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Teaching - Learning Practices and Parameters of Quality Assessment in HEIs

A BOOK OF NATIONAL SEMINAR PROCEEDINGS

Teaching-Learning Practices and Parameters of Quality Assessment in HEIs

Teaching-Learning Practices and Parameters of Quality Assessment in HEIs

(Proceeding of National Seminar on "Revised Accreditation framework of NAAC : Understanding the parameters of quality assessment" sponsored by National Assessment and Accreditation Council (NAAC), Government of India)

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Preface

This proceeding book presents the outcomes and insights from the seminar "***Revised Accreditation Framework of NAAC: Understanding the Parameters of Quality Assessment***" focused on enhancing the understanding of assessment guidelines and parameters for stakeholders in Higher Education Institutions (HEIs). The seminar aimed to equip HEIs with the necessary knowledge to better prepare for assessment and accreditation processes. Specifically, it emphasized the effective preparation and submission of the Annual Quality Assurance Reports (AQARs), Institutional Information for Quality Assessment (IIQA), and Self Study Reports (SSR), along with the technicalities associated with the process of Data Validation and Verification (DVV).

The seminar provided participants with comprehensive knowledge about the frameworks of NAAC assessment and accreditation, ensuring a smoother evaluation process. Practical guidance was offered on effectively compiling and presenting important documents, highlighting institution's commitment to quality enhancement.

The challenges and opportunities associated with implementation of NEP 2020 in higher education were discussed extensively along with strategies to integrate its principles into institutional frameworks.The pivotal role of IQACs in driving quality initiatives and ensuring institutional readiness for the future was emphasized.

The book covers various themes, including NAAC assessment and accreditation, quality assurance, NEP 2020 alignment, document preparation, DVV process, IQACs' role and innovative teaching practices. It serves as a valuable resource for HEI stakeholders, providing insights, guidance, and discussions on continuous quality enhancement measures, and NEP 2020 implementation. The book encourages institutions to embrace transformative approaches and leverage technology to shape the future of higher education.

Editors

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Special Article:

NAAC Assessment in the Light of NEP 2020.

Dr. Kamala Kanta Borah
Principal, Mangaldai College

The main vision of the NAAC is to make quality the defining element of higher education in India through a combination of self and external quality evaluation, promotion and sustenance initiatives. The missions to achieve this vision and to promote the core values -contributing to National development, fostering global competencies among students, inculcating a value system among students, promoting the use of technology and quest for excellence are focused.

Both the quantity and quality of higher education play a pivotal role in the development of any Nation. To ensure the quality of HEIs the self and external evaluation is the paramount importance. National Assessment and Accreditation Council (NAAC) has been set up to facilitate the volunteering institutions to assess their performance vis-a-vis set parameters through introspection and a process that provides space for participation of the institution. The participatory Assessment of HEIs by NAAC provide a lot of benefits viz: institution to know its strengths, weaknesses, opportunities through an informed review process, Identification of internal areas of planning and resource allocation, collegiality on the campus, performance-based funding, institution to initiate innovative and modern method of pedagogy, Intra and inter- institutional interactions etc. and many more.

However, the NAAC guidelines and parameters of Assessment are not static rather dynamic in nature. These go on changing time to time as per requirements. So, it is essential for all Institutions to be updated so as to make the HEIs ready for assessment as per prevailing guidelines. At this critical point of transformation of education policy which brings about the massive change in education structure and administrative reforms the HEIs must work as time demands.

The NAAC Assessment in the light of NEP 2020 is considered to be vital. Multidimensional changes have been expected right from regulatory framework to curriculum structure and research environment. The regulatory body, Higher Education Commission of India (HECI) as proposed by NEP 2020 will have four verticals National Higher Education Regulatory Council (NHERC), National accreditation Council (NAC), Higher Education General Council(HEGC), General Education Council (GEC). It clearly indicates NEP envisages the quality of Higher education through robust administration and effective planning. Performance based grant is given to HEIs through the robust assessment made by NAC. Like NAAC Assessment NEP 2020 mainly focuses on

quality and access. So, hence forth assessment matrices of NAAC will be more related to NEP implementation. NAAC assessment is based on seven criteria comprising of key indicators with assigned weightages differently to three major types HEIs-University, Autonomous College and Affiliated/Constituent College.

The seven criteria are

i) Curricular Aspects

ii) Teaching-learning and Evaluation

iii) Research Innovation& Extension

iv) Infrastructure & Learning Resources

v) Student Support & Progression

vi) Governance Leadership & management

vii) Institutional Values and Best Practices.

Both NEP and NAAC focus on the quality education which is primarily learner centric. So, it is utmost important of HEIs to derive an understanding of the quality status of the institute. The NEP mainly focuses on skill and employability. Accreditations expands placement opportunities for students as NAAC demands best practices to be followed viz exposure, improved academics, access to lab, workshops, opportunities and project etc. International tie -ups to pace up exchange Programme. Proposed model to encourage holistic and Multidisciplinary Education is MERU which is known as Multidisciplinary Education and Research University (MERU) an ambitious and important project of NEP 2020.

The underlying principles of NEP 2020 may be sumerised as

- Recognizing, identifying, and fostering the unique capabilities of each student, by sensitizing teachers as well as parents to promote each student's holistic development in both academic and non-academic spheres.
- Flexibility, so that learners have the ability to choose their learning trajectories and programmes, and thereby choose their own paths in life according to their talents and interests;
- No hard separations between arts and sciences, between curricular and extra-curricular activities, between vocational and academic streams, etc. in order to eliminate harmful hierarchies among, and silos between different areas of learning;
- Multidisciplinary and a holistic education across the sciences, social sciences, arts, humanities, and sports for a multidisciplinary world in order to ensure the unity and integrity of all knowledge;
- Emphasis on conceptual understanding rather than rote learning and learning-for-exams;
- Creativity and critical thinking to encourage logical decision-making and innovation;

- Ethics and human & Constitutional values like empathy, respect for others, cleanliness, courtesy, democratic spirit, spirit of service, respect for public property, scientific temper, liberty, responsibility, pluralism, equality, and justice;
- Promoting multilingualism and the power of language in teaching and learning;
- Life skills such as communication, cooperation, teamwork, and resilience;
- Focus on regular formative assessment for learning rather than the summative assessment that encourages today's 'coaching culture'
- Teachers and faculty as the heart of the learning process – their recruitment, continuous professional development, positive working environments and service conditions
- A 'light but tight' regulatory framework to ensure integrity, transparency, and resource

efficiency of the educational system through audit and public disclosure while encouraging innovation and out-of-the-box ideas through autonomy, good governance, and empowerment.

So, Institutional Preparedness for NEP 2020 in terms of Multidisciplinary, Academic bank of credit, skill development, appropriate integration, outcome-based education(OBE) etc. are prime concern now in NAAC Assessment. The seven criteria comprising of key Indicators and matrices are so designed that one can understand its institutional preparedness while answered for all matrices. So, preparation for NAAC assessment itself of HEIs is akin to attempt to meet the target for NEP, 2020. One can be sure that institutions which will work to meet the underlying principles of NEP 2020 will perform better in the NAAC assessment as per the prevailing NAAC guidelines. So, NAAC and NEP 2020 have been a clarion call for HEIs.

Key benefits of learners in HEIs

- NEP 2020 focuses on student centric learning environment for holistic quality educationby
- Multi-disciplinary approach. HEIs need to be multidisciplinary to facilitate acquiring knowledge in diverse discipline which is the call of the hour.
- Making skill component more predominating to enhance quality and possible avenues for employment.
- Provision of lateral entry and exit in HEIs will decrease the dropout rate of students as envisioned by NEP 2020
- ABC will open up new era of digitalized education which will facilitate mobility of learners across institutions.
- Structural change in UG programmewill create conducive research environment with the help of NRF
- Establishing HECI which has four verticals is expected to bring administrative reforms in HEIs.
- Infrastructural uplift for implementation of NEP2020 in toto.

- Increasing the faculty recruitment in vibrant and transparent manner in proportionate to increasing students.
- Converting affiliating colleges to degree granting autonomous college will enhance possible avenues for new courses. Autonomous status empowers and give more freedom to HEIs for academic planning.
- ODL and online teaching learning will contribute to meet the target of 50% GER by 2030. This will also help to meet SDG 4
- Making the Higher education uniform across the country introduction of NHEQF is another welcoming step by NEP
- Inculcating human values and Indian culture for holistic development of learners.
- Experiential learning and participatory learning will pave the way for creativity and innovation thereby replacing the rote learning.
- Digital technology for online education, online teaching platforms and tools, content creation, digital repository and dissemination.
- Opening campus of top 100 world class foreign universities in the country will prevent exodus of students for quality education. A healthy competition of our HEIs is expected with these universities to uplift quality aspects.
- Allocating budget in education upto 6% of GDP is another positive move.

Challenges

1. The major chunk of HEIs are lack of infrastructureto convert it into a multidisciplinary institute.
2. The lateral entry and exit may pose threat to some HEIs where enrolment is not encouraging.
3. Acute shortage of faculty upsets the PTR which is considered to be adverse situation to impart quality education.
4. Lack of adequate infrastructure to introduce Four-year Undergraduate programmeto run 4th year researchprogramme is another challenge in implementing NEP 2020
5. To find and workout a common and uniform syllabus and curriculum across the nation as per NHEQF
6. Lack of fund to maintain conducive research environment in HEIs.
7. The modality and workability of NRF to create a conducive research ambience yet to be clear. How NRF will support HEIs that is not clearly workout.
8. Rigorous and extensive training programmes for large numbers of facuty members yet to be hold to make them ICT enabled.
9. To make skill courses effective, certification as per NSQF is needed to be done by appropriate authority of skill which is not clearly mentioned.

Otherwise, skill certificates that we issue to learners will not serve the purpose as supposed to be.

10. Lack of academia and industry linkage for better employability. Appropriate institutions and organizations must come forward for internship and training for experiential learning and skill enhancement.
11. Lack of pragmatic method of evaluation to measure conceptual learning of students. A robust and systematic mechanism needs to be evolved.
12. Flexibility *i.e* lateral entry and exit will may possibly create a acute shortage of specialist manpower in the long run.

Imparting quality education embedded with Indian ethos is prime concern of NEP 2020. Humanity, loyalty, integrity and love for the nation of its citizens are the main qualities that can make a responsible citizen. Over all, aim and objective of NEP 2020 is to make a knowledge based vibrant society tobecome India "knowledge super Power" and it is possible by the synergic effort of all. We are optimistic thatstrategic implementation of NEP 2020 in toto can make India the world leader as envisioned by the policy.

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Promoting Gender Sensitive Quality Indicators in Higher Education Institutions

Dr. Barnali Deka

Abstract

The quality of an educational institution is highly contextual to the extent of gender responsive policies and action plan that promotes the value of gender equality. The term quality education deals with providing education and opportunities to both male and female worthy of personal and social development. Quality in higher education is a multi-dimensional concept that encompasses a broad range of areas from teaching learning, research, staffing, infrastructure curriculum, learning equipments, community engagement etc. Concerning all these areas the higher education institutions in India are accredited by National Assessment and Accreditation Council (NAAC) on the basis of certain criteria. Promoting gender sensitive academic environment in the higher education institutions is one the key indicators that ensures the qualitative standard of that institution. This gender sensitive quality indicator gives us evidences of providing opportunities for women and girls in terms of access and opportunities for their advancement. Such gender responsive initiatives can be regarded as the tools of social change for eliminating age old gender-based discriminations from the society. This paper is an attempt to review the gender sensitive attitude of the higher education institutions. By analyzing the gender sensitive quality indicators of 5 selected colleges of Assam, the researcher tries to find out how these institutions address the issue of gender equality.

Keywords : *Quality, Gender Equality, Higher Education Institutions*.

Introduction

The quality issues in higher education have become a matter of primary concern all over the world. In India since last two decades quality assurance and accreditation has been regarded as pivotal in the educational policies for maintaining the standards of higher education system. With a view to reform and upgrade the Indian education system the University Grant Commission has set up the National Assessment and Accreditation Council (NAAC) to assess the quality of different Higher Education Institutions (HEIs). Quality in higher education is a multi-dimensional concept, embracing all its functions and activities- academic progress, teaching-learning, research, staffing, student support and progression, infrastructure facilities, learning resources, equipments, community engagement and academic environment. (UNESCO, 1998). Promoting a gender sensitive academic environment in higher education institutions is one of the main indicators that ensure the institution's quality level in all of these areas. Assessment of the gender sensitive quality indicator gives us evidences of providing opportunities for women and girls in terms of access and facilities for their advancement in a particular HEI. Thus, by promoting gender equality, HEIs can become powerful agencies to bring social change in the context of women empowerment. This paper aims to give a conceptual clarity about the gender sensitive quality indicators and their assessment criteria in selected colleges of Assam.

Objectives of the study

The objectives of this paper are-

1. To study the status of gender equality in selected colleges of Assam
2. To develop an analytical concept for assessing institutional response to gender sensitive quality indicators

Methodology

This study is descriptive and analytical in nature. The findings of this study are based on secondary data collected from official websites of the selected colleges, journal articles, research papers, published books and internet sources. Data pertaining to this study have been collected from five selected colleges of Assam which has already been accredited by NAAC.

Review of literature :

The rigid gender biased norms can be removed from our society by promoting education as an agent of change. It is education that changes the destinies of women and gives a meaningful existence to their lives. The issues of down trodden women are needed to be addresses with different enlightening ideas (Kaul, V. 2000). The European Commission states that implementation of Gender Equality Plans (GEPs) is promoted as one of the mechanisms to tackle the issues of gender inequality in higher education (European Commission, 2021b). "GEPs cover a wide range of thematic areas, depending on contextual/institutional factors and assessment of need, such as recruitment, selection and career progression, work life balance, leadership and decision making, organizational culture, gender in research and education practice, and gender related harassment and assault" (Rosa, R. & Clavero, S. 2021). The representations of genderless

teachers, managers and learners are essential to formulate personnel policies, design of curriculum and quality assurance in this regard. It is observed that if the feminist actors involve in the mainstream organizational structure and institutional arena, they can influence the policy process in the implementation and evolution stages (Verge, T. 2021).

Discussion

The HEIs need to focus on gender policy while formulating this institutional policies and programmes. It aims to bring gender equality that ensures equality of opportunity and equal treatment for both men and women. The gender sensitive atmosphere in HEIs rejects any kind of discrimination based on sex. The awareness on promoting gender equality needs to be initiated by formulating Gender Sensitive Action Plan and implementation of such plans.

Gender Sensitive Quality Indicator Framework

In order to assess the responses to gender equality by HEIs, NAAC has provided a list containing 7 gender sensitive quality indicators namely- (http://naac.gov.in)

- Curricular Aspects
- Teaching Learning and Evaluation
- Research, Consultancy and Extensions
- Infrastructure and Learning Resources
- Student Support and Progression
- Organization and Management
- Healthy Practices

These are the indicators to assess the overall quality of the HEIs. The Gender Sensitive Quality Indicator explores the same areas to identify the practice of gender equality in academic environment.

Gender Analysis of selected Colleges in Assam

As already mentioned, data pertaining to this research study are collected from 5 colleges of Assam already accredited by NAAC. Following is the list of colleges selected by the researcher for this purpose-

Table 1: Names and Accredited Status of the Selected Colleges

Name of the College	Accredited Year	Accredited Status
Abhayapuri College	2016 (Submitted SSR 2023)	B (Cycle 2) (Result awaited for Cycle 3)
Bahona College	2022	A+ (Cycle 3)
B. N. College	2023	A+ (Cycle 4)
Sonapur College	2023	A+ (Cycle 3)
Mangaldai College	2018	C (Cycle 2)

Source : College Websites

The institutions of higher education should consider gender equality by focusing on many areas. For this purpose, they need to value both men and women equally. Values of gender equality should be upheld by practicing equity as one of the core missions of the institution. Women and men are needed to be encouraged to participate equally in everyday activities. Likewise, the structure of the institution should design a framework that promotes gender sensitive work environment for staff and learning environment for students. Besides a clearly defined gender responsive policy and its implementation is necessary for elimination of any gender bias or discriminatory practices. Another most crucial area is institutional governance and leadership where women are encouraged to represent in the decision-making process for smooth functioning of the institution.

Considering all these areas the researcher tries to explore the status of gender equality by highlighting the Gender Sensitive Quality Indicators in the selected colleges as stated below-

Curricular aspect indicator

The curriculum of educational institution provides a detail account of delivering quality education. The quality issues related to gender can be revealed from the courses and programmes on gender issues introduced in the curriculum. The selected colleges of Assam follow the prescribed syllabus of their parent/affiliated universities that contain papers related to gender issues, sex-gender debates, patriarchy, feminism, women empowerment, socio-political-economic status of women, women and health, women in development, women and nature/environment, sexual harassment, gender division of labour, issues of domestic violence, women's rights, women's political participation, right to education of girl child etc. Introduction of these courses in undergraduate and graduate level aims to offer and understanding of the concept of gender and feminism demanding the abolition of gender stereotyping practices from society. It also aims to promote women empowerment.

Teaching Learning Indicator

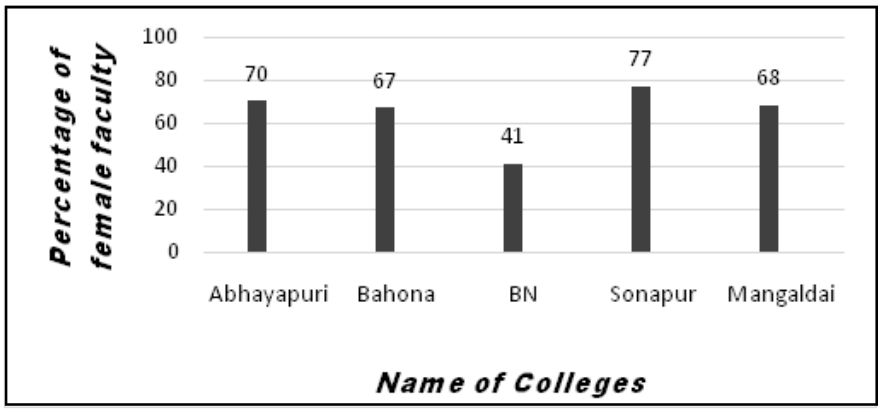
The Teaching Learning Indicator assesses the accessibility of women and girls to a fair learning environment. It demands analysis of gender segregated data on students at UG/PG level and faculties in various departments. Besides, it also analyses participation of female faculties in seminars, workshops, Faculty enrichment programmes, short term courses for their academic enhancement.

Table 2 : Gender Profile of Faculties in Selected Colleges (2021-2022)

Name of the College	Male	Female	Total
Abhayapuri College	31	10	41
Bahona College	27	24	51
B. N. College	35	22	57
Sonapur College	20	22	42
Mangaldai College	30	31	61

Source : SSR, AAR (2021-22)

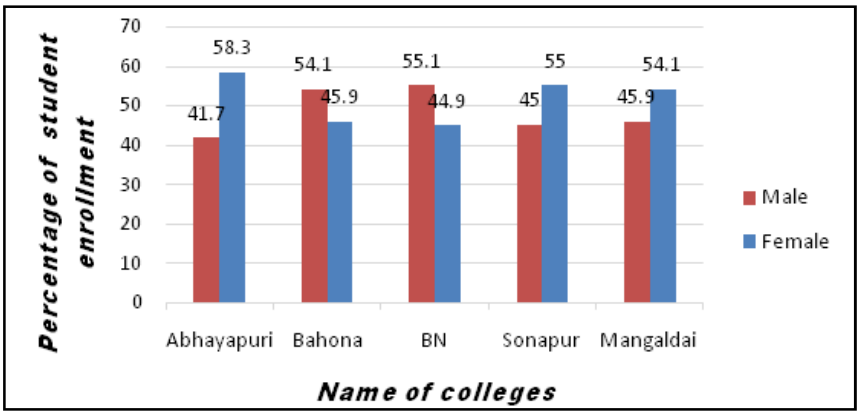
The teaching learning indicator shows the performance of the institution providing accessibility of women and girls in the higher education sector. Table 2 reveals that gender gap in teachers' recruitment is very low in Bahona College, Sonapur College and Mangaldai College. The gender gap shows high in case of Abhayapuri College and B.N. College.



Source: SSR, AAR, 2021-22

Figure 1:Percentage of female faculties participated FDP/STC in selected colleges (2021-22)

Figure 1 shows that out of the existing female faculties except B. N. College more than 50 percent female teachers are getting opportunities to enhance their academic career by doing faculty development programmes and short-term courses.

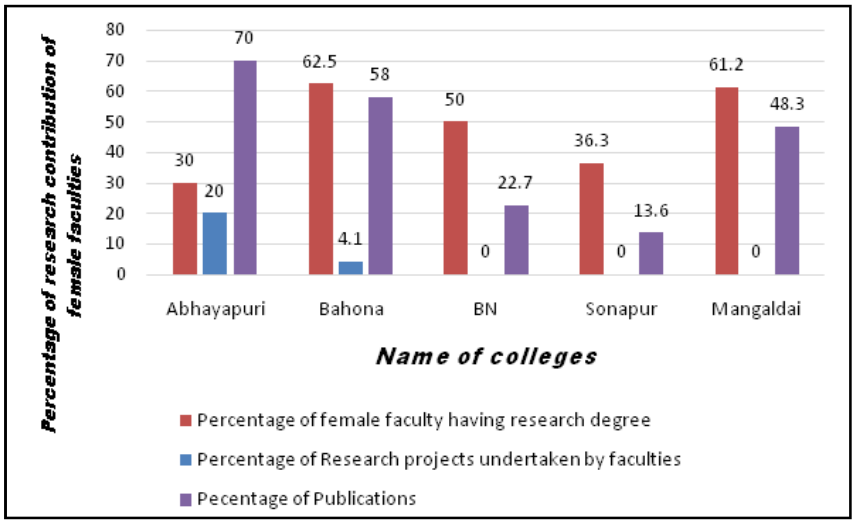


Source: SSR, AAR, 2021-22

Figure 2: Percentage of student enrolment in selected colleges (2021-2022)

Figure 2 shows that percentage of girl's enrollment is higher than boys in Abhayapuri College, Sonapur College and in Mangaldai College and percentage of girl'senrollment is low in comparison to boys in Bahona College and B. N. College.

Research Related Indicator



Source : SSR, AAR, 2021-22

Figure 3: Research Contribution of Female Faculties (2021-22)

Figure 3 shows the contribution of female faculties in the field of research. Out of existing female faculties 30 percent of Abhayapuri College, 62.5 percent of Bahona college, 50 percent of B.N. College, 36.3 percent of Sonapur College and 61.2 percent of Mangaldai College faculties have their research degrees. The institutions show very low percentage of female faculties (20 percent in Abhayapuri, 4.1 percent in Bahona) undertaking research project and shows negative results in other three selected colleges during 2021-2022 session. The category of publication of articles and papers in books shows 70 percent, 58 percent, 22.7 percent, 13.6 percent and 48.3 percent in Abhayapuri College, Bahona College, B.N. College, Sonapur College and Mangaldai College respectively.

Infrastructure and Learning Indicator:

Infrastructural Facilities	Abhayapuri College	Bahona College	B.N. College	Sonapur College	Mangaldai College
Girls Hostel	Yes	Yes	Yes	Yes	Yes
Girls Common Room	Yes	Yes	Yes	Yes	Yes
Separate Toilet	Yes	Yes	Yes	Yes	Yes
Sports Facilities	Yes	Yes	Yes	Yes	Yes
CCTV	Yes	Yes	Yes	Yes	Yes
Vending Machine	Yes	-	Yes	-	Yes

Source: SSR, AAR, 2021-22

Table 3**:** Infrastructural facilities for Women in Selected Colleges

Table 3 shows that all the selected colleges are providing required infrastructural facilities for women and girls. Good and comfortable infrastructural facilities are helpful for increasing enrolment and access for women and girls that serve their personal development and ensures safety and security for them.

