Sports Grounds.

Republic Day Parade

Research

Facilities are provided to students for developing their faculties of thinking, analysis and reasoning.

- **Values inculcated:** Analytical skills, experimentation and reasoning.
- **Present amenities:** Paritantra, National System Conference, Qansas, Seminar and group discussions (SGD), projects, labs, software and Sci-High fest.
- **Future amenities:** As per the research plan.

Consciousness studies

DEI has established the Centre for Consciousness Studies which involves researchers from different knowledge verticals and cross-sections; including Botany, Zoology, Chemistry, Physics and Computer Science, Mathematics, Psychology, Management, Languages (English / Hindi / Sanskrit), Theology, Commerce, Education, Engineering and Medical Sciences. The Centre organizes workshops and lecture series, manages a centre-website, issues journals and conducts research on theory, practice and education of consciousness.

- **Values inculcated: Higher order wisdom, spiritual education: Apara Vidya to Para Vidya.**
- **Present amenities:** Magnetically shielded room (MSR) with MEG apparatus
- **Future amenities:** Enhancement of aforesaid technologies.

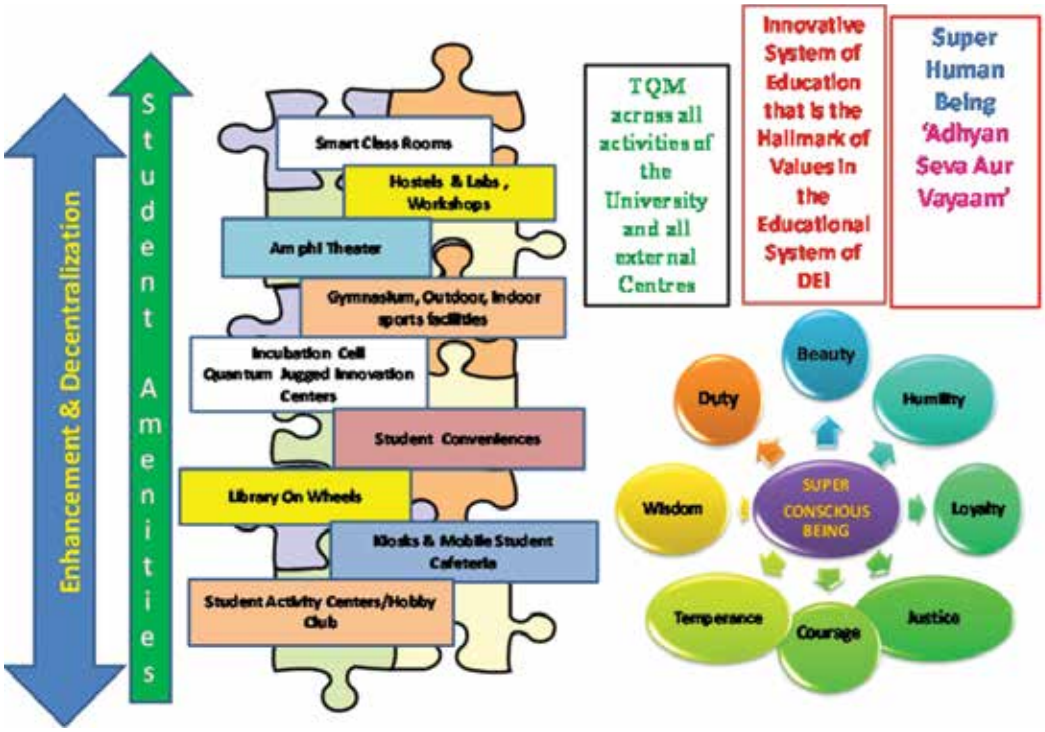
Cultural education

The aim of cultural education is to ingrain religious tolerance, humanism and secularism in today's world of discord, fear and suspicion. This includes the study of different religions like Buddhism, Christianity, Hinduism, Islam, Jainism, Judaism, Sant Mat and other modern religious movements.

Cultural Heritage

- **Values inculcated:** Development of a feeling of Fatherhood of God and Brotherhood of Man, respect for other religions, tolerance, communal harmony and humility.
- **Present amenities:** Core course for all the undergraduates.
- **Future amenities:** Video / audio presentations to explain the concepts related to India's heritage and its preservation.

Strategic Plan for Student Amenities



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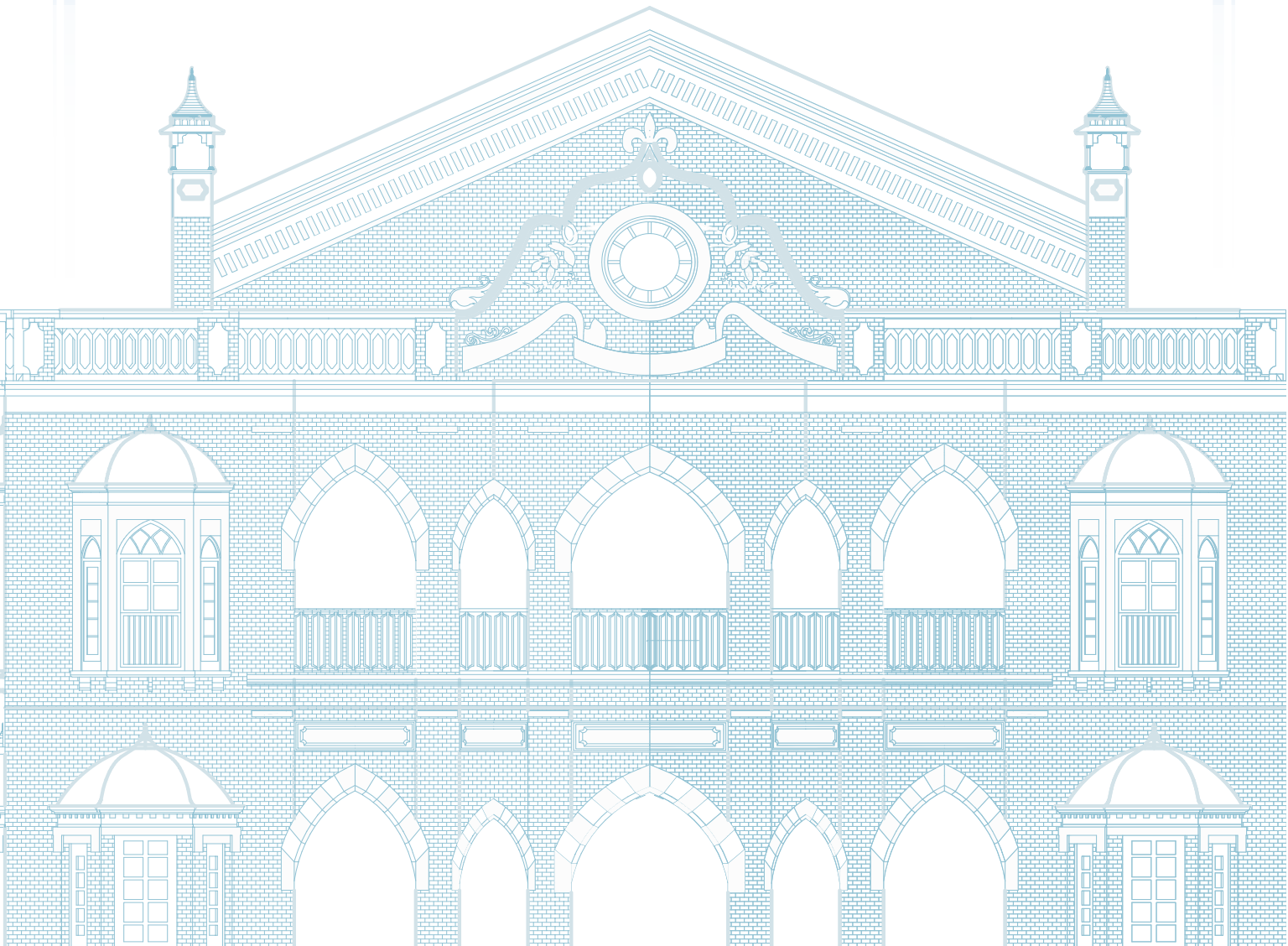
Industry-Institute Partnerships



Industrial training has been one of the key objectives of DEI's education policy, since inception. In the same year that classes were started in REI (Radhasoami Educational Institute) i.e.1917, Model Industries made humble beginnings in Dayalbagh. In a note dated May 5, 1916, Sir Anand Sarup, the Founder of Dayalbagh recorded the object of starting the REI and Workshops as, "... to afford facilities to boys for receiving both mental education and manual training."

A Technical School was opened in 1927 to provide good mechanics, technicians and engineers to the nation. The Technical School had 4-year certificate programs in Electrical and Mechanical Engineering and a 2-year certificate program in Automobile Engineering. Students of the Technical School took great interest in creating gadgets under the guidance of their teachers. In 1928, one student created a sound box, and another made a photographic camera.

Meanwhile, the industries continued to grow in Dayalbagh and by the end of May 1942, products manufactured in Dayalbagh (in the preceding year) amounted to over Rupees One Crore. By March 1945, there were 34 limited companies working inside and outside Dayalbagh. By this time, a number of schools and colleges had been established, especially in remote areas, for women and children from the deprived sections of the society. Thus, a strong education-cum-industrial base was established in Dayalbagh, much before independence.

The administrative policies of DEI have been progressive since the beginning. A hundred years ago, in 1917, a co-educational school was established for classes IV to VIII under REI, much ahead of its times.

Today, emphasis is laid in DEI on earning one's livelihood with honest means. Hence, vocational education and training are considered extremely important. Institutions affiliated to DEI impart value-based quality education at an affordable cost along with all-round development of its students, which is of paramount importance to meet the needs of the contemporary society.

Scope of Education in DEI

Technical Education in DEI

The DEI Technical College (established in 1930), the erstwhile DEI Engineering College (established in 1950) and now the Faculty of Engineering (1981), and DEI Women's Polytechnic (established in 2005) comprise the pillars of technical education at DEI.

Industry Best Practices in DEI

DEI shares many similar best practices with the industry. These include quality, relevance, good management, progressive outlook, goal of high success rate, consolidation of meaningful partnerships, professionalism, consistency, ethics, vision, optimal utilization of resources, performance, commitment, clarity, cultural cohesiveness, creativity, ingenuity, innovation, and team effort. The thought process in DEI is the same as that of the industry – to provide quality with economy. Jugaad (flexible and frugal approach to finding low cost solutions to problems) plays an important role in this.

DEI believes in shared responsibility and accountability to bring out the best in others. Hence, decentralization has been adopted to take education to the doorstep of the learner. This has resulted in many Off-Campuses being developed at Delhi, Melathiruvenkatanathapuram, Timarni, Bengaluru, Murar, and Amritsar. These centers save the learner from the agony of traveling to far off places for education, while helping the industry pick up local talent which is more suited to their work environment due to vernacular and other forms of compatibility.

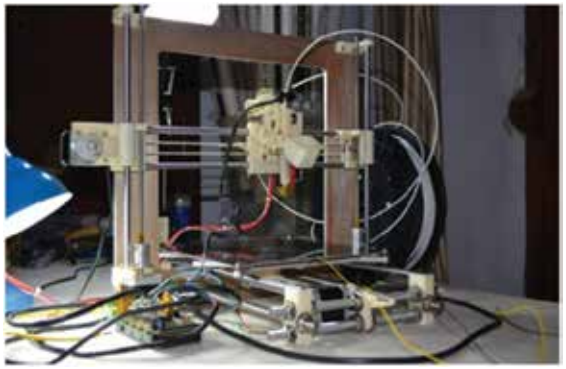
Considering the mutual benefits that accrue to both — the Institute and the Industry, DEI plans to engage around 15% of its faculty positions from the Industry. Thus, DEI students will gain from the experience of industry professionals and at the same time, the industry shall get access to the academic and research facilities available in the Institute.

In order to keep pace with the industrial requirements, DEI holds Curriculum Development Workshops in which industry professionals are invited so that their feedback is readily available, and courses are modified accordingly. Such changes are duly approved by the statutory bodies of the Institute.

A Business Advisory Clinic (BAC) functions from DEI to advise MSME's and new entrepreneurs in starting and managing their businesses. Thus, BAC promotes entrepreneurship. Further, by developing case studies and discussing them in the classroom, students of management are given exposure to real life situations facing Indian MSMEs.

Make in India

DEI students have applied frugal innovation to showcase modern technology, in the spirit of Make in India. Development of low cost 3D printer and autonomous car are an example of student enterprise.



Low cost 3D Printer developed by DEI students

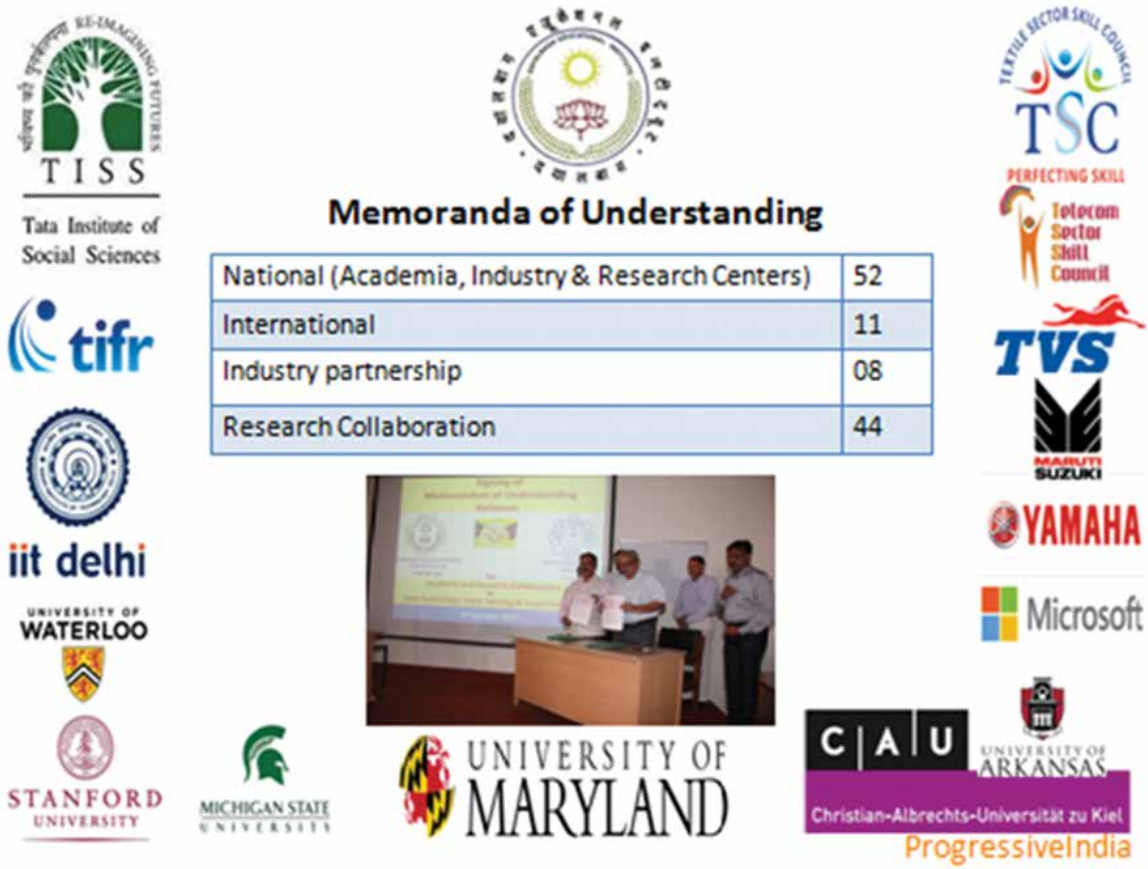
Smart driver-less e-vehicle made by DEI students

Research and Development

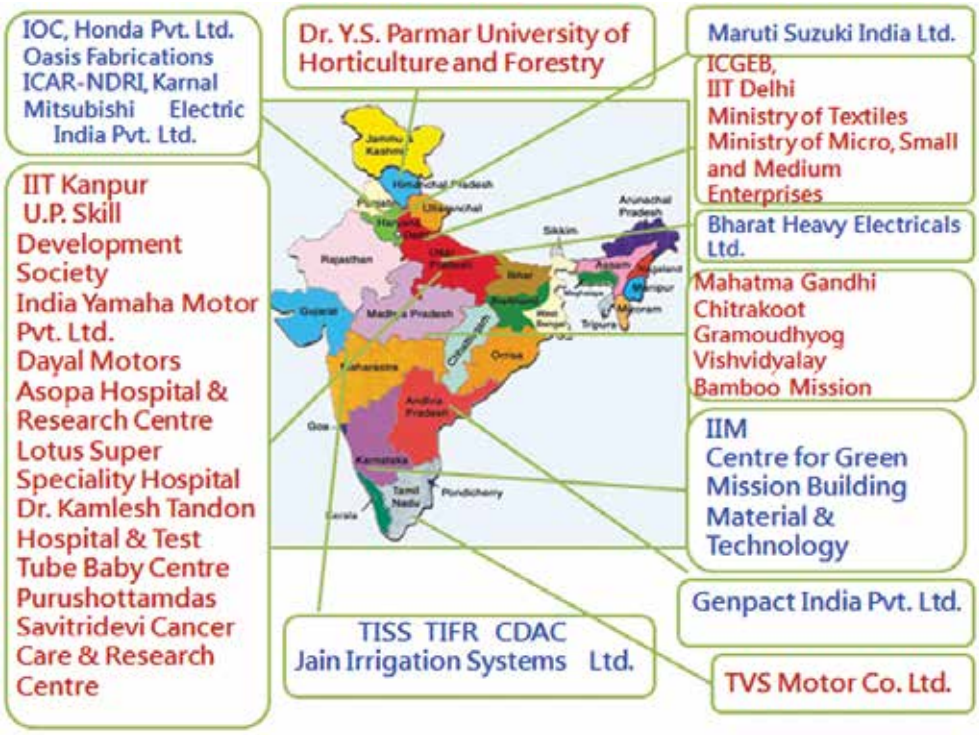
DEI's Center for Consciousness Studies undertakes cutting edge research in the field of advanced consciousness and studies the effects of meditation on brain functions with the help of latest equipment such as fMRI and SQUID devices. Besides, DEI collaborates with other Institutions across the world to undertake socially relevant projects, as detailed in Annexure.

Memoranda of Understanding

Various departments of DEI have entered into Memoranda of Understanding with industry giants, PSUs and R&D Centers, Departments of Ministries, NGOs, and others for mutual exchange and development of expertise in their respective fields, enhancement of training facilities, design and testing of systems, introduction of new programs and initiatives, placement of students, genesis of entrepreneurs and so on & so forth. A brief overview of some of these initiatives is given in Annexure.



MoUs, collaborations and industry partnerships in numbers



Nation-wide outreach of MoUs, collaborations and partnerships of DEI

Nation-wide outreach of MoUs, collaborations and partnerships of DEI

MoUs and Collaborations: Existing status and future projections

Category	2017	2018-22	2023-27	2028-32
National	52	100	150	200
International	11	20	30	40
Industrial partnerships	8	15	25	40
Research collaborations	44	60	75	100

DEI intends to augment its collaborations with industry and organizations of repute in the next 15 years through its alumni.

Role of Industry in Manpower Development

Industries have their best interests at heart in the development of manpower at educational institutes. It provides the industry with a platform for training manpower according to its requirements to produce role-ready workers, engineers, and managers who need not undergo expensive re-training after joining the industry, thereby rendering output from day one of induction. The various facets of manpower development, described in detail in the Annex, are:

- Training of DEI staff
- Student training at DEI by industry experts
- On-the-job training (OJT) in industry/dealerships
- Joint R&D and product development

Role of Industry in Infrastructure Development

As a result of MoUs with the industry, modern training facilities have been established in DEI with corporate assistance, to meet the needs of industrial training. These include-

- Automobile Skill Enhancement Center (ASEC) set up in the Department of Automobile Engineering by MSIL with an investment of INR 20.00 lacs. This includes infrastructure development, tools & equipment, cut-section models and charts etc. Some of the major equipment provided by MSIL include the Alto 800 car, Two-post Lift, AC Gas Recovery Machine and Brake Bleeder.
- Yamaha Training School (YTS), wherein IYMPL has provided all equipment including two-wheeler hydraulic ramps, chain cleaner, battery charger, FI Station, various models of motorcycles etc.
- TVSM Service Training Workshop, in this case, infrastructure development and purchase of tools & equipment has been done by DEI while scooters, motorcycles, cut-section working models, charts etc. have been provided by TVSM.

