



VIGNAN'S

Foundation for Science, Technology & Research

(Deemed to be UNIVERSITY)

-Estd. u/s 3 of UGC Act 1956



STRATEGIC PLAN OF VFSTR



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Strategic Plan of VFSTR

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VISION

To evolve in to a centre of excellence in science & technology through creative and innovative practices in teaching - learning, towards promoting academic achievement and research excellence to produce internationally accepted, competitive and world class professionals who are psychologically strong & emotionally balanced imbued with social consciousness & ethical values.

MISSION

To provide high quality academic programmes, training activities, research facilities and opportunities supported by continuous industry - institute interaction aimed at promoting employability, entrepreneurship, leadership and research aptitude among students and contribute to the economic and technological development of the region, state and nation.

INTRODUCTION

Long-term strategic plan for a period of five years is an important component of the University to gradually implement the projected thoughts for its growth and to successively achieve the set-goals. The projected activities in this document are derived through informal and formal discussions held in AC, BOM, and PMB and also among Deans with the top management and the same guided us in deriving the following document.

The long term academic and research planning related literature from the internet and on-line resources in the public domain are used in shaping our views into a structured document.

The Chairman of Vignan Group of Institutions is an overall guiding force for the strategic plan to up-keep persistently the academic, research and administrative targets.

In the administrative set-up of Vignan's Foundation for Science, Technology and Research, there is a well structured Planning and Monitoring Board as a platform for discussion and brain storming on the strategies for long term development of the institute. The strategic plan and its implementation monitoring are always incessantly aimed to upsurge the quality of education and transparency in management of the institute. The current and future strategy plan will foresee the institute into an excellent center of learning in terms of academics and research. The strategic plan for VFSTR is detailed in this document, drawing on the wisdom of all the above mentioned fora and top management.



EXECUTIVE SUMMARY

Five years strategic plan is conceived to promote the VFSTR as a Centre for Teaching and Learning.

The Academics in the University is the topnotch and hence the planning for self-learning and skill-based practices is emphasized.

Digital technology is the fabric in the embedded practices in the University that enables students adopt self-learning and acquire skills.

The Research and Development is quintessential to meet the local challenges and hence focused on specific goals for process and product oriented design and development. The interdisciplinary and multidisciplinary approaches are emphasized.

VFSTR University becomes a favored destination for potential faculty to mould their career primarily because of the best practices and functional autonomy being followed. Active campus with dynamic work culture and autonomy are long-term goals for nurturing talented faculty.



I. ACADEMIC PLANNING

I.a. Improve Digital Learning and self learning

The education scenario has changed over the time in India especially in the higher education institutions. This is the result of fast changing technologies in the society, and wide applications of technologies for many of the activities.

Digitalization of all measurements, processing, and control have improved the efficiency of working as well as increased inter disciplinary activities. Digital acquisition of data, digital processing of large amount of data, and control of various instruments and processes through automation had brought about a significant change in all aspects in the present society.

The digital technologies have also affected the education field tremendously. There are a large number of digital learning resources including e-books, e-tutorials, online courses and online evaluation techniques. This growth has opened up another big opportunity with a minimum involvement of teaching faculty.

The University/institute of higher learning should be in line with the above developments in digital technologies and adapt them in day-to-day teaching and learning activities. Hence, the University should improve procedures for the digital learning and self learning by students.

I.b. Strengthen practical skills

Science and Technology invariably accompany with the demonstration of concepts through experimentation since the advent of informal education in our society. Several experiments that are being followed in various institutions are developed through intuition. On one hand, theory provides the information on documented evidences in the related subject



accumulated over the years and on the other hand, the practical training and mastering skills in the concerned subject is quintessential as the same is warranted in the industry and societal applications. Practical skills are to be imparted to students either in the laboratory or field or extension programs.