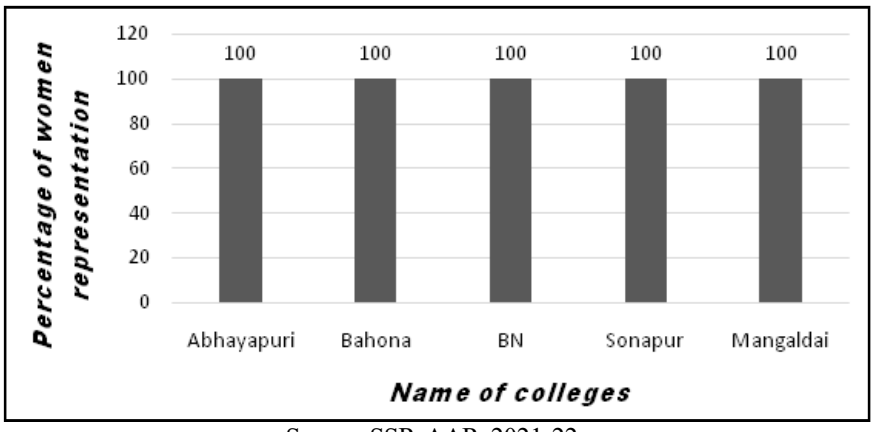
Student Support and Progression Indicator:

Table 4: Arrangement for providing support to girls/women in selected colleges

Name of the Colleges	Sources of Financial Support	Other Support
Abhayapuri College	Ishan Uday Scheme, Merit Scholarship, Special Financial Assistance, Banikanta Kakati Award	Availability of Women Counselor, Anti-Sexual Harassment Cell, Visit by the lady doctor, Health Camp etc.
Bahona College	Ishan Uday Scheme, Merit Scholarship, Special Financial Assistance, Banikanta Kakati Award	Availability of Women Counselor, Anti-Sexual Harassment Cell, Gender champion Committee, etc.
B. N. College	Ishan Uday Scheme, Merit Scholarship, Special Financial Assistance, Banikanta Kakati Award	Availability of Women Counselor, Anti-Sexual Harassment Cell, Gender champion Committee, etc.
Sonapur College	Ishan Uday Scheme, Merit Scholarship, Special Financial Assistance, Banikanta Kakati Award	Availability of Women Counselor, Anti-Sexual Harassment Cell, Gender champion Committee, etc.
Mangaldai College	Ishan Uday Scheme, Merit Scholarship, Special Financial Assistance, Banikanta Kakati Award	Availability of Women Counselor, Anti-Sexual Harassment Cell, Health camp etc.

Source : SSR, AAR, 2021-22

Organization and Management Indicator:



Source: SSR, AAR, 2021-22

Figure 4: Percentage of Women Representatives in Administrative/ Academic bodies/ Committees

Figure 4 reflects the status of women in leadership and governance criterion. The female faculties and girls are serving the institutions as members of Governing bodies, Co-coordinator of Women Cell, President/Secretary of Teacher's Unit, Officer in Charge of examinations, members of different institutional, governmental and nongovernmental committees and subcommittees including Board of members in their affiliated universities etc.

Healthy Practices Indicator

Table 5: Number of Gender Sensitization Programmes Conducted during 2021-22

Name of the Colleges	No. of Programmes
Abhayapuri College	4
Bahona College	6
B. N. College	4
Sonapur College	3
Mangaldai College	3

Source: SSR, AAR, 2021-22

Table 5 shows different numbers of gender sensitization programmes conducted by the selected colleges of Assam. These programmes mainly include celebration of International Women's Day, National Girl Child Day, financial literacy camps for women, self defense camp for girls, health check-up camps etc.

Besides the above-mentioned programmes all the selected colleges have arranged some discussions, lecture programmes entitled with women related topics like women's

legal rights, stress management, superstitions, women empowerment etc. Girl's wing of NCC and NSS are also actively involved in organizing leadership camps for their personality development. For providing special support and assistance to girl students Gender Monitoring Committee, Anti Sexual Harassment Committee, Anti Ragging Committee etc are formed representing both male and female faculties and students in all selected colleges. Annual Gender Sensitized Action Plan is formulated to encourage a gender equal academic environment. They aim to mainstream gender perspective policies to be implemented throughout the targeted year in a positive direction. International Women's Day and National Girl Child Day are celebrated with great enthusiasm under the aegis of Women Cells of respective colleges to aware all the students and staff to the gender issues.

Findings and Conclusion

In order to develop equity, men and women, boys and girls should get equal access in the teaching learning and management processes. The experience of quality and equality depends on the curriculum and the ways of teaching learning which should be considered while analyzing evidences of gender equality. NAAC has focused on maintaining quality in its accredited institutions in terms of gender. NAAC believes that promoting gender equality in HEIs is a holistic and participatory process, so making the disadvantaged groups of the society at the central point of focus in all its policies is of utmost importance. It 'expects that all the HEIs may try to use these indicators not only for assessment purpose but also as an integral part of overall functioning'. (http://naac.gov.in)

After analyzing some of the gender equality indicators, this study shows positive steps undertaken by the selected colleges to promote gender equality. The curriculum of the institution encompasses a broad range of gender specific areas, provides multiple benefits to educate the students. Women's contributions to the field of research and innovation are very crucial for the society to progress. The contribution of women faculties in research and publication needs more attention in the selected colleges. Faculties need to undertake research activities on some contemporary issues and challenges confronted by today's women i.e. in sectors of poverty, health, climate change, violence etc. The will of the college authorities and their commitment to mainstream the girls and women through gender responsive action plan and policies are found satisfactory. Girl student's progression through financial support from different government and nongovernment organizations are beneficial for their advancement. Women are also playing active role in organization and management of the institution. Different healthy practices adopted by the institutions with active involvement of the Women Cells will definitely bring a drastic change in the mindset of people in the context of overcoming the barriers of discrimination from the society. In other words, the HEIs are becoming the actors of social change creating new openings in the journey of achieving gender equality.

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2

Role of Information and Communication Technology in Higher Education

Bismita Medhi

Abstract

ICT is now an essential component of the teaching-learning process. ICT stands for information and communication technology, and it refers to the technologies that are available to convey information via telecommunication. Information and communication technology pervade our daily lives, work, leisure, education, and a variety of other domains. The use of ICT in education engages students as active participants, allows them to learn, and improves their problem-solving abilities. It helps to make classes more dynamic and engaging, as well as to rekindle teacher enthusiasm as they master new skills and methods. Information and communication technology improves motivation, achievement, and learning opportunities for students. It can also assist students in learning crucial occupational skills. In the learning environment, information and communication technology removes the limitations of time and place. ICT is an important change agent in many educational processes, such as administering online exams, paying online fees, and accessing online books and journals. ICT in Higher Education improves the teaching-learning process and offers online learning to thousands of students who would otherwise be unable to benefit from higher education due to a variety of factors such as poor economic status, geographical backwardness, physical handicap, service, and so on. The purpose of this research is to identify the impact of information and communication technology in improving the effectiveness of the teaching-learning process, particularly in higher education.

Keywords- *ICT, Information and Communication Technology, Teaching-Learning Process, Higher Education*

Introduction

The fundamental building block of a nation is education. When a sizable portion of the native population has access to high-quality training and education, the nation is said to have developed. Information and communication technology (ICT) can contribute to higher education's quality improvement by guaranteeing everyone has access to education and promoting equity. Education is one of the many sectors that have been affected by the developments made in the realm of information and communication technology (ICT). ICT is useful in designing and running a productive educational system. Additionally, it can support the provision of high-quality teaching and learning, as well as educational management and administration and the professional growth of teachers. ICT in education will make it feasible to access global remote learning resources and learn whenever and from anywhere we want. ICT has improved online education. Students can manage their study time from home. Students can access their course material online and interact with their professors and peers using computer-based communication tools. Teachers can benefit from training in the most recent technological advancements since students always benefit from newer technologies. Technology aids instructors in their research efforts, and with the use of ICT, teachers may readily impart important knowledge to students (Agrawal, 2003).

Similar to this, ICT aids students in completing their projects and assignments and aids in preparation for competitive exams. Over time, the mode of teaching and learning has changed from offline to online. Higher education has seen many changes as a result of the quick development of technology, such as the introduction of learning management systems that make it easier for faculty and students to share and utilize information. By encouraging students to explore and discover instead of merely learning and remembering, ICT-focused education primarily encourages lifelong learning for students and enhances their knowledge skills. Additionally, it makes it possible for learner-centered pedagogy to be used in place of conventional teacher-centered pedagogy. This not only enables students to work more effectively than in the past, but it also enables professors to change how they teach or deliver knowledge. ICT must therefore be incorporated into the process of teaching and learning in order to increase the efficacy of education (Arora & Malik).

What is Higher Education?

There is a category of higher education among the many categories of education, such as elementary education, secondary education, etc. Post-secondary education starts in institutes of higher education. Higher education is completed with a degree, diploma, or certificate. Colleges, Universities, and numerous professional institutions are the establishments that offer higher education. It covers a wide range of disciplines, such as law, medicine, business, music, arts, and science. Institutions for teacher training and technological institutes are also part of higher education. In order to be eligible for higher education, a student must have completed their secondary education and be older than 18 at the time of enrollment. The higher education system in India offers candidates the opportunity to enroll in programs leading to a diploma, graduation, post-graduation, doctorate, post-doctoral degree, and fellowship in order to advance

their knowledge for practical application (Dixit, Raheja, & IT, 2020).

ICT in Higher Education

Information and communication technology is referred to as ICT. It only denotes the application of technology to communication and information sharing. The range of ICT tools for teaching and learning includes hardware like printers, computers, laptops, tablets, projectors, overhead projectors, video recorders, audio recorders, etc. as well as software like Google Meet and Google Spreadsheets.

Objective of the study

The objectives of the study are as follows-

- To understand the role of ICT in higher Education.
- To identify the numerous ICT tools used in education.

Methodology

The study's methodology is qualitative. As a result, secondary sources including printed books, journals, articles, websites, etc., were used to gather the study's data.

Various ICT tools used in the field of Education

Hardware technology and audio-visual aids in Education: The phrase "hardware technology" refers to a variety of contemporary and antiquated tools that aid teachers in establishing, correlating, and coordinating concepts, interpretations, and appreciations in order to make learning more concrete, efficient, engaging, motivating, meaningful, and vivid. The use of hardware technology by the instructor enables them to manage larger groups of students. We can use radio or television as examples. Numerous students from various locations can hear and watch the television debates at the same time.

Audio aids are the tools that are employed to convey aural messages. They only transmit the bare minimum of messages necessary for communication, like radio. Visual resources are those that are utilized to convey messages visually. They are referred to be audio-visual aids when they are utilized in conjunction with audio resources to effectively communicate the message. In audio-visual aids, there are both hardware and software components (Rafeeq, Ali, & Economics, 2021).

The following are some examples of various audio-visual teaching tools:

Audio-Video recording instruments

Instruments for recording audio and video may both record and reproduce sound, which makes them suitable for enhancing classroom instruction. A lesson can be introduced, reviewed, or improved by recording and replaying lessons on a variety of topics. Some of the types of audio-video recording instruments are-

(i) Record Disc player: A record disc player is a type of talking device that plays back audio from a disc. The presentation of brief dramatized history lectures, the appreciation of poetry and literature, the development of musical expertise, and other educational goals are all greatly enhanced by the use of record disc players.

(ii) Tape recorder/CD player: A tape recorder is a small, lightweight electronic

device that can record, duplicate, erase, and rerecord audio on magnetic tape or CD. Using a tape or CD recorder can help improve classroom learning because pre-recorded tapes of lecturers' lessons on any subject can be played in class. Such instructions are amazing and captivating.

Projecting devices:

(i) Slide projector: For certain themes, slides are produced, and the information they include can take the shape of text, images, graphs, etc.

(ii) Film strip: Before a big gathering of students, a teacher can utilize a video strip to explain a concept or to elaborate on a little object that isn't normally visible. A film projector uses film strips to project images on a large screen. Here, little items appear enormous on the screen, enabling careful examination of their components. These film strips, for instance, can be used to teach pupils about bacteria and viruses, particularly if a strip includes images captured using a microscope. To further explain key topics, sound recordings are occasionally used in conjunction with films.

(iii) Overhead projector: An overhead projector is a tool that can display anything written or drawn on clear plates onto a screen or the white wall in front of pupils during a lesson. This includes charts, diagrams, maps, tables, and more.

- **Programmed Instruction:** One of the significant breakthroughs in the teaching-learning process is programmed instruction or programmed learning. Programmed instruction is a method for giving each learner tailored education or learning experiences that is meticulously specified, methodically planned, experimentally proven, artfully structured, and efficiently controlled. Small portions of the topic matter are presented in a logical order. The educational process is self-correcting. It is the implementation of behavioral science and technological ideas in the realm of education.
- **Computer Assisted Instruction:**The terms computer-assisted learning (CAL) and computer-assisted instruction (CAI) refer to the same thing. Computer-Aided Instruction, or CAI, is the term for written materials intended to be delivered to students using computers, whereas Computer-Aided Learning, or CAL, is the term for the process by which students actually use the materials they have been given.
- **CD-ROM:**A semi-conductor memory device called a ROM is used to store persistent information. Because it has non-volatile memory, the information is retained even if the power to the device is turned off.
- **Dial Access:**Dial access is a 24-hour delivery system that allows callers to access a sizable collection of audio cassettes. It is a component of audio technology that makes use of a learning network.
- **Teleconferencing:**A two-way electronic connection between two or more groups or three or more people who are in different places is known as teleconferencing. Teleconferencing is utilized in education for a variety of objectives, such as providing in-service training without having to leave the workplace, sending qualified professors to distant colleges and universities, and more.

- **Videoconferencing:** Voice, visuals, and human images are all transmitted through a video teleconferencing system. The ability to display the speaker's picture, three-dimensional objects, motion, and pre-produced video clips are advantages.
- **Virtual University:** One can complete their education with the aid of a virtual university without having to leave their home. A virtual university provides a wide range of programs and courses. Any course can be chosen by a candidate.

Role of Information and Communication Technology (ICT) in Higher Education

- **Improved Teaching and Learning Experience:** The enhancement of the teaching and learning process is one of the main advantages of ICT training for teachers. With the use of technology, educators may design more dynamic and captivating lessons that accommodate various learning preferences. This may help students retain information better and do better academically. ICT training can also assist teachers in keeping abreast of the most recent teaching techniques and resources, enabling them to give students a more effective and efficient learning environment (Adam, Anggoro, & Kom, 2022).
- **Increased Student Engagement and Participation:** The increased engagement and participation of students in the classroom is one of the most important advantages of using ICT in higher education. With the use of technology, teachers may design more dynamic and engaging lessons that grab students' attention and hold it throughout the lesson. This may help students retain information better and do better academically. Technology can also give students the chance to work together and connect with one another, which can improve their social and communication abilities (Habib & Ghulam, 2017).
- **Access to a Wide Range of Educational Resources:** Teachers may quickly and easily access online databases, educational websites, and digital libraries that offer a variety of knowledge and resources for their lectures thanks to technology. This can assist teachers in developing more engaging lessons that accommodate the various learning preferences and aptitudes of their pupils. Technology can also give teachers the chance to work together with other educators and share materials and ideas, which can improve their teaching methods and raise the standard of education as a whole.
- **Improved Communication and Collaboration:** ICT can also enhance teacher-student interaction and collaboration. Teachers can readily communicate with their student's using technology by using email, messaging applications, and online discussion forums. By allowing students to ask questions and get answers in real time, this can contribute to the creation of a more engaged and interesting learning environment. Additionally, technology can help students collaborate, enabling them to complete projects and assignments together even when they are not physically present. Important teamwork and communication skills can be developed in this way (Reddy, 2020).
- **Utilize Technology to Facilitate Student Learning:** Teachers can design engaging learning experiences for students by employing technology such as interactive

whiteboards, collaboration software, and other digital tools. By offering visual and aural feedback, these technologies can also aid in making more complicated topics simpler to understand. In the classroom and remotely, technology can be used to improve student communication, comprehension, and teamwork (Chakraborty, Dhara, & Santra, 2018).

- **Learn the application of ICT for Classroom Integration**: Teachers should get familiar with the best practices for teaching using technology in order to ensure the successful integration of ICT into the classroom. This entails being aware of the various learning preferences of students and creating lesson plans that effectively use ICT resources. ICT training for teachers can assist instructors in gaining the skills and confidence they need to use technology in the classroom successfully (Kozlova & Pikhart, 2021).
- **E-learning or Online Learning:** ICT in education enables both students and teachers to learn in innovative ways. In higher education, e-learning, or online learning, is growing in popularity. This gives institutions more opportunities to guarantee that students have access to curriculum materials in the classroom and also enables them to guarantee students' participation outside of the classroom, such as at home (Pertiwi & Purnawarman, 2023).
- **ICT promotes higher-order thinking skills**: The student's capacity to think critically can be developed by using ICT to solve problems effectively. Additionally, it fosters the kids' potential for creativity and logic.
- **ICT enhances subject learning**: The importance that ICT in education offers to the foundational subjects of literacy and numeracy is well established today.
- **Use of ICT motivates learning**: The use of ICT in higher education encourages students to participate actively in their studies. Technology captivates students, which inspires and drives them to learn in the classroom.
- **ICT in education improves engagement and knowledge retention:** Students are more engaged in their work when ICT is incorporated into lessons. This is because using technology to teach the same concepts in various ways can make learning more entertaining and fun. Students will be able to retain knowledge more effectively and efficiently as a result of this enhanced engagement (Henderson & Management, 2020).

Conclusion

Any nation must prioritize higher education because it fosters civic awareness and prepares the majority of the workforce to serve the country. It is crucial to incorporate novel strategies and technical breakthroughs in the sphere of higher education to guarantee both the quality and quantity. The teaching-learning process and research are both positively impacted by the use and integration of ICT in higher education. It improves flexibility, offers a setting that is focused on the needs of the students, and inspires the teaching-learning process. Therefore, we can conclude that by systematically integrating technology into teaching, excellence in higher education can be attained.

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3

Online Teaching and Learning-A Review

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Lakhya Jyoti Gogoi

Abstract

The COVID-19 pandemic has caused a surge in the popularity of online teaching and learning, resulting in the shift from traditional classroom education to computer-based systems. Online education offers several advantages, including flexibility, convenience, cost-effectiveness, and access to a vast array of learning resources. However, delivering effective online education can be challenging, as it necessitates engagement and interaction with students. Interactive sessions such as webinars, virtual classroom sessions, and group activities and discussions, gamification that utilizes game elements to enhance student motivation and engagement, and personalized learning that caters to individual students' interests and needs are among the strategies that can improve student engagement in online education.In addition to these strategies, incorporating best practices such as using multimedia and interactive content, communicating effectively, setting expectations and guidelines, providing timely feedback, and offering adequate support for students can enhance the effectiveness of online teaching and learning. Nevertheless, several challenges exist, including technical issues, lack of face-to-face interaction, maintaining academic integrity, and ensuring accessibility. Addressing these challenges is critical to providing high-quality online education that meets the needs of diverse learners.

Keywords: *COVID-19 pandemic, online teaching, online learning, traditional classroom, computer-based system, face-to-face interaction*.

Introduction

The process of imparting information, including knowledge, values, methods, skills, and beliefs, from one person to another is known as education and the type of education system that involves the use various tools and techniques to impart education in an online platform with the goal of online teaching and learning is to individually reach and engage the modern learner at anytime and anywhere is the online education system (Sadiku *et al.*, 2018).

The history of online learning started long time ago in 1981, when a fully online survey revealed that this new method of education has significant potential to influence the design and delivery of education at all levels of the education system (Joksimović *et al*., 2015). By the middle of the 1990s, distance learning, which started as letter courses in the nineteenth century and developed into educational television in the twentieth, had become the platform for web based online learning system with the launching of World Wide Web (www) that served as a significant turning point in the development of online teaching and learning and acted as a potent stimulant for the advancement of remote education. (Perry *et al*., 2011) and the trend of shifting from traditional classroom interaction towards online education system was increasing in a significant way with each passing year. In recent years, the practice of online teaching and learning have become increasingly popular, but the advent of COVID-19 pandemic has accelerated this trend to a greater extend (Martin *et al.*, 2020).

As more schools, colleges, and universities shifted to remote learning, the importance of online education has become more evident than ever before. However, delivering effective online education is not as simple as uploading course materials to a Learning Management System (LMS) (Murphy *et al*., 2013). To ensure that students receive a quality education, educators must employ certain effective strategies and best practices (Hargis, 2020). Besides, the instructors must adhere to the following important points for successful online education and it includes: encouraging of student involvement and cooperation, encouraging active learning, introducing feedback system, emphasizing time on task system, communicating for high expectations, respecting diversified talents and learning methods, inspiring students, avoiding overloading of information, establishing a framework based on real-life situations, promoting social contact etc (Sun *et al*., 2016).

Thus, the present study will explore about the benefits of online education system being flexible and convenient, cost effective, availability of wide range of resources as compared to traditional counterpart. It includes various strategies and the best practices for enhancing student engagement and learning outcomes for delivering effective online learning system. Besides, the various challenges faced in imparting online teaching and learning system with the solutions to overcome the same are also included.

Benefits of Online Teaching and Learning

Online teaching and learning have several benefits, some of which includes the following as illustrated in figure-1 (Paudel, 2021, Teymori *et al*., 2020)

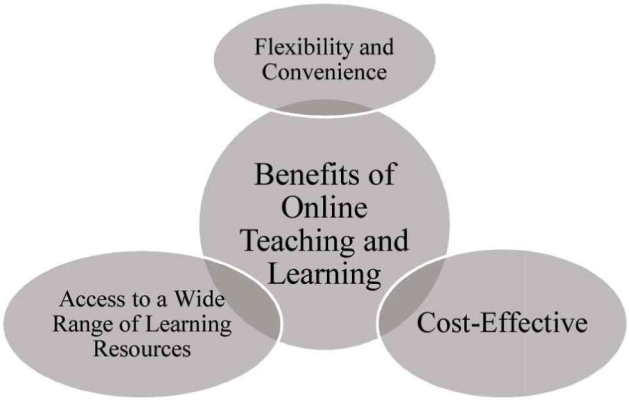

Figure-1: Benefits of online teaching and learning

I. Flexibility and Convenience

One of the significant advantages of online education is flexibility and convenience. Students can learn at their own pace and in their own time, without the need to commute to a physical location. Online learning allows students to access learning materials and resources at any time, from anywhere in the world (Watts, 2017, Shin *et al*., 2009).

II. Cost-Effective

Online education is also cost-effective compared to traditional education. It eliminates the need for expensive textbooks and commuting costs. Additionally, the cost of creating and delivering online courses is relatively lower than traditional classroom teaching (Jung *et al*., 2000, Bartley *et al*., 2004, Jung *et al*., 2005).

III. Access to a Wide Range of Learning Resources

Online learning provides students with access to a wide range of learning resources that may not be available in a traditional classroom setting. With online education, students can access a variety of multimedia resources, including videos, podcasts, and online journals (Recker *et al*., 2004).

Strategies for Enhancing Student Engagement

Effective online teaching requires engagement and interaction with students (Peters *et al.*, 2019). Here are some strategies that can help enhance student engagement in online education:

Interactive Online Teaching

Interactive online teaching involves the use of various tools to promote engagement and collaboration among students. Some of the most popular interactive teaching methods include live webinars, virtual classroom sessions, and group activities

and discussions (Mahmood 2021).

Live webinars allow educators to present course materials in real-time and interact with students through chat rooms or audio/video conferences. Educators can use various tools, such as whiteboards, breakout rooms, and polling, to promote collaboration and discussion among students (Zoumenou *et al*., 2015).

Group activities and discussions can also help promote engagement and collaboration among students. Educators can assign group projects and discussions, encouraging students to work together to achieve common goals.

Gamification of Learning

Gamification involves using game elements to enhance student motivation and engagement in learning. Online educators can use various tools to gamify learning, such as digital games, online quizzes, and assessments. Digital games can make learning more fun and engaging. Educators can use various game elements, such as point systems, leader boards, and badges, to motivate students to learn (Antonaci *et al*., 2019, Jang *et al*., 2015).

Online quizzes and assessments can provide instant feedback to students and motivate them to improve their performance. Educators can use various tools, such as Kahoot and Quizlet, to create interactive quizzes and assessments (Robles *et al.*, 2002).

Using the platform's built-in statistical capabilities, automated evaluation methods employed in some online assessment platforms, like Moodle quizzes, allow teachers to spot trends between a student's answer to a question and overall course performance (Gamage *et al*., 2014).