Initiation of New Programs

A logical consequence of industry institute partnership is the development of new initiatives and training programs catered to meet industrial demands. A few such new initiatives are described in Annexure.

Student Development

Industrial visits

In DEI, industrial visits are an important co-curricular activity. Students are taken to various types of industries for a hands-on experience in relevant fields.

Co-op training program/Internship/Work experience

In order to bridge the gap between what educational curricula and industry requirements, DEI has adopted the Co-op model of education which includes a significant share of practical education in addition to classroom teaching. A right mix of theory and field work provides the student an ideal platform to learn, practice and gain skills otherwise difficult. It also provides the industrial organizations with valuable resources whom they can train, evaluate and recruit thus eliminating the need for further training. The Co-op model at DEI is described in detail in Annexure.

Industry-Institute Partnership Cell and Alumni Association

The institute is conscious of the need to interact with industry constantly in order to stay relevant. This is facilitated through the Industry-Institute Partnership Cell (IIPC) and alumni association of DEI, the Association of Alumni of Dayalbagh Educational Institutions (AADEIs).

Industry-Institute Partnership Cell

The IIP Cell, which was established in 2002, has made significant progress in furthering the cause of industry-institute collaboration. With a senior Professor as its Chief Coordinator and two Project Assistants, the Cell helps in providing consultancy and testing facilities to different industrial houses. The Cell also coordinates activities relating to entrepreneurship development. It helps in organizing short-term courses, seminars and lectures by eminent professionals.

The Association of Alumni of Dayalbagh Educational Institutions

To help the University achieve its goals, the alumni of the Institute, who are well placed in India and abroad, formed the Association of Alumni of Dayalbagh Educational Institutions (AADEIs) in the year 2006.Some important contributions of AADEIs are:

- Placement of DEI students through the DEI-Alumni Placement Assistance Cell (DEI-APAC).
- Student mentoring program for guidance in projects and training.
- Short-term courses on Soft Skills and Computer Skills (Basic & Advanced).
- Guest lectures and domain specific short courses.
- Undergraduate Student Awards for research projects.
- Establishment of ICT enabled Distance Learning Centers in various places.
- Creation of Chairs of Excellence in various departments

Alumni Meet held on November 12, 2017:

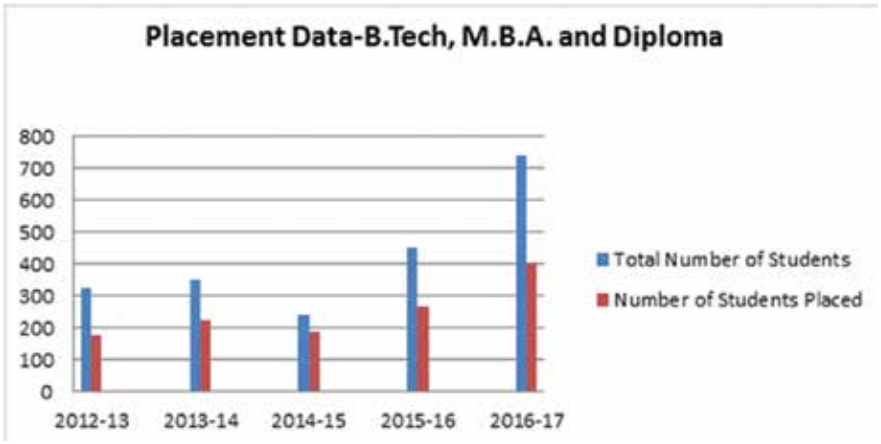
a) View of the audience.

b) Director, DEI, Prof. Prem Kumar Kalra fielding questions after his address.

Placement

Campus Recruitment

Appreciable on-campus placement has been seen for Engineering, Management and Diploma students as well as those from other streams like Science, Arts, and Education for over a couple of years. Some of the top corporate houses which have hired graduates from DEI include Airtel, American Express Bank, Bajaj Electricals, Birlasoft, Deutsche Bank, FIAT India Ltd, GE Capital, Genpact, HCL Technologies, HDFC, Headstrong, Honda Motors, Honda Motorcycle & Scooter India Ltd, Maruti Suzuki India Ltd, Tech Mahindra, TATA Consultancy Services, Tata Cummins Ltd, and SRF among others.



Placement data for B.Tech., M.B.A and Diploma students

Job Fairs

Apart from on-campus placement, another opportunity for placement is available to DEI students in the form of Job Fairs. These job fairs are jointly organized by DEI-APAC and AADEIs. They provide a meeting point for companies who are unable to visit the campus due to some pre-engagement These job fairs are held at various places, towards and after the end of the academic session, such as Noida, Bhiwadi, Jamshedpur, Haridwar,and Lucknow. Some reputed companies visiting the job fairs include Adidas, Airtel, Hero Moto Corp, Honda

Motorcycles, Micromax, Mobikwik, Shriram Pistons, Sleepwell, Spencers, SRF, SYSCOM, Vivo, Genpact, Eureka Forbes, VFS Global, Domino's, Minda, RICO, Lava, HCL, Teamlease, Mothersons, Luminous, Wills Lifestyle, Dunkin Donuts, OPPO, Big Bazaar, HDFC, Metro Hospital, Microtek, Okaya, Havells, TDK, Sundram Finance,among others.

Year	Nos. of Cos.	BCOM/ BBM/ MOM&SP/ OACO	Electrician/ Wire-man/ MVM	Textile Courses	Dip. in Engg / Voc. Dip/ Leather	B. Voc. Auto	MBA	Total
2017	50	128	244	53	184	14	8	631
2016	66	224	282	58	133	0	0	697
2015	60	210	244	121	59	0	0	634
2014	54	258	245	124	0	0	0	627

Student Placement by Course and Year through Job Fairs

Services Offered by DEI to Industry

Consultancy Services

DEI has been offering its expertise to the local industry and defense research labs in a big way. The Faculty of Engineering leads the initiative. The collaboration of its staff with Aerial Delivery Research & Development Establishment (ADRDE), Agra, is a case in point. The major consultancy projects for ADRDE are listed below.

S. No.	Project Title	Project Duration	Amount (Thousands of Rupees)
1.	Design of Winching and Mooring System for Aerostat-2000m^3.	2004-2006	994
2.	Finite Element Structural Analysis of 75 feet Inflatable Hemispherical structure.	2007-2009	996
3.	Study and development of processes for creating Bulk Nano materials for aero- space structures.	2009-2011	995
4.	Study of micro-structure and mechanical properties of ultra-fine grained aluminum alloy (al6061) developed using ECAP and FSP.	2010-2012	999

Consultancy by DEI for ADRDE

Two members of DEI staff served as Master Consultants for Cadence Design Systems (India) Pvt. Ltd from 1.03.2011 to 28.02.2012.

One member of DEI staff served as Training Consultant for Cadence Design Systems from 2004-09 during which he organized several training workshops on Advanced Algorithms at Cadence Design Systems, Noida. The same member was Training Consultant for Atrenta Communications, Noida in 2010 where he organized a training workshop on Advanced Algorithms.

The Department of Electrical Engineering is in talks with Essar Steel India Ltd. for setting up a research lab for making intelligent robots.

The Department of Civil Engineering is geared up to offer consultancy services to local firms and the Indian Railways.

Testing Facilities

The Department of Electrical Engineering, Faculty of Engineering provides testing facilities for motor/generator testing, calibration of voltmeter, ammeter, watt-meter, energy meter etc., HV testing for safety shoes, HV testing of insulators, HV testing of dielectric oil for the local transformer industry and others.

Links with NGOs

Apart from the industry, DEI has links with NGOs working for social uplift and overall development of the downtrodden, tribals, children and the womenfolk. These activities are described in Annexure.

Strategic Plan for Industry Institute Partnership

DEI has formulated a strategic plan with achievable goals and an action plan for furthering its objective of providing need-based education which is of relevance to the society in general and industry in particular. That strategic plan also lists several performance indicators to evaluate its progress in measurable terms. The details are as follows:

Goals

- Increase collaboration with industry.
- Increase interaction of DEI staff with industry.
- Provide technical inputs and solutions towards problems of the industry.
- Offer latest technologies to the industry.
- Augment Co-op relationships with the industry to the next mutually rewarding level.
- Add value to the industry on collaboration with DEI.

Action plan

- Introduce relevant, industry-oriented courses in academic programs.
- Float joint, short-term modular courses with industries having MoU with DEI.
- Promote student internship for all streams actively Offer joint certificates and degrees with industries.
- Explore industry tie-ups for research funding.
- Promote joint research projects actively.
- Strengthen existing MoUs and explore new ones.
- Invite eminent professionals from the industry on sabbatical.
- Use MoUs to build closer ties with the industry, through alumni if required, for appointment of Adjunct Professors.
- Appoint retirees from the industry as Contractual (Asst.) Professors.

Performance Indicators

The action plan mentioned above should help DEI achieve its goals (also listed above) and translate into an:

- Increase in number of students getting selected in top-notch companies with packages at par with the best on offer elsewhere.

- Increase in numbers of start-up founders and entrepreneurs from DEI.
- Increase in development of new technologies.
- Increase in filing of patents.

MoUs & Collaborations: Existing status and Future Projection

In the following table, the existing MoUs, collaborations, and partnerships of DEI with other institutions, industries and R&D organizations at national and international levels are shown. The table also gives future projections for the next 15 years.

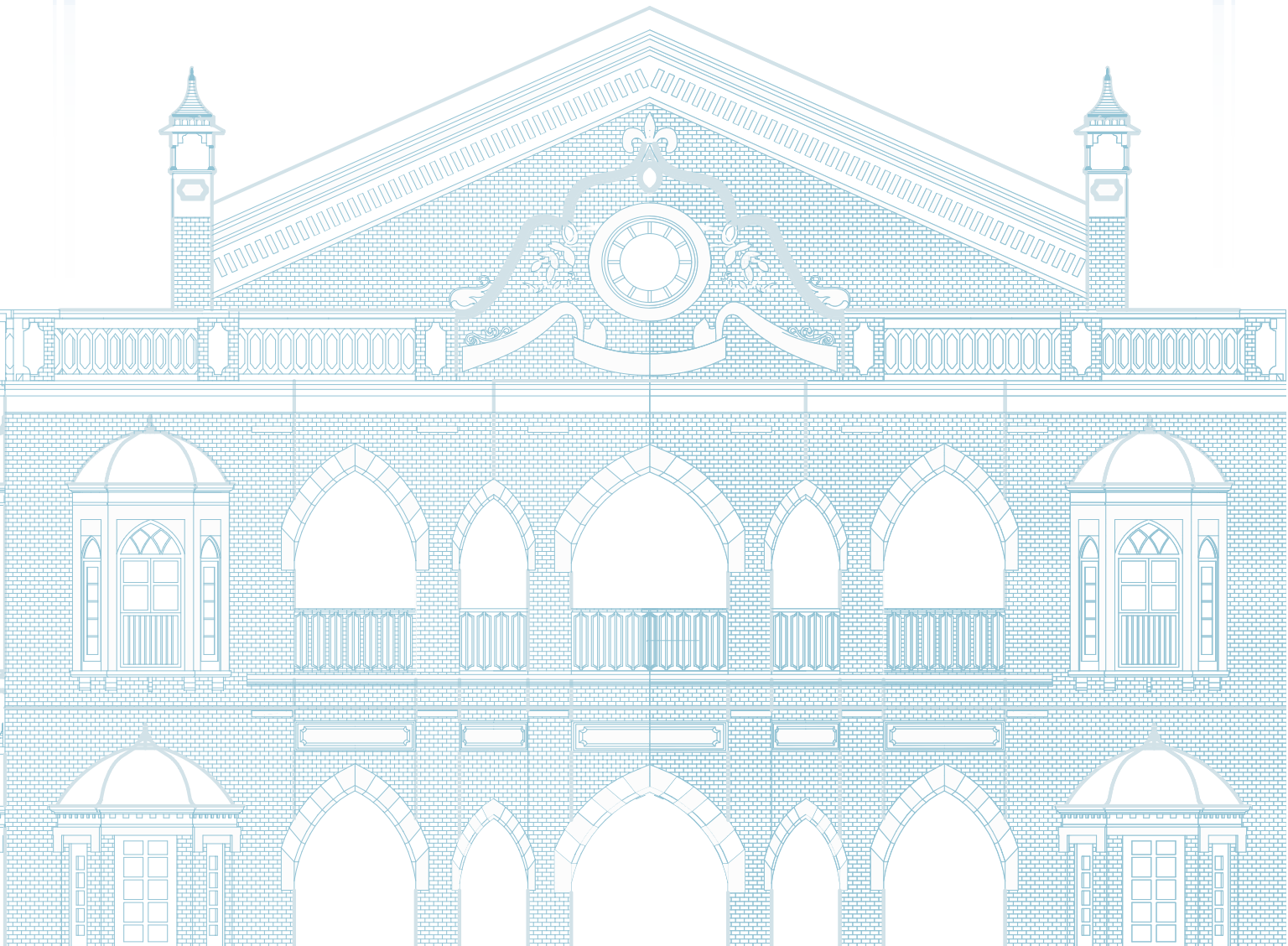
Category type	2017	2018-22	2023-27	2028-32
National	52	100	150	200
International	11	20	30	40
Industrial Partnerships	8	15	25	40
Research Collaborations	44	60	75	100

MoUs and collaborations: Existing status and Future Projections

Activities in DEI are guided by experiential knowledge and intuitive consciousness. Therefore, education here is a unique blend of physical, cognitive, and metaphysical science that molds its students to serve the needs of the industry and the society. Along with academics, equal focus is laid on manual labor, social work, agriculture and a cross functional approach that develops the qualities of hard work, sincerity, adaptability, flexibility, innovation, creativity and excellence in students - all the elements required by the industry in an apt professional. Dayalbagh in general and DEI in particular, is a social engineering laboratory where unique experiments are performed by blending academics with a practical approach to real life situations. Education at DEI is laced with the philosophy of moderation, economy and hard work. This is churning out exceptional results in preparing outstanding professionals whom the industry craves for. Further, efforts are underway to transform the Humans of today into Super-humans of tomorrow, who would render self-less service to all living beings.

21

Non-Teaching Staff



Mission Objective

The mission of the Institute's policy for non-teaching staff is to attract, recruit, nurture and retain value-oriented non-teaching personnel across diverse fields, who can be instrumental in achieving the goal of developing students into 'Complete Men'.

The Institute has set a target of:

- Developing an integrated and cohesive framework for staff recruitment, training, assessment, development and retention; and
- Providing the fullest expression to skills and competency of the staff to facilitate their role.

Non-Teaching Staff / Jobs

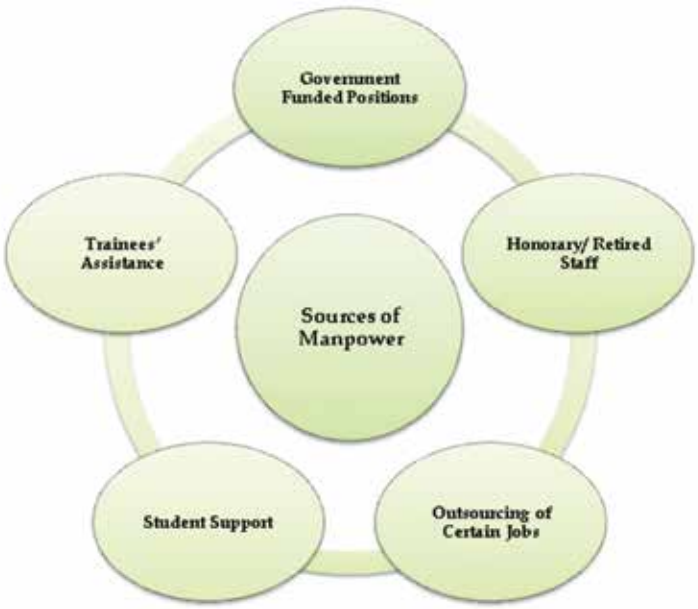
The wide spectrum of activities entailing the services of non-teaching personnel in the institute includes:

- Central Administration
- Faculty Administration
- Institute Statistics and Management Information System (MIS) Cell
- Purchase (Procurement) Cell
- Central Library
- Faculty Libraries
- Training and Placement Cell
- Business Clinic and Incubation Cell
- Publicity Cell
- Incubation, Entrepreneur and Intellectual Property Rights (IPR) Cell
- Computer Centre
- Multimedia Center
- Vocational Training Centers
- Internal Quality Assurance Cell (IQAC)
- Language Lab (ICNC Tall)
- Quantum and Nano Computing Virtual Centre (QNCVC)
- Centre of Consciousness Studies (CCS)
- Institute-Industry Partnership Cell (IIPC)
- Curriculum-based Laboratories and Workshops
- Specialized Laboratories (such as those in Photonics, Soft Computing, Atmospheric Chemistry, Photolysis of Water, Neuro-Psychology, Topology and Linear Graph theory, Bio-inspired Systems, CAD/ CAM and Agile Manufacturing)
- Research Consortium and Research Support Cell
- Cell for Identification of Potential Research Areas
- Skill Development Centers (PMKYK/ UPSDM)
- Entrepreneurial Activities (ATMA/ ADyNaM/ AAM)
- Community Colleges
- Support Cell for REZ to SEZ
- Distance Education Cell (DEI-DE)
- ICT, E-education (e-DEI), E-publishing and Virtual University Cell
- Off-campus Centers

- ICT Centers
- DEI-DE Information Centers
- Works Department
- Essential Services (Electric/ Water Supply/ Audio-Visual Aids)
- Security/ Surveillance Department
- Lawns and Gardens
- National Service Scheme (NSS)
- National Cadet Corps (NCC)
- Scouting & Guiding
- Games and Sports
- Medical and Healthcare
- Seminar Hall Complex
- Boy's and Girl's Hostels
- Non-Resident Student Centers and Canteens

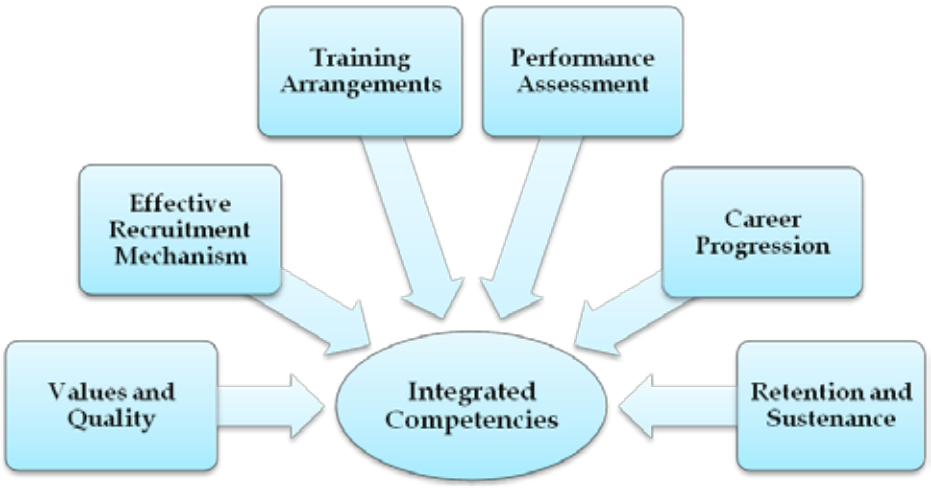
Present Status and Growth

In the Institute, there is an interplay of five dimensions of manpower: (i) Government Funded Positions, (ii) Honorary Staff/ Engagement of Retired Staff, (iii) Outsourcing of Jobs, (iv) Student Support, where necessary, and (v) Trainees' Assistance, where suitable.