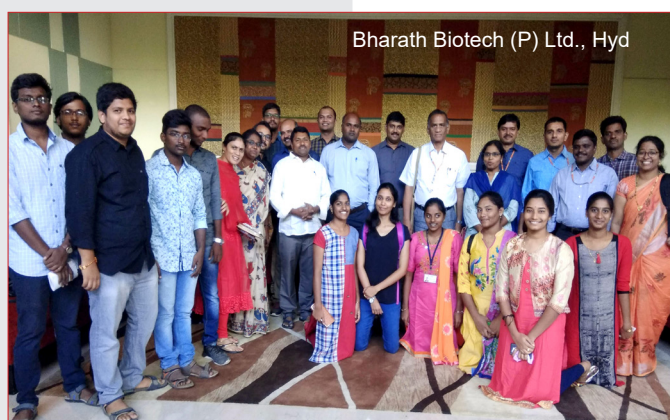
The essential ingredient that identifies any one as an engineer is the knowledge acquired in one's field of study. For example, mastering and acquiring skills in the fields of 3D printing & Robotics, Fluid Mechanics, Solid Mechanics, Machine Design, CAD/CAE, will build the identity of a pupil as an engineer. Further, computers and its gadgets are no more a trade-skill, but a life-skill. Practical knowledge and acquiring skill in at least one programming language, internet usage and web applications, social media etc. are as essential as acquiring proficiency in English language.

The practical training at the institution level bridges the gap between the academic learning in engineering colleges and the actual operating conditions in an industry. Young engineers feel naive due to the sudden change in working conditions right from the theoretical concepts with which they are exposed in their academic program to the operating procedures of the organization where they get employed. Imparting industry-certified skills is an elegant solution to handle this type of misalignment.

Hence, University has to concentrate on skill developmental activities also.

I.c. Strengthen industry participation in academics

Institutions of higher learning impart engineering principles/concepts and evaluate through examinations, as a result the memory and reasoning aspects are enhanced among potential graduates. In addition, a few organizations also have taken up the skill-based practices to train in machine handling skills. Mere simulating an industry atmosphere and culture in an academic set up accentuates the students' readiness for employability.



Industries involve in manufacturing goods, or provide services in a scaled-up environment. Planning, work organization, process optimization, and maintenance of machinery and equipment are essential features of any industry. Punctuality, work discipline, and industrial safety are the features of organized industry. Initiation into these aspects of work enhances the value of engineering degrees acquired by students. Hence, University has to enhance and strengthen industry participation in academics.

I.d. Introduce new interdisciplinary programs and courses

Introduction of Interdisciplinary engineering courses in engineering programs allow students to develop unique skill sets and specialize in chosen areas that may not be provided in traditional departmental programs. Such courses may be designed keeping in mind the emerging technical fields and / or student's desire to have an immersive interdisciplinary experience. The engineer of the 21st century will need to operate effectively in many settings and often with a global perspective. The interdisciplinary program requires the student to choose and experience activities for technical development and growth that are not part of formal course work. A few of the interdisciplinary courses that provide an introduction to rapid design are through virtual and physical prototyping, Robotics in medicine, 3D printing of virtual organs, Engineering design process, Process engineering, Big Data, Big data Genomics, Problem solving methods and Computational Biology. Interdisciplinary team work, current industrial practice and manufacturing process capabilities emphasize hands on learning to promote a new approach among students which otherwise not possible through classical courses. University should introduce interdisciplinary courses in the beginning and gradually bring in interdisciplinary research programs.



II. RESEARCH AND DEVELOPMENT

II.a. Strengthen industry academia consortia and improve collaborative research

Universities and industries have been collaborating for over a century. The rise of a global knowledge economy has further intensified the need for strategic partnerships that go beyond the traditional funding of discrete research projects. World-class ranked universities are at the forefront of pioneering such partnerships. The partnerships are designed to run longer, invest more, look farther ahead and hone the competitiveness of companies, universities and regions. In short, they transform the role of the research in University in the 21st century, anchoring it as a vital centre of competence to help tackle social challenges and drive economic growth.

However, this attempt is a big leap. It requires each side to engage far beyond the conventional exchange of research for funding. When they work well, strategic partnerships merge the discovery-driven culture of the University with the innovation-driven environment of the company. But each side must overcome the tight barricades to engage in industry-University partnerships of all types.