Personalized Learning

Personalized learning involves tailoring education to individual students' needs and interests. Adaptive learning platforms can help educators achieve this by adjusting the course content and pace to each student's learning style and progress (Grant *et al*., 2014).

Tailored learning content can also help personalize learning. Educators can use various tools, such as eBooks, podcasts, and videos, to provide students with learning materials that align with their interests and preferences (Bonk *et al*., 2009).

Best Practices for Effective Online Teaching

To make online teaching and learning more effective, educators should follow these best practices (Lewis *et al*., 2006):

I. Use of Multimedia and Interactive Content

Online education is highly dependent on multimedia and interactive content. Educators should use multimedia resources such as videos, images, and infographics to engage students and reinforce learning outcomes. Interactive content such as quizzes, assessments, and simulations can also enhance the learning experience (Khamparia *et al*., 2016, Herman *et al*., 2016).

II. Clear and Concise Communication

Clear and concise communication is essential in online teaching and learning. Educators should use simple and easy-to-understand language and provide clear instructions to students. They should also encourage students to ask questions and provide timely responses to student queries (Berge, 2013).

III. Establishing Expectations and Guidelines

Establishing expectations and guidelines is essential in online teaching and learning. Educators should set clear expectations for student participation, attendance, and deadlines. They should also provide students with a course syllabus and a clear understanding of the course objectives and learning outcomes (Yuan *et al*., 2014, Ehrlich, 2002).

IV. Providing Timely Feedback and Support

Providing timely feedback and support is critical in online teaching and learning. Educators should provide students with timely feedback on assignments and assessments. They should also be available to provide support and guidance to students when needed (Bonnel, 2008).

Challenges and Solutions in Online Teaching and Learning

Online teaching and learning come with several challenges that educators must be aware of. Here are some of the challenges and their solutions (Herbert, 2007, Johnson *et al*., 2016):

I. Technical Issues

Technical issues such as poor internet connectivity, software glitches, and hardware problems can disrupt the learning process. Educators should be prepared to troubleshoot technical issues and provide alternative learning options for students.

II. Lack of Face-to-Face Interaction

Online teaching and learning can be isolating for students, and the lack of face-to-face interaction can affect their motivation and engagement. Educators should promote social interaction among students through group activities, discussion forums, and collaborative projects.

III. Maintaining Academic Integrity

Maintaining academic integrity is a significant concern in online teaching and learning. Educators should use plagiarism detection tools and set clear guidelines for academic honesty. They should also provide students with a clear understanding of the consequences of academic dishonesty.

IV. Ensuring Accessibility

Ensuring accessibility is essential in online teaching and learning. Educators should design online courses that are accessible to students with disabilities. They should also provide alternative formats for course materials and ensure that online platforms are accessible to students with assistive technologies.

Conclusion

Online teaching and learning have become an integral part of the academic landscape. The benefits of online education are numerous, including flexibility, cost-effectiveness, and access to a wide range of learning resources. However, to maximize the potential of online education, educators must employ the right strategies and best practices. Interactive online teaching, gamification of learning, and personalized learning is some of the strategies that educators can use to enhance student engagement and learning outcomes. Additionally, educators should follow best practices such as using multimedia and interactive content, clear and concise communication, establishing expectations and guidelines, and providing timely feedback and support. By addressing the challenges and implementing these strategies and best practices, educators can make online teaching and learning more effective and enjoyable for students.

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4

A Qualitative Analysis of Student Feedback Mechanisms and Their Impact on Quality Assurance in Higher Education

Anupam Thakuria

Abstract

Student feedback is considered a crucial element in the quality assurance process in higher educational establishments. Through a qualitative analysis, the goal of this study was to find out how student feedback mechanisms affect quality assurance in higher education. The study utilized a case study approach and collected data from two colleges in the Darrang district of Assam. Data were collected from students, faculty members, and other key stakeholders through semi-structured interviews and analyzed using thematic analysis. The study identified several key themes, including the effectiveness of different feedback mechanisms, the importance of timely feedback, the role of feedback in promoting student engagement and motivation, and the challenges associated with implementing effective feedback mechanisms. The results of the study suggest that student feedback mechanisms can have a positive impact on higher education quality control. However, the effectiveness of feedback mechanisms is influenced by several factors, including the type of mechanism used, the timing of feedback, and the level of engagement from both students and instructors. The study also identified several challenges associated with implementing effective feedback mechanisms, such as the need for institutional support and resources and the resistance to change from stakeholders. In general, this study's findings provide significant insights into the impact of student feedback mechanisms on quality assurance in higher education. The findings of the study can be used to inform institutional practices and policies to enhance the efficiency of feedback mechanisms and the quality of higher education.

Keywords: *Student feedback, Quality assurance, Higher education, Evaluation, Assessment*

Introduction

Higher education is a critical component of any country's development and ensuring its quality is of utmost importance. The feedback mechanism is an essential aspect of quality assurance in higher education institutions. It allows students to express their opinions on the quality of the education they are receiving and helps institutions identify areas for improvement.

Assam's Darrang district is home to a number of colleges, and the quality of the education they provide is crucial to the district's growth. As a result, the purpose of this study is to investigate how well two colleges in the Darrang district of Assam use student feedback mechanisms to guarantee quality.

Challenges

One of the primary challenges in ensuring quality education in higher education institutions is the lack of an effective feedback mechanism. Inadequate feedback mechanisms can hinder the growth and development of institutions and ultimately affect the quality of education provided.

Motivation

The motivation behind this study is to understand the impact of student feedback mechanisms on quality assurance in higher education institutions. The study seeks to identify the strengths and weaknesses of existing feedback mechanisms and to provide recommendations to improve the effectiveness of these mechanisms.

Objectives

The primary objective of this study is to analyze the qualitative data collected from two colleges in the Darrang district of Assam to identify the impact of student feedback mechanisms on quality assurance in higher education. The study aims to achieve the following specific objectives:

- To identify the types of feedback mechanisms in place in the two colleges.
- To understand the effectiveness of existing feedback mechanisms in improving the quality of education provided by the colleges.
- To identify the challenges faced by institutions in implementing effective feedback mechanisms.
- To provide recommendations for improving the effectiveness of feedback mechanisms in ensuring quality assurance in higher education institutions.

Contributions

The purpose of the study is to better comprehend how student feedback mechanisms affect quality assurance in higher education institutions. It is expected to provide insights into the strengths and weaknesses of existing feedback mechanisms and recommendations for improving the effectiveness of these mechanisms. The study's findings will be useful to higher education institutions in the Darrang district of Assam and other institutions facing similar challenges.

Literature Review

Kooli, 2019 explores the function and impact of public certifying rehearses on the administration and the executives of Omani confidential advanced education establishments. It primarily focused on analyzing 25 Omani higher education institutions' quality audit reports. According to the data analysis, the bulk of the institutions operate without a defined strategic direction and lack effective governance and management mechanisms. However, there has been some development in terms of student grievance systems, health and safety management, institutional affiliations for programs and quality assurance.

Riad Shams *et al*., 2019 provide and clarify a framework for the implementation of QA drivers for meaningful knowledge transfer amongst varied stakeholders. This applied system characterizes numerous situations and viewpoints for the utilization of QA drivers in the worldwide schooling industry. The inductive method used in the paper is what gives the paper its academic singularity. If QA practitioners follow these characteristics as guiding phenomena, they will be able to effectively ensure quality in their multi-stakeholder engagements in higher education and beyond.

Iglesias-Pradas *et al*., 2021 investigate the shift to emergency remote instruction at Universidad Politécnica de Madrid's School of Telecommunication Engineering. It shows how kids did academically during the COVID-19 epidemic in comparison to other years. The findings support the notion that organizational elements may assist in the successful implementation by improving students' academic performance in emergency remote instruction. The study investigates further explanations for the analysis's findings.

Mishra *et al*., 2020 investigate Mizoram Online teaching and learning methods utilized by the university for the teaching and learning process and subsequent semester assessments. In the midst of the COVID-19 pandemic, its goal is to address the essential aspects of online education teaching and learning, as well as how online education can be successfully adapted using existing resources. The paper investigates teachers' and students' perspectives on online teaching-learning modes using a combination of quantitative and qualitative methods, as well as the process of putting online teaching and learning modes into use. This study aims to provide a complete picture of ongoing online teaching and learning activities during the lockdown, as well as to establish a connection between the education system's online teaching-learning process and change management.

Bruggeman *et al*., 2021 carried out a qualitative study to investigate expert teacher qualities for blended learning adoption. Twelve master interviews were led, and the outcomes uncovered two gatherings of mixed learning educator credits: seven adaptive characteristics, including the ability to recognize a pedagogical need for change and the ability to creatively connect technologies to learning processes, and four maladaptive characteristics, such as confusion regarding blended learning or anxiety regarding technology's ramifications. This study adopts a thorough strategy to distinguishing related educator qualities that fundamentally affect the reception of mixed learning in advanced education.

Wang *et al*., 2019 conducted the research's implications are examined for academics and policymakers in higher education, particularly in developing nations. On average, students in the MOOC-based flipped classroom performed better than those in the traditional classroom, however, neither self-efficacy nor self-regulated learning improved after the course. As per the quantitative and subjective measurements, most understudies had a positive involvement in the flipped homeroom with regards to understudy connection, accessible learning materials, and dynamic learning results. The consequences of MOOC integration are examined.

Sobaih *et al*., 2020 investigate the extent to which students and instructors engage in formal academic communication via social media platforms. The two educators and understudies took part in web-based poll reviews and top to bottom meetings. The findings indicate that students' personal use of social media has contributed to its successful use in maintaining formal education. In any case, huge aberrations in web-based entertainment use for understudy backing and fostering a web-based local area were found between scholastic individuals and understudies. The findings confirm that a new era of social learning, social presence, and an alternative platform for online learning can be heralded by appropriate use of social media. The research's implications are examined for academics and policymakers in higher education, particularly in developing nations.

Finlay *et al*., 2022 evaluated during the COVID-19 pandemic, the perceptions and experiences of virtual and blended learning in an undergraduate sport and exercise sciences cohort. The findings demonstrated that, across all survey sub-sections, blended learning consistently resulted in higher levels of satisfaction, resulting in a significantly higher overall satisfaction score with the course. For the virtual learning review, Year 1 and Year 2 understudies had essentially higher insight scores for showing on my course, appraisal and input, scholarly help, association and the executives, learning assets, and learning local area, yet not for learning valuable open doors, understudy voice, or Coronavirus explicit. The implementation of face-to-face and/or online components for more practical, science-based courses may benefit from these findings.

Martins *et al*., 2019 explore the students' use of EMIS and the net benefits that result from it. It provides a successful EMIS model, which asserts that in order to provide students with net advantages, instructive establishments should guarantee that their schooling the executives data frameworks are of great, and that students are satisfied with the system and actively use it. Students from higher education institutions participated in an empirical investigation. According to the findings of the study, net benefits are predicted by EMIS use and student happiness, whereas the quality of the accessible information and the intrinsic service of the EMIS are also significant predictors of both student satisfaction and continued use of the EMIS.

Herodotou *et al*., 2019 researched whether providing PLA data to instructors predicts student performance and gives them the ability to identify and assist those who are at risk in a higher education institution that offers distance learning. That was found in a university-wide, multi-methods study with 1325 students, nine courses, and

59 professors when students are engaged in PLA, teachers may favourably improve their performance. Follow-up semi-structured interviews revealed instructors' real use of predictive data, as well as its influence on teaching practises and intervention techniques to help at-risk kids.

Proposed Methodology

This study utilized a case study approach and collected data from two Colleges of the Darrang district. Data were collected through semi-structured interviews with students, faculty, and administrators, who are key stakeholders. The study used thematic analysis to look at the data.

Research Design

This study has utilized a subjective examination plan to acquire a top to bottom comprehension of understudy criticism components and their effect on quality confirmation in advanced education foundations. Because it enables the investigation of the topic's complexity and the interpretation of the collected data, the qualitative method is appropriate for this study.

Data Collection Methods

This study has collected data through semi-structured interviews, which has given the participants a chance to share their thoughts on how well feedback mechanisms work to improve education quality at their respective colleges. The interviews also provided the opportunity for the participants to elaborate on their responses and share their experiences and perspectives. In addition, conducting interviews with students, faculty, and administrators have provide acomprehensive understanding of the feedback mechanisms' implementation, effectiveness, and challenges.

Document analysis is also an effective data collection method as it provides a reliable and valid source of information. This method enabled the researcher to obtain information on the feedback mechanisms and quality assurance policies and practices in the two colleges. It provides insights into how the colleges are currently addressing feedback from students and how they use it to improve the quality of education

Data Analysis Techniques

For this study, thematic analysis is a useful data analysis method because it enables the identification and interpretation of data patterns and themes. The use of a deductive and inductive coding approach ensures that the analysis is both rigorous and comprehensive. The analysis process is involved the identification of key themes and sub-themes that emerge from the data, which are then used to interpret the findings. The study uses a narrative approach to present the findings, which involves the presentation of the themes and sub-themes in a coherent and logical manner. This approach allows the researcher to present the findings in a comprehensive and meaningful way. The study is also used member checking as a validity check to ensure that the findings accurately represent the participants' views and experiences.

Generally, the blend of numerous information assortment strategies and the

utilization of topical examination will give a thorough comprehension of the effect of understudy criticism systems on quality confirmation in advanced education foundations in the Darrang region of Assam. The findings of this study will contribute to the existing knowledge and provide insights into how feedback mechanisms can be improved to ensure the delivery of quality education.

Results

The study identified several key themes, including the effectiveness of different feedback mechanisms, the importance of timely feedback, the role of feedback in promoting student engagement and motivation, and the challenges associated with implementing effective feedback mechanisms.

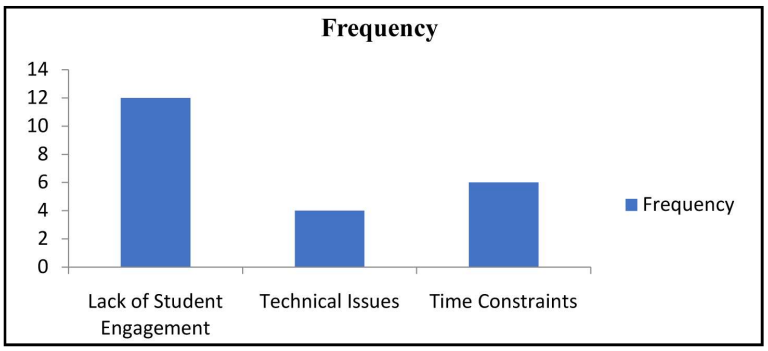
The study found that feedback mechanisms can have a positive impact on higher education quality control. However, the effectiveness of feedback mechanisms is influenced by several factors, including the type of mechanism used, the timing of feedback, and the level of engagement from both students and teachers.

The study also identified several challenges associated with implementing effective feedback mechanisms. These challenges include resistance to change from stakeholders, lack of institutional support and resources, and the difficulty of collecting and analyzing feedback data.

The study's findings suggest that institutions need to allocate sufficient resources to implement effective feedback mechanisms. Additionally, institutions need to address the challenges associated with implementing effective feedback mechanisms, such as resistance to change and the difficulty of collecting and analyzing feedback data.

Table 1: Challenges in Implementing Effective Feedback Mechanisms

Challenge	Frequency
Lack of Student Engagement	12
Technical Issues	4
Time Constraints	6



Graph 1: Challenges in Implementing Effective Feedback Mechanisms

Discussion

Based on the data collected from two colleges in the Darrang District of Assam, the study found that student feedback mechanisms play a critical role in quality assurance in higher education institutions. The use of semi-structured interviews and document analysis provided insights into how these mechanisms are implemented, their effectiveness, and challenges associated with them.

The thematic analysis revealed several key themes related to the impact of feedback mechanisms on quality assurance, including the importance of communication, the need for timely and actionable feedback, and the role of faculty and administrators in the process. These themes were further elaborated through sub-themes, providing a comprehensive understanding of the issues.

One of the key findings of the study was that student feedback mechanisms are crucial for quality assurance in higher education institutions, but there are significant challenges associated with their implementation. For example, some students may not feel comfortable providing feedback, while others may not see the value in doing so. Additionally, there may be challenges associated with analyzing and acting on feedback in a timely and effective manner.

The study also found that communication plays a critical role in the effectiveness of feedback mechanisms. Clear communication between students, faculty, and administrators is necessary to ensure that feedback is understood, acted upon, and evaluated. The study recommends that institutions improve their communication channels and provide adequate training for faculty and administrators to ensure that they understand the importance of feedback and how to act on it effectively.

By and large, the discoveries of this study have significant ramifications for the plan and execution of understudy criticism systems in advanced education establishments. The study highlights the need for institutions to take a proactive approach to feedback, addressing the challenges associated with its implementation and working to improve communication channels between students, faculty, and administrators. The study contributes to the existing knowledge on this topic and provides insights into how feedback mechanisms can be improved to ensure the delivery of quality education.

Conclusion

Based on the qualitative analysis of student feedback mechanisms and their impact on quality assurance in higher education institutions in two colleges from the Darrang district of Assam, it can be concluded that the implementation of feedback mechanisms is crucial in improving the quality of education. The study found that both colleges have established feedback mechanisms that allow students to express their views and opinions on the quality of education they receive. However, there were some challenges, such as lack of awareness among students, limited participation in feedback mechanisms, and inadequate follow-up on the feedback received.

The analysis also revealed that feedback mechanisms play a crucial role in ensuring the continuous improvement of the quality of education. The findings

highlighted the need for more effective and efficient feedback mechanisms that allow for timely and relevant feedback. The study also showed that the integration of feedback mechanisms in quality assurance policies and practices is essential for improving the quality of education.

Overall, this study emphasizes the importance of feedback mechanisms in quality assurance in higher education institutions. The findings provide insights into the implementation, effectiveness, and challenges of feedback mechanisms and their impact on quality assurance in the Darrang district of Assam. The results of this study can contribute to improving the implementation of feedback mechanisms to ensure the delivery of quality education.

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5

Review on innovative practices in teaching Botany to the undergraduate students

Dr. Debashree Kakati

Abstract

Botany was considered as a core subject in biology education starting from the elementary and high school level, but unfortunately its significance in the present curriculum has been observe to be gradually declining. Botany or the study of plant sciences in the 21st century requires that students will learn integration of various levels of concepts followed by synthesis and analysis of concept-based information. For this a student can not only rely on the confined syllabus, lectures given by the teachers or some guided laboratory sessions. Such monotonous methods of teaching will leave the students with a misconception or even negative impression on the subject. The primary factors for decline of this subject also include the overall challenges effected the STEM (Science, Technology, Engineering, and Mathematics) education. Such Decline of interest for the subject among the students will not only create a critical shortage of producing experts in this field, but also may create a void for trained botanists mostly needed to address the critical issues in biodiversity management, biotechnology, food security, climate change and similar fields. Therefore, novel strategies are required to engage the students as well as the teachers in the curriculum of Botany targeting to inspire the new generation. The present review exhibits a wide range of innovative, creative, participative and experiential teaching learning methodology that can be used in plant science education.

Keywords: *Innovative practices, Botany, plant science*

Introduction

The various issues and problems in teaching plant sciences along with the need of innovative and interesting teaching methods have been first brought into notice by Hershey (1996). He mentioned that "As a result of plant neglect, the general public, most precollege teachers, and many college-level biology teachers are generally illiterate about botany." Botany once taught as a core subject and considered as a principal component in biology education not only in higher education but also in the high school and secondary school level, now gradually declining its charm and importance (Quave, 2014). Some major causes of this decline also include the various factors effecting the STEM (science, technology, engineering, and mathematics) education. Now the botany educators are attaining a critical state in developing botany education through innovative solutions to rejuvenate the subject in the classroom. The urgent need of integration of innovative and creative teaching learning practices in life sciences is to boost interest in science and technology education among the educators arises since the publishing of "*Vision and Change in Undergraduate Biology Education: A Call to Action*" by Brewer and Smith 2011. It was published by the American Academy for the Advancement of Science (AAAS) and funded by the USA National Science Foundation (NSF).

The key areas recommended in the document are,

(1) Integration of basic concepts and applicability in the curriculum,

(2) Emphasizing student centered learning,

(3) Encouraging required suitable changes in the institute

(4) Engagement of the biology community to operate the changes

Challenges and threats in Botany education

One of the greatest obstacles in case of elementary and secondary education is to complete the course as well as incorporating extensive plant studies parallel resulting in the lack of adequate time. This affects the student's knowledge in higher education institutes. Also particularly in Assam Higher Secondary Education Council syllabus, Botany only holds 35 total marks in the biology paper in the final examination. This could also be a reason for less interest of the students towards the subject. There are many other loopholes as well (Quave, 2014)-

- ❖ At elementary and high school level, all teachers may not have adequate knowledge about plants, still sometimes botany is asked to teach by a general science teacher who may have specialized in mathematics.
- ❖ In most of the cases teachers do not have enough open space to provide students experiential learning in field and forests.
- ❖ Lack of contemporary lessons and courses in the curriculum.
- ❖ Out of date courses and syllabus.
- ❖ A subject frequently neglected by students and educational institutions.

- ❖ Herbaria are being continuously abandoned and HE Institutions subsequently keep eliminating traditional botany courses, as plant science had been incorporated as parts of various multidisciplinary courses.
- ❖ It is difficult to generate interest in the study materials because it is comparatively tougher.
- ❖ Basic pedagogy primarily includes memorization of plant names and their characteristics are less appealing to the students.
- ❖ In most of the cases students get away from the core course without ever experiencing the true beauty of plants and their global importance.

Therefore, student's enthusiasm must be fostered for studying the plant sciences to produce future experts in Botany and a global plant science community nurturing connection with the nature.

Some innovative teaching learning practices in Botany

Different scholars have suggested various innovative methods of teaching learning Botany in higher education. Ethnobotany, as an interdisciplinary subject comprising of the study of interaction between plants and people could be a useful link to fill up the gap between plant science education and society at individual level. Advantages exhibited by ethnobotany are (Harrison, 2014; Bennet, 2005; Prance, 2007)-

- It is the way by which an educator could make the more subject relatable for the students to the contemporary community.
- It will bring the educators from different streams together.
- It helps in developing educational standards
- It helps in compiling a wide range of educational teaching learning resources of ethnobiology.
- It will help in better understanding the relationship between people and environment.

One such popular example is the OSN's report on Vision and Change for Ethnobiology Education in the USA (McClatchey *et al*. 2013).

Core needs of Botany educators and students in present time

A Botany educator could adopt various teaching strategies to present and interpret the subject more effectively and interestingly (Fig. 1), few of such basic needs have been discussed below,

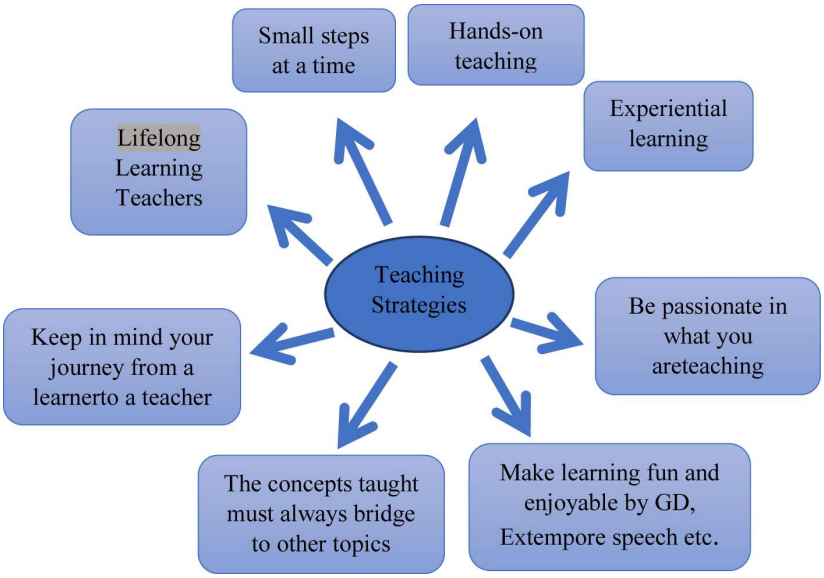

Fig. 1: Teaching strategies for a present-day Botany educator

An innovative course and suitable curriculum

Courses are to be developed according to the educator's innovative interests and creativity as well as the instructor's academic interest and later could be merged into a suitable curriculum (McClatchey *et al*, 2014).