At present, there are 548 non-teaching members in the Institute, of which, only 352 are on government-funded positions (Technical, Ministerial and Supporting staff) in different cadres sanctioned by the State Government/ University Grant Commission. Others include honorary staff, outsourced positions, trainee assistance and student support. With the growth of students on- and off-campus, a conservative estimate for this number after five years is 1250, and about 2125 and 3300 at 5-yearly intervals. Currently, while the student-teacher ratio in the Institute is 1:17, the teaching-non-teaching staff ratio is 1:9.

Recruitment and Career Progression Policy



Mechanism for recruiting Non-Teaching Staff

The Institute follows the rules and guidelines of UGC with respect to recruitment. The staff recruitment mechanism / Cadre Recruitment Rules (CRR) involve advertisements for vacant positions, screening of applications, short-listing of eligible candidates, written tests and interviews by a selection committee. The recommendations of the committee are then placed before the governing body of the Institute.

Training Arrangements

Non-teaching staff members are generally trained in-house, but they also attend training programmes offered by the government or other agencies, when required.

Technical staff is encouraged to attend skill-based training programs / workshops on laboratories etc. Also, ministerial staff is deputed to attend training programs on various administrative matters including pension schemes, reservation, disciplinary rules, leave rules, promotion rules, budgeting, pay commissions and allied matters, accounting methods, income tax, GST, and other contemporary issues related with the Internal Quality Assurance Cell, ISO, QMS, etc.

Performance Assessment

Standard proformas (refer Annexure) are used for objectivity in the appraisal process. Staff members have quarterly performance appraisals when on probation, and permanent staff members have annual performance appraisals done by their reporting officers.

Career Progression

The career progression policy of the Institute includes reasonable opportunities for career growth in the cadres of supervisory, technical, clerical and subordinate staff, as per the cadre rationalization. This allows the employees to move up the organization hierarchy.

The Cadre Recruitment and Promotion Rules framed in the Institute state clearly that certain positions in each category i.e. Group A, B and C (up to a certain percentage of sanctioned posts in that cadre) are to be filled by promotion.

It is expected that non-teaching staff would also have a career path parallel to that of the teaching staff, which would lead to greater satisfaction in one's work-life.

Retention and Sustenance

The Institute takes good care of the employees and the rate of retention is very high. Employees are loyal to the Institute and they stay on job till the age of superannuation. Attrition owing to mid-stream resignation is negligible.

Projections

Given the Institute's ambitious expansion plans, the gamut of existing non-teaching jobs is expected to increase significantly in future.

Non-Teaching Staff Requirements

Non-teaching positions funded by UGC that are needed for efficient functioning of the Institute are shown in the table following this section.

- Non-teaching positions in Group A will be raised from 17 to 44 in 2022, to overcome the current deficiency. The student enrolment expected in 2022 is 16000 (up from the present 8706) and 30000-32000 in 2032. As far as non-teaching staffing is concerned, close supervision of students would be provided by their teachers and technical instructors / administrative staff (Group B and Group C), while overall administration and control would be provided by those holding positions from Group A.
- Digitization is required to increase efficiency and cost-effectiveness in many processes. Alternatively, work may be done by outsourcing a specialist firm, having explored the necessary funding options. University-level ERP systems could be considered, thereafter.
- Increased student enrolments and overall development will increase the responsibility of the Central Administration; hence, it may be strengthened with positions in Group A and B of the hierarchy, for effective implementation of work.
- The Central Library and faculty libraries will also need augmented resources for similar reasons.

Engineering/ Civil Works have a perennial need of technical staff for maintenance and construction work. Several laboratories and workshops shall be opened for new courses and will require technically qualified staff.

Staff requirements for sports and games have been listed. Staff is also required for support activities, such as Sanitation, Transportation, Canteens, Hostels, etc.

Non-teaching staff: current status and future projections

Particulars	Current Status	Projections						
		First Five Years					Next Ten Years	
	2017	2018	2019	2020	2021	2022	2023-27	2028-32
Total Students Enrolments	**8706**	**12000**	**13000**	**14000**	**15000**	**16000**	**23000**	**30000**
Of which Ph.D., M.Phil. &M. Tech.	717	800	900	1000	1100	1200	1800	2500
Teaching Faculty	504	750	813	933	1000	1150	1950	3000
Teacher - Student Ratio	1:17	1:16	1:16	1:15	1:15	1:14	1:12	1:10
Personnel in Non-Teaching Jobs	**548**	**820**	**890**	**1020**	**1090**	**1250**	**2125**	**3300**
Of which								
A. Government Funded Positions	**352**	**399**	**413**	**426**	**437**	**503**	**596**	**675**
Group A	17	34	37	40	42	**44**	55	60
Group B	40	62	67	71	74	**77**	110	141
Group C	175	220	228	235	240	**262**	311	354
Group D	120	120	120	120	120	120	120	120
B. Honorary Staff	**21**	**50**	**60**	**70**	**80**	**90**	**100**	**120**
C. Outsourced Positions	**78**	**120**	**135**	**150**	**160**	**175**	**200**	**220**
D. Students Support	**99**	**251**	**282**	**374**	**413**	**482**	**1229**	**2285**
E. Trainees' Assistance	**Periodic (Summer), Assignment/ Job-based**							
Teaching - Non Teaching Ratio	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.10

Note: *1. Students Enrolment include Main Campus, Off - Campuses and Open & Distance Learning Centers in India & Abroad.*
2. Students of Ph.D., M. Phil. and M. Tech. support in Laboratories, Workshops/ Research and organization of Conferences/ Seminars/ Workshops.
3. Students of UG and PG assist in Entrepreneurial Activities/ Central Support Services and organization of Programs and Events.
4. Experts from Abroad support in some of the specialized services.

UGC funded non-teaching positions required

S. No.	UGC Funded Positions	5 Years	10 Years	15 Years	Group
1	Deputy Registrar	3	3	0	A
2	Assistant Registrar	3	4	2	A
3	Public Relations Officer	1	1	0	A
4	Chief Statistical Officer	1	0	0	A
5	Statistical Officer	1	0	0	A
6	Technical Officer	6	0	1	A
7	Chief Engineer (Civil)	1	0	0	A
8	Assistant Engineer	1	1	1	A
9	Training & Placement Officer	7	0	0	A
10	System Analyst	2	2	1	A
11	Librarian In-Charge	1	0	0	A
12	**Total A**	**27**	**11**	**5**	
13	Senior Technical Assistant	13	7	5	B
14	Section Officer	5	5	5	B
15	Security Officer	1	0	0	B
	Canteen Manager	1	0	0	B
16	Assistant	6	14	16	**B**
17	Junior Engineer	2	2	1	**B**
18	Assistant Security Officer	2	0	0	B
19	Coach - Physical Education	5	3	2	B
20	Professional Assistant	2	2	2	B
	Total B	**37**	**33**	**31**	
21	Upper Division Clerk	11	10	10	C
22	Lower Division Clerk	21	13	12	C
23	Computer Operator	14	4	4	C
23	Junior Technical Assistant	5	3	2	C
24	Laboratory Assistant	18	10	9	C
25	Cook	8	3	2	C
26	Semi-Professional Assistant	5	3	2	C
27	Library Assistant	5	3	2	C
28	**Total C**	**87**	**49**	**43**	
	Grand Total (Group A+B+C)	**151**	**93**	**79**	

Use of Technology

The Institute intends to use Information Technology to spearhead efficiency in the way of working. This would permeate into all processes, for example, admission, recruitment, promotion, results, accounts, MIS and database management. While the need for suitable non-teaching manpower and investment in equipment cannot be overstated, computers will be used to execute most of the work. Technology will also be used for teaching at centers through networked systems, sharing library resources, research work, statistical work relating different functions, managing university databases, hosting communication network, besides several administrative jobs. It is expected that non-teaching staff in the Institute will do more and more jobs using computers.

Involvement of Retired/ Honorary Staff

India has a large pool of active and experienced retirees, with knowledge in diverse areas such as administration, science, and engineering. The institute plans to involve such knowledgeable retirees, who express interest in contributing to its objectives.

Student Involvement

Students at all levels will be involved in services such as the library, laboratories/ workshops, security/ surveillance, maintenance of solar panels and electrical batteries, electricity/water supply, vocational/ entrepreneurial/ skill-based programs, and also in tasks related to their course of study under supervision and guidance of their instructors. This will provide them an opportunity for entrepreneurial development and a means to support themselves.

The proposed framework of financial support to students, under the Earn-While- You-Learn program is as follows:

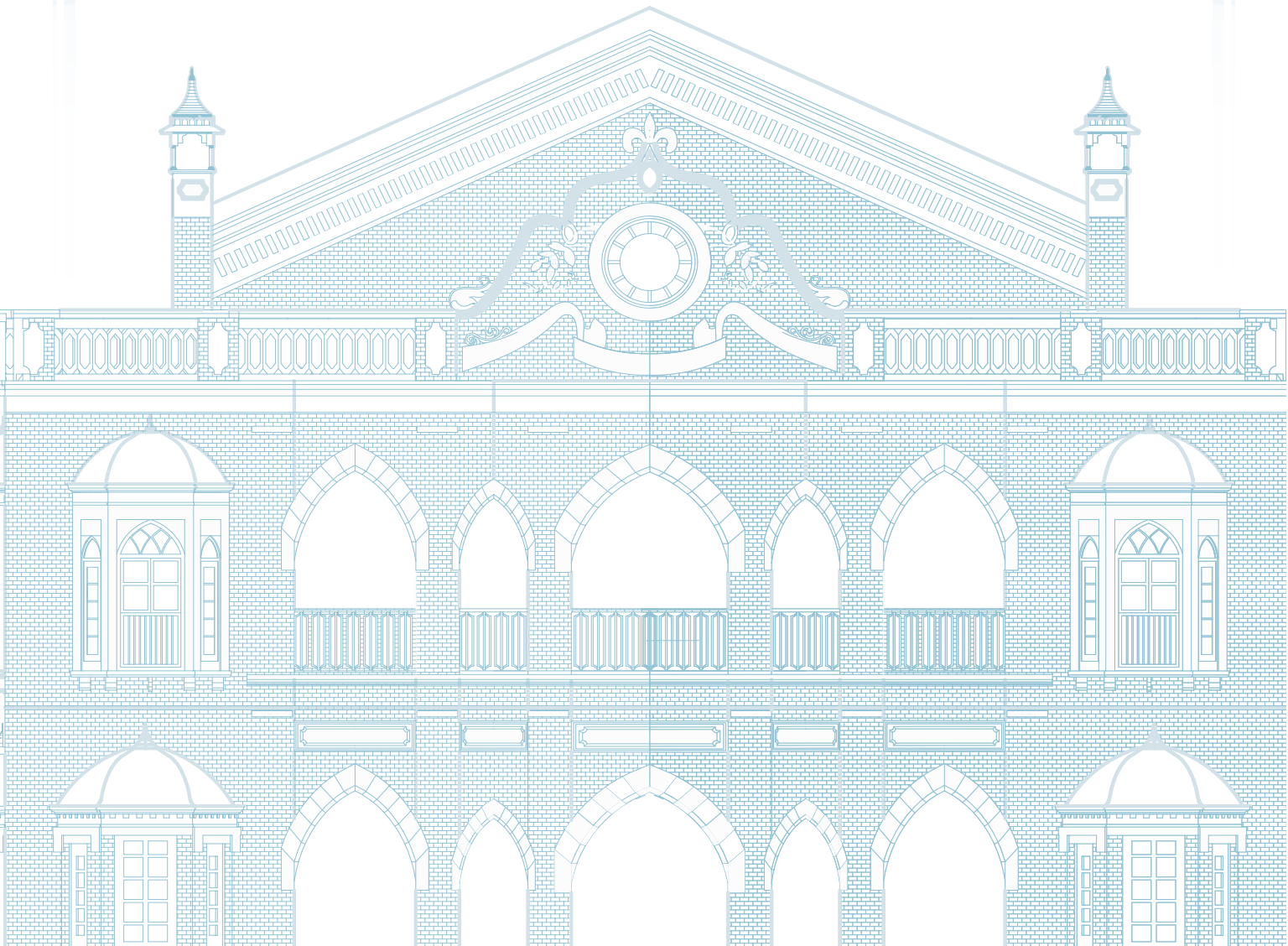
- Post-graduates and researchers will be engaged on a rotational basis for two hours per day, on a nominal payment of Rs. 3000 per month.
- Undergraduate students and those studying in the vocational and skill-based courses will be engaged on a rotational basis for two hours each day, on a nominal payment of Rs. 2000 per month.

Involvement of Alumni

The Alumni of DEI have gladly shared their experience, knowledge, contacts and time when in service and more so after retirement, imparting professional knowledge as well as honest feedback to the Institute. It is proposed to increase the involvement of alumni in non teaching activities, especially those, who have outshined others in different walks of life and wish to contribute to their alma mater.

22

Unique Features of DEI



Unique Features of DEI

1. Dayalbagh Educational Institute: As Others Saw It
2. Quantum and Nano Systems Centre
3. East West Forum at The Science of Consciousness (TSC)
4. Automobile and Multi-skill (AAM) Karkhana
5. Business Advisory Clinic (BAC)
6. Systems Approach and ISM Model of DEI Education
7. Industry Institute Partnership
8. ISO 9001: Quality Management System
9. Co-Curricular Activities
10. Skill Development at textiles
11. Total Quality Management
12. तोD-मोD-जोD (तोड-मोड-जोड)
13. Values and Quality Day
14. Apparel and Toy Making Association (ATMA)
15. Soft Skill Development
16. Society for Preservation of Healthy Environment and Ecology and Heritage of Agra (SPHEEHA)
17. Dayalbagh: An Eco-village

Dayalbagh Educational Institute : As others saw it

"I am indeed very happy to have this opportunity of visiting one of the finest institutions in India that I have seen. The Dayalbagh institution in my opinion is a unique one. Everybody is made to work, is given the lesson in the dignity of labour, and made to feel that not only work is dignified but work is also worship. I am quite sure that this institution will become a model for the rest of the country to follow. In fact, it should be the endeavor of the Government to take children from other parts to come and stay here for a week, so they may imbibe the spirit and learn from the kind of disciplined life that exists here. I am deeply impressed with the visit. I carry very cherished memories of this visit".

Honorable Shri R. Venkataraman,
President of India, 16th March, 1992.

…." what makes a university great, it is the quality of education that makes a University great. DEI is exemplified by this statement, in letter and spirit. We have a roadmap for India becoming a developed nation, economically developed nation by the year 2020. Fundamental to this is education with value-based system. I am glad that DEI is promoting education with value-based system."

Honorable Dr. A.P.J. Abdul Kalam,
Former President of India, 2011.

I find this University impressive in its vision, creating a complete person or a complete man and in its spiritual faith, its base in hard work and service to society as well as excellence in academic content is really quite a concept to put together. I do wonder who else in the country you will compare yourself to since I don't know if anybody has this vision. So you are a class by yourself."

Prof. Dan Mote,
President, University of Maryland, U.S.A, 2006.

"The DEI is a fascinating center of learning. The holistic approach from moral values, ethics, skills, to knowledge & employment a multifaceted product comes out. Congratulations. Wish I could have spent more time to understand fully this fascinating out-of-the-box approach. My humble pranams to Pujya Guruji."

Honorable Shri E.S.L. Narasimhan,
Governor, Andhra Pradesh &Telengana, September 17th, 2017

"I have been impressed tremendously by spirit of working together, dignity of labour and the selfless efforts by one and all in this University. They have preserved the heritage yet moved on with times as far as technology is concerned. Their stress on vocational education could work as a model for the entire country. I wish the University and the Trust all the best in the years to come."

Shri Ashok Thakur,
Secretary, MHRD, January 12th, 2013

"Had an opportunity of visiting this unique Institution on the occasion of its 35th Convocation Ceremony. Have always heard of this Institution since childhood but was totally taken aback by the reality which is much better than whatever we have heard. This Institution has laid a

tradition of fusion between Education and contemporary skilling which needs to be universally replicated. It is creating a new generation of youngsters who are spiritually inspired but still grounded in the realities of the country's current needs. A very motivating and inspiring experience. Thank the Management for giving us this opportunity."

Shri Rohit Nandan,
Secretary, MSDE, Govt. of India, January 12th, 2017

"The visit during UGC Review Committee was fully supported and helped by the Director, Deans and Heads and all teachers and staff members. The dedicated and committed teachers and staff members are providing quality education and helping in building the character and Human Resources needed for the growth and development of the nation. I congratulate and thank them for their continued efforts in making true human beings with knowledge, wisdom and consciousness. I wish them all the best wishes in this endeavor.

Prof. G.D.Sharma,
Vice-Chancellor, Bilaspur University, Chhattisgarh, October 7th, 2017

"I am really impressed by the spirit and the breadth of activities of the University. I like particularly the relevance for all aspects of society, from engineering to sustainability and the arts."

Prof. Frank Schweitzer,
ETH, Zurich, March 10th, 2017

"A very inspiring visit. I am very impressed with the idea of all-round holistic development of students, with an emphasis on service & humility. Reminds me of many of Gandhiji's ideals. I wish D.E.I. the very best in the days ahead! Thank you also for the overwhelming hospitality."

Prof. Sandip Trivedi,
Director, TIFR, Mumbai, December 12th, 2016

"When was the last time you experienced something for the first time. This was one of the days. Full of wonderful experiences, great learnings and the chance to interact with some great minds. This is a unique Institution grounded in Indian values and modernized by global intellect and technology. I look forward to collaborating with the institute in many areas."

Shri Bhaskar Pramanik,
Chairman, Microsoft India, February 7th, 2017

Quantum-Nano Systems Centre

Context

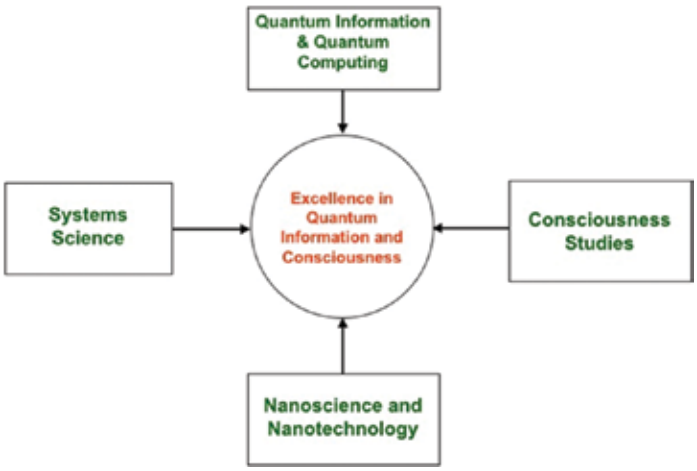
The Quantum-Nano Systems Centre is a multidisciplinary center at DEI set up to promote teaching and research activities in this highly challenging multidisciplinary area. It has the following aims:

- To bring together the complementary research strengths of partnering groups for rapid and effective growth of research in Quantum-Nano Computing paradigms.
- To utilize the latest distance-learning technologies such as videoconferencing, webcasts, e-lectures, online courses for **Promoting Quantum-Nano Education** and provide opportunities to young scientists and researchers.
- **Dissemination of knowledge in Quantum-Nano Computing** to industries/ research and development organizations and academia through workshops, seminars, courses, webcasts and research contacts and an annual winter school on quantum and Nano computing systems.
- **To promote collaboration between theoretical physicists and theoretical computer scientists** and explore possible applications of the technical tools of quantum field theory and string theory to problems in condensed matter theory, which is the theoretical framework underlying experimental research in **Nano-technology and Quantum Computing.**

Rationale

With a focus on the rapidly growing area of quantum-Nano computing and quantum information science, the Centre provides an environment for scientists to explore the fundamental working of quantum systems, to devise and implement prototype quantum computers, and to develop quantum algorithms and novel applications. Through a vigorous program of lectures, seminars, and workshops, the Centre stimulates intellectual exchange among students and faculty. The activities of the Centre received recognition from the MHRD under its National Mission on Education through ICT, with a major funding by supporting it as a Quantum and Nano Computing Virtual Centre with IIT Kanpur, IIT Delhi and IIT Madras as partners and with several international collaborators.