This also aims to address the challenges of bridging the industry-University by highlighting what makes universities attractive as industry partners, what structures make for excellent partnerships and what approach produces seamless interactions. It builds on a growing pool of academic research about the state of industry-University collaboration. It further offers concrete lessons and recommendations from experienced managers on both sides. The empirical lessons in this collaborative research lead to some obvious policy conclusions which may include for long-term strategic partnerships. The organization that strives for excellence is mostly educational institution which invariably deals with



molding of human resources for meeting needs in the society. The primary focus of most industry-University collaborations is to develop joint research. Further, this collaboration has an impact on teaching and learning that develop naturally out of the partnership. In practice, professors join a project inside the company, imbibe its culture and thus create a fruitful ongoing exchange that helps to modernize curricula. Vignan's University should initiate and strengthen collaborative research with industries.

II.b. Create specialized Centers of Excellence in frontier areas

A Centre of Excellence (CoE) is a unit in an organization or a department that works on a leading-edge knowledge and competency in the chosen area. It is managed by highly-skilled individuals and experts, who disseminate knowledge in an organization and share best practices. A CoE is a place where the highest standards are maintained and operates with the mandate and accountability to define and implement frontier areas of research.

The CoE owns the competency. It defines the roadmap. It brings standards. It displays the architecture for the chosen module. Teams across the organization use the module/component in their products or solutions. The CoE develops the competency through hiring, training, and partnerships that can be leveraged across the organization.

In today's world, the pace at which disciplines are changing is incredible. The evolution of technology is unstoppable. There is an inherent need for the universities to provide solutions that showcase a deep understanding of domain and technology to address evolving customer expectations and societal needs. What becomes extremely important for universities is to establish incubators of innovation and possess the ability to constantly innovate. Thus, Centers of Excellence can be an effective solution to address industrial challenges in the University set up. Vignan's University should establish Centers of Excellence in a few of the frontier areas to carryout focused research.



II.c. Research laboratories and project centers should be dynamic

Research Laboratories are workplaces to conduct scientific experiments. The key architectural, engineering, operational, safety, and sustainability considerations for the design of Research Laboratories are quintessential for students to execute project works. Highly flexible interdisciplinary laboratory space to support and encourage the interaction of the researchers housed within the campus is nonetheless required. Equally important is to provide the most highly serviced and safest laboratory space on the campus. Robotics facility, 3D printing facility, Biogas plant, Animal House, Structural engineering facility, VLSI, Workshop etc are a few examples. The primary activities housed in these facilities should meet the requirements of students' projects that are to be taken up and supervised by faculty.

Students normally participate in a team work on research and development projects. While participating in project work, students develop and improve their skills of collecting and evaluating the literature, participate in planning, execution and monitoring of projects, learn more about teamwork, and apply appropriate technology for a given task, implement their own solution and integrate it with solutions from other students in the final results. They also learn how to present the final product. Project work nonetheless promotes more interaction between students and teachers in a team environment while creating practical solutions to a specific problem. The following learning outcomes namely (1) Define project goals, (2) Construct project team, (3) Develop project task, (4) Demonstrate results of project task, (5) Analyze finished project task and (5) Identify problems during development of the project task will be attained with the implementation of the project work in a B.Tech curriculum.

Research Laboratories and project centres at Vignan should be dynamic to achieve these objectives



II.d. Product and process oriented research to be improved

Product development capabilities and prototypes are the basis for successful competition in the current globally-linked economy. The same requires fundamentally improved approaches to organize the development process, reduce waste, and provide products to meet customer needs in the society in order to respond to global competition. Time-to-market is a key element in competitive success. This approach enhances integration of product and process design with strategic objectives to improve organizational effectiveness, and promote to design a framework for effective implementation of technology.

Since product and process design have a major influence on the competitiveness of the enterprise, it is especially critical that the design function be better integrated with the other functions of the enterprise. This means integration within the engineering function (e.g., integration of both product design with process design and integration of electrical, mechanical and software design), and integration of the engineering function with external organizations (customers and suppliers).

More specifically, the objectives of Product and process oriented research are:

- The design of products to better meet customer needs and quality expectations.
- The design of processes to produce products at a more competitive price.
- Reduction of product and process design cycle time or time-to-market to bring products to market earlier.
- High productivity through release of producible designs and minimization of disruptive design changes

Vignan's University has to gradually move from "paper publication" oriented research to "product and process" orientated research. This approach benefits students and faculty, and enhances interdisciplinary learning and knowledge.