Use of Internet

Extensive use of the internet should be there not only in course and curriculum development but also in public sharing of academic ideas, teaching learning strategies, and curricular aspects (McClatchey *et al*, 2014). Several such platforms are e.g., Facebook, Google sites, WiserEarth, open-source websites and university servers etc.

Development of large a network of Botany educators

To engage and activate the isolated and neutral educational institute the concept of 'open society' network for academic, administrative and research collaboration among various educational institutes was developed including Pat Harrison and the Botanical Research Institute of Texas (BRIT), US National Science Foundation (NSF) International Society of Ethnobiology (ICE), Society for Economic Botany (SEB), Society of Ethnobiology (SoE), Society of Ethnopharmacology (ISE) as part of the Research Cooperative Networks program (McClatchey *et al*, 2014).

Change in the teaching methods

The old teacher centric unidirectional flow of knowledge from the teacher to the students inside the confined classroom is to be gradually replaced by student centered, outcome based, problem-based learning, as a philosophy of pedagogy (Mazur-Stommen, 2006).

Enhance student's competencies

The core competencies are summarized in six points by Brewer et al. 2011,

1. Ability to apply the process of science,
2. Ability to use quantitative reasoning,
3. Ability to use modelling and simulation,
4. Ability to promote the science as an interdisciplinary nature of science,
5. Ability to develop interdisciplinary curricula,
6. Ability to understand the relationship between people and environment.

Instructional methods

Traditional lectures and demonstration, interactive classes, group discussions, debates, secondary researches, primary research, problem-based learning, case studies, model-based learning, websites, students' profile, journals, online blogs, team-based methods through structured tasks, different online methods etc (McClatchey et al, 2014).

Use of Online Tools- Online social sites, text messages, videos, online integrative platforms, biodiversity and life sciences databases etc. (Table.1, Table. 2).

Table 1: Popular online resources used in teaching learning plant sciences (Quave, 2014, Internet sources)

Online resource category	Description
Social networking sites	Facebook, Wiser Earth, WhatsApp, Google, etc.
Text-based messaging	Listservs, Twitter
Video based resource	YouTube, TED, Vimeo, University of Hawai'i Manoa videos
Multimedia based resource	Instagram
Online collaborative platforms	Wiki's, blogs, Encyclopedia of Life, Google sites, Wikipedia, Web of Knowledge, Web of Science, INPI, Bone Commons, Agrobiodiversity weblog
Biodiversity databases	Tropicos, online herbaria, JSTOR, EBSCOhost Academic Search Premier, Google Scholar, Biodiversity Heritage Library, USDA PLANTS Database, Dr. Duke's phytochemical and pharmacy database, Field Museum database, Dan Moerman's Native American Ethnobotany database, Bishop Museum archives, Science direct, Atrium, IPNI, PubMed, Natural Products Alert database, Germplasm Resources Information Network database, ethnobotany databases, clinical databases
Course management systems	Blackboard, Moodle

Other	Prezi, Elluminate Live, seminars, society websites (Society for Economic Botany and Society of Ethnobiology), variety ofindividual and institutional websites, Alaska Ethnobotany project, Global Diversity Foundation, online journals, museum catalogs, botanical gardens, Open Science Network in Ethnobiology

Table 2: Few examples of mobile friendly software applications and websites (Internet Sources)

Category App	**Website name**	**Website**
Flashcards	StudyBlue	www.studyblue.com/online-flashcards/
Organization	LiveBinders	www.livebinders.com
Plant identification	Leafsnap	leafsnap.com/
	TXRangeID	www.brit.org/rangeplants
	NatureTap	www.greenmountaindigital.com/
Data collection tools	Plot hound	silviaterra.com/plothound/
Field tools	SoilWeb	casoilresource.lawr.ucdavis.edu/drupal/node/902
Navigation	Google Earth	www.google.com/mobile/earth/
	Basecamp	garmin.com

Ethnobiology as a bridge between student and society

Ethnobiology is playing a revolutionary role in the contemporary education by filling up the gap between the students' knowledge and interest and the natural science. It engages ethnic people *in situ*. In order to develop interest for plant study among the young people so that they can grow an intimate connection with the nature (Wagner 2008). It helps the educator to identify the connections and seek involvement of students from various ethnic groups and academic backgrounds (McClatchey *et al*. 2013). Ethnobiology is also referred as the "missing link in ecology and evolution" or the interaction of "biota with human cultures" since ethnobiologists can better understand the relationship of people and nature hence can apply local knowledge more effectively in ecological and phylogenetic researches (Saslis-Lagoudakis and Clarke 2013; McClatchey *et al*. 2013). In spite of its root to traditional and natural study ethnobiology still manages to have an interdisciplinary and up to date area of studies and thus subsequently play an important role in generating interest among students for STEM subjects (McClatchey *et al*. 2013). Best practices in ethnobotany among the students comprises of extensive field studies so that they could learn about useful plants in their nearby habitat and their application in science and technology. One of the best examples of real time implementation in this field is the creation of "*Molai Forest*" by Jadav Molai Payeng. Use of local plants stimulates the interest among the

students as they become more familiar with their own place (McClatchey *et al.* 1996).

Innovative Teaching practices in Botany

Based on the needs of the present-day teaching learning environment the educators must adopt and apply alternative methods of teaching which promote active, participative, student centered, experiential, innovative and creative learning comprising of real-life research opportunities. Additionally, individual learners could be assessed with formative, summative and process assessment (McClatchey *et al.*, 2013).

Some examples of innovative teaching practices are,

1. Public engagement- Botanical gardens and Botany science centersplay important role in not only teaching learning practices of plant sciences but also in public display, research, education, conservation and ecological restoration which makes learning plant sciences more relatable and excited (Fig. 2) (Vougioukalou *et al.*, 2014; Ballantyne *et al.* 2008; Chen *et al.* 2009; Donaldson 2009).

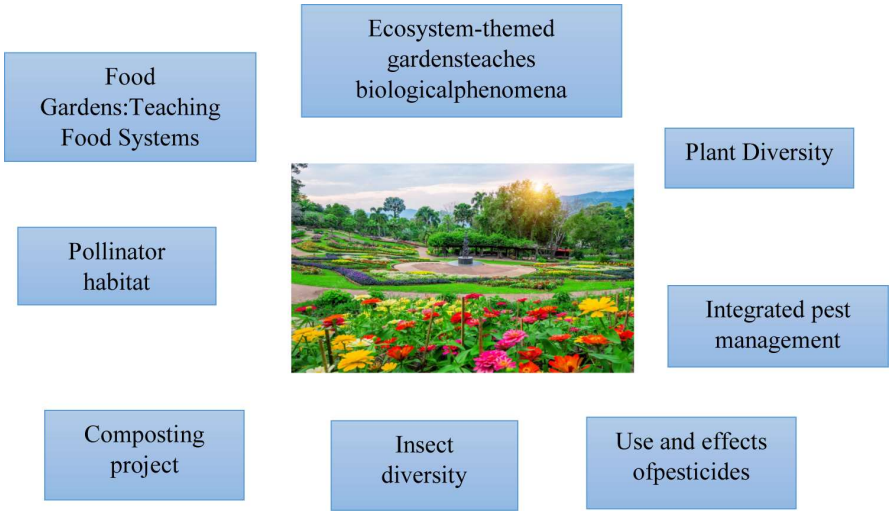

Fig 2: Role of Botanical Garden in Botany Education

2. *Organizing Youth Programs*- To popularize plant science among the students and youths' initiatives could be taken to organize strategic programs. Eg. New York Botanic Garden's (NYBG) "Plants to People program "Ethnobotany Explorers," an ethnobotany program for 9^{th} –12^{th} grades (Harrison, 2014), BSI, in India organizes various training and workshops for young botanists etc.

3. *Outdoor experiential learning*- Outdoor programs such as field studies during graduate and PG programs, excursions during graduate and PG programs, ethnobotanical survey and documentation in native places by the students etc. could be structured as a part of the curriculum of Botany (Harrison, 2014).

4. *Research-based learning*- Research-based learning is a method of active,

experiential learning includes preparation of Dissertation; Project report etc. ignites critical thinking and inquisitiveness among students, and could be effectively incorporate in the plant science education (e.g., Nosich, 2009)

5. *Integration of Technology in Assignments*: Integration of modern-day technology in student's assignments could increase their interest towards the subject. This branch of botanyalsothe Budget Teaching materials are everywhere. For e.g., preparation of 2-3 min YouTube academic videos on the learned topic, or preparation of mind maps, integration of podcast, GIS technologies etc (Wagner, 2014).

6. *Demonstration*: Demonstration of the botanical experiments, or plant physiology and metabolism or other processes could make the subject more interesting and appealing in front of the students and could help in better understanding (Hartman et al., 2000).

7. *Digital Literacy*: Digital literacy in teaching, learning and research in botany includes, (i) how to conduct a search to get an online literature, book chapter, journal etc., (ii) how to judge the quality of online information (3) ethics and fairness of online research (Wagner, 2014).

8. *Shift of learning objectives*: Brosi and Huish (2014) suggested the objectives of the plant identification courses could be changed from the conventional teacher centered approach to a broader and interdisciplinary method by paired up with other fields as per Bloom's taxonomy, such as,

- ❖ Associate various plants and their roles (Comprehension)
- ❖ Study of regional plants, their uses and implications (Comprehension)
- ❖ Apply plant identification and classification for wide social and ecological needs (Application)
- ❖ Compile the collected data (Synthesis)
- ❖ Create concept maps (Synthesis and evaluation)

9. *Service Learning*: Service learning includes integration of social, environmental, and ethical awareness (Brewer *et al.* 2011). This will help students to develop an understanding of the role of plants in real societal environment and their actual interactions. Example 1: Garlic mustard (*Alliariapetiolata*) is an invasive plant species which is toxic to the West Virginia white butterflies (*Pieris virginiensis*) larvae and eradicates native wildflowers essential for butterflies (Keeler *et al.* 2006). For the past six years, students in Plant Taxonomy of West Virginia University took initiative to remove garlic mustard from a known West Virginia white butterfly site in a state forest in Maryland in a large scale.

10. *Interactive Problem Solving and Games*: Often plant identification and taxonomic investigation is considered as a part of less interest among the students. Therefore, problem solving, quizzes, interactive games etc. can be used in a useful and interactive method to introduce a new plant to the students. Groups of students can also be challenged to create associations to co memorize the plant names (Brosi and Huish, 2014).

11. *Interdisciplinarity*: An initiative had been taken to unite and engage university students, academics, and community members from broad streams of science and art, in Connecticut to develop a better understanding of the impact of anthropogenic factors on sustainability (Clark and Button, 2011). Such approaches are very contemporary and fruitful in making the subject more employable.

12. *Rejuvenating Folk Plant Taxonomy*: Folk plant taxonomy is the science of how cultures name, identify, and classify living plants (Berlin, 1973) which could be effectively used by Botany educators.

Conclusion

In the present review it is evident that if appropriate initiatives are not taken on time by the educators, the beauty and ascent of the subject plant science or Botany will soon decline more and more in coming times. Incorporation of effective, innovative, creative and participatory teaching learning process in HEIs could only save the importance of Botany as a core subject. Such initiative has been already taken by various institutes in different parts of the world. For e.g. in Hollins University, Plant Sciences has been incorporated in the curriculum through strategic Ethnobotanical Learning Modules, In The University of Hawaii, Hilo (UHH), the Department of Hawaiian Studies provides popular classes on Hawaiian culture, traditional botany and Hawaiian ethnozoology which are strongly based in the local Hawaiian culture, The Botanical Research Institute of Texas (BRIT) use to provide Educational Outreach for Young People and Families (Vougioukalou, 2014). Thus, it can be expected that strategic adaptation and modification of the conventional teaching learning methods along with incorporation of new teaching learning technologies will help Botany to flourish and evolve in a more progressive way in near future.

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6

Utilization of Information and Communication Technologies (ICT) in Learning Science

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Abstract

The findings of this research demonstrate that Information and Communication Technology (ICT) has an essential part to play in the classroom instruction of scientific concepts. The requirements for the area of science education place an emphasis on the need for science educators to make use of instructional methods that cultivate an in-depth scientific understanding while simultaneously utilizing research skills and the ability to find solutions to complicated problems. The importance of Information and Communications Technology (ICT) in the field of education is briefly discussed below. There is a focus on the positive effects that ICT can have on science education. There are many different kinds of technical tools being developed, including both hardware and software. At the very end, there is an effort made to stress the role that teachers play in effectively utilizing ICT in the classrooms of science students.

Keywords: *ICT, Science, Education, Software*

Introduction

A quote from Mahatma Gandhi: "By Education, I mean an all-round drawing out the best in child and man body, mind, and spirit" (Joshi, 2021). The fate of India is being fashioned in its classrooms, as stated by the Kothari Commission (1964-66) (Poornima, 2020). These claims illustrate the value of education in modern India. Teachers today need to understand the need of delivering a variety of learning experiences to help students with their differences and make an effort to employ the media and methods developed by Educational Technology. Using technology to its full potential can improve classroom instruction and infuse lessons with deeper significance for students. According to NEP 2020, educational software suitable for use in the classroom will be widely accessible to educators and students of all ages and levels, including those in rural regions and the Divyang (Kumar, 2022).

Education, according to the Indian education commission (1964–1966), should be both science-based and consistent with Indian culture and values so that it can serve as a basis for and tool for the nation's prosperity, security, and welfare (Chaudhary & Teaching, 2014). The traditional approach failed to pique students' attention in the modern scientific and technical era and failed to meet the intellectual, psychological, and emotional needs of students in the new century. There needs to be a shift in how things are taught. The standard educational model is predicated on disseminating data in discrete chunks. It includes rote memorization of concepts, facts and principles which do not realize objectives of teaching. Improving students' capacity to learn is mostly dependent on effective pedagogical practices. Effective education requires adopting and implementing novel, engaging, and unexpected approaches. The acronym "ICT" stands for "information and communication technologies" and was first used in 1992 to describe "computer and computing related activities"(Haddon & spaces, 1992). The term "information and communication technology" (ICT) was coined by the United Nations Educational, Scientific, and Cultural Organization in 2002 (Anderson, Van Weert, & Duchâteau, 2002). Teleconferencing, electronic mail, audio conferencing, television lessons, radio broadcasts, interactive radio counselling, the interactive voice response system, audio cassettes, CD ROMs, and so on are just some of the many types of ICT products that have been put to use in education (Passey, Rogers, Machell, & McHugh, 2004). According to United Nations Report (1999) ICT covers internet service provision, telecommunication equipment and services, information technology equipment and services, media and broadcasting, libraries and documentation centres, commercial information providers, network-based information services and other related information and communication activities (Hurtado, Milem, Clayton-Pedersen, & Allen, 1999).

Teaching science is one area where ICT may play a significant role. Recent advances in information and communication technology bring both exciting new possibilities and formidable new obstacles for conventional classroom instruction. The standards for science education stress the need of teachers employing methods that foster in-depth knowledge of the subject matter and the ability to apply that knowledge through the development of inquiry and problem-solving skills (McFarlane

& Sakellariou, 2002). In recent years, there has been a transition from teaching students ICT through science to teaching students how to use ICT to aid in their science education. In addition to student-cantered ICT activities, there has been a rise in the use of ICT to facilitate instruction for the entire class (Aina & Education, 2013).

Role of ICT In Education

Information Technology was limited only to the textual mode of transmission of information with ease and fast. But the information not only in textual form but in audio, video or any other media is also to be transmitted to the users. Information technology was only capable of transmitting information quickly and easily via text. However, the users must also receive the information in audio, video, or any other form, in addition to text (Hamidi, Meshkat, Rezaee, & Jafari, 2011). It has created new opportunities such as e-learning, virtual universities, e-coaching, e-education, and e-journals, among others. ICT increases the amount of rich content available to instructors and students in the classrooms and libraries. The student now has the chance to obtain information using all of their senses. It has given the teaching-learning process some variation and broken up the monotony (Agashe, 1995). The Information and Communication Technology insurgency poses unique difficulties for the global education system. Three important areas are where this generally happens. First, participation in the information society is one of them. The second is how ICTs affect access and how they alter the educational process. ICT is formally taught in schools and other institutes of higher learning in this country, where better organized education is made available. Thirdly, non-formal education is made possible by ICT through organized programs like "continuing education," "adult education," and online learning. Higher education institutions benefit from the knowledge exchange that occurs when students have ICT skills by having more educational possibilities available to them. ICT literacy integration will be essential because it entails using technology to carry out learning tasks. In order to develop thinking and problem-solving abilities, it must include the use of ICT to manage complexity, solve problems, and think critically, creatively, and methodically (Punie, Zinnbauer, & Cabrera, 2006). This can be used in a variety of ways by students, including for assignments, research, data collection, and record keeping. Teaching and learning can benefit from its use. This can serve as a channel for communication between educators and students. In this case, teachers or students enrolled in programs that prepare them to become teachers must be familiar with and comfortable using ICT if they are to effectively introduce and appreciate the necessity of ICT in educational institutions. They need to be provided chances to learn new things. To achieve this goal, it is important to support initiatives to incorporate ICT-based training programs into their curricula. Technology in education (ICT) has permeated today's curriculum in every possible way. It allows for the efficient storage, retrieval, and processing of electronic content (Hawkridge, 2022).

The benefits of ICT in science

There is a wealth of evidence showing that students are more motivated when they have access to ICT to aid in their education.

- ✓ Students are more actively participating in class; they exhibit greater curiosity and have longer attention spans.
- ✓ ICT can give users access to a wide variety of high-quality resources that are pertinent to learning about science. When there are no viable conventional alternatives, the resources sometimes cover the gaps; other times, they serve to supplement already available resources. In some cases, ICT resources are less good than conventional alternatives and do not add to learning.
- ✓ Computers also make it possible to rapidly and accurately complete repetitive activities, freeing up more student time for analyzing the supplied scientific data.
- ✓ Many ICT tasks can be completed without using a dedicated classroom or lab. As a result, they can expand learning outside the classroom and the time students spend in it, putting ICT use at the centre of learning rather than as an optional extra. An activity can be extended from one classroom to another later in the day or even at home in the evening.
- ✓ ICT gives teachers the chance to be innovative in their instruction and in the learning of their students.

It is generally agreed that the majority of the science concepts, laws, and principles that students quickly forget may be taught to students over a lengthy period of time via ICT, allowing for memory retention. This agreement may be due to the fact that some subjects are difficult to explain, and ICT definitely aids in the learner's ability to keep the subject matter for an extended period of time in their memory. However, this may be accomplished fast with the use of computer animation. The chance to repeat it as often as necessary for learning is also given to the students (Papastergiou & education, 2009).

ICT gives users access to a variety of relevant and high-quality resources for science education and learning. The general agreement is that ICT enables readily available, multi-media tools that facilitate the visual display and management of sophisticated science models and their three-dimensional visuals to improve understanding of scientific concepts. Scientific instructional resources of the highest calibre and applicability are readily available through ICT. The most recent research journal catalogues and standards are accessible with the help to information and communication technologies. This means that anyone can easily access the vast and most recent collection of study materials linked to learning, teaching, and research using ICT(DeHaan & Technology, 2005).

Varieties of Technological Tools

Traditional classrooms frequently make use of a wide range of technological tools and resources today. They are:

Computer in the classroom

The computer is a gadget that makes the process of teaching and learning easier. It is a tool that cannot be overlooked in the process of incorporating ICT into the

classroom. The instructor is able to illustrate and demonstrate a new lesson here, in addition to showing out new websites.

Class website

It is the simplest approach for students to see project work and assignments. Once we designed this web page, we provide classroom works, homework assignments, famous quotations, games. Students today are computer and internet literate. Therefore, most institutions offer teacher webpages that are easily accessible via the school website.

Mobile devices

The educational experience that students receive in the classroom can be improved by the utilization of mobile devices such as smartphones.

Interactive Whiteboards

An interactive whiteboard has made it possible to engage with computer programs. Through the use of computers, these improve the teaching-learning process in the classroom. Students can draw, write, or manipulate images on the interactive whiteboard, which not only supports visual learning but is also participatory.

Digital video

The use of equipment comparable to an LCD projector has made our teaching and learning process as effective as it could be.

Online media

Through the use of the internet, a classroom instruction can be made more effective by utilizing streamed video websites.

Online study tools

Tools that encourage learning by making it more enjoyable for the student or by providing personalised teaching.

Negative impacts of ICT

Students' capacity for scientific thinking and analytical ability may suffer if they rely too heavily on information and communication technology. It is commonly considered that students only have a superficial understanding of the information that they download from many different sources that are available on the internet. In addition, students put a lot of effort into making phony presentations and taking content from the internet, which hinders their ability to think analytically and scientifically.

Regarding ICT's negative effects, it might reduce the amount of face-to-face interaction between students and teachers. More than a quarter of educational institutions in the nation do not have technical support for teachers to use ICT, which is another well-known fact. When teachers are hindered by any technical issues with ICT tools such projectors, laptops/computers, speakers, and printers during ICT-based instruction, they avoid using these resources. To tackle the problem, the institutions

must offer the assistance of technical experts to the instructors and students. A cluster of adjacent institutions can be formed for this purpose.

Effective Use of ICT

The availability of educators with the necessary level of technical expertise is essential to the successful implementation of ICT. They should have a favourable attitude toward information and communications technology and be able to recognize the potential of ICT. There are four phases that are carried out in order to implement ICT content in the Teacher education programme. This is done so that student teachers, when they graduate and become teachers in schools, will have the ability to use ICT tools in classroom instruction to promote flexible learning environments and meet the individual learning objectives of the subject matter content. The four phases are:

a) ICT Literacy

b) Use of ICT for teaching and learning activities that is effective and efficient.

c) ICT based pedagogy, online support, networking and management.

d) Implementing cutting-edge ICT best practices.

Conclusion

ICT use has the potential to significantly alter education and training primarily in two ways. First off, a rich representation of the information alters how learners perceive and comprehend the material. Second, the widespread dissemination and simple availability of knowledge may alter the dynamic between professors and students. ICT may be a potent support for advances in education. We can remove all obstacles to communication and instruction in higher education institutions of learning by utilizing ICT technologies like computers, laptops, digital cameras, video, Internet, websites, webcams, radio, television, and software applications like word processing, spreadsheets, e-mail, digital libraries, computer mediating conferences, video-conferencing, LCD and slide projectors, etc. The challenge for educators has therefore been to develop a new generation of educators who are able to use a variety of technologies and tools in all aspects of academic, administrative, research, and extension roles.

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7

Use of Geospatial Technologies in Preparing NAAC Assessment Reports

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Abstract

Geospatial technologies like GIS and GPS have out bounded their limits from the discipline of Geography to various other arenas. In present time the analysis of many complex themes are carried out using the geospatial technologies. A geospatial technology can be defined as a tool that enables us to acquire data that is referenced to the earth and use it for analysis, modelling, simulations and visualization. Geospatial technology allows us to make informed decisions based on the importance and priority of resources most of which are limited in nature. In the present study we will attempt to understand the potentialities and prospects of geospatial technologies in preparation of reports for NAAC assessment. The different type of reports that are to be prepared like the Green Audit Report, Energy Audit Report, Biodiversity Report, Library report etc. can use geospatial technologies for making their assessment more rational and also easier to comprehend. The tools like drone mapping, GPS waypoints demarcation, area mapping, NDVI analysis, LST (Land Surface Temperature) analysis will bring standardization in the reports. With this view of diversifying the arena of geospatial tools in the NAAC assessment, the present study is carried out.

Keywords : *Geospatial, Geography, NAAC, Mapping*

Introduction

India is now the world's second largest higher education system, with around 38 million students in 50,000 academic institutions (including 1,057 universities) and a goal of doubling gross enrolment rates from the current 26.3% to 50% by 2035. Further, India is the second largest source of international students (after China) globally (University World News, 2022). This abundant number of higher education institutions struggles among themselves for imparting best education to the students (Gholap, P., &Kushare, P., 2019). Moreover, it was on the part of the nation to standardise the quality of education all over the country. With concern this problem the National Assessment and Accreditation Council (NAAC) was established by University Grants Commission (UGC) in September 1994. The prime objective of this council is to evaluate the performance of universities and colleges in the country. The philosophy of NAAC is based on objective and continuous improvement, so that all institutions of higher learning are empowered to maximize their resources, opportunities and capabilities (Suryawanshi, V. S., & Shinde, V. S., 2019). Competitiveness is not only in quantity but also in quality level in the international scale. Even though the rank of India is high in enrolment ratio of students in higher education, the quality of education imparted is far behind the international level. Therefore, the compulsory NAAC assessment of the academic institution is essential to boost the development of the education.