Its mission is to actively explore and advance the application of Quantum-Nano Systems to a vast array of relevant information processing techniques. It aims to not only generate knowledge in this highly challenging and emerging area, but also to develop trained manpower to enable the country to take a lead.



The Centre has established research activities and made outstanding research contributions in the following challenging aspects of Quantum and Nano Computing: graph theoretic topological quantum system modeling, quantum-inspired algorithms, quantum-inspired evolutionary algorithms for intelligent manufacturing, Nano-photonic computing: neuro-morphic devices and nanomaterials for energy conversion.

Description

The Centre is making efforts to accomplish this by creating a truly unique environment that fosters cutting-edge research and collaboration between researchers in the areas of computer science, engineering, mathematical, chemical and physical sciences, by:

- promoting inter-departmental research
- developing e-resources on state-of-the-art research developments:
  - Books/book chapters
  - Video lectures delivered by eminent researchers
- promoting inter-institutional research collaborations in India and abroad through:
  - Exchange visits of faculty and students
  - International conferences/workshops
  - Invited talks and seminars
  - Joint publications
- training manpower and exposing students to research problems and recent developments

Clockwise: Sir Roger Penrose, Oxford Univ., UK; Prof. S. Hameroff, Univ. of Arizona, Tucson, USA; Dr. A. Bandyopadhyay, NIMS, Japan, MEG controller and magnetically shielded room at the Centre

Inaugural Talk delivered by Prof. Douglas Osheroff, Stanford University (Nobel Laureate in Physics 1996)

Impact

Research at the Centre has led to active collaborations with universities/institutes and research laboratories in India and abroad, including the Institute for Quantum Computing, University of Waterloo, Canada; Institute for Quantum Sciences, Michigan State University, USA; Massachusetts Institute of Technology, USA; Harvard University, University of Maryland, College Park, USA; IBM Watson Research Centre, USA and Alcatel-Lucent Bell Labs, USA; Christian Albrechts Universitat, Kiel, Germany; IISc Bangalore; TIFR Mumbai; IMSc Chennai; IIT Kanpur; IIT Delhi; IIT Madras; IIT Bombay; IIT Kharagpur; IoP Bhubaneshwar; ISI Kolkata and IIT Roorkee.

A few areas of Research:

- Systems model of spirit-mind-brain interactions being developed.
- Single-point source for education, training and experimental work for quantum-nanocomputing and quantum information sciences
- Responsible for seeding the field in the country, starting in 2006.
- All lectures delivered at the Centre available online.
- The Centre has been regularly organizing conferences, workshops, lectures and seminars with eminent speakers. It has organized an International School on Quantum-Nano Computing in November/December every year, since 2008.
- The multidisciplinary activities of the Centre have benefitted large number of students and faculty (over 2500) in India and abroad.
- International and national recognition for outstanding research at the Centre.
- A number of faculty members associated with the Centre have been invited as Visiting Scientists and to deliver talks in prestigious events at leading laboratories in India and abroad.
- Several publications have resulted in high impact factor refereed journals.
- The 15 and 2 channel Superconducting Quantum Interference Devices (SQUIDs) have also been used to conduct state-of-the-art quantum teleportation experiments in consciousness.

- The following books have been published:

  V. Sahni, Quantum Computing, McGraw Hill Education (Asia), 2007.

  V. Sahni and D. Goswami, Nano Computing, McGraw Hill Education (Asia), 2008.

  V. Sahni, V. Lakshminarayanan and D. P. Srivastava, Quantum Information Systems, Tata McGraw Hill, 2012.

Beneficiary Testimonials

- "QANSAS is an eye-opener to state of the art in Quantum and Nano S & T."
- "I have been inspired to pursue research in quantum computing."
- "I look forward to research collaboration in mutual areas of interest".

East-West Forum at TSC

Context

Consciousness is the final frontier for science. It is the ground of being. Since time immemorial, man has been intrigued by his own self, his awareness and his existence in the universe. These fundamental questions have provided the impetus for mankind to probe nature and acquire knowledge and understanding for conclusive answers. Although different perspectives have been with us from the very beginning of human intellectual tradition, these issues have acquired great significance in the 21st century due to tremendous scientific and technological advances that include ***quantum physics, information processing, artificial intelligence, Nano and biotechnology, advanced imaging techniques such as fMRI and PET and optogenetics,*** to examine and understand neurological processes with unprecedented spatial and temporal resolution. During the past quarter century there has been an explosive multidisciplinary interest in studying consciousness that include ***neuroscience, psychology, philosophy, cognitive science, artificial intelligence, molecular biology, medicine, quantum physics, and cosmology as well as neuro-aesthetics, neurotheology and experiential and contemplative approaches.***

The Centre for Consciousness Studies was established at DEI in 2011 to facilitate multidisciplinary research activities in this extremely challenging area. The Dayalbagh community around DEI, having a rich spiritual heritage and exposure to scientific expositions on consciousness by its Spiritual Leaders, provides a unique opportunity for research at the interface of scientific and experiential approaches to Consciousness. The Centre organizes regular research colloquia department-wise, to facilitate collaborative research and organized the 20th International Conference on Toward a Science of Consciousness (TSC) in 2013 at DEI.

This research also led to a regular one-day global forum on Integration of East-West Perspectives on Consciousness as part of the International TSC series of Consciousness organized in collaboration with the Centre for Consciousness Studies at the University of Arizona, USA. The Centre has organized this event since TSC-12 at Arizona, DEI (TSC-13), Arizona (TSC-14, 16), Helsinki (TSC-15) and San Diego (TSC-17) through live two-way interactive video-conferencing, facilitating exchange of ideas and meaningful discussions.

Rationale

The Integrated East-West Forum facilitates the presentation of key ideas from both approaches where these ideas can interact in a spirit of evaluation enrichment and constructive criticism. It appears plausible to evolve a science of inner experience (which is repeatable and verifiable) by attempting to integrate Eastern and Western scientific approaches and philosophy by verifying inner spiritual phenomenology of consciousness through well-established scientific epistemology, including three important stages of observation (awareness), report (description) and analysis (understanding) (Price and Barrell, 2012) while also availing of modern techniques such as fMRI and MEG scans in capturing repeatable physiological/physical parameters of neural correlates accompanying inner spiritual experience during meditational practices. Invoking higher and higher levels of unified quantum field theory,

with correspondingly subtler and subtler particle size of fine grained geometry will lead to a significant jump in the level of fineness (fine-grained quantum geometry) which should enable us to access, at least in the abstract world of mathematics and physics, the primary ultimate source of consciousness in the whole Universe. We need to resolve the inextricably linked problems of subtlest particles smaller than Planck's length (10^{-35} m) and large distances more than 10^{10} light years and approach zero and infinity by application of logic and induction in the right way.

Description

- Measurement of Environmental Correlates during Meditation with Superconducting Quantum Interference Device (SQUID)
- Quantum Teleportation Experiments in Consciousness with 15 & 2 channel SQUIDs.
- Psychometric Study of Consciousness
- Spiritual-Psycho-Physical Quantum System Model of Consciousness
  - Spiritual System Theory Framework
  - Omni-Quantum Theory for Spiritual Consciousness System Modeling in Cosmology
  - Neuro-environmental Cognitive Spiritual Phenomenology
  - Hierarchical Order Theory (HOT) of Consciousness and Spiritual-cognitive And Neural-Environmental correlates (SCANE).
  - Approach to Integrate Arts (First-Person Spiritual-Cognitive-Material Phenomenology) and Science (Third-Person Neuro-Physical Environmental -Cognitive Correlates) of Consciousness
  - A Graph Theoretic Quantum Systems Model of the Human Brain
- Eastern Philosophy and Consciousness
  - Interpretation of Eastern Philosophy in terms of modern scientific advancements
  - Impact of Yoga and Meditation (transcendental and ultra-transcendental)
  - Altered states of Consciousness
  - Correlation of different states of consciousness as described in various religious traditions
  - Identification of unifying principles across traditions
  - Preparation of a Map of full Spectrum of Consciousness
  - Eastern perspectives on Neuro-aesthetics, Neuro-theology and Neuro-phenomenology
  - Impact of Sound and Music on Consciousness

Rev. Prof. P.S. Satsangi and Prof. Stuart Hameroff, Emeritus Chairs; Forum at TSC-2015 Univ. of Helsinki.

TSC-2013 at DEI Dayalbagh

Impact

- This innovative initiative has had an impact on the scientific community.
- There was consensus among eastern philosophers and western scientists at the TSC 2016 Panel Discussion that, on one side, for internal experiences or human experience, a protocol has to be necessarily followed. This program has resulted in supporting the entrepreneurship initiative in the society.
- Consensus emerged on studying environment around those who perform Yoga, Mahayoga or Surat Shabda Yoga and we pin our hope on Corporate Social Responsibility as a measure, that those who perform Surat Shabda Yoga have greater sense of Corporate Social Responsibility.
- There is need to explore ultimate nature of reality from two ends, i.e., from science as well as inner or human experience. Combination of conceptual insights with practical applications would only lead to real practical experience of what this inner reality is and what the human experience is like.
- The research perspective at DEI can offer profound insights in terms of growing ultimate comprehension of human consciousness.
- Active participation and involvement of all Departments and Faculties of DEI.
- Unique cross-campus initiative, the like of which is not to be found anywhere in the world.
- Hosted 1000 delegates from 18 countries at various events.
- Several renowned scientists have participated in the East-West Forums that include, Prof. James Barrell, Univ. of West Georgia, USA, Prof. Jack Tucszynski, Univ. of Alberta, Canada, Prof. Harald Atmanspacher, ETH Zurich, Switzerland, Prof. Rocco J. Gennaro, Univ. of Southern Indiana, Prof. Rocco J. Gennaro, Univ. of Southern Indiana, USA, Prof. John Hagelin, Maharishi University, USA, USA, Prof. Paavo Pylkkanen, Univ. of Helsinki, Finland, Dr. Anirban Bandyopadhyay, NIMS Japan, Prof. Subhash Kak, Oklahoma State Univ., USA, Dr. Deepak Chopra, USA, Dr. Tarja Kallio-Tamminen, Helsinki, Finland, Dr. Chris Fields, USA, Mr. Thubten Samphel, Dharmasala, India, Prof. Menas Kafatos, Chapman Univ., USA, Prof. Mani L. Bhaumik, UCLA, USA, Dr. A.K. Mukhopadhyay, AIIMS, India.
- Book published: Rev. Prof. P.S. Satsangi and Prof. Stuart Hameroff (Eds.), Consciousness: Integrating Eastern and Western Perspectives, New Age Books, New Delhi, 2016.

- P. Sriramamurti, Prem Prashant and Anand Mohan (Eds.), Spiritual Consciousness, New Age Books, New Delhi, 2013.

Beneficiary Testimonials

- "The conference was a great success and accomplishment. Congratulations! The confluence of Eastern spiritual philosophy, and quantum cognition, biology, physics and cosmology is the best chance to understand the science of consciousness. Your conference will be remembered as the time/place where it all started to come together. Thank you!"

Prof. Stuart Hameroff,
Director, Centre for Consciousness Studies,
University of Arizona, Tucson, USA at TSC-2013

- "The sanskar taught by Radhasoami sect was so evident in every single feature of organizing the event that I felt how purity could spread beyond race, religion and become a global language of love."

Dr. Anirban Bandyopadhyay, NIMS, Japan

- "I express my gratitude, heartfelt thanks and humble love to you, all faculty and staff of DEI and pranam to Prof. P.S. Satsangi. It was an excellent intellectual and spiritual feed to me. The hospitality and human touch in every little behavior combined with professional excellence has been a resounding expression of all your rooting in the Spirit. This is an example of the Divine Materialism which is not a mouthful word but a Reality for you all. Salute to this rare evolutionary leap from homo sapience to homo spiritualis!"

Prof. A.K. Mukhopadhyay, AIIMS, New Delhi

Automobile And Multi-Skill (Aam) Karkhana

Context

The education system in Dayalbagh is over a hundred years old and two features characterize it: vocational education and training, and selfless service to the downtrodden. The educational system is underpinned by the philosophy of social responsibility by way of providing low-cost, high-quality education and training locally. Accordingly, DEI not only offers programs and courses in engineering and management but also offers modular programs to persons who are unable to continue with higher studies for any reason, academic, financial or domestic. DEI has taken need-based courses to remote locations of the country for tribal and unprivileged sections of society.

Roadshow by Yamaha Motor.

Village Chaupal.

Disseminating information about AAM Karkhana

Rationale

The AAM (Automobile and Multi-skilling) Kharkhana has been established at Rajaborari by DEI's Centre of Rural Entrepreneurship (CORE) and Technical College with the help of India Yamaha Motor Pvt Ltd (IYMPL), Surajpur. The objectives of the AAM Kharkhana include:

- Skill enhancement of local tribal youth in repair of automobiles, agro-farm equipment, electric appliances, iron fabrication/welding etc.
- Establishment of a common resource center for young entrepreneurs for skilling and entrepreneurial experimentation.
- Extending sustainable self-employment opportunities in remote tribal areas.

Description

The AAM karkhana at Rajaborari has been fully equipped with all essential equipment for automobile service and repair such as tools, air compressors, washing units, hydraulic two-wheeler ramps, spark plug cleaners and testers. The karkhana is also equipped with a motor winding machine, welding machine, and drill machine, etc., for repair of electric appliances, and iron fabrication/welding jobs. AAM offers services to the local population in the above fields at competitive rates and provides opportunities to the tribal youth for training and self-employment. The trainee, after acquiring adequate skills, can even work at the karkhana on payment of nominal charges towards rent for space and tools and equipment, electricity and water charges, etc. Experts from the Department of Automobile Engineering, DEI Technical College are regularly sent on deputation to Rajaborari to train the local youth. An expert welder from a nearby village, Temrubahar, in the Rajaborari estate takes on fabrication jobs and trains those interested in welding.

Motorcycle service and repair - early days, without AAM *Karkhana* shed.

AAM *Karkhana* duly established.

Motorcycle being serviced in the AAM *Karkhana*.

Motor winding and welding jobs being attended to at the AAM *Karkhana*.

Impact

Earlier, the local residents of Rajaborari Estate (comprising 10 villages with a population of over 5000 people) had to go to Timarni (55 km away) to have their vehicles serviced or repaired. This is now possible locally at very reasonable rates, saving time, energy, and money.

The AAM Workshop also serves as a shared 'Rural Resource Centre' where anyone can come and use the equipment for his private or commercial use at a very nominal fee.

Two companies, IYMPL and Mahindra were informed that the villagers come to the karkhana in large numbers and asked if they would like to organize free service camps (FSC) in the Basant Mela, a local fair of importance, to be held between 7 – 10 February 2017. Both agreed and their stalls were a great success with 213 motorcycles, 4 tractors and 3 SUVs serviced in the camp; the villagers requested that such camps be organized regularly.

Free Service Camp by IYMPL.

Motorcycle washing at Free Service Camp.

Free Service Camp by Mahindra.

Mahindra vehicle being attended at FSC.

Beneficiary Testimonials

- "I have undergone six-month two-wheeler automobile repair training at AAM Karkhana Rajaborari. The DEI Technical College has also arranged and sponsored twenty-day training for me at India Yamaha Motor Pvt. Ltd, Surajpur (near Noida). I have now started my own flour mill cum automobile repair shop in my village which provides livelihood to my family."

  Mr. Ashok Uikey, Tribal Youth, Village Rajaborari, Dist. Harda (M.P.)

- "I belong to village Temrubahar (a Korku tribal village) in district Harda. I am using the welding equipment and infrastructure of AAM Karkhana, Rajaborari for my self-employment purposes. I was working in a factory at Bhopal as welder but now I have relocated back to my village and started my own welding services by using AAM Karkhana equipment (welding machine, cutter, power back-up etc.). I am simultaneously managing my agriculture operations as well. I have earned Rs. 50,000 in past six months from my welding jobs without making any investment in the costly equipment and power back-up in this rural area"

  Mr. Sukhdev Bhusare, Korku Tribe, Village Temrubahar

- "I have completed my one-year certificate program in Motor Vehicle Mechanic (MVM) from DEI and am presently working at the AAM Karkhana since past two months. I will open up my own workshop in my village Mogradhana in times to come."

  Mr. Anand Raj Bhalavi, Korku Tribe, Village Mogradhana

- "My name is Gurdayal Yadav and I belong to village Mogradhana. My father is a farmer and we also have a small kirana shop in our house. I attend training at the AAM Karkhana in the forenoon and help my old father in managing the shop in the afternoon. I have plans to take loan after my training and expand my current shop to include automobile repairs as well."

  Mr. Gurudayal Yadav, Rural Youth, Village Mogradhana

Business Advisory Clinic

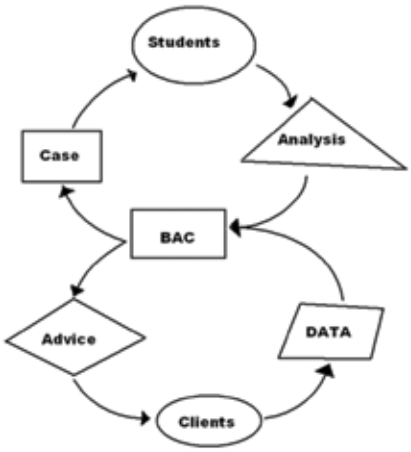
Context

Management Education should focus on applying concepts to real-life business situations. Micro, small and medium enterprises (MSMEs), also, should use management concepts to deal with challenging situations. The Business Advisory Clinic (BAC) initiative of DEI offers free services to MSMEs who cannot afford management consultants; these situations, when discussed in the classroom, expose students to the practical aspects of management. Through these free advisory services, BAC promotes entrepreneurship in MSMEs.

Rationale

The Business Advisory Clinic is an innovative initiative based on the case study method. This involves presentation of content in a narrative form followed by questions and activities that promote group discussions and solving of complex problems. Case studies facilitate higher learning, fact recollection, to analysis, evaluation and application.

BUSINESS ADVISORY CLINIC(BAC)



Using real-life case studies, critical thinking and problem-solving skills of students are enhanced exposing them to the challenges faced by MSMEs. These case studies are also published for wider dissemination in the academic fraternity.

Description

BACs activities are immersive in nature with students absorbed in discussions and eager to contribute. Students come up with solutions and alternatives using a multi-pronged approach.

BAC activities

Impact

- This innovative initiative has positive impact on the student learning and their appreciation of the application of theoretical concepts in real life situations.
- This innovative method of problem solving supports entrepreneurs by giving advisory services which are otherwise not available to them.
- This program has resulted in supporting the entrepreneurship initiative in the society.
- "Techniques for Enhancing Risk Consciousness of MSMEs in India using Experiential Approach", invited talk given on April 19, 2016 from 11.30AM to 1.00PM, Canada-India Centre River Building, Carleton University, Ottawa, Canada.
- "Is entrepreneurship decision of university students a conscious choice? A study of an Indian University using Triangulation Approach", The Science of Consciousness (TSC 2016), Tucson, Arizona, April 25-29, 2016.
- "Profitability at any cost?": A Mini Case Study on Business Ethics, International Journal of humanity and Social Sciences, ISSN: 2231-3532&E-ISSN:2231-3540, Volume 3, Issue 1, 2014, pp 069-071.

Beneficiary Testimonials

- "It was fun interacting with other students in a team and discussing real life cases."
- "I was saved from making a bad investment decision as I took time in the preparation of the project report and understanding the risks involved."
- "We have started to appreciate the applications of concepts in the real-life situations"
- "It was very exciting to present the case study and solutions we developed in a conference".