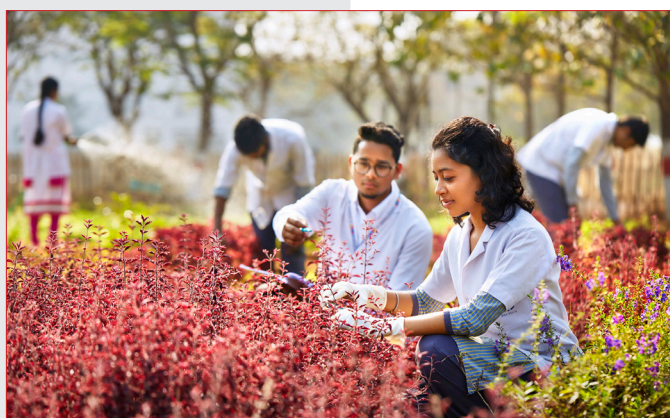
II.e. Promote interdisciplinary research in frontier areas

Undertaking research across disciplines certainly prompts new innovative ideas. The same has great potential to generate revolutionary technological innovation to meet the growing demands in the society. Moreover, we live in a time of unprecedented growth in urban populations. Rapid expansion creates significant challenges in stewarding urban network and infrastructure systems including transportation, food, water, and power so as to ensure that communities are resilient and sustainable. Responding to these challenges, we have a remarkable opportunity to realize innovative and groundbreaking approaches, techniques, and tools to leverage advancements in data science, sensing, communication, and infrastructure design to connect people, communities, and the urban infrastructure in new and productive ways. Further, the University should aim for the adoption of a clean energy future by developing next generation solar energy and electrical energy storage materials, devices and systems, as well as their integration with the grid. Therefore, it is to encourage interdisciplinary research in the University with a coordinated development of basic disciplines and applied disciplines.

II.f. Priority in research in the locally relevant engineering areas

Environmental sanitation, waste management and digital awareness are major rural issues in India. Recent interventional studies on environmental sanitation in India highlighted the importance of prioritizing control strategies. Research related to the appropriate cost-effective intervention strategies and their implementation in Indian context is a big challenge.

These priorities are particularly important because of issue of water constraints, environment-related health problems, rapid population growth, inequitable distribution of water resources, issues related to administrative problems, urbanization and industrialization, migration of agricultural workers, and rapid economic growth.

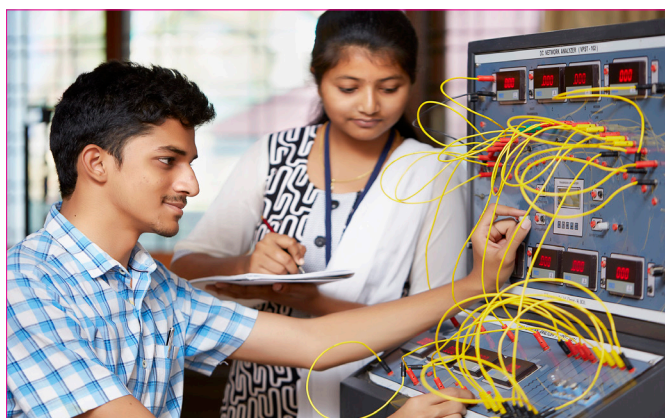
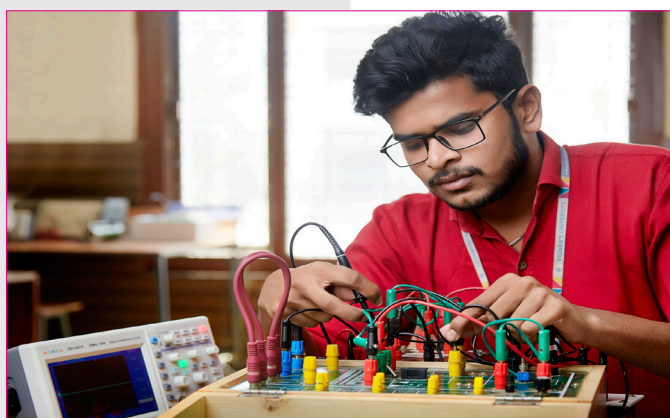


Morbidity and mortality due to waterborne diseases have not declined in commensurate with increase in availability of potable water supply. More importantly, young children bear a huge part of the burden of disease resulting from the lack of hygiene. India still loses between 0.4 and 0.5 million children under 5 years of age due to the reason namely the failure to make significant headway in improving personal and home hygiene, especially in the care of young children.