NAAC assessment includes different criteria and for each criterion there are metrics. There is no available standard format for presentation of the data under different category by the institution. The presentation skill of the institution varies from one to another. However, the showcasing of the data and works of the college must be visually appealing and easier for understanding for all the stakeholders. The use of geospatial technologies in preparation of the reports will not only make it sophisticated but also it will be very easily understood by the people (Shellito, B. A., 2012). As geospatial technologies has outbound its fences and has applicability in diverse fields, it has immense potentiality in aiding the requirements with varied functions available within the technology. The diversification of geospatial technologies is continuously increasing day by day. In the present time it is intensively used in the defence, agriculture, disaster management, land use analysis, biodiversity conservation etc.

The geospatial technologies have great scope in enhancing the quality of the NAAC assessment reports. Geographic Information System, Global Positioning System, Remote Sensing and Aerial Photography technologies can be used in various aspects of NAAC criteria. The technologies may not only help in the reports but also in developing the skills of the students. In the present time these arenas of development are not only confined to the discipline of geography but are used by engineering departments and analyst of Earth Sciences. Moreover, expertise in the geospatial technologies has become a significant genre of employment in the recent times. Therefore, the skill enhancement courses among the students will not only help them in learning of a new technology but also provide job opportunities in future.

Therefore, the geospatial technologies have a significant role in the Higher Education Institutions from both applicability in NAAC Self-Study Report (SSR) and

skill up gradation of the students.

Criteria of NAAC Assessment

There are seven criteria for NAAC Assessment and under each criterion there are number of Key Indicator (KI). These KI has different weightage as assigned by the council. The following table shows the distribution of marks under different criteria and key indicators.

*Incase of HEIs who exercise to opt for the weight age of $\leq$ 3% of Non-Applicable Metrics, the total score will vary accordingly.

Criteria	Key Indicators (KIs)	Universities	Autonomous Colleges	Affiliated/Constituent Colleges	
				UG	PG
1.Curricular Aspects	1.1 ***(U)** Curriculum Designand Development	**50**	**50**	**NA**	**NA**
	1.1.***(A)** Curricular Planning and Implementation	**NA**	**NA**	**20**	**20**
	1.2 Academic Flexibility	**50**	**40**	**30**	**30**
	1.3 Curriculum Enrichment	**30**	**40**	**30**	**30**
	1.4 Feedback System	**20**	**20**	**20**	**20**
	Total	**150**	**150**	**100**	**100**
2.Teaching-Learning and Evaluation	2.1 Student Enrolment and Profile	**10**	**20**	**40**	**40**
	2.2 Catering to Student Diversity	**20**	**30**	**50**	**50**
	2.3 Teaching-Learning Process	**20**	**50**	**50**	**50**
	2.4 Teacher Profile and Quality	**50**	**50**	**60**	**60**
	2.5 EvaluationProcessand Reforms	**40**	**50**	**30**	**30**
	2.6 Student Performance and Learning Outcomes	**30**	**50**	**60**	**60**
	2.7StudentsatisfactionSurvey	**30**	**50**	**60**	**60**
	Total	**200**	**300**	**350**	**350**
3. Research, Innovations and Extension	3.1 Promotion of Research and Facilities	**20**	**20**	**NA**	**NA**
	3.2 Resource Mobilization for Research	**20**	**10**	**15**	**15**
	3.3 Innovation Ecosystem	**30**	**10**	**NA**	**10**
	3.4 Research Publications and Awards	**100**	**30**	**15**	**25**

	3.5 Consultancy	**20**	**10**	**NA**	**NA**
	3.6 ExtensionActivities	**40**	**50**	**60**	**50**
	3.7 Collaboration	**20**	**20**	**20**	**20**
	Total	**250**	**150**	**110**	**120**
4. Infrastructure and Learning Resources	4.1 Physical Facilities	**30**	**30**	**30**	**30**
	4.2 Library as a Learning Resource	**20**	**20**	**20**	**20**
	4.3 IT Infrastructure	**30**	**30**	**30**	**30**
	4.4 Maintenance of Campus Infrastructure	**20**	**20**	**20**	**20**
	Total	**100**	**100**	**100**	**100**
5. Student Support and Progression	5.1 Student Support	30	30	50	50
	5.2 Student Progression	40	30	30	25
	5.3 Student Participation and Activities	20	30	50	45
	5.4 Alumni Engagement	10	10	10	10
	Total	**100**	**100**	**140**	**130**
6. Governance, Leadership and Management	6.1 Institutional Vision and Leadership	10	10	10	10
	6.2 Strategy Development and Deployment	10	10	10	10
	6.3 Faculty Empowerment Strategies	30	30	30	30
	6.4 Financial Management and Resource Mobilization	20	20	20	20
	6.5 Internal Quality Assurance System	30	30	30	30
	Total	**100**	**100**	**100**	**100**
7. Institutional Values and	7.1 Institutional Values and Social Responsibilities	50	50	50	50
	7.2 Best Practices	30	30	30	30
	7.3 Institutional Distinctiveness	20	20	20	20
	Total	**100**	**100**	**100**	**100**
Best Practices	**TOTAL SCORE**	**1000***	**1000***	**1000***	

(U)-*applicable only for Universities and Autonomous Colleges*
(A)-*applicable only for the Affiliated/Constituent Colleges*
NA-Not Applicable (Source: http://www.naac.gov.in/)

Criteria wise use of Geospatial Technologies

As an experimental attempt, the Mangaldai College has incorporated some geospatial techniques for preparation of NAAC assessment reports. This task was authorised to the Department of Geography of Mangaldai College. This practice has sophisticated and authenticated the works of the college, as all the data are spatially referenced and shown in real-time.

The areas where the geospatial data are used by Mangaldai College are following:

CRITERIA-3- Research, Innovations and Extension

The metrics 3.3.1 that includes extension activities in the neighbourhood locality was addressed by adoption of a village by the institution. For this village adoption the authorised committee prepared a pilot survey map showing the boundary of the village. The map gave an idea about the location and the physical characteristics of the area like terrain, rivers etc. This information helped the college authority in being aware of the natural conditions of the villages and the related challenges by large. Also the spatial referenced map of the adopted village of Mangaldai College has an international standard. The village can be traced from any corner of the world with the created geodatabase.

Fig 1.1: Adopted village by Mangaldai College

CRITERIA 5- Student Support and Progression

Under this the metrics 5.2.1 (Student Placement) and 5.2.2 (Student Progression) has been used for incorporating the geospatial technologies. The footprint of our students can be traced by placing them in a map of the world. Both Progression and Placement can be marked on a map of the country or the world. This will make easier to see where our students have been placed as an employee and where they are progressed for higher education.

Fig 1.2 Student Progression of 2021-22 of Mangaldai College

CRITERIA 7- Institutional Values and Best Practices :

The 7th criteria of NAAC assessment deals with different moral values and social awareness issues by the institutions. The College have taken initiative to prepare a Green Audit Report for which mapping of the college, landuse pattern, sound pollution mapping of the college, pH level mapping at different areas of the college are carried out using the geospatial technologies. These maps have made the report look very attractive, engaging and easy to understand.

Again for the Biodiversity Census task taken up by the college is also done using the help of the geospatial technology. A pilot survey of the campus was carried out and then incorporating the dataset with the satellite imageries a total of 62 grids are prepared. These grids are used as a reference in conducting the biodiversity survey.

These are only a few examples where the geospatial technologies are been used by the MangaldaiCollge. There is great potentiality of the technology that can help in preparation of the reports of different criteria and metrics in the near future.

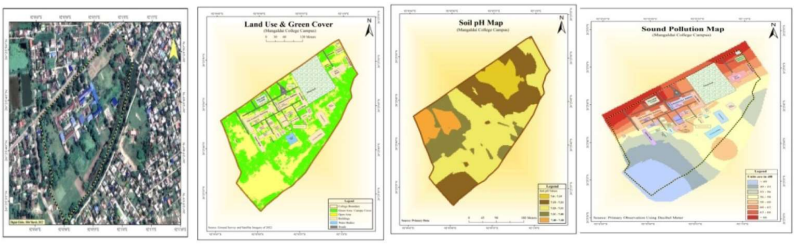

Fig: 1.3 Different maps prepared for Green Audit Report

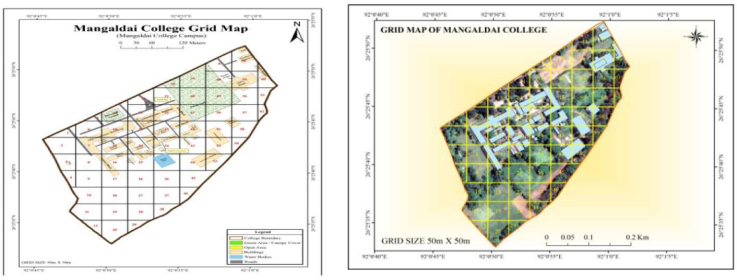

Fig: 1.4 Grid map prepared for Biodiversity Census

Potentiality, Challenges and Future prospects

The potentiality of geo-spatial technology is well acknowledged by the scientific community because of its ability to handle multiple sources of data and generate real time information, which assistant extensively in planning and decision-making process. The geospatial technology is well utilized in different applied geo-sciences like geology, geography, military studies, urban and rural planning, etc. The higher educational institutions are very much interested to get good grade in NAAC assessment through

different performance indices mentioned in seven criteria. In this regard the higher education institutions can apply geo-spatial technology to create accurate spatial database of their respective campus, which will help in decision making and proper management of the institution. The Mangaldai College administration have understood the potentiality of geo-spatial technology and hence applied this technology to create spatial database of the campus, to make the green audit of the campus, to prepare the biodiversity registrar of the campus and also to assess the student progression of the institution. Mangaldai College has showed a path to the other higher educational institutions of the state of Assam to adopt this technology to fulfill the different requirements as per NAAC criteria.

One of the major challenges that higher education institutions of the state may face in using the technology is lack of skilled man power. As geo-spatial technology is a skilled based task and need efficient man power to handle and process spatial data and to generation spatial information. The higher educational institutions of Assam have very few professionals having expertise in geo-spatial technology and hence the institutions may face hurdle to handle and process the spatial tools. To solve this issue the Department of Geography, Mangaldai College has taken an initiative and already started an add-on course on application of geo-spatial technology in various fields. Students of the department have already got the basic idea about the technology and they could provide support to the other institutions if needed. This will provide job opportunity to the students also.

Hence the geo-spatial technology has immense potentiality and future prospects to fulfill the NAAC criteria in higher education institutions. The initiatives taken by Mangaldai College will be an eye opener for other higher educational institutions of the state of Assam.

Conclusions

The use geospatial technology has been increasingly in all the fields. The ability of the technology to prepare maps according to the requirement has undoubtedly improved the modern cartography. The skill is now on demand by various departments who deals with analysis of multiple datasets. Therefore, it is essential to embrace the capability of the technology and use it in enhancement of the NAAC reports. Moreover, it also becomes necessary to equip the young generation with skills so that they have better job opportunities. Add-on and certificate courses may be the tool for impartment of basic geospatial knowledge among the students. With this the study asserts that geospatial technology can be the future for many aspects of the NAAC assessment reports provided skilled man power available in the field.

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8

Use of ICT and its impact on Teaching - Learning Quality

Mukul Bezbaruah
Shriyam Borkakoti

Abstract

Education is the backbone of a society. Without proper education, no one can survive in this world of competition. In this era of modernization, Information and Communication Technology (ICT) has become one of the most dominant factors in the teaching and learning process. Nowadays ICT is vastly used in the enrichment of basic skills of the teacher as well as enlarging the motivation of the learners to participate in the learning process. The proper utilization of ICT contributes significantly in enhancing the quality of education. Today's world has become an arena of high competition and the learners do not have any other option instead of making themselves eligible than others and in this context, ICT plays an important role. ICT can enhance the teaching learning environment because it uses skill-based methods in the process of teaching rather than the traditional methods. With the changing times, ICT has covered almost all the parts of urban as well as rural areas of the country which immensely contributes to mitigating the huge gap in providing quality education presented earlier among the urban and rural areas. The focus of this paper is to study the use of Information and Communication Technology (ICT) in education, and examine its impact on enhancing the teaching and learning quality, so that the process of teaching and learning become more effective.

Key words: *ICT, Quality Education, Output, Impact, Workforce.*

Introduction

According to UNESCO "ICT is a scientific, technological and engineering discipline and management techniques used in handling information and application and association with social, economic and cultural matters". Information and Communication Technology, commonly known as ICT has changed the lives of human beings drastically. In the present scenario no one can live life without using ICT. When we talk about ICT, it includes computer hardware, software, application of telecommunication technologies, projection devices, Local Area Networks (LAN), Wide Area Networks (WAN), digital cameras, Compact Disks (CDs), Digital Video Disks (DVDs), cell phones, satellites, and fiber optics etc. By using all these components, we can settle several functions without consuming much time. The United Nations Development Programme (UNDP) defines Information and Communication Technologies: ICTs are basically information-handling tools—a varied set of goods, applications, and services that are used to produce, store, process, distribute, and exchange information in order to enhance communication, facilitate decision-making, foster collaboration, and drive innovation in various domains and sectors.

In this era of globalization, the entire education system of most countries in the world has changed its traditional methods of teaching which were predominant during the ancient times, and we can directly mention ICT as one of the main tools which significantly contributes to it. Students of this era have faced an incredible environment of competition, and to compete anywhere students need quality education. Here the role of teacher becomes very important. So the teachers have to be capable of providing quality education and with the use of proper ICT tools, they can enrich themselves with good skills and can contribute to the upliftment of the students. ICT plays an essential role in changing and modernizing educational systems as well as the way of learning.

Objectives of ICT in education

When the teacher uses ICT in education, students become more interested in their work. Because there are many ways to use technology to make the teaching and learning process more pleasurable and fun. The main objectives of ICT in education are discussed below briefly-

- ICT in education wants to improve engagement and knowledge retention.
- ICT promotes higher-order thinking skills.
- ICT also wants to increase the variety of educational methods and services and literacy rate through distance education.
- It promotes technology literacy among citizens, and the equal importance to slow and gifted children. Students with special needs are no longer at a disadvantage as they have access to essential material and special ICT tools which helps them to become successful in life.

Major ICT initiatives in education in India –

- **EDUSAT:** EDUSAT was launched by the Indian Space Research Organization

(ISRO) in collaboration with the Ministry of Human Resource Development (MHRD). This project aims to multicast interactive multimedia for the educational sector and augment distance education capabilities in the country.

- **Saransh Portal**: Saransh Portal is a decision support system (DSS) developed by the Central Board of Secondary Education (CBSE) that helps in coordinating students, teachers and parents to look upon the performance of the student. It is a comprehensive tool to analyze and self-review CBSE affiliated schools helps in increasing the interaction between school and parents.
- **ePathshala:** It is a jointinitiative of Central Institute of Educational Technology (CIET), National Council of Educational Research and Training (NCERT) and hosted by National Informatics Centre (NIC) and Department of School Education and Literacy, Ministry of Human Resources Department, Government of India. It aims at providing easy access to all kinds of study materials to anyone sitting anywhere on the globe without any restrictions.
- **e- YANTRA:** e-Yantra is an initiative by IIT Bombay and is sponsored by MHRD under the National Mission on Education through ICT program that aims to create the next generation of embedded systems engineers with a practical outlook to help provide practical solutions to some of the real-world problems.

Impact of ICT on Teaching and Learning

We can be found in the earlier discussion, that ICT has a huge impact on teaching and learning process. With the changing times, ICT has also developed very rapidly nowadays and it is commonly used in the teaching learning process. Before using ICT in education, the entire education systems were run by traditional methods and in the present context those methods are not much suitable and learning was hard as well, introduction of ICT has changed the traditional

concept. It has the potential to transform the nature of education. ICT not only transforms teaching but also the learning processes.

The impact of ICT in education are discussed below -

- ICT has the potential to improve the education system of the nation. It has now become more students centric. Students can gain knowledge from different sources by using ICT.
- ICT helps enhance the quality of education by facilitating new forms of interaction between students, teachers, education and the community.
- ICT makes education more accessible for all, bringing to the doorstep of children living in remote rural locations by means of enabling distance learning. Those who genuinely want to gain knowledge can use these ICT tools.
- ICT provides teachers with new sources of information and knowledge and by using these sources teachers can enhance their knowledge and after that they can share that knowledge with the students which will be fruitful for the students.
- By integrating ICT into the classroom, students have the ability to learn more effectively, collaborate with each other, and explore the world around them.

Anytime, anywhere access to internet-based tools is necessary to encourage learning inside the classroom and beyond.

We can find some negative impacts of ICT on education as well. Let's discuss those negative impacts over education-

Because of the blessings of ICT, nowadays everything is available on internet. Everyone who has necessary devices can access all these sources. Students can easily get whatever study material they want from the web. Because of that students may feel lazy to attend the physical classes. With these habits they might become irresponsible. If they do not attend classes on regular basis, they may not understand what teachers have taught to them. Sometimes technology can become a curse over human beings. Reliability over technology can be useful but if the students got addicted with these technologies, it can impact negatively on them.

Over dependency on ICT may also put negative impact on teachers teaching process. Teachers always need information on the topic they are going to teach. This information can easily be searched from the web. Information from the web or internet that mostly came or wrote from personal's opinion. It is not all facts. Teacher who depends more on the ICT do not perform well as a teacher. For example, they may not check through the details of the work that searched from the web.

These are some negative impacts of ICT on education. Thus, it can benefit humanity if it is used correctly by the teachers and students. Everything has both positive as well as negative perspectives. It will be beneficial for us when we eliminate the evil parts and try to enjoy its positive perspective.

Conclusion

By the above discussion we can find a significant impact of ICT in the education process. Because of the development of ICT, the education process has crossed the boundaries of nations and anyone from anywhere can gain valuable knowledge by using these tools. And we can also find that because of the use of ICT in education, it has become affordable for everyone.

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9

ICT and its Application in Teaching-Learning Quality

Gultaz Begum

Abstract

Information and Communication Technologies (ICT) can impact students learning when teachers are digitally literate and understand how to integrate it into curriculum. Schools use a diverse set of ICT tools to communicate, create, disseminate, store, and manage information. In some contexts, ICT has also become integral to the teaching-learning interaction, through such approaches as replacing chalkboards with interactive digital whiteboards, using students' own smart phones or other devices for learning during class time, and the "flipped classroom" model where students watch lectures at home on the computer and use classroom time for more interactive exercises. When teachers are digitally literate and trained to use ICT, these approaches can lead to higher order thinking skills, provide creative and individualized options for students to express their understandings, and leave students better prepared to deal with ongoing technological changes in society and the workplace. Considering that ICT plays an important role in society, especially if we take into account social, economic and cultural role of computers and internet, it is clear that the time has come for the actual entry of ICT in the field of education. The combination of ICT and the internet certainly opens not only many opportunities for creativity and innovation, but also for approaching the teaching material to current generation of students. Technology saves time and gives students access to powerful new ways to explore concepts at a depth that has not been possible in the past. The growth of these communication and computer systems, their ease of use, the power and diversity of information transfer allow teachers and students to have access to a world beyond the classroom also interact with each other over a world geographic distance in a meaningful way to achieve the learning objectives.

Keywords: *Computer, Digital, ICT, Teaching-Learning, Technology*.

Introduction

Today we do not need to go any further than our own home or even room, to see some form of ICT in our lives. Whether it be a computer, plasma TV, or mobile phone, we all have them in some part of our lives. In today's society, people as consumers of ICT, all strive for the one dream – the dream of a connected life.

This makes ICT a lifestyle choice for much of the population. In addition, this lifestyle choice is changing the way we communicate, increasing the rate of consumerism, and changing how we interact and gather information. ICT has invaded and transformed many aspects of our lives to the extent that we live in an environment that is dominated by technology which itself is consumer-driven. No matter how we perceive its presence, there is no denying that it is an important part of our lives and that it is here to stay.

Information can come in many forms such as sound, video, text, and images, so when we think of what technology it is available that produces these aspects of information and sometimes a combination of all these, we refer to such technology as mobile phones, digital cameras, video cameras for example.

Today information and communication technologies are the one thing and so the repertoire of technologies expands further to encompass computers and computer-related products, email, MMS, and other forms of communication

Issues and Discussion

Digital culture and digital literacy : Computer technologies and other aspects of digital culture have changed the ways people live, work, play, and learn, impacting the construction and distribution of knowledge and power around the world. Graduates who are less familiar with digital culture are increasingly at a disadvantage in the national and global economy. Digital literacy-the skills of searching for, discerning, and producing information, aswell as the critical use of new media for full participation in society-has thus become an important consideration for curriculum frameworks.

In many countries, digital literacy is being built through the incorporation of information and communication technologies (ICT) into schools. Some common educational applications of ICT include:

i) **One laptop per child:** Less expensive laptops have been designed for use in school on a 1:1 basis with features like lower power consumption, a low-cost operating system, and special re-programming and mesh network functions. Despite efforts to reduce costs, however, providing one laptop per child may be too costly for some developing countries.

ii) **Tablets:** Tablets are small personal computers with a touch screen, allowing input without a keyboard or mouse. Tablets can be downloaded with inexpensive learning software ("apps"), making them a flexible learning tool. The most effective apps develop higher order thinking skills and provide creative and individualized options for students to express their understandings.

iii) **Interactive White Boards or Smart Boards:** Interactive white boards allow projected computer images to be displayed, manipulated, dragged, clicked, or

copied. Simultaneously, handwritten notes can be taken on the board and saved for later use. Interactive white boards are associated with whole-class instruction rather than student-centered activities. Student engagement is generally higher when ICT is available for students use throughout the classroom.

iv) **E-readers:** E-readers are electronic devices that can hold hundreds of books in digital form, and they are increasingly utilized in the delivery of reading material. Students-both skilled readers and reluctant readers-have had positive responses to the use of e-readers for independent reading. Features of e-readers that can contribute to positive use include their portability and long battery life, response to text, and the ability to define unknown words. Additionally, many classic book titles are available for free in e-book form.

v) **Flipped Classrooms:** The flipped classroom model, involving lecture and practice at home via computer-guided instruction and interactive learning activities in class, can allow for an expanded curriculum. There is little investigation on the student learning outcomes of flipped classrooms. Student perceptions about flipped classrooms are mixed, but generally positive, as they prefer the cooperative learning activities in class over lecture.

ICT and Teacher Professional Development : Teachers need specific professional development opportunities in order to increase their ability to use ICT for formative learning assessments, individualized instruction, accessing online resources, and for fostering student interaction and collaboration. Such training in ICT should positively impact teachers' general attitudes towards ICT in the classroom, but it should also provide specific guidance on ICT teaching and learning within each discipline. Without this support, teachers tend to use ICT for skill-based applications, limiting student academic thinking. To sup-port teachers as they change their teaching, it is also essential for education managers, supervisors, teachers, educators, and decision makers to be trained in ICT use.

Ensuring benefits of ICT investments: Additional conditions must be met in order to ensure that the investments made in ICT benefit the students. School policies need to provide schools with the minimum acceptable infrastructure for ICT, including stable and affordable internet connectivity and security measures such as filters and site blockers. Teacher policies need to target basic ICT literacy skills, ICT use in pedagogical settings, and discipline-specific uses. Successful imple-mentation of ICT requires integration of ICT in the curriculum. Finally, digital content needs to be developed in local languages and reflect local culture. Ongoing technical, human, and organizational supports on all of these issues are needed to ensure access and effective use of ICT.

Resource Constrained Contexts: The total cost of ICT ownership is considerable: training of teachers and administrators, connectivity, technical support, and software, amongst others. When bringing ICT into classrooms, policies should use an incremental pathway, establishing infrastructure and bringing in sustainable and easily upgradable ICT. Schools in some countries have begun allowing students to bring their own mobile technology (such as laptop, tablet, or smart phone) into class rather than

providing such tools to all students-an approach called Bring Your Own Device. However, not all families can afford devices or service plans for their children. Schools must ensure all students have equitable access to ICT devices for learning.