Systems Approach & ISM Model Of DEI Education

Context

"Applied systems research addresses real world problems concerned with complex, unstructured, multidisciplinary, large scale systems which require acquiring information of the system and its components and environment…which seek approximate solutions to precisely or imprecisely formulated problems…" Most Revered Prof. P. S. Satsangi, *Chairman, Advisory Committee on Education, DEI, and Founder President, Systems Society of India (SSI)*

The unique attribute of systems theory is that it can integrate and see the world in terms of facts and events with their context and as 'whole'. It brings forth a reorganization of the way of thinking desirable in synthetic, expansionist, dynamic, multiple and mutual causality modes of inquisitive thinking, conceptualization of scenarios and in-depth analysis.

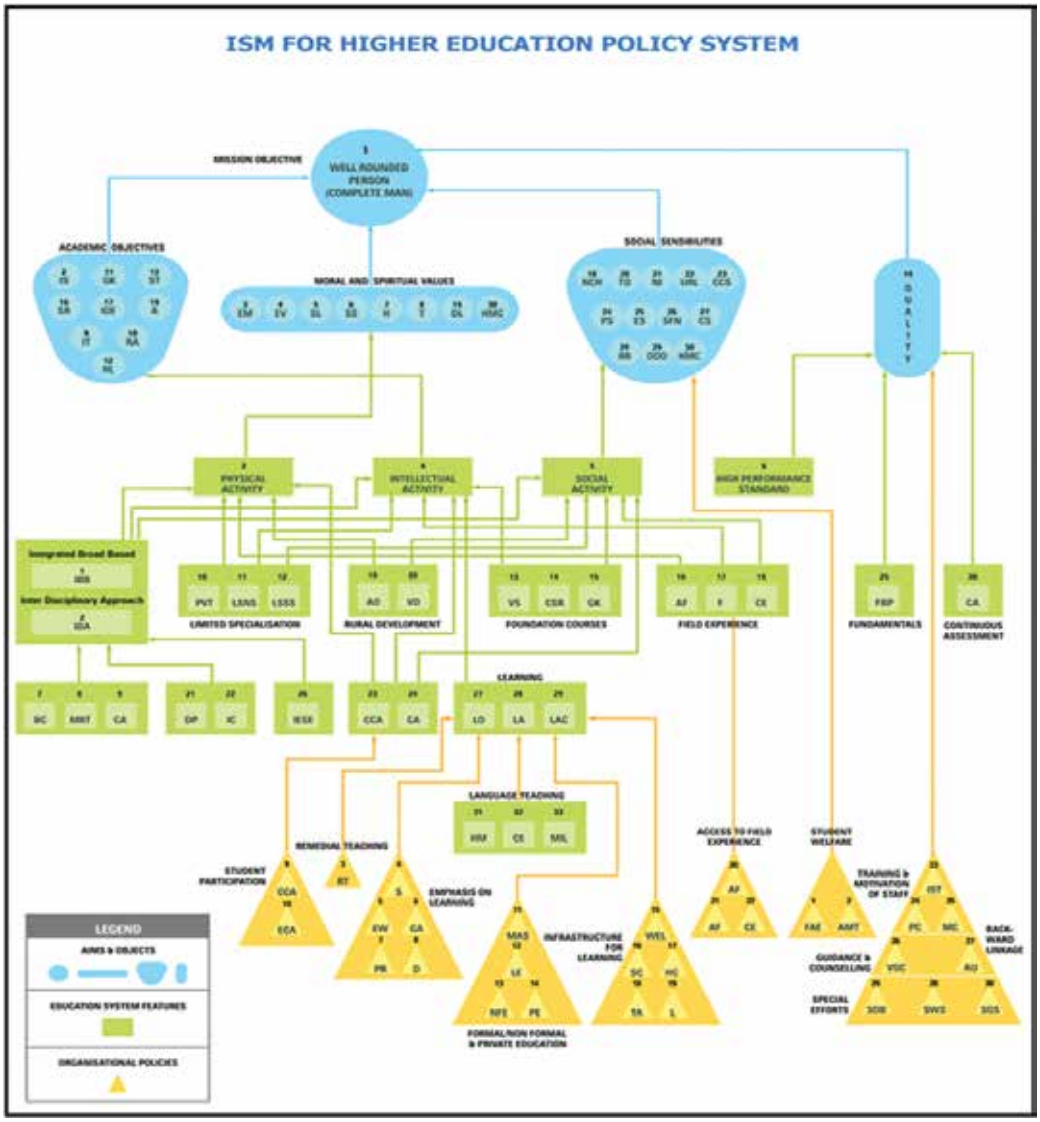
Rationale

Consistent with the systems philosophical tenet of 'Holism', DEI's holistic education model concerns an understanding of a body of knowledge by examining its value-interactions with other epistemological constituents that is vital for the well-being of any civilization and its ecological and cosmological existence. The unique attribute of value-based education is that it can integrate within the framework of its postulates, the methods and systems of providing educational contents across a multidisciplinary body of knowledge.

Description

DEI's values-based Quality Policy is configured around its aim and objects, education system, organization and governance mission objective of bringing about the physical, intellectual, ethical and emotional integration of an individual with a view to evolving a well-rounded, complete person. DEI fosters in its students, faculty and staff, a culture of total quality sustained excellence, innovation, creativity and initiative, both in the world of education and the world of work; that is, with teaching, learning, research, administration, on the one hand, and social and industrial outreach and entrepreneurship, on the other.

The conceptual construct of DEI's educational model (in the figure on next page) has elements spread over Aims and Objects, Educational System and Organization, in a hierarchical structure depicting these elements in the form of an Interpretive Structural Model. The Mission Objective, i.e., development of a Complete Man, is at the top.



Elements such as Students Participation, Remedial Teaching, Interface for Learning, Access to Field Experience, Training and Motivation of Staff, are shown at the grassroots level, while the Educational System designed to develop the Complete Man is shown in the middle layer.

Any student who joins the undergraduate programme has to perform not only Intellectual activities but also take part in Physical and Social Activities through Foundation Courses, Field Experience (Work Experience), Rural Development, Limited Specializations, etc. Different educational activities lead to not only Academic Objectives but also inculcate Moral and Spiritual Values and develop Social Sensibilities among the students. High Performance Standards, Fundamentals and Continuous Assessment in the Educational System lead to 'Quality'. The model thus depicts how organization policy elements are put together to create an educational system that leads to the attainment of the Aims and Objects and finally results in the Development of a Complete Person.

Impact

In pursuance of its ISM- mission objective of evolving a 'complete man', DEI's curriculum includes core courses and co-curricular activities which encourage the well-rounded development of the individual. These include the following: Cultural Education, Comparative Study of Religion, Scientific Methodology, General Knowledge and Current Affairs; Rural Development, Agricultural Operations, Social Service and Co-Curricular Activities (cultural and literary activities, games and sports). This values-oriented total quality and holistic education approach benefits from providing a well-rounded perspective of life making education not only of immediate relevance but making it of continuing value throughout life in a more meaningful way. Given that the world today is torn, with strife and conflicts at every level, there is an urgent need to make modern education more balanced with emphasis on values and quality in a synergistic way and promote the overall idea of holistic education to resolve this crisis. India and, for that matter global society, requires an educational reform on the above lines that aims at excellence but not at the cost of relevance, which inculcates dignity of labour, encourages initiative and creative work, which is multi-disciplinary, which prepares students for the increasingly techno-social systems of tomorrow without uprooting them from their agricultural and cultural moorings. An education model that will generate in students the basic values of humanism, secularism and democracy by exposing them to the principles of all the major spiritual and moral traditions of the world and to their own cultural heritage, thus developing in them an integrated personality of well-adjusted persons whose world has not been 'broken into fragments by narrow domestic walls'.

Beneficiary Testimonials

In a recently concluded survey of DEI students across all its faculties, the - ISM model was validated to be 'very effective' in terms of indicating the strength of relationship among holistic values and quality variables and holistic personality development of the students enrolled in various courses and programs. Attribute-wise weighted average score-levels and the overall scores of correlations coefficient, R were found to be higher in the graduating batch of students compared to new admissions students indicating the strong link between personality development attributes and their stay at DEI.

Newly admitted batch of Students-result:

Variables	Academic Excellence	Moral and Spiritual Values	Social Sensibility
Academic Excellence	1		
Moral and Spiritual Values	.539 (Moderate positive r)	1	
Social Sensibility	.511 (Moderate positive r)	.676 (Strong positive r)	1
Physical Well-Being	.418 (Moderate positive r)	.541 (Moderate positive r)	.589 (Moderate positive r)

Results from a survey for validation of ISM Model, conducted on newly admitted students of DEI

Passing-out (Final year) batch of Students Result:

Variables	Academic Excellence	Moral and Spiritual Values	Social Sensibility
Academic Excellence	1		
Moral and Spiritual Values	.612 (Strong positive r)	1	
Social Sensibility	.599 (Moderate positive r)	.763 (Strong positive r)	1
Physical Well-Being	.517 (Moderate positive r)	.671 (Strong positive r)	.752 (Strong positive r)

Results from a survey for validation of ISM Model, conducted on final year students of DEI

Industry-Institute Partnership

Context

The knowledge imparted by educational institutions should be of relevance to industry, focusing on practical training in addition to theoretical concepts. Vocational education finds favor with students as they can get jobs. Industry invests heavily in training fresh graduates to make them fit for industry: Industry-Institute partnerships enable industrial training in the institute.

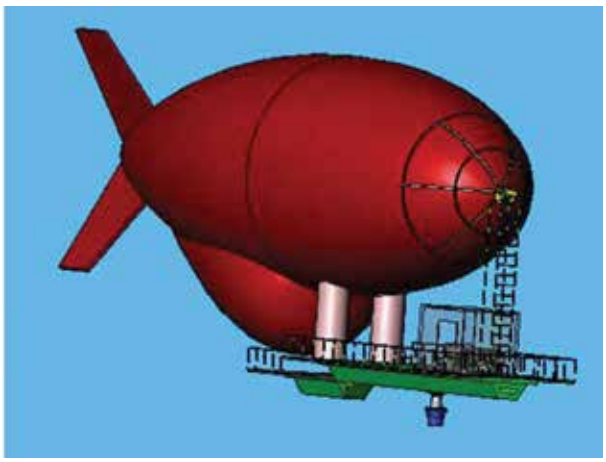
Rationale

Industry has taken upon itself the modernization of laboratories, workshops in some categories of educational institutes as also the training of their staff in modern practices, and on-the-job training (OJT) to students. This takes place via visits to educational institutions by industry experts. As government grants decline, educational institutions benefit from such arrangements by offering consultancy, and design and testing facilities. Therefore, industry-institute partnerships are important and mutually beneficial.

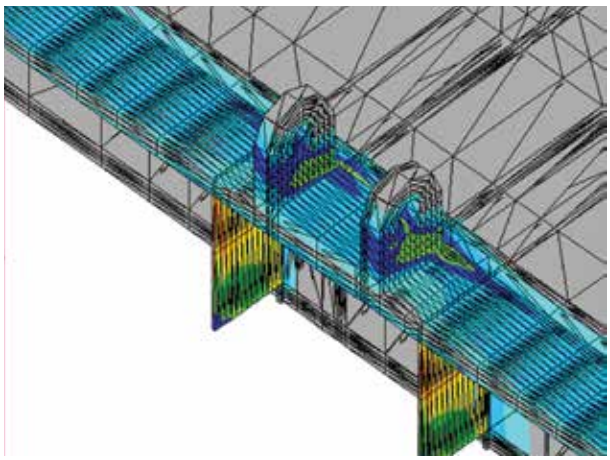
Description

DEI has been offering its expertise to the local industry and DRDO in a big way. Some of the important consultancy projects are given in the table below.

Consultancy	Recipient
a. Design of Winching and Mooring System for Aerostat-2000m^3. b. Finite Element Structural Analysis of 75 feet Inflatable Hemi-spherical structure. c. Study and development of processes for creating Bulk Nano materials for aerospace structures. d. Study of microstructure and mechanical properties of ultrafine grained aluminum alloy (al6061) developed using ECAP and FSP.	ADRDE, Agra
a. Motor/Generator Testing. b. Calibration of Voltmeter, Ammeter, Wattmeter, energy meter etc. c. HV testing for Safety Shoes d. HV testing of Insulators e. HV testing of dielectric Oil	Local industry
Setting up research lab to make intelligent robots.	Essar Steel India Ltd.
Material testing and mix design.	Local firms, Indian Railways



Design of Winching & Mooring System of Aerostat.



FEM Analysis of P-7 Platform Structure.

The Department of Automobile Engineering, Technical College has signed MoUs with Maruti Suzuki India Ltd (MSIL), Gurgaon; India Yamaha Motor Pvt Ltd (IYMPL), Surajpur; and TVS Motor Co (TVSM), Hosur in the field of automobile manufacturing and sales. These MoUs envisage upgradation of training facilities in the department to meet industry requirements, staff and student training, internships and on-the-job training (OJT) for students, industrial visits, and final placement of students. The MoUs have also resulted in joint development of new programs: the DEI-TVS Community College Programs (CCP) in Sales and Service both provide for three months of classroom training followed by nine months of OJT at the company's dealership in the hometown of the student. A trainee is well trained as a mechanic and has a relatively fast career progression.

Yamaha Trainer with students.

TVS training facility.

Apart from MoUs with companies mentioned above, the department has ties Honda Motorcycle & Scooter India Ltd (HMSI), Manesar and Mahindra Navistar Automotives Ltd (MNAL), Mumbai. These companies have visited the campus for one-day programs on Safe Riding Training and training on CNG technology.

Demonstration of driving simulator by HMSI

Visit by MNAL team for training on CNG technology

Impact

Consultancy: DEI faculty is an official consultant to ADRDE (DRDO).

Felicitation: DEI faculty members have been felicitated with Academic Excellence Award, 2011 by Aerial Delivery Research and Development (ADRDE), DRDO, Agra for their long-standing academic and research support to ADRDE.

Patent awarded: "A 3D-ECAP Die for manufacture of Bulk Nano-Structured Materials".

Awards: Top three students of Certificate in Motor Vehicle Mechanic (four-wheeler) program were awarded a Certificate of Merit and cash awards from Maruti Suzuki India Ltd.

MSIL instructor interacting with students.

MSIL Certificate.

DEI faculty members have been actively engaged in joint activities with industries and government organizations as chairs in technical sessions, technical experts, academic experts, members of project review committees/selection committees, guest lecturers in industry and as financial and technical consultants.

ISO 9001: Quality Management System

Context

ISO 9001 is the world's most widely recognized Quality Management System (QMS). It belongs to the ISO 9000 family of quality management system standards (along with ISO 9004) and helps organizations to meet the expectations and needs of their customers, amongst other benefits. An ISO 9001 quality management system helps the organization to continually monitor and manage quality across all operations and outlines ways to achieve, as well as benchmark, consistent performance and service.

Rationale

The Institute was awarded ISO 9001:2008 certification on 2nd January 2017. The scope of the certificate is, "Provision of academic administration, management and administrative support services for conducting educational programmes with the award of credits and grades."

ISO 9001:2008 certification

Description

The Core committee for implementation of ISO 9001 includes the following:

- The Director
- The Registrar
- The Treasurer
- The Controller of Examination
- The Assistant Registrar (Admn.)
- The Assistant Registrar (Accts.)
- The Assistant Registrar (Exam.)
- Shri Soami Dayal, BHEL
- Dr. Ratan Saini, Coordinator, IQAC & Management Representative.

Number of training courses have been organized and attended by officers and staff on ISO 9001:

- ISO 9001:2008 and ISO 9001:2015 Awareness training
- Lead Auditor Training for ISO 9001:2008 and ISO 9001:2015
- Internal Auditor Training for ISO 9001:2008 and ISO 9001:2015

The Departments covered are:

- General Administration
- Finance and Accounts
- Academic Administration
- Central Library

Internal Audits are scheduled at planned intervals to check that the quality system conforms to requirements and that the system is effective. 'Requirements' include the standard itself, as well as the company's own requirements (that is, its own procedures and policies).
A Periodic Audit is conducted as per the ISO 9011 by trained Internal Auditors.

- Dr. Saurabh Mani
- Dr. Amit Gautam
- Dr. Sunita Malhotra
- Ms. Surat Pyari

ISO on QMS will be renewed for 9001:2015.

Impact

The impact of ISO 9001 is manifold as all stakeholders including officers, staff and students are now aware of importance of quality and Key Performance Indicators (KPIs). The Institute is working to improve the system's performance based on feedback.

Cocurricular Activities

Context

Cocurricular activities develop the personality of a student as well as to strengthen the classroom learning. Cocurricular activities are designed to give students the opportunity to show their talents and complement their education.

Rationale

One of the distinctive features of the DEI system of Education is the focus on co-curricular activities with an objective to build up the total personality of a student. Through a structured method, combining evaluation in the form of marks, participation in intra- and inter-faculty competitions and events, regular weekly classes under the guidance of teachers who are experts in various fields, a student at DEI receives opportunities to nurture talents and grow into a confident individual, skilled in some artistic pursuit and/or in games and sports.

Description

The evaluation of students' overall performance is done at the end of the even semester of an academic session. The marks awarded in the CCA (Cocurricular Activities) are displayed on the notice board in the same way as is done for other courses. The Cocurricular Activities are divided into three heads, each head having a weightage of 200 marks:

- Cultural and Literary Activities
- Games and Sports

The Compulsory Games and Compulsory Cultural-Literary Activities are held in regular periods allotted in the time table.

For making fair assessment and imparting good training to the students during these compulsory periods, at least one teacher is deputed for every twenty students participating in regular periods of Games and Sports, or Cultural and Literary Activities. For evaluating a student's achievement in these activities, competitions are organized at Intra- and Inter-Faculty level. The best performers are sent to represent the Institute in the competitions outside the campus.

Impact

- The compulsory Cocurricular activities provide students a platform to exhibit their non- academic abilities.
- Cocurricular activities create an environment for spontaneous participation of students in co-curricular activities, create leaders for future and provide opportunities for community service activities.
- Cocurricular activities groom students in the "art of living" and working together.
- Cocurricular activities give the students an opportunity to develop skills.

Student Testimonials

- "The congenial environment in DEI has given me numerous opportunities to participate in extracurricular activities and groom my personality".
- "Life as a DEI student is unique in its own right. Here studies are perfectly balanced with extracurricular to achieve overall development of the students."
- "As Students we are encouraged to take initiatives and hone leadership skills, so that they can cope with the world outside the campus."
- "For me, Life in Dayalbagh University has been breathtaking and enriching. The environment not only helped me in imbibing knowledge but also in developing my overall personality, fueling confidence in me."

Skill Development in Textiles

Context

DEI runs more than 100 skill courses. The unique feature of these courses is that each of them is either a major course offered in any stream of arts, science, commerce, management, engineering or a work experience course which leads to skill development.

Rationale

In 1988, the work experience course in Textiles was extended to a 1-year certificate course. In 1991, it was made a PG Diploma in Textile Design and Printing. The students taking these courses either get employment or start their own enterprise where they become job enablers.

Description

Nalani Kamara of the 1993-94 batch started her work from the terrace of her house in a small shed with one sewing machine. Today Kosh Innovations is an ISO 9001:2008 certified company focused on improving people's lives through meaningful innovations. It has come up with a line of eco-friendly products using efficient and highly systematic production processes backed by advanced machinery. With a turnover of more than 10 crores, Nalani Kamara has multiple products and employs more than 100 people.

Impact

Nalani's success story has had a great impact on the students taking this course. These students have been encouraged to begin their own start-ups, through innovation and channelizing their ideas into new products.

Beneficiary Testimonials

- "I never wanted to study and always used to wait for the day to be over. I came to know about the Textiles program from my neighbor and joined DEI to pass my time. I have received a systematic and articulated way of vocational training which imparted skills. Today I am a successful entrepreneur who wishes the day was of 36 hrs."

Total Quality Management

Context

Total Quality Management is essential for sustainability and development of quality in higher education.

Rationale

The Institute has developed a Total Quality Management System which reflects the Value Education -Quality policy.