Strategies on solid/food waste management and awareness generation, for setting up and operation of compost plants to enhance capacities of rural infra-structures are to avoid density and settlement layout and poverty status. Access to networked services invariably leads to solutions in different parts of the city or within the rural neighbourhood.

Vignan's University, being situated in a rural area, should concentrate on research and technology intersections for sustainable development in the following areas:

1. Prevention of contamination of water in distribution systems
2. Growing potential for water reuse and conservation
3. Implementing innovative low-cost sanitation system
4. Sustainability of water and sanitation services
5. Access to network services
6. Shelter and Health of live-stock and seasonal vaccination.
7. Agricultural machinery accessible to farmers
8. Better access to markets through digital platforms/applications



II.g. Improvement in h-index of the institution

The h-index is a popular measurement for the research quality reflected in publications. Although the h-index integrates the number of publications and the academic impact of each publication is to evaluate the productivity of a researcher. It assumes that all papers that cite an academic article contribute equally to the academic impact of the said article. The citation from a well-cited paper certainly brings more attention to the article than the citation from a paper that people do pay least attention. From the definition of the h-index, it is apparent that the academic impact of each publication plays a crucial role in evaluating the research performance of a scholar and the organization. Hence, h-index and all its variants use the number of citations of the publications of a scholar/University which is a measure for academic impact and the same needs to be improved for more visibility of the performance of the departments in the University.

III. FACULTY

Human resource is the most important among the assets of the University. This attribute is particularly accentuated in the present context of steep growth. Thus, human resource management is a vital institutional function. VFSTR is the most favoured destination for potential faculty to groom. It recruits young people and enables the fresh staff members to grow professionally along with the institute.

III.a.Promote continuous learning of the faculty

At the organizational level, implementing continuous learning is increasingly an important parameter to the success of the organization because of changing economic conditions and improving the global knowledge in both academics and skills. The objectives of promoting continuous learning of the faculty are as follows:

1. To enhance the knowledge and skills of the teacher in state-of-the-art technologies in Engineering Domain.
2. To equip the teachers with modern methods of Teaching–Learning Process.
3. To inculcate the Professional ethics, values and competencies in Teachers.
4. To provide guidance to adopt to the changes in Curriculum vis-a-vis Industrial needs.

Vignan's University should enable to implement continuous learning through Faculty Development Programmes, Technology Enabled Learning and Industry Interactions.



III.b.Retain talented faculty

In an increasingly competitive global environment, college attendance is on the rise. As the demands on educational institutions increase, universities find themselves trying to accommodate growing number of students, recruit and retain quality faculty, and provide up-to-date and relevant educational experiences that prepare students ultimately to enter a global workforce.

For universities, the ability to attract excellent faculty is a key to meet many of the other demands they face in educating students. The University's first obligation is to attract, nurture, and retain faculty of the highest excellence, where excellence is understood in both powerful intellectual creativity and the eagerness to stimulate and support the creativity of students. With the increased demand for excellent educators, it is becoming even more important for institutions of higher learning to retain valued faculty members and attract new prospects. Among the factors that contribute to the advancement and retention of faculty is none other than the climate that supports the professional development of faculty.

Vignan's University should retain the talented faculty by implementing the following good practices.

1. Provide a platform for employees to speak their mind freely within the organization.
2. Allow employees to use their talents and skills. A motivated employee wants to contribute to work in areas outside of his or her specific job description.
3. Appreciate employees for good work done.
4. Monetary rewards, bonuses, and gifts complement the appreciation.
5. Provide functional autonomy.



III.c.Enhance freedom and autonomy of faculty

In universities, a chairperson or department head supervises individual departments of instruction. Faculty members in each department are ranked, in descending order, as professor, associate professor, assistant professor, and instructor. The existing faculty normally has significant influence over the hiring of new faculty members and their tenure and promotion procedures, the curriculum and graduation requirements, and admission criteria.

The role of the faculty in governance was at one time predominantly advisory. Over time, the faculty has become gradually engaged in policy formation. Faculty representatives are often found on governing boards and in several formal or informal positions. The formal authority of the faculty may be codified in institutional charters or in the standing rules of institutional governing boards.