Inclusiveness Considerations:

i) Digital Divide: The digital divide refers to disparities of digital media and internet access both within and across countries, as well as the gap between people with and without the digital literacy and skills to utilize media and internet. The digital divide both creates and reinforces socio-economic inequalities of the world's poorest people. Policies need to intentionally bridge this divide to bringmedia, internet, and digital literacy to all students, not just those who are easiest to reach.

ii) Minority language groups: Students whose mother tongue is different from the official language of instruction are less likely to have computers and internet connections at home than students from the majority. There is also less material available to them online in their own language, putting them at a disadvantage in comparison to their majority peers who gather information, prepare talks and papers, and communicate more using ICT. Yet ICT tools can also help improve the skills of minority language students-especially in learning the official language of instruction-through features such as automatic speech recognition, the availability of authentic audio-visual materials, and chat functions.

iii) Students with different styles of learning: ICT can provide diverse options for taking in and processing information, making sense of ideas, and expressing learning. Over 87% of students learn best through visual and tactile modalities, and ICT can help these students 'experience' the information instead of just reading and hearing it. Mobile devices can also offer programmes ("apps") that provide extra support to students with specialneeds, with features such as simplified screens and instructions, consistent placement of menus and control features, graphics combined with text, audio feedback, ability to set pace and level of difficulty, appropriate and unambiguous feedback, and easy error correction.

The Benefits of the use of ICT for teachers and their Students

In today's digital age, it's more important than ever for teachers to have a solid understanding and judgment about how to use ICT skills appropriately.

Not only can ICT training help teachers stay up-to-date with the latest technological advancements, but it can also benefit their students in a variety of ways. Having a digital pedagogy in early childhood education and primary education is about having the attitude and the aptitude.

From improving teaching methods to enhancing student engagement, here are some of the key benefits of our ICT training for teachers.

i. Improved Teaching and Learning Experience

One of the biggest benefits of ICT training for teachers is the improvement in the teaching and learning experience. With the use of technology, teachers can create

more interactive and engaging lessons that cater to different learning styles. This can lead to better retention of information and improved academic performance for students. Additionally, ICT training can help teachers stay up-to-date with the latest teaching methods and tools, allowing them to provide a more effective and efficient learning experience for their students.

ii. Increased Student Engagement and Participation

One of the most significant benefits of ICT training for teachers is the increased engagement and participation of students in the classroom. With the use of technology, teachers can create more interactive and dynamic lessons that capture the attention of students and keep them engaged throughout the class. This can lead to better retention of information and improved academic performance for students. Additionally, technology can provide opportunities for students to collaborate and communicate with each other, which can enhance their social and communication skills. Overall, ICT training for teachers can have a positive impact on the learning experience of students and help them achieve their academic goals.

iii. Access to a Wide Range of Educational Resources

Another benefit of ICT training for teachers is access to a wide range of educational resources. With technology, teachers can easily access online databases, educational websites, and digital libraries that provide a wealth of information and resources for their lessons. This can help teachers to create more diverse and engaging lessons that cater to the different learning styles and abilities of their students. Additionally, technology can provide opportunities for teachers to collaborate with other educators and share resources and ideas, which can enhance their teaching practices and improve the overall quality of education.

iv. Improved Communication and Collaboration

ICT training for teachers can also improve communication and collaboration between teachers and their students. With the use of technology, teachers can easily communicate with their students through email, messaging apps, and online discussion forums. This can help to create a more interactive and engaging learning environment, where students can ask questions and receive feedback in real-time. Additionally, technology can facilitate collaboration between students, allowing them to work together on projects and assignments, even if they are not in the same physical location. This can help to develop important teamwork and communication skills that are essential for success in the modern workplace.

This importance of ICT training for teachers permeates throughout our online professional development for early childhood teachers and Primary teachers, and throughout all our educational resources. We may support you in the following ways as you establish the foundation for your digital pedagogy:

Utilize Technology to Facilitate Student Learning:

Technology is a powerful tool for teachers to help facilitate student learning. By utilizing technology such as interactive whiteboards, collaborative software, and other digital resources, teachers can create engaging and stimulating learning experiences

for students. Additionally, these technologies can help make more complex topics easier to understand by providing visuals and audio feedback. Technology can be used in both the classroom and remotely to enhance student collaboration, comprehension, and communication.

Learn the Best Practices for Classroom Integration:

To ensure the successful integration of ICT into the classroom, teachers should become familiar with best practices for teaching with technology. This includes understanding different student learning styles and designing appropriate lesson plans to incorporate ICT tools. Additionally, teachers should be comfortable using the hardware and software needed to effectively teach ICT lessons. Taking part in ICT training for teachers can help provide teachers with the confidence and skills they need to effectively use technology in the classroom.

Disadvantages of the technology to use in the classroom

There are much fewer disadvantages of technology in the classroom.

Technology use in the classroom can be a distraction

True! Students may appear usefully occupied with the task when in fact they are working very inefficiently and failing to exploit the potential of ICT. They may divert from the intended task without it being too obvious. However, this is the reason why we should monitor technology to use in the classroom in addition to observing their learning progression in ICT.

Technology can detract students from social interactions

Some believe it is, however, we need to remember that technology in the classroom has a way of bringing students together. It has a natural ability to promote collaboration amongst students and also, there are many ways for students to socially interact with technology in the classroom like blogs.

The pros and cons of technology in the classroom remain a deciding factor for many teachers in an online and digital world.

Conclusion

The use of ICT has been rendering a significant contribution in bringing about improvements in the quality of education at all levels. In the present existence, from the education in pre-schools to university level, individuals possess this viewpoint that improvements can be made within the teaching-learning processes, instructional strategies, administrative, governance and managerial functions, when one implements ICT. In order to make effective use of ICT, it is vital for the individuals to augment their skills and abilities on continuous basis. ICT acts as a change agent within the learning process and enhances educational management. The factors influencing quality of education through ICT are, defining learning objectives, managerial functions, leadership skills, decision making processes, working environmental conditions, school resources, school context, school process, improved understanding of the subject and increase in interaction and teamwork. When the members of the educational institutions possess effectual knowledge and information in terms of making use of ICT in these aspects, then they are able to carry out their tasks and activities diligently

and resourcefully towards the accomplishment of desired goals and objectives. ICT has been viewed as having an impact on students, instructors, non-teaching personnel, and parents in order to improve the quality of education. The major role of ICT has been recognized in generating awareness and augmenting one's knowledge and skills regarding various subjects and concepts. When individuals are making use of technology to prepare their assignments and projects, then they are able to carry out their tasks in a convenient, manageable and well-organized manner. Students are able to obtain information through the internet in terms of all subjects and topics. Finally, it can be stated that Teachers and students should upgrade their skills and abilities and make use of ICT in the implementation of all tasks and functions within the educational institutions.

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10

The Current Scenario of ICT in Teaching-Learning Processes

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Abstract

The amalgamation of old tactics with new technologies is the answer to enhance the development of a particular sector covering health, economy, and education. We can't ignore the kind of knowledge our traditional educational system conveys from the learning of great saints like Sankardeva, Buddha, and Saint Kabir. But, adding a new layer of teaching style on top of the fountain of knowledge would be an added advantage for the new era of progress. There comes the importance of integrating Information and Communication Technology (ICT) tools in teaching-learning processes. It will help in fostering engagement and fun learning as well as will enhance the higher-order thinking skills of students. The classes become livelier with the introduction of tools like multimedia, e-learning, digital storytelling, and blogs. The ICT ensures effective learning that is more individualistic, provides scope for real-time assessment and feedback, and helps in visualizing the concepts for better understanding and retention. A field can progress if we embrace the new evolving technologies, learn them and adapt them to the classroom environment. It's time to adopt steps to uplift our education system by allowing faculties to learn ICT tools as much as possible. Various measures will address the challenges and make people aware of the opportunities in the digital sectors. The paper will focus on the current trend of ICT in the teaching-learning process, the scope, and the challenges. This paper will spread awareness of the educational revolution through ICT and contribute to realizing Digital India.

Keywords: *ICT education, teaching-learning, digital India, e-learning*.

Introduction

The teaching-learning process has changed tremendously from the earlier period. Change is inevitable. Charles Darwin, one of the pioneers of zoology, rightly said, 'It is not the strongest of the species that survives, nor the most intelligent, but the one that is most responsive to change.' The amalgamation of old knowledge with new technologies is the way to enhance the development of a particular sector covering a wide range of health, economy, and education. We can't ignore the knowledge our traditional educational system conveys from the learning of great saints like Sankardeva, Buddha, Kalidasa, and Saint Kabir. The wisdom from old saints is the base of human civilization. They have played an inevitable role in teaching-learning processes. But, adding a new layer of teaching style on top of the fountain of knowledge would be an added advantage for the new era of progress. There comes the importance of integrating Information and Communication Technology (ICT) tools in teaching-learning processes. The paper will focus on the current scenario of ICT in the teaching-learning process, the initiatives, and the challenges. This paper will spread awareness of the educational revolution through ICT and contribute to realize Digital India.

Significance

Teaching-learning is a transformative process that directs the learner's energy into a positive outcome with the help of knowledge. It includes various methods like participative, problem-based learning, and experiential learning. The power of technological aids can enrich the teaching-learning experience. According to UNESCO, 2002, ICT serves as one of the pillars of modern society. The introduction of ICT has brought a revolution in various sectors covering teaching-learning. ICT tools for teaching- learning supports lots of digital infrastructures and software tools. The digital infrastructures can be printers, computers, laptops, tablets, and software tools like Microsoft Teams, Google Meet, and Google Spreadsheets. Implementation of new technologies can significantly contribute to the educational process, and computers are integral components of it. Integration of ICT enhances the quality of education for students by optimizing information delivery. One can constantly reflect and analyse ones learning by building a lifelong intellectual partnership with technology. It will help in fostering engagement and fun learning as well as will enhance the creative, constructive higher-order thinking skills of students. The classes become livelier with the introduction of tools like multimedia, e-learning, digital storytelling, and blogs. The ICT ensures effective learning that is more individualistic, provides scope for real-time assessment and feedback, and helps in visualizing the concepts for better understanding and retention. ICT ensures the proper access, retrieval, storage, transmission, and modification of pieces of information through digital platforms. Moreover, the COVID-19 pandemic has proved the significance of ICT in teaching–learning process beyond the classroom. An increase in the use of ICT in education by integrating technology into the curriculum has a significant and positive impact on students' achievements.

Challenges

Although using ICT enabled tools in higher education is an effective way of

teaching, it also has various challenges. Teaching with ICT facilities will be a failed approach without up-to-date equipments. Infrastructure shortage is one of the major challenges faced in higher education. Most of the higher institutions in the country lack the necessary modern ICT facilities and provision of relevant and appropriate software that constitutes a major obstacle during incorporation of ICT in teaching-learning. Another problem faced especially in rural areas is the irregularity of power supply which makes it difficult to maintain the proper functioning of ICT equipment and facilities. Use of ICT in teaching-learning brings with it a new set of requirements for teachers as well as for the institution. These include certain administrative responsibilities like developing appropriate use policy, new criteria for assessments and providing proper training on use of ICT for teachers. Lack of training and awareness among teachers has created a tendency to resist in using such tools in their teaching processes. It also reflects their resistance to change and adapt to the new era of technology. Failure of implementing various schemes provided by government is a loophole of teaching-learning processes. Moreover, misuse of technology and cybercrimes like hacking are also some of the drawbacks of ICT.

Initiatives

Various government initiatives in collaboration with higher educational institutes have been introduced to make the teaching-learning process affordable, inevitable, and joyous experience for the welfare and encouragement of students (Table 1).

Table 1: Major Initiatives for ICT-enabled learning

Sl. No.	Name of the scheme	Description
1.	SWAYAM (Study Webs of Active Learning for Young Aspiring Minds)	Massive Open Online Courses (MOOCs) digital Platform.Provides the best quality educational contents that is accessible to anyone.
2.	NDL (National Digital Library)	Digital repository offering learning materials in multiple languages and also support differently abled learners.Includes textbooks, articles, videos, audio books, lectures and all other kinds of learning media.
3.	SWAYAM Prabha (the 34 Educational DTH Channels)	A high-quality educational channel on a 24X7 basis.Provides new contents on a daily basis in a repetitive manner.
4.	NAD(National Academic Depository)	Aspires to provide Digital, Online, Trusted, Verifiable Certificates.Unique, Innovative and Progressive initiative under “Digital India” theme.
5.	E-ShodhSindhu	Provide availability of international electronic journals and e-books to all the higher educational institutions, thus, enabling access to best

		educational resources in the world using digital mode.
6.	FOSSEE (The Free and Open-Source Software for Education)	Promote use of open-source software in educational institutions via documentation, such as textbook companions and instructional material, such as spoken tutorials. It also includes awareness programmes, such as training workshops, conferences and Internships.
7.	Virtual Labs	Provide experiential learning in online mode. More than 6 lakh students are accessing the course and more than 205 virtual labs in 9 Engineering & Science disciplines are operational.
8.	Ask A Question	The faculty from IIT Bombay address the queries coming from students of science and engineering backgrounds in an online forum or during an interactive live session.
9.	e-Kalpa	Provides online learning content for learning Design with various resources such as video lectures and presentations, materials of design and crafts. It also comprised of visual gallery enriched with rich heritage of art and design found all across the country.

NEP and ICT

NEP 2020 highlights the importance of using ICT-based educational initiatives to meet the current needs and future challenges. It proposes the modification and transformation of all aspects of the education system by 2030. It aims to create a new system involving India's traditions and value systems emphasizing SDG4, the major goal of 21st century education. Under this policy an autonomous body, National Educational Technology Forum (NETF) will be formed. The functions of NETF will include building of proper infrastructure in technological sectors of education, thus, channelizing new ideas in research and innovation. Development of Teaching-learning e–content in multiple languages and uploading it in platforms like DIKSHA, conduction of Pilot studies for online education and evaluation, providing training and incentives for teachers and adoption of Blended models of learning are some of the prime focuses of NEP 2020.

The Way Ahead

An early promoter of technology in the classroom, the educator, author, programmer, and public speaker, David Warlick stated that 'we need technology in every classroom and in every student and teacher's hand, because it is the pen and paper of our time, and it is the lens through which we experience much of our world.'

A field can progress if we embrace the new evolving technologies, learn them

and adapt them to the classroom environment. It's time to adopt steps to uplift our education system by allowing faculties to learn ICT tools as much as possible. Various measures will address the challenges and make people aware of the opportunities in the digital sectors. There should be the acceptance of embracing technology and realizing its benefits to bring it inside the classroom. Learning should not be confined to textbooks. Earlier there was no defined classroom. The saints used to get enlightened with knowledge through meditation sitting under a tree or hills. The changing era has brought so much advanced technology that we can now feel and learn what the saints have experienced. We can make our classroom lively and vibrant. We should realize that it is much beyond it. The steps we can take include the accessibility of course materials through cloud devices e.g., Dropbox, Google Drive, etc., and online accessibility of educational notes from the Institute Website and content community such as SlideShare, Scribd, and Quora. We can use computers, laptops, tablet computers, audio players, and projector devices in the best possible way and can access lectures and study materials from online digital repositories and digital libraries (E-ShodhSindhu, Shodhganga, e-PGPathsala). There should be sophisticated sound enhancement and microphones system for Lectures and to do Digital Video Recording to make students learn in a much better way through e-contents. There is a need of creating content in different languages to reduce the hindrance of accessibility to knowledge gain. Reducing the digital divide is also a serious matter of concern that should be taken into account. Here, comes the role of the government to take steps to bring and exchange ideas between communities involved with the teaching-learning process and the stakeholders. Teachers, students, and stakeholders need to be made aware and trained for the maximum benefits that can be availed through ICT tools. Creating SWAYAM-NPTEL Local Chapter is one of the praiseworthy steps taken by the government for the accessibility of courses by experts from all over the country in the online mode. The call of the hour is to take small efforts to make teaching-learning a joyful experience to make a big difference in the whole education system and thus, contribute to build the future of the nation.

"Do what we can with what we have and where we are." - Theodore Roosevelt

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11

Role of IQAC in Quality Initiatives of HEIs

Dr Dibya Jyoti Saikia

Abstract

To prepare for global competence, Indian higher education system is undergoing significant reforms. The overall quality of higher education is the primary focus in policy formulation, and certification of higher education institutions (HEIs) by the National Assessment and certification Council (NAAC) has been made essential in order to improve quality. The primary responsibility of IQAC is to develop, plan, and supervise various actions necessary to improve the quality of education provided in institutions and colleges. It can promote and determine quality-related actions and concerns through a variety of programmes and activities such as seminars, workshops, symposia, conferences, panel discussions, role-playing exercises, model demonstrations, case studies, academic meetings, and other similar events or activities. IQAC has its role in determining the benchmark for academic and administrative processes, catalyze active participation of teachers in teaching and learning processes, collecting feedback from all stakeholders on quality processes, quality initiatives and implementation of best practices, management information system for quality assurance, creating research and development environments, preparation of AQAR, SSR and other documentations. IQAC need to do periodic assessments and promote value framework with certain targets. IQAC holds accountability for institutional quality and promote collaborations in all aspects for a holistic approach. IQAC hold responsibility for participation in various accreditation and ranking, select and promote co and extra-curricular activities, constructing and monitoring effectiveness of various bodies, cells and committees. Professional practices and experiential learning-based practices are also must be monitored by IQAC for a global platform. Perspective and strategic plans initiated by IQAC should be made for every academic year and academic administrative audit of the institution is one of the prime importance in this aspect.

Keywords: *Higher education institutions (HEIs), National Assessment and Accreditation Council (NAAC), benchmarking*

Introduction

After India's independence, the panorama of Indian higher education shifted. Some notable changes in HEIs have occurred since the creation of the University Grants Commission (U.G.C) in 1956. Various commissions were formed to Kothari commission, Radhakrishnan commission, Indian education policy (1986), and new education policy have all been used to assess the quality of education. It is necessary to safeguard and monitor the quality of education at the university and college levels for students and stakeholders. As a result, as indicated by Nikam (2016), it should be required to construct an internal quality assurance cell (IQAC) at HEIs that is capable of communicating internally and externally to stakeholders.

The formation of an Internal Quality Assurance Cell (IQAC) by certified institutions is a significant step towards advancing long-term quality standards. In any institution, the IQAC is a crucial administrative body in charge of all quality problems. The primary responsibility of IQAC is to develop, plan, and supervise various actions necessary to improve the quality of education provided in institutions and colleges. It can promote and determine quality related activities and issues through various programmes and activities such as seminars, workshops, symposia, conferences, panel discussions, role playing exercises, (model) demonstrations, case studies, academic meetings, and any other type of event or programme for all of the institution's stakeholders. The primary responsibility of IQAC is to develop, plan, and supervise various actions necessary to improve the quality of education provided in institutions and colleges. It can promote and determine quality related activities and issues through various programmes and activities such as seminars, workshops, symposia, conferences, panel discussions, role playing exercises, demonstrations, case studies, academic meetings, and any other type of event or programme for all of the institution's stakeholders. Because quality improvement is a continual process, the IQAC has been tasked with developing a framework for purposeful, consistent, and catalytic improvement in educational institution performance.

Materials and method

The materials for the study were collected from different search engines like google scholar, Scopus and web of science. Keywords like IQAC, NAAC, benchmarking and role of IQAC etc. were used for searching.

Review of literature

Sawant *et al.*, 2016 in his publication mentioned about the Internal Quality Assurance Cell (IQAC) and its role for the uplifting of HEIs. He made conclusions based on the Questionnaires prepared for obtaining the outcomes of functioning of IQAC. He also remarked that some higher institutes lack sufficient information regarding research and development. Among the 29 HEIs, it was found in their study that 21 IQAC coordinators considered IQAC is very significant for the uplifting of HEIs whereas 8 disagreed the same. IQAC was considered excellent administrative body by 14, good by 10, poor by 3 and unsatisfactory by 2 respondent coordinators. In conclusion, it was said that IQAC is a significant body and contributes hugely to maintain quality

standard of HEIs in various aspects. He further concluded that the coordinators require more autonomy for better performance.

Sharma, 2016 stated that IQAC is mandatory and instrumental for bringing positive changes in HEIs. NAAC being the guiding force set certain criteria for the HEIs and IQAC has its role to implement the same for proper functioning of the system. He also mentioned that assessment and quality must be ensured through proper functioning of IQAC.

Herekar, 2013 stated that affiliated colleges should establish a strong and empowered IQAC by dynamic academician and administrators. He also emphasized that faculty members of institutions should proactively involve in promoting teaching learning process, promote ICT based facilities, evaluation process, grow a strong feedback and record system and encourage the consultancy and research approach.

Results and discussion

It was found that IQAC is the prime body of the HEIs that may function for proper functioning and uplifting. IQAC should work towards fulfillment of the five core values of NAAC which are contributing to National Development, fostering global competencies, inoculating value system in students, promoting use of technology and quest for excellence. The present finding is in accordance with Gupta et. al., 2016 who stated that IQAC benefits the HEIs as it clarifies and helps institutes to focus institutional functioning towards quality enhancement, internalization of quality culture, ensuring enhancement and coordination among various activities, providing good basis for academic functioning and building a constructive and organized methods for well internal communication. Moreover, it was also found that IQAC has a definite role in performing academic and administrative audit of the college.

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12

An Analysis of the Departmental Experimental Best Practices

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Saraswati Devi

Abstract

Science departments are following different experimental best practices in terms of their laboratory experiments, projects, field visits etc, which have strengthened the basic experimental knowledge of the students. During the last few years, it has been observed that laboratory practices need to be developed in order to cope up with the changing scenario of the experimental as well as skill-based education. At the same time in these days of super specialization, perfection of the students in a specified field is of utmost necessary. Keeping these points in mind our department is forwarding the students to experimental fields such as designing and fabrication of electronic appliances. Performance of the students in this field has been monitored in regular interval of time. The ageing effects of fabricated appliances were regularly tested for its durability and applicability. The entire processes have been carried out again by the next batch of students. Thus, we are continuing this experimental practice, terming it as a best practice and satisfactory results have been obtained. In this paper, a brief analysis of this laboratory practice for the last five years has been presented.

Keywords: *Electronic appliances, aging effect, durability and applicability.*

Introduction

NAAC (National Assessment and Accreditation Council) is an autonomous body established by the University Grants Commission (UGC) of India to assess and accredit institutions of higher education in the country (Varghese M. A. *et al*, 2020) NAAC assessment is a crucial process that evaluates the quality and performance of higher education institutions based on various parameters such as curriculum, research, governance, infrastructure, and student support services. The purpose of NAAC accreditation is to elevate the holistic development of the Higher Educational Institutions (HEIs). The process of assessment and accreditation helps an institution to know its strengths, weaknesses, opportunities, and challenges (Jha, S. N., 2021). One such criterion to evaluate the Higher Education Institutions (HEIs) is the best practice acquired by them. Under the criterion VII, NAAC has allotted 100 points (Varghese M. A. *et al*, 2020) to "Innovation and Best Practices". Therefore, it is an important aspect to score good grade in the assessment process. An institute has to provide at least two best practices as per the NAAC format: Title of the practice, Objectives of the practice, the context, the Practice, Evidence of success, and Problems encountered and resource required (Varghese M. A. *et al*, 2020)

One could define best practice of an institute as the practices which add commendable value to an institution. In other words, institutional excellence is the aggregate of best practices followed in different areas of institutional performance (Varghese M. A. *et al*, 2020). The purpose and intent of the best practices should be to focus on continuous improvement efforts and understanding the fundamentals that lead to success. Following this concept, every department can have their own best practices which in turn could become institutional best practice. One such best practice adopted by the Department of Physics, Mangaldai College is to strengthen the basic experimental knowledge of the students.

Objectives of the Practice

If decision-making and investigation are encouraged, the undergraduate labs are more positive and more effective for students. Theory and experiment is the basis of Physical Science. What it means to do experimental physics is to grasp the basic underlying concepts of physical theories through first-hand experience in the laboratories. This will inspire the students to visualise and understand the advanced topics. In addition to this, the labs need to showcase the techniques and skills to conduct the experiments. In line with the above motivation, Department of Physics, Mangaldai College has been providing hands on experience on designing and fabrication of basic circuits required in our day to day lives. The projects related to the above-mentioned context is discussed in the further sections.