Description

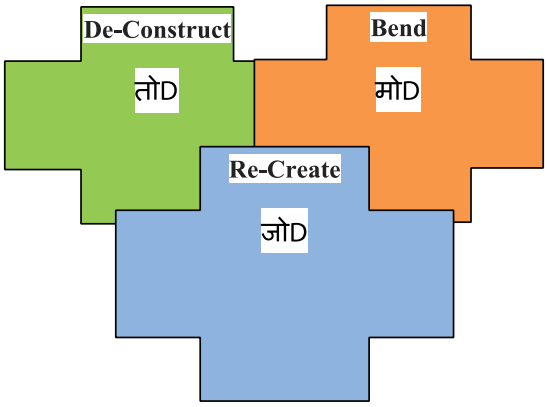
The Total Quality Management elaborates on the various elements of Value Education-based Quality policy:

- DEI's values-based Quality Policy is configured around its aim and objects, education system, organization and governance mission objective of bringing about the physical, intellectual, ethical and emotional integration of an individual with a view to evolving a well-rounded, complete person.
- DEI fosters in its students, faculty and staff, a culture of total quality sustained excellence, innovation, creativity and initiative, both in the world of education and the world of work; that is, with teaching, learning, research, administration, on the one hand, and social and industrial outreach and entrepreneurship, on the other Holistic development of students will be strongly emphasized and promoted through the foundational Core Programme and Work-experience.
- Implementation of DEI's broad-based, comprehensive, flexible and innovative education policy will be regularly reviewed, curricula upgraded, and experimentation and reforms initiated.
- Technological interventions in implementing total quality management through the Sigma Six Q paradigm will be supported in:
  - Monitoring and implementation of water and air quality
  - Enhancing use of renewable energy
  - Innovation in education and healthcare
  - Innovating in agriculture and dairying
  - Empowering of women and weaker sections of society
- Career advancement of faculty will be supported. Accountability and faculty performance will be monitored through assessments by students, peers and management and recognized fairly and freely.
- Interactions with industry will be supported through diverse mechanisms such as internship, consultancy, prototype development and R & D, sponsored research and technology transfer.

Impact

The impact of Total Quality Management is clearly visible in the alumni of the Institute as they excel in their respective fields with distinctive qualities of hard work, sincerity, honesty and reach higher positions in the organizations.

तोD-मोD-जोD



Context

Education is the crucible in which Innovations and creativity are nurtured. Promoting creativity and originality through our educational institutions is a first step towards broadening and deepening the impact of innovation in our society and economy. To foster creativity at an early stage and to encourage an innovative mindset in the learners, it is necessary to provide a hands-on learning environment where students can de-construct, re-construct or re-purpose everyday objects that they see or use.

Rationale

The innovative skilling initiative in Dayalbagh Educational Institutions is based on the concept of, "Tod-Mod-Jod" or "तोD-मोD-जोD", i.e. learning through dismantling, joining, adding, assembling, shaping, designing, redesigning, reshaping. This method of learning is in contrast to the conventional training. तोD-मोD-जोD (TMJ) not only allows students to understand the scientific principles behind the everyday products they use, but also helps the students to expand their horizons to larger concepts and applications so as to enable them to solve real world problems. For instance, students typically do not know the inside of a ceiling fan, तोD-मोD-जोD (TMJ) session would help them to understand how mechanical airflow and electric concepts and components are used.

Description

Dayalbagh Educational Institute introduced तोD-मोD-जोD at middle school level for innovative and self-motivated students who want to create a new product out of those used in daily life. The teacher as mentor encourages students to follow their creative instincts. The feedback from students shows a complete change in their perception towards machines and devices. Curiosity and inquisitiveness are encouraged. These are critical for nurturing an innovative mindset. It is hoped that तोD-मोD-जोD centres will develop a way to excite and challenge young minds in a fun learning environment. The National Innovation Council of India has proposed the creation of Tod Fod Jod (TFJ) centres in schools and colleges.

Impact

- तोD-मोD-जोD centre will provide a hands-on learning environment where students can de-construct, re-construct or re-purpose everyday objects that they see or use.

- Helpful in establishing the concept of learning through “Tinkering”, “Discovery”, and Experimentation”.
- Early Start towards building a nation of creators not just consumers of products.
- Make education relevant, real and fun.

Student Testimonials

- “Will always be curious on how what I use actually works”.
- “Connects multi-disciplinary concepts learnt in textbooks to real life applications”.
- “We want तोD-मोD-जोD classes every day”

Values and Quality Day

Context

As part of its basic structure which rests on the foundation of values and quality education, the Dayalbagh Educational Institute celebrates Values and Quality day on the day of *Deepawali* – the festival of lights. The festival of joy, victory of good over evil and brotherhood seems an appropriate occasion for the celebration of the mission objective of the DEI system of education – to create a well-rounded personality steeped in high character and ethical values.

Rationale

In the present scenario, Values Education is the missing link between quality teaching and learning practices. Today society reflects the impact of values erosion and deterioration in character and ethics. To address this issue and in pursuance with the Institute's thrust on Values-based Education and Continuous Quality Enrichment across all spheres of Teaching and Research, DEI has also launched Quality and Values Drive spanning all its Faculties, Colleges, Distance Education-ICT Centers and High Schools for Girls and Boys in India and abroad.

Description

A representative committee has been constituted with its members assigned in various faculties of DEI to play proactive roles as Values and Quality Counsellors with a purpose to broadly facilitate sensitization and counselling of the students and faculty members about preservation and enrichment of the DEI Values and Quality System, ensuring compliance with the Professional Code of Conduct, Monitoring and Analysis of Performance Indicators, Regular Appraisal and Feedback-discussion with Deans/Principals, Heads, Course in charges and staff members.

The activities organized on this day include:

- Inter-faculty and inter-institute competitions
- Students' Paritantra to encourage systems approach across all disciplines.

The core theme for all activities is values and quality in education.

Impact

In the above context, celebrating Values and Quality Day on Diwali every year also provides a welcome opportunity to review the yearly progress towards the attainment of the ideals and mandates under the institute's Vision 2031 plan. The celebration of values and quality education on this day encourages student participation in cultural and literary events, make students more conscious about the importance of values and quality in education and encourages healthy interaction. Students and staff participate with overwhelming enthusiasm and interest across various faculties of DEI, renowned colleges and institutions of Agra and Mathura, and a number of Open and Distance Learning / ICT centers across India and abroad in a synchronous mode with DEI main campus events.

ATMA (Apparel and Toy Making Association)

Cutting Training at ATMA Centers

Training in toy making

Context

DEI has made ground-breaking progress in vocational education since January 2004 when the first vocational certificate-level course in sewing was introduced via distance mode at more than 50 locations across the country with the objective of training and selfless service to the downtrodden. This turn towards skill-based courses was justified by the DEI system's emphasis social responsibility and upliftment of the weaker sections. The aim was to bring low-cost, high quality education to the learner's doorstep. The institute does not hesitate to reach out to remote locations of the country to offer need-based courses to the tribal and unprivileged sections of society.

In the year 2014, the Home Science department of the institute took the initiative to launch an undergraduate level vocational course, of B. Voc. (Apparel Designing) which attracted many learners. The institute has made a huge effort to uplift social and economic conditions of society's underprivileged sections, especially women.

Rationale

The ATMA (Apparel and Toy Making Association) was established at Rajaborari by DEI's Centre of Rural Entrepreneurship (CORE) and the Home Science department, Faculty of Arts. The objectives of ATMA include:
Skill enhancement leading to economic gain of local tribal female population in sewing and toy-making or other related activities.
Improving awareness on health and social evils for the upliftment of female members of selected area. Establishment of a common resource center for skilling and entrepreneurial experimentation by young female entrepreneurs. Extending sustainable self-employment opportunities in remote tribal areas. Sensitizing the residents to the relevance of proper nutrition, immunization, health and hygiene, and education of the girl child.

Description

The department had already been running a D.E.I-mentored certificate course in Dress Designing and Tailoring at Rajaborari for ten years. The training given by the institute to students and faculty was related to apparel production and preparation, and for making soft toys: it was very enthusiastically accepted by the tribal women. This training covered womenfolk located in ten rural villages of Rajaborari, District Harda, Madhya Pradesh.

Within a period of two months, by January 2015, three training-cum-production centers were established at different locations of Rajaborari. This included ten sewing machines, a cutting table and a cupboard at each center.

Since Dayalbagh had been running primary level schools at various locations in Rajaborari, one room (about 15 ft by 10 ft) from these schools at the three selected sites were used for the installation. These centers were located at Mogradhana, Kayari and Rajaborari.

Training and Infrastructure at ATMA Centers

Training in toy making

At first, salwar and kameez for which a demand existed, and whose market potential was seen to be promising was selected for production. Standardized patterns in appropriate sizes were procured/ prepared; the cut pieces were prepared into bundles sent to Rajaborari for sewing. Within next two months, three copies of standardized stencils sizes, small, medium and large were prepared and sent to the three centers. Training the women to cut suits using the stencils reduced the time taken for the job as also the effort of transporting them.

Within the next six months workshops on quality awareness, standardization of stitched garment sizes and appropriate sewing techniques to achieve uniformity in production were organized. With the organizational inputs from the administration and the faculty as well as students of the institute, good quality white uniforms for girls were produced. From July 2015, these were sold at nominal rates to university students by the Home Science Department.

Training and Workshop on sewing apparels Quality Enhancement

Workshop on Quality Enhancement

Because of these interventions, more than 180 women from Rajaborari and surrounding villages began stitching kurta and salwar, producing apparel of an acceptable quality. About 70 women were trained to stitch and produce soft toys. Once quality awareness became widespread in the workforce, different kinds of stitched items began to be made, from June 2015. Simple items for which there was a demand among the local Agra community and Rajaborari community were selected. These were:

- D.E.I girls' uniform
- Ladies' suits
- Shoulder bags
- Kurtas for men
- Pyjamas for men
- Cushion covers, pillow covers
- Soft toys

With an objective to empowering women to become the bread winner and to increase inflow of revenue in the rural zones, by May 2016, an Apparel and Toy Making Association (ATMA) was formally structured. Under the ATMA banner, exhibitions were organized at local and institutional level to market the product. The women were trained and guided to produce items of a good quality; from May 2016, printing, painting, embroidery was incorporated in the items to add value. The prepared samples are organized in a catalogue with style numbers and images to procure orders. Attempts to achieve large production orders from various outlets and other business set ups are being made. In May 2016, soft toys made by rural women of Rajaborari were packed and sent to Canada for sale. With the support of the institutional infrastructure, outlet to sell ATMA products on the campus, called, "D.E.I Quantum Jugaad", was established.

These products are marketed at the following locations:

- Local level: Haat at Rajaborari, Timarni
- In Agra: in Exhibitions and at the "D.E.I Quantum *Jugaad*" outlet.
- Ujjain, Bhopal, Indore.

At present various items are being produced and a catalogue is ready for procuring orders.

Samples with Codes for Order procurement

Impact of ATMA initiative

- Four garment production units with ten sewing machines and other training-cum-production related facilities have been established at Mogradhana, Kairi, Rajaborari and Salai.
- Training for layering, layout, cutting, bundling and sewing of items has been imparted at the four established centers, to over 200 women from weaker sections.
- Training for machine-cutting of fabric to improve the speed of production and printing, embroidery and painting has also been given to increase the range of products.
- For selected items a good quality of products has been achieved.
- About 45 women are ensured a continuous income ranging between Rs 1500/- and Rs 3000/-.
- The trainers have built the skills required for creativity, innovation and entrepreneurship.
- The students have a business launch-pad to innovate, experiment and implement ideas that have relevance to the immediate workplace (society).
- A regular sales counter has come up on the university's campus
- A request to start more centers is emerging from other villages.

Soft Skills Development

Context

Soft skills refer to a cluster and combination of skills such as social skills, communication skills, attitudes, career attributes, social intelligence and emotional intelligence quotients that enable individuals to effectively deal with their environment, work harmoniously with others, perform well, and achieve their goals along with the hard, technical skills. Hard skills used to be the only skills necessary for career employment and were generally quantifiable and measurable by educational background, work experience or interviews.

Rationale

A comprehensive educational policy focusing on all-round development requires attention to the following soft skills in DEI students.

- Leadership

  This is developed by providing ample opportunities via participation in games and extracurricular activities, seminars and group discussions.
- Communication skills in the form of Seminars and Group Discussions

  DEI provides a platform for students to develop communication skills by preparing and presenting seminar papers and actively participating in group discussions. Students learn to be good communicators who can adjust the tone and style according to the audience, comprehend and act efficiently on instructions, and explain complex issues to others.
- Self-motivation in the form of continuous evaluation system

  DEI's educational policy is based on a continuous evaluation system. Students at DEI have to incessantly work to perform well in academics and must be self-motivated: a positive attitude is a vital soft skill developed in this process.
- Work ethics taught through value-based education, discipline and commitment

  Work ethic skills teach DEI students to be hard working, self-motivated, learn time management, regularity in attendance.

Description

Students are given an opportunity to further hone their soft skills by the Alumni Association of DEI (AADEIs), now an arm of DEI.

The objective is to prepare the DEI student for a global work place, to have the skills to get the best career opportunities suited to each candidate; be it self-employment or job placement, to ultimately evolve into a complete person. The goal was to enhance their employability with the loftier aim of ultimately enabling them to become the 'complete person'

- Mode of Instruction

  A blended mode for local DEI students and jobseekers using DVDs face-to-face contact sessions guided by qualified expert mentors and guest lecturers. Live-interactive classes/ workshops, role-playing and group discussions, practice sessions, mock interviews and counseling for imparting hard and soft skills, practical and theory classes for IT skills and synchronous delivery via video conferences to Distance Education Study Centers of live sessions and recordings. Students come for the following services:

- Skill development
  - Soft skills (communication, personality development and interview techniques)
  - Basic IT skills (MS Office)
  - Advanced IT skills (C-Programming, Unix and Perl, Java, Networking, and others)
  - Vocational IT skills (Tally, Access and Excel)
- Placement preparation
  - General aptitude practice tests
  - Help on resume creation/editing
  - Mock interviews
- Group discussion
- Spoken English
- Career Guidance

IT Skills Workshop

Group Discussion

Psychological Clinic and Counselling Cell

The Department of Psychology, Faculty of Social Sciences is taking the initiative to provide services to the DEI students and community at large, to foster their soft skills. Psychologists and counselors are helping those in need of enhancing their personality in terms of interview skills, resume writing, inhibitions to express themselves, emotional problems, etc. Psychological tests, tools and therapies are used.

Impact

Students gain confidence and can articulate their ideas easily. The soft skills development programs have led to better job prospects for the students.

Beneficiary Testimonials

- "Net study group is a great help for students preparing for NET. It gives direction for preparation". Vidhi Jalan (Nov 4, 2017)
- "This time on Dec 26,2011, I appeared in NET exam (it's my first attempt) and I found NET coaching held in June at DEI was useful to a large extent, as some important sections were covered. research aptitude, communication, ICT, Teaching aptitude etc. specially practice sheets were useful because some questions were exactly same as of practice sheets, and about difficulty level of exam... overall NET classes are helpful and should be organized in near future for upcoming NET exams. " (Shefali Bansal, M.Phil. Economics, DEI, Jan 4,2011).

Society for Preservation of Healthy Environment and Ecology and Heritage of Agra (SPHEEHA)

Context

In last few decades, development in Agra has resulted in growth in industry, traffic and population due to which the pollution levels have risen significantly, green cover has reduced, and water bodies degraded. As Agra's residents change their lifestyles, the price paid for ill-planned development has been ignored. Many citizens and NGOs of Agra have come forward to resolve the environmental issues and care for the protection and preservation of the heritage of the city. SPHEEHA (Society for Preservation of Healthy Environment and Ecology and Heritage of Agra) has been at the forefront of taking-up environmental issues of Agra at every possible forum to conserve what we are still left with and try to replenish whatever we can. It has also been one of the pioneers in organizing regular mass tree plantations in this city since 2006.

Rationale

In 2006, SPHEEHAs foundations were laid, with the aim of bridging the gap between the Government Departments, Non-Governmental Organizations and residents to promote healthy environment for the wellbeing of the residents by providing specialized inputs and service and consultancy for better management of ecosystems of the city and raising public consciousness in matters regarding environment and ecology. Society for Preservation of Healthy Environment and Ecology and Heritage of Agra (SPHEEHA) is a registered body under the Societies Registration Act, 1860 (No. XXI).

Vision

SPHEEHA's vision is to make all urban habitats Eco-Friendly and Sustainable through interactive and inter-connected efforts embodied with zeal, tireless interest and vigor and the unified aim of making the motto, Clean and Green Agra, a reality.

Mission

SPHEEHA aims to work for sustainable management of the life-supporting ecosystem to protect and preserve the physical environment for the cultural, emotional and spiritual well-being of the residents of Agra.

Its focus is on:

- Sustainable management of life support ecosystems.
- Protection, preservation and development of environment.
- Cultural, emotional and spiritual wellbeing of residents.
- Developing Agra as an eco-city.

Description (Activities)

The society with active involvement of DEI has successfully organized several seminars and workshops on different aspects of environment having relevance for Agra in which some renowned experts, environmentalists, scientists, engineers/technology experts, administrators/policy makers and social workers, drawn from different parts of the country and abroad, participated as speakers and panelists.
SPHEEHA has made a bold attempt to weave a tapestry of sustainable ecosystem in context of urban environment in portions of Agra. Following are the efforts and activities conducted by the organization.

- Efforts for Biodiversity, Heritage and Ecological Conservation include:
- Reducing pollution leaving no carbon footprints.
- Rain water harvesting at community and individual level.
- Tree plantations done with scale and ensuring survival.
- Reclamation of waste land and appropriate utilization of the same.
- Highlighting and helping preserve the rich heritage of Agra.
- Involving professionals, practitioners, researchers, policy makers, concerned citizens, academicians and NGO's.

Seminars/Conferences/Workshops Organized

- In 2007, SPHEEHA conducted its first seminar – *Seminar on Environment of Agra: Issues and Solutions* (SEAIS) by identifying the issues and discussing possible solutions that plagued the city and continued to do so. In this seminar, all possible issues like, From Taj Mahal to Potable water supply, the dying river Yamuna to Solid Waste Management –were discussed under a single roof with a battery of experts. 'Say no to Plastic bags' campaign by SPHEEHA was a major success in 2007 as a result of this conference.
- In September 2008, SPHEEHA in association with DEI organized a *Workshop on Rainwater Harvesting* and focused on conservation of water in this arid region. With experts joining from IIT Delhi and IIT Roorkee, Individual and Community based Rainwater Harvesting was the suggested way forward. This was implemented by SPHEEHA in the township of Dayalbagh with help from the authorities.
- On March 1, 2009 SPHEEHA organized a *Seminar on Facing the Challenges of Climatic Change and Global Warming*. The organization of this seminar was a gigantic step taken by SPHEEHA to focus on global issues and the impact it has on a city like Agra.
- In 2010, SPHEEHA continued its work of implementing Rainwater Harvesting systems in and around Dayalbagh Township in Agra and to keep a check on the systems and process also held a *Seminar on Climate Change, Water Management and Concept of Eco-Village/Eco-City.*

- In 2010, SPHEEHA organized *Workshop on Earth Hour and a Workshop on Waste Management*
- In 2011, SPHEEHA organized a Workshop on the Concept of Eco-village – *A Role Model for Sustainable Environment and Development*. The proceedings of the conference are cited as a bible on the subject by many. It has been published by Tata McGraw Hill. In the same year a *Seminar on Biodiversity Conservation of Wetlands and Eco-Tourism Prospects in Agra* was also organized.
- In 2013, SPHEEHA organized a Seminar on *Consumption levels, Environmental Damage & Sustainable Settlement*. The Chief Guest was Dr. Anil Kakodkar – Chairman Solar Energy Corporation of India and Former Chairman, Atomic Energy. He was pleased to observe that SPHEEHA and residents of Dayalbagh Township in Agra – which had seen a lot of inputs being put by SPHEEHA, was working on the principle of reducing needs and thus towards sustainable development. The Seminar was lauded by national media and the work of SPHEEHA started reaching people beyond Agra.
- In November 2014, SPHEEHA organized a Seminar on *Traffic in Agra: The Sustainable Course.*
- SPHEEHA has his roots firmly grounded with its various activities and it increased its engagement with the citizens of Agra via an Annual Painting Competition for school children in Agra. It annually organizes a one-day Workshop – *Agra beyond Taj, celebrates The Wetland Day and Tree Plantation* activities and organizes *training of students and youth*. The work of SPHEEHA has spread evenly within all spheres of society and has been appreciated by all.