The academic freedom of the faculty and instructional staff serve students well in fact, it is the hallmark of excellence in education. Higher education is supposed to offer students the most sophisticated information possible from the knowledgeable sources. Students need to learn how to use critical intellectual tools that enable them to seek new information and to assess its utility. Students need to be able to speak and study in classrooms where ideas are debated and challenged. Professionalism and free exchange of ideas are at the heart of education. Academic freedom is the mechanism that allows students and faculty to flourish.

Thus, academic freedom may be defined as the freedom to conduct research, teach, speak, and publish, subject to the norms and standards of scholarly inquiry, without interference or penalty, wherever the search for truth and understanding may lead. Teaching-learning environment is fast changing in the current scenario. The autonomous system, with decentralized management culture at its heart, can bring about much needed innovations, in order to stay relevant and change according to needs.



A few tips up-keep the professional Culture

1. All members of the faculty value and support developmentally-appropriate levels of career autonomy.
2. Junior faculty is responsible for initiating their own growth and independence, with the support of more senior colleagues.
3. Both independence of scholarship and team science should be promoted.
4. Senior faculty and mentors openly convey pride in their junior colleagues' accomplishments.
5. Junior faculty actively recognizes their mentors/senior colleagues' contributions to their scholarly, educational, and service endeavors.
6. Open dialogues occur with regard to career autonomy, during which the parties acknowledge and attempt to address different perspectives on this matter and agree to seek consultation when needed.
7. Annual faculty review sessions serve as a medium to address these issues as well.
8. Regular outside "audits" of all mentoring relationships should follow as a standard procedure within the department.



IV. INFRASTRUCTURE

IV.a. Develop the Campus into a digital learning resource

In terms of teaching and learning, there are three characteristics that provide context to follow digital technology trajectories. The first characteristic is personalization: the growing capabilities and willingness to use digital resources to create custom pathways for learning.

The second characteristic is the adoption of hybrid learning models. The footprint of the online dimension is expanding across all avenues of higher education, including institutions that have traditionally valued intimate and face-to-face learning. It has greatly accelerated the transformation of higher education into online education.

The third characteristic is the analysis of ever-increasing amounts of data and its increasing influence in the conduct of higher education. The use of “big data” affords much more nuanced and timely insights into all kinds of learning processes. It enables the creation of custom reports tailored to specific learning contexts, ranging from institutional dashboards to personalized assistance for learners. It provides the basis for measuring progress towards institutional strategic goals.

Thus, digital technology is the fabric of nearly everything associated with teaching and learning. Digital technology is the core strategic enabler of learning in all higher education institutions.

Vignan's University should enhance the digital environment of the institution to enable to practice above features of advanced digital teaching and learning. The systems, networks, applications, and through-put should be state-of-the-art quality, and should be used extensively.



IV.b. Develop the infrastructure with environmental sustainability

Colleges and universities have long been the launching pads for innovations. From scientific, social to environmental; the concentration of youth, inquiry, and scholarly research have energized many causes. In recent decades, the environment has been a hot button for many campuses. The microcosm of society, compressed into the footprint of the campus, has fostered a heightened awareness of campus sustainability efforts, especially by students on the environment.

It is no surprise that in this hyper-interpersonal space, the concept of operating green environment and its sustainability has become so important. “Adapting ‘green’ practices to sustain the environment” is “essential” and/or “very important”.

The disposal of food waste in the University set-up is normally being done by sending it to a nearby farm. However, it needs to be encouraged in the campus to produce organic fertilizers and also biogas fuel, generating heat and electricity for the inmates and neighbouring community. Such systems should be established at Vignan’s University.

The need to capture, store, filter and reuse rainfall is becoming more and more important. Rainwater harvesting is increasingly sought after by both the general public and commercial organisations. Therefore, the need is felt to harvest the rain water and tap the Krishna river water to rejuvenate the ground water table in the University campus.