Methodology

The designing of any electrical circuit requires proper analysis and synthesis to obtain the desired output. The design and fabrication of a regulated power supply (rps) is discussed below.

The first project taken up by the students was to design and fabricate a single

mode regulated power supply and a dual mode regulated power supply which includes designing and fabricating series/parallel LCR circuit using different electrical/electronic components such as designing of PCB and soldering. The basic principle of designing a power supply was taught to the students by giving insights into the following required methods: general block diagram, the input transformer, the rectifier circuit, the smoothing capacitor/filter, the regulator and regulated power supply design (Maloney T. J. and Dabral S., 1996,Williams, A. B. and Taylor Fred J. 2006, Dimopoulos and Hercules G.,2011). Selection of proper mode of use and understanding the way of equipment testing was taught alongside.

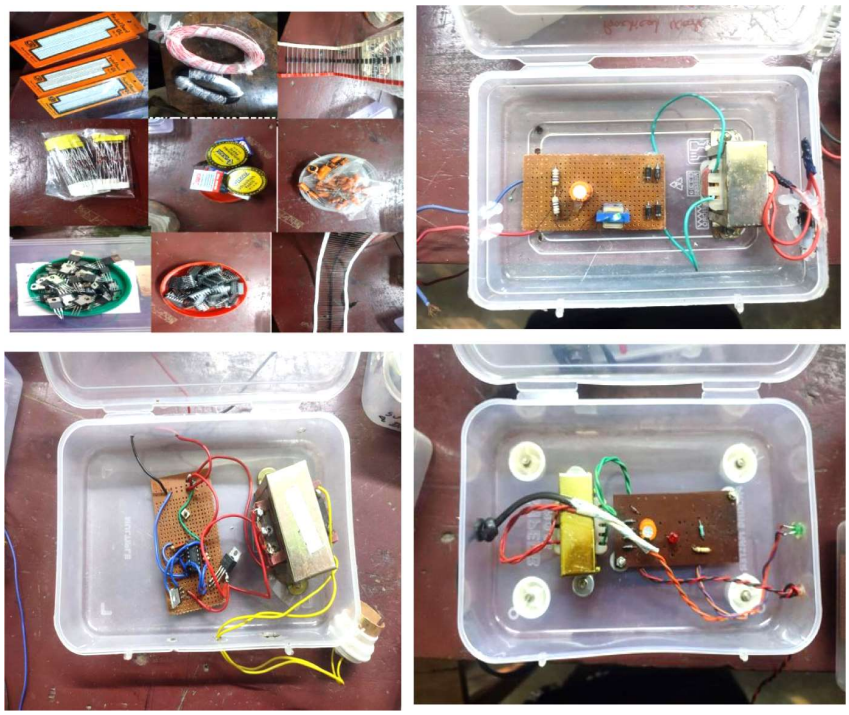

Fig 1: Some samples of raw materials and projects made by the students

Although such power supplies are found in abundance in the commercial markets and can be bought when needed, still we chose to train the students to design these supplies rather than buying the same. The products were not just cost-effective but also later on used in our labs in different experiments and some are kept to be used whenever required. These types of practice also helped some students to pursue higher studies with Applied Physics and Electronics as the core subject. Also, after graduating with such experiences, even if it is at the basic level, students will feel quite confident to pursue further education in different technicalbranches. The power supplies made by the students are kept in good-condition as far as possible and can be used when required. In addition to this, the following designing of circuits were also done:

Sl. No.	Name of the Project	No. of Students (2016-17 and 2017-18, 2018-19, 2020-21, 2021-22 session)
1	Power Supply Circuit	16
2	Audio Frequency Amplifier	5
3	RC Coupled Amplifier	11
4	Diode-Transistor Logic Gate	13
5	De-Morgan's Theorem	9
6	Dual Mode Power Supply	12
7	Single Mode Power Supply	8
8	FM and AM Radio Receiver	10
9	Regulated Positive and Negative DC Power Supply	13
10	Direct Coupled Amplifier	1
11	Variable DC Power Supply	5
12	Anti- theft detector	1
13	Extension board having ac voltage regulating and measuring facilities	4
14	Filter circuits	30
15	Clippers and Clampers	43

Problems encountered

While carrying out the best practice it was found that most of the students lacked basic knowledge of PCB, soldering and theoretical knowledge of the subject topic. Hence attempts were made to make them familiar with such topics by imparting knowledge to them. It was observed that students were able to gain hands on experience of what he/she has learnt in the theoretical part of the syllabus that helped in boosting their understanding of the topic in a better way. However, while designing the circuits one is bound to encounter certain problems in spite of taking high precautionary measures. Some of the common problems encountered and the necessary resources to tackle them are enlisted below.

- **PCB Failure**, which is evitable. Detection of such PCB failures were also not that easy as the same called for ***good testing equipment's and sound testing protocols***
- **Design Flaws** which showed up in some cases due to poor PCB design which further lead to heat damage, open and short circuit issues**.** Such design flaws

were difficult to correct and the student had to redesign their PCB.

- **Soldering Flaws** which popped up in some cases due to poor performance of the students. Such flaws further resulted in open circuit, short circuit issues. Although such soldering defects were corrected by repairing the defective joints, ***yet a proper detection of the bad joints needed some testing equipment's.***
- **Component Failure:** Some cases were encountered where even after properly following the steps, the circuit retained some issues. Later on, it was found that these were due to some damaged and defective electronic components. In most of the cases, the reason was found to be either soldering flaw or design flaw.
- **Age and Physical damage**: Even after proper designing and fabrication of PCB, they can malfunction because of exposure to heat, dust, natural decomposition etc. To avoid further malfunction, ***proper storage of such PCB's has been considered***.

It is to be noted that during the lockdown period, this practice had come down to a halt due to the pandemic. It was retrieved from the session 2020-21.

Evidence of Success

The evidence of success can be drawn from the following points-

1. In the past sessions, a total of 181 students were benefitted by designing not just power supply circuits but various other basic electronic circuits used in day to day lives.
2. Upon completion of this practice, students were able to understand the basic underlying process of designing, fabrication and working of a regulated power supply.
3. Power supplies made by the students were cost-effective and also later on used in our labs in different experiments and some are kept to be used whenever required.
4. These types of practice have helped the students to pursue higher studies with Applied Physics and Electronics as the core subject.
5. The skill developed during the practice has boosted the confidence level of students which might help them to acquire skilled based jobs.

Conclusion

The motivation behind considering the subject topic for the best practice was to impart the students not just the knowledge required to make a PCB but also gain knowledge in designing and fabrication of some other electronic devices. In course of performing the experiment individually, the students got the chance to explore and perform every step by themselves and thereby gaining an experimental taste of the topic that they have learnt theoretically. They also learnt about the precautionary measures that should be taken regarding the complete understanding of the subject topic.

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13

Impact of ICT Use in the Lives of Students and Teachers in HEIs

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Abstract

The use of ICT in the classroom is essential for giving pupils the chance to learn how to function in the information age. Experiences with the technology in pedagogically advantageous ways may have an impact on pre-service teachers' aspirations to use ICT for teaching and learning. Educational institutions are under increasing pressure to use ICT to impart to pupils the knowledge and skills they will need to succeed in the digital era. ICT adoption and integration in the classroom creates greater opportunities for instructors and students to work together more successfully in the globalised digital world. This article was chosen due to the strategic significance of ICT in education in general and in particular, due to its significant potential to revolutionise how students are taught in the classroom. It presents opportunities for more flexibility, accessibility, and involvement to inspire teaching and learning at the individual, collective, and societal levels. ICT implementation significantly improves learning facilitation and enhancement. ICT gives teachers the freedom to play creatively and to take use of efficient collaboration, processing, and problem-solving techniques. It also gives students a space to experiment with new ideas. Students then have the opportunity to improve their cognitive abilities as a result of this. It is discovered that empirical study on the use of ICT is essential for exposing barriers and for fostering training opportunities that are essential for the learning process, teacher satisfaction, and student accomplishment. Effective ICT use, however, broadens the perspectives of teachers, encourages greater student participation and access to learning, and offers a sensible opportunity for when and how to use ICT.

Keywords: *ICT, HEI, adoption*

Introduction

Over the past few years, communication, computer, and information technology have proliferated dramatically over the world. Wide-ranging potential for the use of new technology tools in teaching and learning systems have been made possible by the development of new broadband communication services and the integration of computers and telecoms. The fusion of computers and communications opens up possibilities for education systems that were previously unthinkable. Thanks to its ability to integrate, enhance, and meaningfully engage with each other over a wide geographic distance to satisfy the learning objectives. There is now a world outside of the classroom available to teachers and students. We are grateful for the advancement of communication and computer systems, as well as for the ease of use, strength, and variety of information they can transmit.ICT should enable teachers and students to collaborate across institutional and geographic boundaries, promote learner autonomy, and include everyone in their teaching.

Learning environment attributes

Utilising ICT to support learning environments that investigate reality and develop knowledge, encourage active learning and assessment, inspire students, provide tools to boost student productivity, provide scaffolding to support higher level thinking, and increase collaboration and cooperation, all serve to improve learning. Engaging students in ICT based activities can strengthen the reasoning abilities of the students, can improve verbal communication and can promote intellectual capacity of the pupils. However, it is obvious that rather than being causal, the relationship between using ICT and learning gains is probabilistic. By tying ICT use to instructional techniques or activities built on well-researched learning theories, it is possible to hypothesise about potential effects on student learning.

Impact of ICT application on students

ICT is one of the most important developing technologies, having a significant impact on every area of human endeavour. Over the years, it has undergone a significant transition that has altered how people live, study, work, and play while also making teaching and learning easier and more pleasant. As a result, the internet has become a crucial instrument for the current information culture, and it is impossible to imagine life without it (Adelakun *et al*., 2020). ICT makes use of several technologies to more quickly record, communicate, gather, store, analyse and disseminate the data required to complete a given task (Bobillier Chaumon *et al*., 2014; Pedagoo, 2020). ICT has both positive and negative effects on kids' academic achievement, but the positive effects are more prevalent. ICT uses a variety of information technology tools to improve pupils' knowledge and memory recall. It is important to note that the usage of ICT promotes establishment of "learner-centric" environment and improves student comprehension and memory capacity by utilising a variety of IT resources, like films, graphics, animation, etc., in a thorough and enjoyable manner. Some benefits of using ICT include easy distribution of learning materials, enhancement of interactivity, promoting collaborative activities among students, promoting active and independent learning, enhancing digital literacy of the students, improve acquisition of practical

ICT skills, better understanding of difficult concept etc. Prior research (Lowther *et al*., 2008; Weert & Tatnall, 2005) has demonstrated that effective use of ICT can improve educational quality and link learning to real-world contexts. Learning can occur at anytime and anyplace because to the accessibility of course materials available online, which are accessible twenty-four hours a day, seven days a week (Lowther *et al*., 2008; Weert & Tatnall, 2005). ICT, according to Reid (2002), gives students greater time to delve further into subjects outside of the confines of the course material. Its utilisation not only affects conventional teaching techniques but also compels educators to personalise their own.

Impact of ICT use on teachers

Use of ICT greatly benefits the teachers in a myriad of ways. Studies show a direct correlation between students' achievement and effective teachers' ability to create engaged, interesting learning environments. Teachers' interactions with students can also have a positive effect on how students see learning, their role in the classroom, their own skills, and their motivation to succeed. Incorporation of ICT in classrooms enables the teachers to develop effective communication skills.

Digital literacy is another aspect in which teachers excel while incorporating ICT into teaching. Every educator who is tech savvy contributes to giving the student body the aptitude and technical innovation needed to meet international standards. When applied properly and effectively, technology can be used to lessen certain differences. Teachers can guide the class through a lecture while audio learners record it for later review and visual learners follow along with illustrations on their tablets. Teachers can provide their pupils the choice of producing projects like movies, podcasts, or written articles with the use of technology like this. Digital literacy is required to establish the criteria and parameters for this kind of distinction. Digitally savvy educators are also aware that it is less about the technology itself than it is about the personalised learning opportunities it may offer each student. This is what motivates differentiation and can help it become effective and highly focused to meet the needs of each learner. Incorporation of ICT can boost the creativity of teachers significantly.

ICT use can influence the competence of teachers. With the aid of digital technologies, teachers can facilitate lessons more successfully. Advancement of knowledge and attainment of functional skills is highly associated with ICT use by teachers. ICT is used by teachers to develop course material. This method enables students to have a thorough understanding of the topics covered in class and to use what they have learned to solve problems in teams in the real world (Lawrence and Tar, 2018).

Challenges and barriers

The following challenges to ICT adoption and integration in HEIs were noted by Stockdill and Morehouse (1992): user characteristics, technicalities, content qualities, and organisational skills. ICT implementation constraints might be personal, technological, organisational, and/or institutional, according to Sherry and Gibson (2002). Individual and institutional barriers are the two categories of constraints on teachers' use of ICT in the classroom, according to Becta (2004). Lack of time, lack of

confidence, ignorance of ICT, and resistance to change are some of the challenges faced by teachers. Obstacles at the institutional level include a lack of funding, inadequate hardware and software, and inadequate technical problem-solving education. The difficulty of ICT integration into teaching and learning increases significantly when ICT is combined with other internal applications utilised in teaching and learning. These difficulties prevent teachers from implementing ICT in their classrooms. To properly use and integrate ICT to enhance students' learning, teachers must complete professional training. Teaching staff members require instruction in utilising and integrating technology, as well as preparation for doing so. Many teachers lack access to technical resources like projectors and smart whiteboards, which can be used in the classroom to provide visual examples. Access to information and help for the use and integration of ICT is a problem in many courses in developing countries. Teachers in HEIs also struggle with a lack of technical support. Lack of technical help prevents teachers from adopting and integrating technology in the classroom, according to Korte and Husing (2007), who emphasised the significance of technical assistance for enabling instructors to integrate technology into their teaching.

Conclusion

The aim of this paper was to provide a better understanding on how ICT use has impacted teachers and students of HEIs. This study shows that, despite their high ambition, teachers still face a number of challenges when attempting to integrate ICT into HEIs. Teachers must have access to ICT resources, including hardware, software, and technical support, since it has been determined that confidence, competence, and accessibility are crucial components for technology integration in institutions.

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14

NAAC's Revised Accreditation Framework (RAF) with Special Reference to Data Validation and Verification Process

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Abstract

The Revised Assessment and Accreditation (A&A) Framework was launched in July 2017. It is an explicit ICT enabled process having a healthy objective with transparent, scalable and sound mechanism. It shifts from qualitative peer judgement to data based quantitative indicator evaluation with increased objectivity and transparency. The RAF introduces the element of third-party validation of data. The present system enhances the participation of students and alumni in the assessment process.

Data Validation and Verification (DVV) is a rigorous and time-bound process of validation and verification of quantitative data submitted/ uploaded by the HEI on the NAAC's online portal as part of submission of SSR. The DVV is initiated by NAAC for the concerned HEI by authorising/ entrusting a third party or agency which meticulously verifies and validates the genuineness or accuracy of the data submitted or uploaded. The HEI having submitted its SSR on-line, has to wait until the DVV process gets underway and must reply to all the queries of the DVV partner by timely uploading all the relevant data/ files in the clarification box failing which the HEI shall be liable for disqualification for Accreditation process. The intention behind NAAC's applying this software-based mechanism is precisely to bring in transparency, accuracy and objectivity in the accreditation process. The paper attempts to throw light on the credibility and accountability of the DVV process which is instrumental in rendering the Revised Accreditation Framework (RAF) of NAAC more reliable and hassle-free and also crucial for the final NAAC-grading.

Key Words: *RAF, Validation, Verification, Accreditation, DVV, HEI, SSR*

Introduction

National Assessment and Accreditation Council (NAAC), an Autonomous Institute of University Grants Commission, has been assessing and accrediting higher education institutions for enhancement of quality in education since 1994. In order to evolve a suitable tool for assessing the quality, timely efforts have always been implemented by NAAC to modify its methodology and pathway for Assessment and Accreditationprocess in a digitally time bound and transparent way in HEIs in Indiaat partheglobal context. NAAC modifies the grading system time by time by incorporation and omission of key indicators and matrics with the changing scenario of higher education. Now-a-days, accreditation of HEI by NAAC is a key eligibility criterion for academic, administrative as well as infrastructural upliftment of the HEI by dint of grants and supports. Presently, NAAC offers the following grades to the HEI based on the CGPA achieved by the HEI.

Revised Framework of Assessment and Accreditation

The RAF for NAAC accreditation process is free from the earlier process in terms of robustness, objectivity, transparency and scalability while ensuring that the entire process becomes ICT enabled. Prior to RAF, the peer team visited the HEI physically and verified and validated the information furnished by the HEI in the SSR and prepared the Grade Sheet which in turn was needed to be approved by NAAC's executive council; this accreditation process was qualitative rather than quantitative. But the RAF is more quantitative rather than qualitative involving IT-enabled digitalized system with substantial thrust on verifiable data.

Eligibility norms for assessment

HEIs to be eligible for the process of assessment and accreditation, must have at least two batches of graduated students or have six years of existence, whichever is earlier, and fulfil some other conditions as mentioned below:

a) Institutions are to be affiliated to a university recognized by UGC to be eligible for assessment.

b) Institutions applying for subsequent cycles of Accreditation can submit the IIQA during the last six months of the validity period.

c) Institutions applying for Assessment and Accreditation by NAAC need to mandatorily upload the information on "All India Survey on Higher Education" (AISHE) portal. For Registration in the NAAC HEI portal, AISHE code (reference number) is a must.

Steps of Assessment and Accreditation Process

In the present-day context, HEIs willing to get accredited by NAAC will have to comply with the following steps sequentially:

- HEIs registration on the NAAC website
- Submission of Institutional Information for Quality Assessment (IIQA)
- Submission of SSR on acceptance of IIQA
  (On rejection, an institute has 2 attempts to resume the IIQA form within 1 year)

- ❖ Student Satisfaction Survey (SSS)
- ❖ Starting of the DVV process and Pre-qualifier Score
- ❖ Onsite Peer Visit by NAAC
- ❖ Announcement of the Institutional Grading by NAAC

Interested HEI in the first step of A & A process is required to register itself with NAAC by submitting necessary details like AISHE Code, head of the institute and IQAC coordinator details etc. After verification, NAAC gives the user ID and password for the HEI and that will be treated as the HEI portal in NAAC website for any of the future action of A & A process. Through this portal, HEI submits IIQA (Institutional Information for Quality Assessment) through its registered portal. NAAC may, however, accept or reject the IIQAbased on the applicant institution's due compliance to the set norms. If the IIQA is rejected in the first attempt, the institution will have two more chances to re-submit the same with the already paid fees or the institution will be asked to upload its SSR (if the IIQA is accepted by NAAC) in the prescribed format to be available online on the NAAC portal of the HEI, accompanied with all the supporting/ relevant documents within 45 days from the date of acceptance of IIQA. Institutions failing to submit the SSR within 45 days will have to apply again by initiating the process of submission of IIQA with requisite fees. Special request for extension of submission-deadline of SSR can be entertained by NAAC only in matters of natural calamities, or any technical glitch for a period not exceeding 15 days. In case of failure to honour the extension granted, the entire process of assessment and accreditation for the concerned HEI will get terminated and IIQA fees paid shall be forfeited.

Student Satisfaction Survey (SSS)

As per the revised system, Student Satisfaction Survey is conducted online after submission of SSR. NAAC sends a set of SSS questionnaire (20 objectives& 01 subjective) to the e-mail IDs of all the students from the database and responses received from the students have to be at least 10% of the student population or 100, whichever is lesser. The SSS will only be considered for evaluation if the response rate is as per the limit specified by NAAC.

Data Validation and Verification (DVV)

The submitted data on Quantitative Metrics (QnM) will come under the purview of a process called Data Validation and Verification (DVV).In the DVV process, all the information submitted along with SSR are validated through the Data Validation and Verification (DVV) process using an online mechanism, which generates a pre-qualifier score. A deviation report would be sent to the HEI seeking clarification. In the DVV process, NAAC can enquire about any documents for verification and validation of the claims made in the SSR if it is supposed to be needed. DVV process starts after the submission of SSR. During the DVV stage, the HEI is expected to respond with clarity within the stipulated time set by the DVV team. NAAC entrusts some third party/ partner for the task. Upon clarification of the queries having been submitted by the HEI, the data will again be sent to the DVV partner for further verification and validation. The DVV process normally gets completed in not more than 30 days. Once the DVV

process is over, a DVV deviation report is generated on the basis of which accreditation & assessment process will be initiated. NAAC will reassess the submitted data and depending on the extent of the deviation it will arrive at a pre-qualifier score. The minimum pre-qualifier score that is set to qualify for the SSR is 30%. The pre-qualifier scores at this level don't include the Student Satisfaction Survey (SSS).HEI with less than 30% has to re-apply for the A&A process through the IIQA afresh and pay all fees all over again after 6 months from the date of declaration of the pre-qualification. Therefore, based on the DVV score, the NAAC authority would decide on any of the decisions: a) Dates of the Peer Team Visit, b) Deferring the Peer Team Visit, c) Disqualifying the institution from having a Peer Team Visit. If the HEI is found to have submitted fraudulent data/information, it will not only be debarred from the accreditation process but also dealt with legally. On the other hand, HEI clearing the DVV process will have to be ready for the Peer Team Visit (PTV). Then the HEI is informed through official mail or in the HEI portal about its pre-qualified status. HEI that is pre-qualified will only enter the next round of assessment—the on-site visit by the Peer Team.

In all uploadable documents the authority must sign and scanned copy of the documents should be uploaded. Insertion of scanned signature in the soft copy is not accepted. HEI can use class 3 digital signature of the concerned authority. Class 3 digital signature is the highest level of authenticate signature. NAAC portal supports only 5MB large file for uploading. If the file is larger than 5MB, it should be stored in the HEI website and the link should be provided in the proper space of the online SSR format. The Online file should neither be stored in google drive nor be password Protected. It is mandatory to respond to all clarifications raised by the DVV for the items in the extended profile and metrics, within the stipulated time.

Peer Team Visit and Logistic Fees

NAAC discloses the names and profiles of the Peer team members just three days before the scheduled date of visit. HEIs will not be required to make any payment to the visiting team. NAAC bears the responsibility for all the logistic expenses to be incurred for arrangement of the PTV. The pre-qualified HEI needs to pay an advance towards logistic expenses that may be incurred in the arrangement of the Peer Team Visit. Peer team visit of the HEI does not exceed three months from the date of clearance of the pre-qualifier stage.

Result

The final result of the Assessment and Accreditation process is worked out through combined evaluation of the qualitative and quantitative metrics. This compiled outcome document is comprised of three components: Peer Team Report; Graphical Representation of Quantitative Metrics (QnM); Institutional Grade Sheet. The institutional CGPA is calculated based on the System Generated Scores (SGS) of the quantitative metrics, the scores from the qualitative metrics (evaluated during on-site visit) and the scores obtained on the Student Satisfaction Survey.The CGPA obtained by the assessed HEI is taken into account for arriving at the final grade to be assigned on a seven-point scale as shown in the table 1. Institutions securing a CGPA equal to or less than 1.50 are declared by NAAC to have been "Assessed and found not

qualified for Accreditation".

Table 1: Institutional Grades and Status of Accreditation

Range of Institutional Cumulative Grade Point Average (CGPA)	Grade offered by NAAC	Status of the HEI
3.51-4.00	A++	Accredited
3.26-3.50	A+	Accredited
3.01-3.25	A	Accredited
2.76-3.00	B++	Accredited
2.51-2.75	B+	Accredited
2.01-2.50	B	Accredited
1.51-2.00	C	Accredited
≤ 1.50	D	Not accredited

The Peer Team Report consists of a General Introduction of the assessed HEI, Criterion wise analysis of the evaluated qualitative indicators, over all SWOC analysis and Recommendations/Suggestions for quality enhancement of the assessed institution. Graphical Representation of Quantitative Metrics reflects the Quality Profile of the HEI which is system generated statistical analysis of quantitative indicators. Institutional Grade Sheet is a software generated document reflective of the scores on the qualitative indicators, quantitative indicators and student satisfaction survey. These three above components form the "NAAC Accreditation Outcome" document.