Other Activities

Month and Year	Activity
July 24, 2011	Tree Plantation-2011
October 16, 2011	Workshop: 'E- Waste Management'
November 27, 2011	Seminar: 'Concept of Eco-Village/Cities as Role Models for Sustainable Environment and Development (CERMSED)'
January 15, 2012	Environment Meet-2012
March 4, 2012	Orientation Program for newly inducted Associated Members and Student Members
July, 2011	Representation in Taj Trapezium Zone (TTZ) Authority
December, 2011	Visit of Mr. Rob Kirkby, CEO Energy Advantage Inc., Toronto
May 23-28, 2012	Summer School: 'Hands-on-Experience with Instrumental Methods and Techniques for Analysis of Environmental samples'
June-December, 2012	Tree Plantation-2012
November 3, 2012	Talk-Waste Management and Need to Create Zero Waste Campuses
February 2, 2013	World Wet-land Day Agra Environment Meet-2013
February 25, 2013	Seminar-Agra Beyond Taj
June 5, 2014	World Environment Day
July 29, 2014	Environment Education Program-Global Tiger Day
August 10, 2014	Tree Plantation – 2014
February 22, 2015	Environment Meet – 2015
February 25, 2015	Seminar: 'Agra Beyond Taj'
June 5, 2015	Environment Day-2015

June 20, 2015	Seminar: 'Developing Action Plan for implementation of Traffic Issues in Agra
August 18, 2015	Tree Plantation-2015
November 29, 2015	Essay Writing Competition
December 6, 2015	Seminar: 'Smart Cities, Citizen Science and Eco Habitat and Sustainable Development'
December 13, 2015	Drawing Painting Competition
December 25, 2015	Orientation Program for newly inducted members
February 24, 2016	Agra Beyond Taj-Literary Panorama

Impact

SPHEEHA has taken the lead to bring all stakeholders under one roof with experts from across the country helping outline the broad vision and possible solution to make Agra a Smart City. Visitors to Agra often complain about the city's poor traffic management system. Severe traffic congestions on the main as well as arterial roads are everyday occurrences. Tourists, who come to see the Taj Mahal, recount of harrowing experiences on the roads. A detailed action plan for traffic issues in Agra, developed by a team of IIT-Delhi professors in association with SPHEEHA was released by the Commissioner of Agra, Pradeep Bhatnagar in June 2015. The work of SPHEEHA is spread evenly with-in all spheres of society and is appreciated by all.

Dayalbagh: An Eco-village

Context

Eco-villages are urban or rural communities of people who strive to integrate a supportive social environment with a low-impact way of life. To achieve this, they integrate various aspects of ecological design, permaculture, ecological building, green production, alternative energy, community building practices, and much more. Eco-villages are living models of sustainability. They represent an effective, accessible way to combat the degradation of our social, ecological, and spiritual environments.

An Eco-village is a community that lives in total harmony and communion, not only in respect of its members or in its relationship with other communities or the entire nation, but in its relationship to the large variety of flora and fauna, nature and even the creator.
Dayalbagh is an eco-village/city, quiet and peaceful with a largely self-sustaining agricultural production, water harvesting and increasing use of renewable solar energy. Education, agriculture and industries prosper in harmonious and ecologically sustainable manner. Dayalbagh is greener and more sustainable since its foundation in 1915, even though its population has increased. Dayalbagh's eco-development, presents an admirable combination of material and spiritual development. It represents a classic case of self-sustained eco-friendly existence of human settlement in close harmony with the nature.

Description (Activities)

Self-Governance

Civic affairs are managed through a committee of elected representatives under the overall supervision and control of a primary committee. The eco-village is divided into *mohallas* each having *Sarpanch* and *Panches* for different activities of the *mohallas*. Honorary services are imparted by the residents of the village.

Water and Electricity Supply

Water supply to the village is provided through tube wells. To sustain ground water levels, rain water harvesting schemes have been implemented. For electricity needs the village bulk purchases are made from M/S Torrent Power Ltd. To ensure uninterrupted electricity supply, the village also has its own back up generation facility. There is also an increasing use of solar power. Solar powered lights have been installed in open spaces within and outside the village in selected areas and also for street lighting. Solar power units are installed in all institutional buildings. Moreover, to reduce power consumption, LED lights are used to the maximum possible extent.

Sewage and Garbage Disposal

There is a regular sewage system and garbage disposal. Garbage disposal includes segregation of biodegradable (kitchen waste) and non-biodegradable waste at each house of the village. There are well established treatment facilities for effluents. Treated water is used for irrigation.

Security and Surveillance

Safety and Security of the colony is maintained by day and night patrolling *(pehra)* in shifts by the residents. Community policing through watch and ward department is performed for safeguarding public property. Most recently, CCTV cameras have been installed at various locations in the village which are also monitored by the residents.

Educational Hub

Education from the pre-Nursery to the Ph.D. level and beyond is imparted through DEI. Additionally, the village has a School of Languages to teach regional and foreign languages, a School of Art and Culture to provide training in music, dance and handicrafts, a Tailoring school for empowerment of women from the weaker sections of the society, an Indian Music Training Centre and a School of Dress Designing and Interior Decoration. A Day Boarding School has also been set up to provide special tutorial teaching to the students of under privileged families who do not have adequate facilities at home.

Economical Agriculture and Farming

The topography of the land was initially dominated by ravines, low mounds, patches of rocks and stones and alkaline soil, sand dunes and patches of reeds and weeds, lying as waste-land. Since 1942 under the 'Grow more food' campaign, the uneven and unproductive barren lands have gradually been made suitable for cultivation. Today, in the Dayalbagh area, there are nearly 1531 acres of agricultural farms where cereals, pulses, oil seeds, vegetables, fruits, cash crops (potato, sugarcane, etc.) and fodder are cultivated. Farming activities are eco-friendly and based on organic farming that helps in soil conservation and enrichment. Both traditional and modern agricultural practices are adopted here. Agriculture is supplemented by Gaushala wastes for meeting out its manure requirement. Cooperative efforts are made in performing different agricultural activities and no chemical substances like insecticides, fungicides, weedicides or chemical fertilizers are used. The agricultural produce of Dayalbagh is sufficient to meet the requirement of the residents and the pilgrims who come for short visits.

Horticulture

Horticultural activities are practiced in Dayalbagh: there are orchards of mango, jackfruit (Artocarpus spp.), Guava (Psidium) and various citrus species along with many other fruit trees to provide large canopy cover as well as a supply of some fruit.

Cattle Yard and Dairy

Dayalbagh has its own cattle yard with over 800 head of cattle which fulfils the milk requirement of the residents. Its fodder requirements are met internally round the year. Animal waste is recycled and used as manure in fields. The dairy produces pasteurized milk

and several milk products employing the most advanced techniques. These products are also sent outside the country.

Green Belt

The construction of green-belts has been an important feature of land use planning in Dayalbagh. These are in the form of a tree corridor all along the Yamuna river bank, in agricultural and farming areas, and, areas earmarked for timber plantation.

Ecology and Biodiversity in the Green Belt

The western part of Dayalbagh eco-village has triangular patches of dense plantations reaching the bank of the Yamuna. While most of the uneven land has been leveled and converted into well-formed green fields, in some areas the uneven topography remains. This area is being used for cultivating crops such as *taramira*, growing trees such as *amla* and some timber plantation. An orchard of citrus fruits has also been established in this area. Two species, - Prosopis and Acacia are also maintained in the region.

Waste Treatment: Composting

In Dayalbagh, domestic waste is mostly organic, and each member of the population produces approximately 200 kg of organic solid waste per year. Other sources include garden litter and wastes from dairy sheds, etc. The residents segregate the wastes into biodegradable and non-biodegradable material which is collected: pooled biodegradable wastes are directly sent to composting sites while non-biodegradable materials are sent to recycling points.

Transport

The most popular modes of transport in the area are bicycles and cycle rickshaws; efforts are on restrict the number of fossil-fuel driven vehicles in this area to reduce congestion and to accompanying noise and air pollution. Within the Dayalbagh colony, transport is provided by electric vehicles and rickshaws.

Executive Summary

of 15-year Strategic Plan

In today's technology-enabled, fast-changing world, the biggest challenge faced by future human capital and institutions of higher learning is to make their students adapt to change from one state of equilibrium to another by continually reorienting themselves to rapidly-changing environment building on their past experiential learning. This demand calls for a flexible, adapting educational ecosystem with dynamism, resilience, acceptance, tolerance, foresight and, above all, wisdom in its learners.

Dayalbagh Educational Institute's (DEI's) values and quality-education policy is exquisitely configured in its aims and objectives to bring about the physical, intellectual, ethical and emotional integration of an individual, with a view to evolving a well-rounded complete person. The Education Policy of the DEI, since inception, with its long-range vision for the progress of the nation has been delivering excellence without compromising on its relevance in the changing times.

Our Vision

To provide linkages to all stakeholders potential 'values and quality' to the kinetic permanent state in a dynamically oriented and refreshed equilibrium through integrated, hierarchical system of education enabled by economic and flexible (jugaad) innovation technology founded firmly on DEI Education Policy.

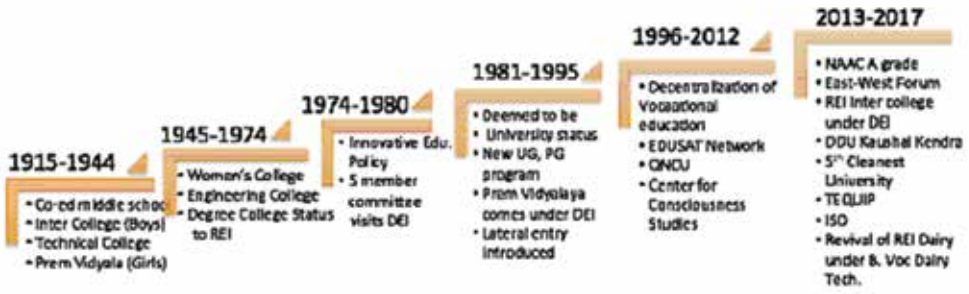
Our Mission

A model University, measured by its 'excellence but not at the cost of social relevance', reaching out to the last, the least, the lowest and the lost; pursuing research and discovery with frugal innovation, contributing with the principle of achieving more with less for nation, and community building and beneficial to public at large with cultural reforms enriching and empowering weaker sections, women and children.

About the Dayalbagh Educational Institute (DEI)

The foundation of DEI was laid in 1917 as the Radhasoami Educational Institute, a co-educational middle school, by a completely self-reliant innovative community called Dayalbagh. Dayalbagh is a century old now, a living example of cooperative co-existence, self-sufficiency and self-reliance, untouched by the ills of inflation. The visionary founders of DEI foresaw the challenges of the future and skilling, working with own hands and vocationalization of skills became integral part of education from its early years.

Historical Progress of Education

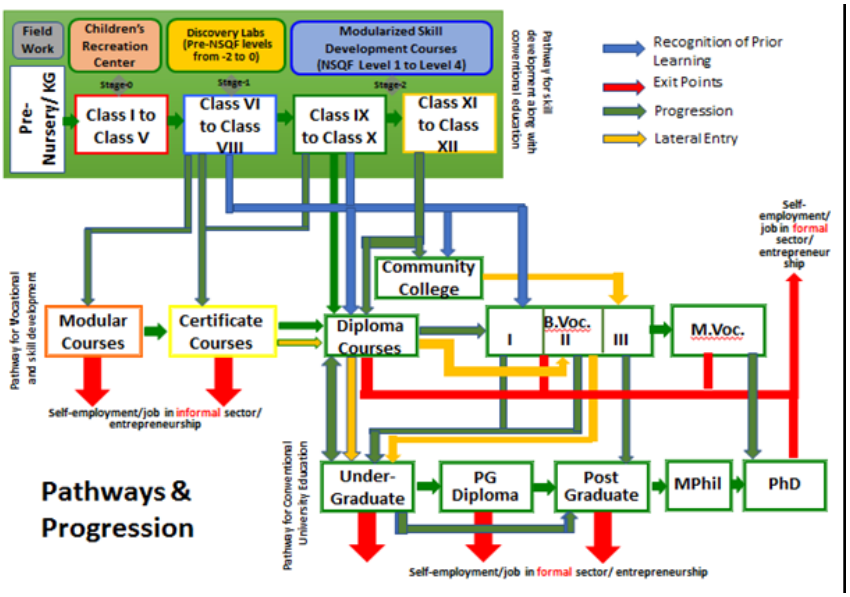


The community's best practices like agriculture and dairy farming, uplift of weaker section, skilling for all ages, and values such as temperance, tolerance and acceptance of India's cultural and religious diversity, became part of the Educational Policy of the DEI in 1975, and were implemented as institute-wide compulsory core courses from 1981, when DEI was granted the 'Deemed to be University' status.

Today DEI integrates its Six Pillars of Education (shown below) from pre-nursery level onwards with skill pathways at all levels. DEI's unique dual (i.e. conventional and skill-based) pathways of education, with provision for multiple entry and exit points (pictured below), provide learners from all walks of life access to higher education at affordable cost. With 7 Faculties, 22 Departments and several well-equipped laboratories, DEI feeds back its best research outcomes and experiential knowledge to society and surrounding rural communities.

Six Pillars of Education in DEI

SCHOOL BOARD	TECHNICAL EDUCATION	SKILL EDUCATION	UNIVERSITY EDUCATION	OPEN DISTANCE EDUCATION	ENTREPRENEURIAL EDUCATION
■ Pre-Nursery ■ DEI Nursery Cum Play Centre ■ PV Primary School ■ Bal Shiksha Kendra (NFE Center) ■ Off-Campus Schools ■ DEI Prem Vidyalaya Girls' Intermediate College ■ REI Intermediate College	■ DEI Women's Polytechnic ■ DEI Technical College ■ Faculty of Engineering	■ Center for Applied Rural Technology ■ DDU Kaushal Vikas Kendra (Vocational Degree Programmes) ■ Uttar Pradesh Skill Development Mission (Modular Courses) ■ Prime Minister Kaushal Vikas Yojna ■ Training Through Established Institutions	■ Faculty of Arts ■ Faculty of Commerce ■ Faculty of Education ■ Faculty of Science ■ Faculty of Social Sciences	■ Distance Education ■ Vidyaprasar ■ Virtual Labs ■ MOOCSKENE Bharat / MOOCS ■ SWAYAM Courses	■ Earn and Learn ■ ATMA ■ AdyNaM ■ AAM ■ Life-Long Learning ■ Medical Camps ■ Quantum Jugaad



The 'SIGMA SIX Q' approach of DEI

DEI has always advocated and practiced 'excellence with relevance.' Research and technological advancement that benefits society is embraced by the DEI community. The research focus is on developing methods, procedures or technologies that are customized to the needs of Indian conditions, that are cost-effective which allows equal penetration at every social level and aims at enhancing the overall quality of life for the masses. This approach is called the SIGMA SIX Q approach at DEI, and strives to achieve excellence through quality, values and innovation. This approach weaves SIX basic threads important for sustainable living together and emphasizes the importance of research in improving the QUALITY(Q) of life. The areas of research focus are:

- Generation & use of renewable energy
- Water & air quality monitoring
- Innovation in Education and Healthcare
- Innovation in Agriculture and Dairy practices
- Values Education
- Women Empowerment

Skilling to Entrepreneurship

Strong support of alumni and friends of DEI has enabled the establishment of 400 remote learning centers in India and abroad, whose objective is to provide access to education to those in the last mile. To accelerate entrepreneurial activities in these remote and rural areas, DEI has set up rural resource centers/incubators called 'karkhanas'.

- **ATMA (Apparel and Toy Manufacturing Karkhana)**

  Experienced faculty from the DEI visit and train rural women in garment stitching and soft toy making. Rural and tribal women now regularly stitch uniforms for DEI students. The products made while training are marketed by DEI and labour cost/ stipend is given to the learners.

- **ADyNaM (Agri Dairy Nano Processing of Multi-products) Foods**

  The ADyNaM karkhana has facilities for processing of agricultural and dairy-based raw produce to make secondary products. Women are trained in production of pickles, chutney, amla candy and squashes. A Level-1 food testing laboratory has been setup to implement quality control and to comply with food safety standards.

- **AAM (Automotive and Multiskill) Karkhana**

  This karkhana is aimed at training youth in repair, maintenance of two wheelers, tractors, farm equipment and solar power systems.

Strategic Plan

DEI aims to become a leading research-cum-teaching institute in Consciousness Studies. For DEI this pursuit is carried out by bringing together teachers, researchers and students from various disciplines like psychology and cognitive science, physics, mathematics, life science, language studies, arts and music, engineering management etc. This truly transdisciplinary study has allowed unparalleled insight into many aspects of human behavior, psychology and functioning of brain. Rigorous scientific research is being carried out to understand the experiential science through experimental techniques.

DEI envisions to become a leading teach-ing cum research institute in Consciousness studies and Entrepreneurial education with emphasis on agricul-ture, dairy farming and healthcare.

DEI's Strategic Plan charts the distinctive course expected of an institution with a long and distinguished history. It builds on the traditions of excellence established by our founders, with a clear view of our strengths, opportunities and weaknesses. DEI plans to become a leading teaching-cum-research institute in Consciousness studies and Entrepreneurial Education, with emphasis on Agriculture and Dairy Farming. The Strategic Plan is anchored by an accountability framework through measurable inputs and deliverables that monitor progress towards our goals. Over the next five years, building on our foundational strengths and propelled by the promises outlined in this Strategic Plan, DEI will emerge as an institute with excellence in specific disciplines and strong societal outreach that delivers holistic education to every learner.

The DEI will leverage its strength, taking advantage of the opportunities to overcome the existing weaknesses to reach the goals. We will allocate our resources in the areas that sets us apart and will align our future resources with the upcoming deliverables to become leading research and teaching institute in agriculture, entrepreneurship and consciousness while sustaining other areas of research in the institute. Learning ecosystem in DEI will be enhanced through experiential learning by connecting class rooms, labs and research to real world problems.

DEI will emerge as one of the leading inclusive, regionally focused institute with excellence in specific disciplines with strong societal outreach and deliv-ering holistic education to every aspiring learner.

DEI will focus on regional problems with international partnership to create a global impact through IPRs research publications. The major focus areas shall be Agriculture, Consciousness, and Entre-preneurship.

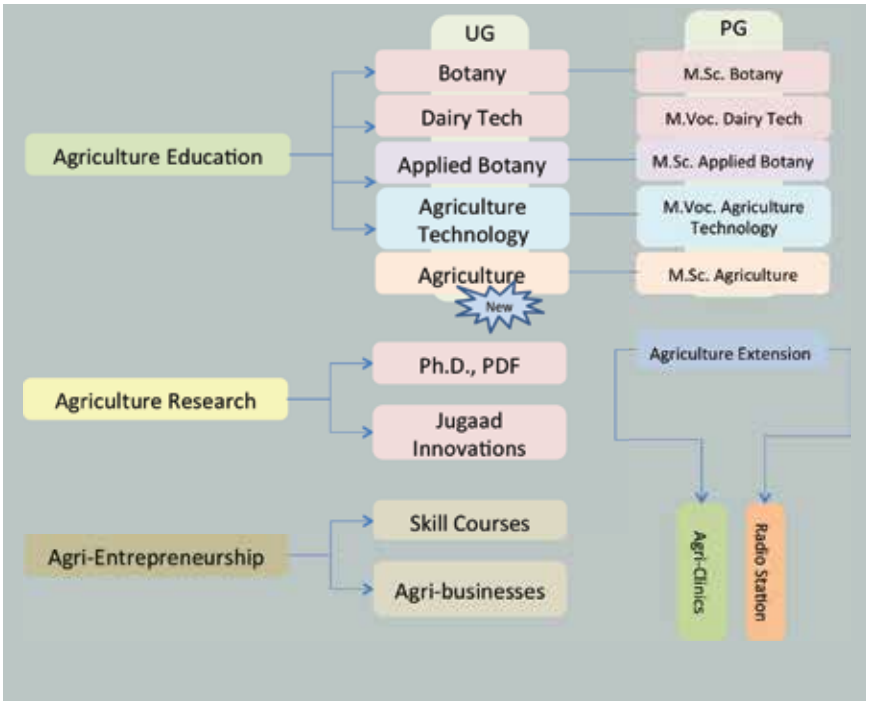
These areas have been arrived at from view point of achieving highest goal of life that is Ultimate Reality and life sustenance. These areas offer unique opportunities to share eastern philosophy with best practices of our country and western thought processes of technology emersion for solutions around our lives and remote.