IV.c. Recreation facilities for students

Building a facility in the University campus specifically for recreation is an utmost important concept, since, the definition of “recreation” and its place in the college landscape has changed dramatically. The campus recreation centre has its roots in physical education facilities. Almost all universities offered health education buildings, and they are primarily intended for teaching young people to make them physically fit in their profession. The core spaces serving recreation — gymnasias, weight rooms, pools — have carried through to the dedicated recreation facility. Recreation Services extend facilities and programs that ensure a safe, healthy and active campus experience for faculty, staff, students and alumni. Further, the Recreation Centre offers a variety of Intramural Sports to initiate competitive spirit while encouraging teamwork. A few intramural sports are normally being offered in educational institutions and the same keeps students and staff engaged to up-keep their health and professionalism. Vignan’s University should further increase and extend the recreational facilities for the physical and cultural benefit of students.



V. WORK CULTURE

V.a. Improvement in automation and digitalization

Digitalization is nothing but digital processing by a computer. Whereas, automation facilitates to adopt a fast-moving machine to complete an assembly and doesn't necessarily have to involve smart devices. The routine transactions found in most of the universities are paper-based including the storage of files, money transactions and account books. Staff also got used to this type of system. However, in pioneer academic institutions, all academic, monetary and administrative transactions are through digital mode which become transparent and accessible. In this line, the trained young faculty will be of immense potential to up-keep the records and will be made accessible to the rest of the community in the University set-up. Thus, the implementation of digitalization and office automation are inevitable accompaniments of developmental events to achieve set-targets in any University set-up.



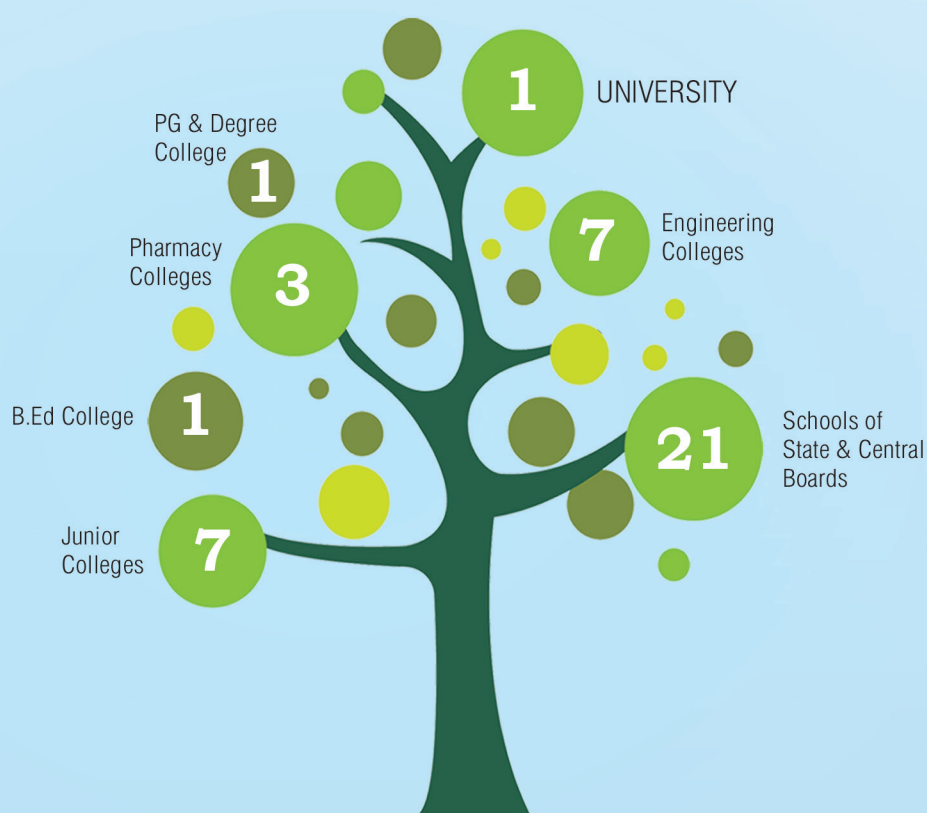
CONCLUSION

The envisaged strategic plan of the Vignan's Foundation for Science, Technology and Research for the duration of five years invariably foresees the rapid growth in shaping and building the personality of students and career development of faculty with the utmost concern and sense of belonging towards the society by imbibing the conceived curriculum, culture and a conducive environment nurtured at Vignan.

Vignan's Foundation for Science, Technology and Research will translate all these high level strategies into action plans and implement them in the concerned areas of academics, research, infrastructure and faculty in the next few years.



Symbolising
41 years of
honest
growth



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