It is proposed that same will be done in agriculture through diversification. Lab-on-land experimentation and research will be carried out at all off capuses and technology interven-tions will be the prime area where students will be trained on precision agriculture, increased

yield (three different crops per year). Diversification of agricultire will build the enterprises around green (agri) and white (dairy) economy across the country.

Learning ecosystem of DEI will be enhanced through experiential learning. Research focus will be on regional problems with international partnership

The approach would be to explore and venture new horizons in Agriculture, Consciousness and Entrepreneurship, which in-turn will help in overcoming weaknesses in terms of Low IPR, Funding, Tech Start-ups and infrastructure and will also help in taking advantage of having opportunities for creating well equipped labs, having publications, industry interaction and utonomy; and will leverage the strengths of the institute in Skilling and intellectual wealth. Issues concerning human resources, skilling and ocietal connect and relevance could also be addressed. As depicted in the above figure agriculture will just not remain a content of class rooms but will be extended to connect to the community. DEI has created lab-on-land in the areas of dairy farming, renewable energy, securityand surveillance. This concept unfolds the challenges of real life and leads to research and experiments to address these issues.



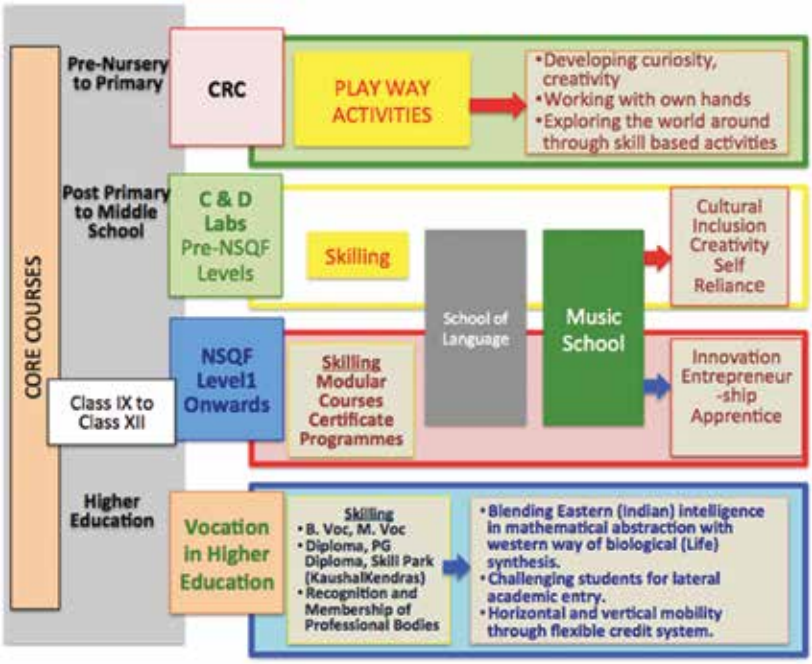
Entrepreneurial education in DEI has a different flavour. DEI has been engaged in mobilizing the lost youth with the least resources to engage purposefully with any of the six pillars of education in DEI. For this DEI regularly organizes medical camps in the rural areas every fortnight through the NSS wing. These medical camps apart from free medical check-ups, also offers skilling activities for children. These activities are called 'hole in the wall' experiments. These activities create a hole in the wall of social and economic barriers and allows them to explore and access the world full of opportunity for development and progress. Agricultural counseling, skilling for women is also a part of these medical camps. DEI aspires to engage every applicant with NO-MEANS in education by creating enough opportunities for earning for sustaining themselves. This will help in bringing many students to the mainstream education and in building their scholarship.

Skilling to entrepreneurship is a serious business for us in DEI, we believe that right exposure to skilling at right age can unleash the creativity in every learner leading to entrepreneurial acumen with ability to adapt, work and address challenging problem in unique ways with holistic view.

Consciousness study is another area that set DEI apart with its unique strength of experiential knowledge, best practices from the community. DEI system of education emphasizes on nurturing healthy body, agile mind and development of latent spiritual faculties through Yoga, meditation, comparative study of religion, theology and research in these areas. DEI has successfully created a platform for scientific dialogue between eastern scientists and philosophers and western scientists through special East-West forum in the annual conference on The Science of Consciousness held annually. This conference is organized by the Center for Consciousness, Arizona State University and DEI has been actively participating to discuss the science of eastern philosophy.

In next five years DEI will create opportunities to engage purposefully the lost youth with least resources, by providing means for sustenance.

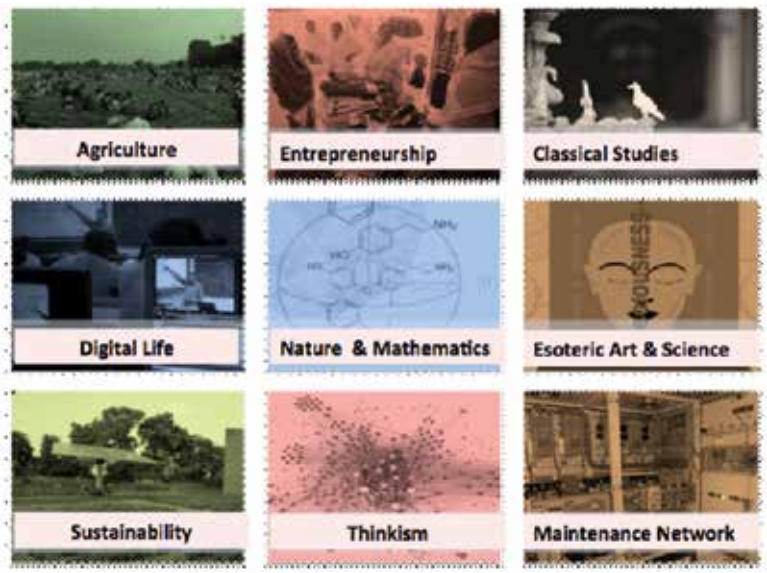
DEI from its experience proposes consciousness as a potential field to attract international research collaboration, create global impact through research on the areas like super intelligent machines, deep learning, thinkism, digital life. These areas are globally deliberated by technologists to address the locus standi of humans in the era driven by super-intelligent machines.



Educational Framework of DEI from Pre-nursery to higher

Experiential knowledge in the area of Consciousness and the recognition glob-ally, sets DEI apart. DEI proposes to align its future resources for developing this field.

Based on the distinguished past, present academic wealth and in anticipation of future global challenges, DEI has identified nine emerging multidisciplinary research areas. DEI proposes to break the traditional boundaries of departments and faculties and create multidisciplinary research divisions to converge diverse expertise from science, humanities, technology and management. with the existing experiential knowledge and field experiments DEI will be able to create a niche on the international platform in these areas.



Research Divisions

To strengthen research and teaching in these areas DEI will enhance and substantiate the library support services with following action points:

- Technology interventions for the access to the e-resources and database.
- Library on wheels and kiosks
- Access to libraries of collaborating partners
- Creating local library resources at off and off shore campuses
- Creating repository, open-ware, freeware, software and tools for teaching, learning and research
- Technology intervention for MOOCSKENE BHARAT and e-courses.
- Interactive portal for library

Our strengths, opportunities, weaknesses and challenges

To draw a strategic plan that is accountable and can be adhered to we have carried out self estimation on 5 letter grade (A to E) point scale. This enables us to allocate our resources proportionately for achieving tangible outcomes.

DEI has intellectual wealth of highly qualified faculties in diverse fields. This wide knowledge scape will be leveraged to create new interdisciplinary multidisciplinary emerging areas of research and teaching by breaking the boundaries of departments and faculties. The Centre for Consciousness Study at DEI is one such aggregating platform, where faculty and students from diverse fields come together for discussions, research and field trials. 100 years of presence as a purveyor of value-based education and skilling, DEI has a strong network of alumni and friends. This network has been instrumental in many outreach activities and industrial partnership. This potential strength of DEI will be further utilized to enhance industrial partnership, entrepreneurial start-ups and global presence. DEI is a pioneer in skilling education at all levels (nursery to higher education) this vast treasure of experiential knowledge has facilitated in uplifting weaker section, connecting young learners to the grassroots for understanding the challenges.

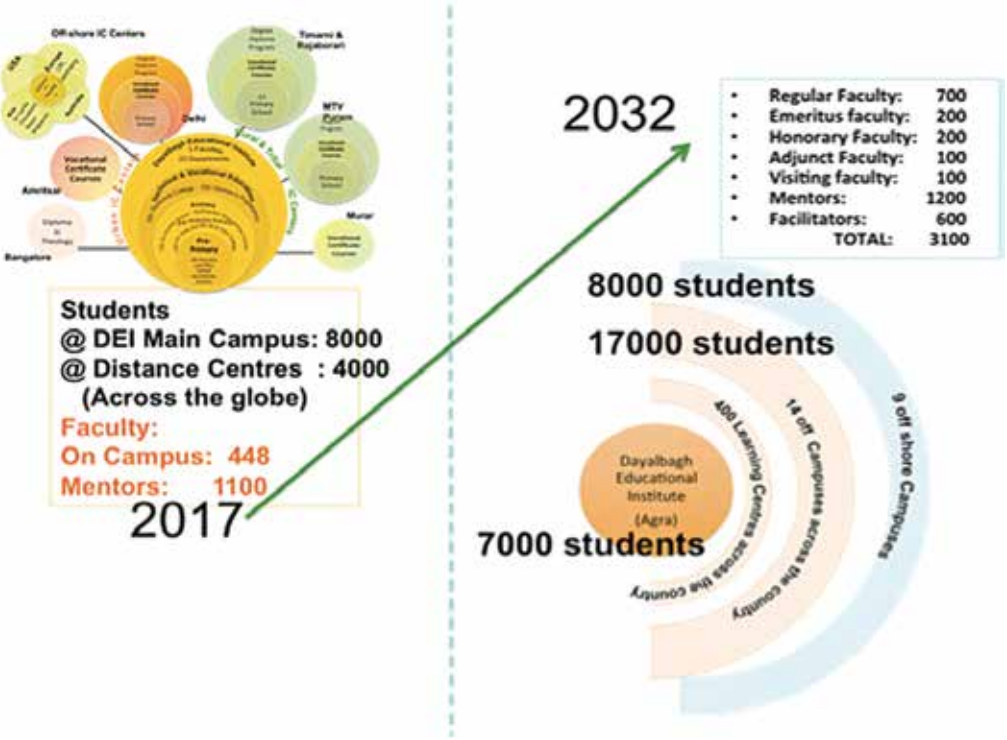
Affordable quality education at DEI is a hallmark feature. But DEI is determined to create avenues for every aspiring learner including the least on the last mile. Such needy students will be given opportunity to assist in maintenance of surveillance network, library management, hostel management, maintenance of infrastructure (one MW solar power grid, central computing facility) to compensate their tuition and hostel fees. Presently this opportunity is offered to few needy students as earn while you learn scheme.

To enhance teaching quality, senior peers will mentor junior faculties through positive encouraging and rewarding atmosphere. Students feedback will be the benchmark for improvement and enhancement. Faculties will be given flexibility to add trending research and their impact as part of their instructions to connect the abstraction of a theoretical concept to a real problem.

DIY ethos of DEI has encouraged faculty to integrate technology to deploy 1 MW solar power system, fiber optic network, surveillance network. DEI partnered with BSNL to customize the technology for last mile mobile connectivity. DEI has been active partner in NMEICT for creation of e-content. DEI will further strengthen this potential of DEI to create e-contents and technology interventions for further expansion.

DEI will expand to create 14 off campuses across the country and 9 off shore campuses internationally. The past-experience of reaching out to 400 ICT learning centers for field visits

and experiential learning around the globe for becoming global citizen, demonstrates that technologies can act as multipliers and enablers for education and beyond, it is proposed that further expansion will be through technology interventions and emphasis will be laid on creation of soft infrastructure to make the educational content available to the learner at any pace, place and time. Brick and mortar type infrastructure will be minimized to maximize flexibility, economy and freedom.



Our expansion plans

Presently, DEI has completely automized the admissions, selection and examination process. It is proposed that in next five years finance, purchase, administration will also be fully automated.

Present research publication rate of DEI is 0.8 per faculty, with most of the publications coming from science and engineering faculties. Whereas, the world raking criteria requires **maximum** 6 publications per faculty with at least 6 citations of each paper. To make it to top 500 we propose to encourage all the academic staff to publish in the scopus indexed journal with academic rewards. We propose in the next five years the publication per faculty will increase to at least 2 per year and over the next 10 years publication rate will be increased to average of four per faculty with average four citations per research publications. For enhancing research publications every faculty in the institute (with doctorate) will take at least two doctoral research students. This will impact the research deliverables to achieve the research goals.

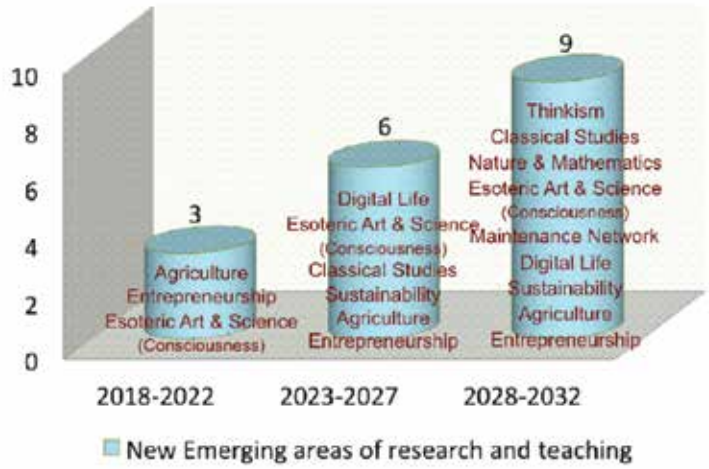
Strong national and international network of alumni and friends of DEI will be leveraged to increase industry-academia interactions. At present DEI has active partnership in curriculum development in the area of automobiles and all the vocational programs. Department of Chemistry has a research partnership with Indian Oil Corporation. These partnerships will be increased to next level in the form joint research, IPRs and employability of students.

DEI will leverage its strength to address the weaknesses. We propose to create an ecosystem for innovation. An IPR cell will be created with immediate effect and faculty, staff and student will be made aware and encouraged to file IPR. Adequate measure will be taken to allocate resources of all kinds to facilitate this with immediate effect.

Increased engagement with industry and market will lead to startups by faculty and students. DEI has an Entrepreneurship and Virtual Incubation Cell (EVIC). This cell will assist in incubation of ideas and mentoring startups until spin-off. DEI will help students in finding potential corporates in acquisition of startups.
DEI will lay emphasis that every faculty should have at least one research project from, industry/public funding agencies to increase the **purchasing-power parity (PPP)**. This will lead to strengthening of research and allied infrastructure.

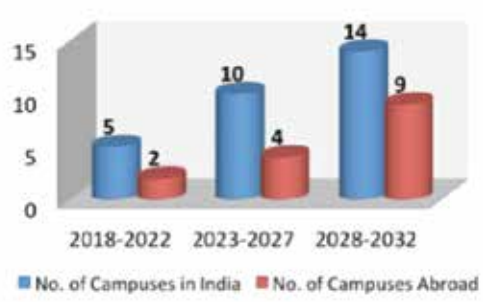
Today DEI has 8000 students on campus, we propose to decrease this strength to 7000 by creating off campuses and off-shore campuses catering to regional demands. This will decrease the burden on existing student amenities and infrastructure.

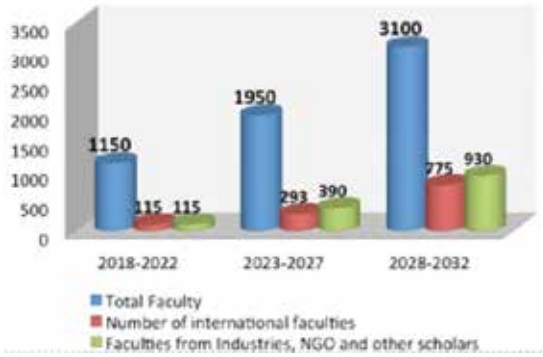
We are confident that with the proposed new transdisciplinary research divisions we will be able to strengthen the existing international partnership. Expansion and diversification at off campuses and off shore campuses will facilitate in attracting foreign faculties and students. The propose plan for starting these new divisions is shown below:



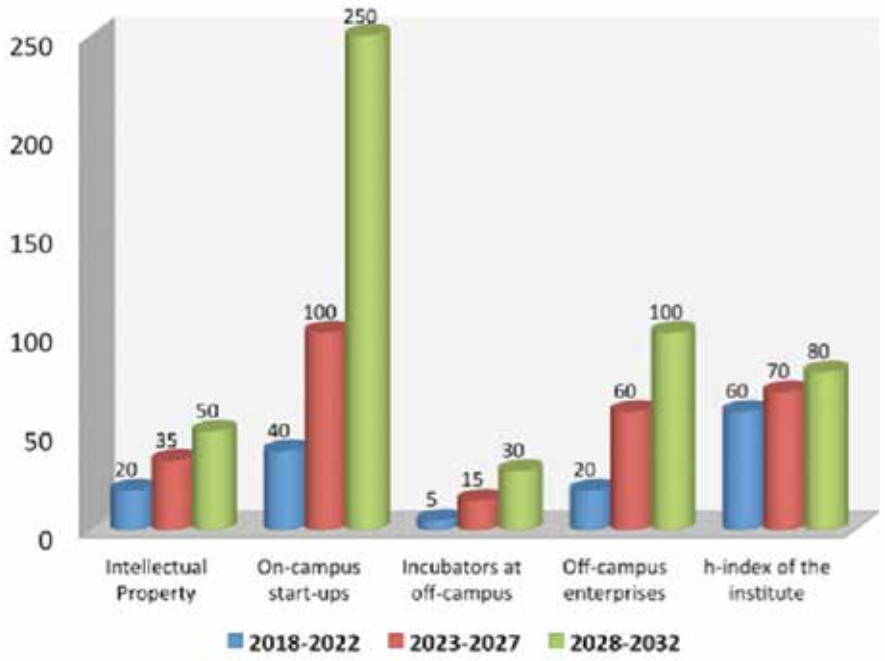
DEI will work on certain aspects to meet the target of being amongst top 500 universities in the world. For this we have identified certain areas with immediate priorities by mapping the criteria and points set by the international ranking agencies (Times Higher Education and QS World Ranking) and the opportunities and weaknesses.

Measurable inputs at a glance





Measurable outputs at a glance



OPPORTUNITIES	Criteria by world ranking agencies (QS & THE)		Proposed measurable to achieve the goals		
		Present	2018-2022	2023-2027	2027-2032
Adequate measures to support students with 'NO-MEANS'	Atleast 200 students	50	500 students	700 students	1000 students
Purchasing-power parity (PPP) on infrastructure					
Funding and PPP on research					
Low IPR	Maximum 50 per years	3	15	30	50
Research publication	7 per faculty	0.8	2	4	6
International collaborations	Good proportion of publications with international co-authors	1%	5%	7%	15%
Number of doctoral students	8				
Institute-industry interactions	10 partnership with research/IP publications	01	05	07	10
Low Startups	5 independent spin-offs in 5 years	01	5	15	20