Conclusion

It is obvious that the sole function of NAAC has been to monitor the quality compliance of HEIs. On this count the enforcement of the RFA and Accreditation by NAAC is a welcome move. NAAC's accreditation can be construed as a powerful tool of quality assurance which asserts that an accredited institution has had to undergo a rigorous process of external peer evaluation based on a set of pre-defined standards/ principles. NAAC has consistently been at work to design a potent system of accreditation based on the principles of transparency and quality enhancement and maintenance. Data Validation and Verification (DVV) is an integral part to this robust and transparent system of accreditation of NAAC. Due to the validation and verification of the quantitative data by automated software, the accreditation by NAAC has become more objective and reliable. Importantly, the DVV process can help an HEI to get a better grade by suggesting modification or improvement in the supporting documents furnished along with the SSR. Similarly, an HEI may be awarded a poorer grade than it deserves or it may attract a penalty due to mismatch or misappropriation of data. So, responding to DVV queries in an exact, vivid and authentic manner plays a pivotal role in the final grading awarded by NAAC. Thus the DVV is a crucial aspect of the NAAC

assessment process. Last but not the least; it can be assumed that the existing framework of NAAC assessment is going to be aligned to the National Education Policy (NEP), 2020 in near future.

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15

A Study on Institutional Best Practices Implemented by Selected NAAC Accredited Higher Educational Institutions in Assam

Dr. Dhiren Deka

Abstract:

India has one of the largest and diverse education systems in the world. Privatization, widespread expansion, increased autonomy and introduction of programmes in new and emerging areas have improved access to higher education. But, at the same time, it has also led to widespread concern on the quality and relevance of the higher education. In order to address the quality in Higher Education Institutions (HEIs), the Government of India established National Assessment and Accreditation Council (NAAC) in 1994 and subsequently it has been carrying out the process of quality assessment and accreditation over the past two decades. As a part of assessment process the HEIs gone through self-evaluation process and subsequently prepare a Self Study Report (SSR). NAAC primarily focus on quality culture in terms of quality initiatives, quality sustenance and quality enhancement as reflected in the vision, organisation, operations and process of HEIs. To be more precise, NAAC has set seven criteria for assessment of HEIs. As a part of the seven criteria, an institution needs to implement two best practices as per NAAC format provided in the Manual which carry 30 weightage. The present paper intends to examine the different best practices implemented by the selected NAAC accredited colleges in Assam.

Key Words: *Institutional best practices, Self Study Report (SSR), NAAC, HEIs*

Introduction

India has one of the largest and diverse education systems in the world. Higher education in India is undergoing considerable change.The privatization, widespread expansion, increased autonomy and introduction of programmes in new and emerging areas have improved access to higher education (NAAC, 2022). Of late, Indiahas witnessed an impressive growth in the number of higher educational institutions and Gross Enrolment Ratio (GER). According toAll India Survey on Higher Education 2020-21 report,estimated total enrolment in higher education institutions is 4,13,80,713 of which 90,84,095 is in universities and its constituent units, 2,95,40,392is in colleges, and 22,66,516 in stand-alone institutions.During the same period, 1113 universities and 43796 colleges were listed on the AISHE Portal. Out of the 1113 universities, 235 belonged to central government, 422 belonged to state government, 10 were government aided deemed universities, and 446 were privately managed but unaided. Further, out of 41600 colleges which are responded to AISHE Portal,21.4 percent are government colleges, 13.3 percentare private aided and 65 percent are private unaided.Majority of the colleges are smaller in terms of enrolment,24.5 percent of the colleges are having enrolment less than 100 and 48.5 percent of the colleges have a student strength of 100 to 500 which means that 65.1 percent of the colleges got enrolment less than 500 students and only 4 percent colleges have enrolment of more than 3000.

As India isexperiencing growth in terms of GER and HEIs,widespread concern is on rise aboutthe quality and relevance of higher educational institutions. For instance, FICCI (2012) pointed out that while India has shown impressive growth in adding numbers ofhigher education institutions and student enrollment, the dearth of quality institutions in highereducation still persists. It is ironic that not a single Indian university figures in the top 200 list of anyof the premier ranking agencies like Times Higher Education, Shanghai Jiao Tong University Rankingand QS Asia. The British Council (2014) also highlighted that many HEIs in India are suffering from low quality of teaching and learning. The system is beset by issues like chronic shortage of faculty, poor quality teaching, outdated and rigid curricula and pedagogy, lack of accountability and quality assurance and separation of research and teaching.According to the University Grants Commission of India (2008), out of 317 universities under the UGC purview only 164 universities are recognized as eligible to receivedevelopment grants from the UGC under 2f and 12 B. The remaining 153 universities are not covered simplybecause they do not meet minimum investment in physical facilities and infrastructure criteria laid down by theUGC to receive its assistance. Again, out of 14,400 colleges that are under the UGC purview as per its mandate, only 6,109 colleges are recognizedunder section 2(f) of the UGC Act. The remaining 9,875 colleges are not recognized by the UGC because they donot presumably meet the minimum criteria of physical facilities and infrastructure. Further, way back,UGC (2003) pointed out that unless the quality and standard of Indian higher education institutions is enhanced zealously and sustained at a high level through innovation, creativity and regular monitoring, it seems to be difficult for the Indian academics/professionals to compete in the World scene. This calls for suitable assessment and accreditation mechanisms to be available in the country to ensure the quality and standard of the academic/

training programmes at higher educational institutions. The assessment has to be continuous and the process has to be transparent to gain the acceptance of the society at large. Given that the HEIs in India should emphasise on quality parameters along with the necessary and inevitable quantitative expansion.

Statement of the Problem

In order to address the quality in HEIs, the Government of India established the National Assessment and Accreditation Council (NAAC) in 1994 and subsequently it has been carrying out the process of quality assessment and accreditation over the past two decades. As a part of assessment process the HEIs have gone through self-evaluation process and subsequently prepare a Self Study Report (SSR). NAAC primarily focus on quality culture in terms of quality initiatives, quality sustenance and quality enhancement as reflected in the vision, organisation, operations and process of HEIs. To be more precise, NAAC has set seven criteria for assessment of HEIs. As a part of the criterion 7, an institution needs to implement two best practices as per format provided in the Manual which carry 30 weightage. Therefore, it has become imperative to examine the different best practices implemented by the higher education institutions.

Significance of the Study

The present paper examines the best practices successfully implemented by the higher educational institutions as per the format provided in NAAC Manual. The study will equip various stakeholders about the objectives or intended outcomes of the best practices and underlying principles. One can gain the contextual features or challenging issues that need to beaddressed in designing and implementing thepractice. The work will help in identifying the problems encountered and resources required to implement the practice. Furthermore, the present study will act as a torchbearer in incorporating the best practices in higher education institutions to enhance qualityand make the institutionsready for future.

Objectives of the Study

The primary objective of the present paper is to examine the best practices implemented by the selected NAAC accredited colleges in Assam. The main focuses of the paper are on:

1.To find out the objectives/intended outcomes of the best practices.

2.To find out the underlying principles or concepts of the best practices.

3.To examine the contextual features those are addressed in designing and implementing the best practices.

4.To study the main constraints and limitations in implementing the best practices.

5.To examine the evidences of success of the best practices implemented by the selected colleges.

Research Methodology

The present work is descriptive in nature. The study is primarily based on secondary data. To fulfil the objectives of study the researcher conveniently selected

threesample undergraduate colleges of Assam whichare assessed and accredited by NAACon or after 2022. The logic behind the cut-off date is to incorporate those colleges which have completed their NAAC cycle recently. The three sample colleges are then classified into three categories based on NAAC Grade such as A, B and C. The Self-study Report (SSR) and NAAC Grade Sheet of all the samplecolleges areretrieved from NAAC website's Accreditation Status Section (please refer http://naac.gov.in/index.php/en/2-uncategorised/32-accreditation-status). The list of the sample colleges are highlighted in Table no.01.

Table no.01: List of the Sample Colleges

NAAC Grade Sheet	Cycle	Year	Sample Colleges
Grade A^{+}	1st Cycle	2022	Mayang Anchalik College, Morigaon
Grade B^{++}	2ndCycle	2022	Lalit Chandra Bharali College, Guwahati
Grade C	2nd Cycle	2023	Janata College, Kabuganj, Cachar

Source: Sampling

Discussion and Results

This section of the paper discusses the different best practices implemented by the sample colleges as per the objectives of the study viz., objectives/intended outcomes of the best practices, underlying principles or concepts, contextual features, constraints and limitationsand evidences of success.

Title of the Best Practices: The titles of the best practices of the sample colleges are highlighted in Table no.02.

Table no.02: Title of the Best Practices

Name of the College	Title of the Best Practices
Mayang Anchalik College *(NAAC Grade – A^{+})*	1. Explore the Magical Healing Culture and Preserve the Extinct Heritage of Mystic Mayang. 2. Impart the Skill, Empower the Women.
LCB College	1. Course Management and Learning Outcome *(NAAC Grade – B^{++})* 2. Institutional Social Responsibility: LCB College
Janata College *(NAAC Grade – C)*	1. Educating the children for promoting Communal harmony in the locality throughfun learning 2. Innovations in teaching-Learning process

Source: SSR of sample colleges

Interpretation: From Table no.02 it can be observed that Mayang Anchalik College emphasised on exploring magical healing culture and preserve the extinct heritage of Mayang in its first practice. It is well known that Mayang is a very famous place with regard to magical healing culture. The college has tried to preserve the local culture. In the second practice, stress was given on women empowerment through imparting skills. A careful observation of the Table no.02 reveals that both practices of Mayang Anchalik College primarily connected to the society and the culture. On the other hand, LCB College in its first best practice tried to focus on course management and learning outcome delivery mechanism. And in the second best practice the college focussed on institutional social responsibility. Similarly, the Janata College in its first practice highlighted on promoting communal harmony and in the second practice it underlines on innovations in teaching learning process.

Objectives of the Best Practices: The primary objectives of the best practices implemented by the sample colleges are highlighted in Table no.03 and Table no.04.It can be observed in Table no.03 that in first best practice Mayang Anchalik College primarily aims to explore, understand and document all local magical knowledge and herbal medicinal practices and transmit all to next generation. Another thrust area is to promoting cultural tourism centred on old age magic and medicines. Building a museum to preserve heritage and to set up an herbal medicinal plant garden also has social relevance. The LCB college in its first best practice aims to build effective teaching, learning and evaluation mechanism. The college tried to make teacher and student aware of the Programme Outcomes, Course Outcomes and Programme Specific Outcomes of courses. While, Janata College in the first best practice attempted to reduce disparities between the native Manipuri speaking community and the other community of the Kabuganj area.Again, Table no.04 reveals the key objectives of the best practice no.02. It can be observed in Table no.04 that MayangAnchalik College aims to empower the local women by raising awareness and developing innovation and entrepreneurial skills. It talks about providing Training Programmes on Jacquard Handlloom and Handicraft for women to increase their production quality & capacity. While LCB College attempted basically to extend support and use the intellectual resources of the college fraternity for the development of the society, promote cohesion with the neighbourhood and sensitize students towards social responsibilities. On the otherhand, Janata College tried to bring qualitative improvement in the academic life of the college.

Table no.03: Key Objectives of the Best Practice No.01.

NAAC Grade A^{+}: Mayang Anchalik College	NAAC Grade B^{++}: LCB College	NAAC Grade C: Janata College
Best Practice no.01: • To explore, understand and document all holistic knowledge of magical and herbal medicinal practices traditionally continued among the villagers of Mayang. • Transmit the traditional knowledge of magical and herbal healing practices to the next generation. • To promote cultural tourism centering to the centuries old practices of magic and medicines. • To inspire and help the scientists and researchers to undergo intensive research works on this body of traditional wisdom to explore its scientific, economic and socio-cultural values in society. • To set up an herbal medicinal garden to preserve the rare medicinal plants identified and used by the local traditional healers. • To set up a Museum to preserve the tangible and intangible heritages of Mayang locality.	**Best Practice no.01:** • To conduct a planned approach for an effective teaching, learning and evaluation mechanism. • To create a conducive learning environment that caters to the student specific needs. • To make teachers and students aware of the POs, COs and PSOs of courses. • To strive towards achieving academic excellence by the institution in the long run.	**Best Practice no.01:** • To reduce the disparities between the native Manipuri speaking community and the other community of the Kabuganj area. • Holding a summer camp evolved as an aid, as the moral construction of a child's mentality begins at home. • Attempt to prevent the children from being the victims of such a mentality, the Summer Camp primarily focused on the interaction of children from both communities on a single platform.

Source: SSR of sample colleges

Table no.04: Key Objectives of the Best Practice No.02.

NAAC Grade A^{+}: Mayang Anchalik College	NAAC Grade B^{++}: LCB College	NAAC Grade C: Janata College
Best Practice no.02: • To enhance the skill consciousness among the women of the locality. • To enhance the innovation and entrepreneurship skill among the women of the locality. • To conduct skill development Training Programmes on Jacquard Handlloom and Handicraft for women to increase their production quality & capacity. • To provide continuous help and support to poor weavers of the locality linking with various women empowering schemes of the government. • To establish a Jacquard Handloom Lab both for the girl students and local women community for training, research and development. • To set up an Outlet or to create the market link for handloom and handicraft products of the local women community. • To provide help and support for all round development of local women community. • To contribute to the development of rural economy through imparting the skill and empowering the women in many ways.	**Best Practice no.02:** • To extend support and use the intellectual resources of the college fraternity for the development of the society. • To promote cohesion with the neighbourhood to achieve the common goal of development of the area. • To periodically survey the development needs of the neighbouring community and plan activities for their overall well-being. • To reach out to the marginalized section of the society. • To sensitize students towards social responsibilities.	**Best Practice no.02:** • To bring qualitative improvement in the academic life of the college and ensure continuous assessment of activities, review, redesign and introduce innovative tools and techniques required thereof to ensure further improvement.

Source: SSR of sample colleges

Underlying Principles of the Best Practices: The underlying principles or concepts of the best practices are highlighted in Table no.05 and Table no.06.

Table no.05: Underlying Principles of the Best Practice no.01.

NAAC Grade A^{+}: Mayang Anchalik College	NAAC Grade B^{++}: LCB College	NAAC Grade C: Janata College
Best Practice no.01: The Mayang Anchalik College has selected the practice as best practice as this college is located in the heart of Mayong area which has been famous as the nerve centre for studying magic and medicine in Assam since very early age. The college believes that as a higher educational institution of the area, it has the responsibility to explore, understand and preserve this body of traditional knowledge and practices of this locality before of its extinction as these practices are still traditionally handed down from generation to generation mostly in oral form. Accordingly the college has been undertaking several programmes in this line since the time of its establishment with active involvement of its community people, teachers, students and researchers.	**Best Practice no.01:** There is no mention about Underlying Principles or Concepts.	**Best Practice no.01:** There is no mention about Underlying Principles or Concepts.

Source: SSR of sample colleges

Table no. 06 : Underlying Principles or Concepts of the Best Practice no. 02.

NAAC Grade A^{+}: Mayang Anchalik College	**NAAC Grade B^{++}: LCB College**	**NAAC Grade C: Janata College**
Best Practice no.02: The Mayang Anchalik College has selected this practice as the college is located in such an area where each and every women of the locality are weavers by born. But the fact is that they are accustomed with their very old technology of handloom and textile and outdated designing methods and they have also lack of skill consciousness, innovation and entrepreneurship skill. The college believes that as a higher educationa-linstitution of the area, it has the responsibility to empower the women of the locality through improving their skill and thus to promote the rural economy of the area through the development of the local handloom and handicraft industry in an innovative way.	**Best Practice no.02:** There is no mention about Underlying Principles or Concepts section.	**Best Practice no.02:** There is no mention about Underlying Principles or Concepts section.

Source: SSR of sample colleges

Interpretation : The underlying principles of best practice no.01 of Mayang Anchalik college is that the college is located in the heart of Mayang area which has been famous as the nerve centre for studying magic and medicine in Assam since very early age. The college believes that it has the responsibility to explore, understand and preserve this body of traditional knowledge and practices of this locality before of its extinction. The underlying principle for second best practice is that the college is located in such an area where each and every women of the locality are weavers by born.But, they are accustomed with their very old technology of handloom and textile and outdated designing methods and additionally, they lack invention, entrepreneurship, and skill consciousness. While, there is no mention about underlying principles in the SSR of LCB College and Janata College.

Contextual Features of the Best Practices: The contextual features or challenging issues of the best practices are shown in Table no.07.

Table no.07: Contextual Features of the Best Practices

NAAC Grade A^{+}: Mayang Anchalik College	NAAC Grade B^{++}: LCB College	NAAC Grade C: Janata College
Best Practice no.01:· The college has carefully observed that the people of Mayang locality have been transmitting their uniqueknowledge and tradition of magical and herbal medicinal practices mostly in oral form for the last so manycenturies. It may so happen that this body of knowledge and practices may vanish within a couple ofcenturies, if they are not properly explored, documented and preserved. So, the college has taken thisinitiative since it is the need of the hour to revive and preserve these centuries-old traditional knowledgeand practices.	**Best Practice no.01:**· A need was felt for aninstitutionalized process of dissemination of teaching, learning and evaluation activities catering to thestudent specific needs which allows for discipline specific flexibilities at the same time. Thus, thepractice of course management and learning outcome delivery mechanism evolved over the years.	**Best Practice no.01:**· To promote national integration and harmony, the college as an extension service came outto serve the locality with a system of fun learning for the young school going children, in the form ofsummer camp during their summer holidays. The college as an intellectualinstitution has the potential to boost the children imbibing togetherness, friendship, tolerance and unity. Fostering the spirit of oneness and upgrading the intellectual and spiritual thoughts among the young minds.

Source: SSR of sample colleges

Interpretation: Table no.07 reveals that the Mayang Anchalik College in its first practice realized the need to revive and preserve the centuries-old traditional knowledge and practices in Mayang area. In the second practice, the college observes that almost all the women of Mayang locality are weavers in born but they lack new and recent technology of handloom and textile & innovative designing methods. Therefore, the college tried to empower the weavers through the development of their skill and capacity. While, the LCB College in its first practice felt the need to institutionalize the process of dissemination of teaching, learning and evaluation activities catering to the student specific needs. In the second practice, the college realized the overall well-being of the neighborhood area. Likewise, the Janata College in its first practice emphasized to imbibe togetherness, friendship, tolerance and unity among the children. In the second practice, the college felt the need for innovative and ideal practices that aim at the holistic development of students as well as promote quality and excellence.

Implementation Strategies of Best Practices: The implementation strategies of the best practices followed by the sample colleges are highlighted in Table no.08 and Table no.09.

NAAC Grade A^{+}: Mayang Anchalik College	NAAC Grade B^{++}: LCB College	NAAC Grade C: Janata College
Best Practice no.01: (1).Home Visit/Field Visit Programmes to Explore Magic& Folk Healing Practices. (2) Surveys on Magic and Folk Healing Practices & Practitioners. (3) Publications of Leaflet/Brochure/Books related with Magic, Medicine and Tourism Resources. (4) Seminar/ Workshop/Project/ Training Programmes to Create an Environment of Knowledge Transfer and Preservation of Heritages. (5) Institutional Setup to Explore and Preserve Heritages, Traditional Knowledge and Practices.	**Best Practice no.01:** The practice is implemented in three dimensions: (1) The maintenance of course file covers vision and mission, syllabus, academic calendar, teaching plan, retention of scripts and tutorial sheets/class test papers/quizzes. (2) The periodic review includes class attendance, and result analysis. (3) In monitoring the IQAC keeps a vigil on the smooth functioning of the practice with periodical review	**Best Practice no.01:** (1). Exercises on Physical and mental fitness. (2). Storytelling, recitation, drawing, folk dance and music. (3). Sharing of Tiffin and eating together. (4) To develop leadership quality among the young mindsand feeling the sense of responsibility though different themes and activities.

Source: SSR of sample colleges

Interpretation: It can be observed in Table no.08 that primarily Mayang Anchalik College has conducted extensive field survey to explore magic & folk healing practices and published Leaflet/Brochure/Books related with Magic, Medicine and Tourism Resources to implement the practice. While, LCB College maintains course files, conduct periodic reviews and closely monitor the practice. On the other hand, Janata College incorporated physical and mental fitness, organize storytelling, recitation etc. and inculcate the habit of eating together and develop leadership quality to pursue the first practice.

Table no.09: Implementation Strategies of Best Practice no.02

NAAC Grade A^{+}: Mayang Anchalik College	NAAC Grade B^{++}: LCB College	NAAC Grade C: Janata College
Best Practice no.02: (1).Skill Care for Women (Programmes for Skill Development and Enhancement of Entrepreneurship Skill). (2)Legal Care for Women (Programmes for Legal Aid, Minimizing Domestic Violence etc.).(3) Health Care for Women (Programmes of Health Check-up and Health Awareness).(4) Safety and Security Care for Women (Programmes for imparting skill to women for Physical Safety and Security). (5) Social Care for Women (Programmes for inspiring women to keep their own College and Village clean & green).	**Best Practice no.02:** (1). Outreach activities in the neighbourhood community. (2) The Adingiri village, close to college, was adopted long back. (3) Extending the intellectual resources of the college fraternity (4) Extending the feasible college resources like the College Central Library has opened a wing at the Assam Central Jail, donating books and daily newspapers for the jail inmates. Different cells and departments of the College have visited old age homes several times over the years and extended financial and mental support to the inmates.	**Best Practice no.02:** (1). Extra-curricular activities like sports, NCC, Extension activity, field trips etc. (2). Offered courses in spoken English computer courses. (3) Use of innovative evaluation techniquessuch as seminars quizzes, debates, project works and extempore speech test etc for continuous assessment. (4) Use of audio-Visual aid, computer and internet accessibility.(5) Optional use of the auditorium, classrooms,laboratories, and other infrastructural facilities.

Source: SSR of sample colleges

Interpretation: Table no.09 reveals that Mayang Anchalik College adopted different strategies to implement best practice no. 2, some important are skill care, legal care, health care, social care and safety and security for women. The LCB College carried out outreach activities, opened a Library wing at Assam Central Jail, visits old age homes and provide mental support to implement the practice no 2. While, Janata College basically adopted some extra-curricular activities, introduce innovative evaluation system, and used audio-visual aid to implement the practice.

Evidence of Success of the Best Practices: The evidences of success of the best practices are highlighted in Table no.10 and Table no.11.

Table no.10: Key Evidences of Success of the Best Practices no.01

NAAC Grade A^{+}: Mayang Anchalik College	**NAAC Grade B^{++}: LCB College**	**NAAC Grade C: Janata College**
Best Practice no.01: 1. Explored, identified and documented40 Magical Ingredients used by the magicians of Mayangand also inspired to pass on their teachings and secrets to the next generation. 2. Recorded the names and address of a total of 15 expert Magicians (Bezes) of Mayang. Explored and documented a total of 35 Mantras along with their uses, a total of 35 Manuscripts on mantras and medicines, a total of 40 Medicinal plants along with their uses, a good number of Photographs on Magical and herbal Healing practices, the texts of a total of 25 Mantras (Incantations) and a total of 40 herbal medicinal prescriptions of 20 diseases, photos of a total of 30 varieties of rare medicinal Plants. 3. On the subject of Magic, Medicine and Tourism, the College has published a	**Best Practice no.01:** 1. The course management and learning outcome delivery mechanism is a tool for making teachers andstudents aware of the POs, Cos and PSOs. 2. The course management and learning outcome delivery mechanism has helped in self-assessment of theteaching learning and evaluation activities of all teachers. 3. Its success lies in that it is a comprehensive plan to measure the fulfillment of course and programmeoutcomes. 4. The success also lies in evaluating how far the teachers have succeeded in tailoring the teaching methodologies including ICT usage in their discourses. 5. Consolidated student attendance and mentor ward system reveal students' specific problem. An instancemay be cited in the context. During the	**Best Practice no.01:** 1. The children actively participated in the programme and appreciated a lot to thecollege. 2. The guardians showed keen interest for their wards to expose themselves in an environmentother than school and effective use of their holiday. 3. The children could show their various hidden talentsother than academic activities.

Table no.10: Key Evidences of Success of the Best Practices no.01

NAAC Grade A^{+}: Mayang Anchalik College	NAAC Grade B^{++}: LCB College	NAAC Grade C: Janata College
Leaflet, a Souvenir, a Book, an Abstract Book, the first issue of College Journal, a *Gohari Patra* and a Brochure. 4. Through Tourist Information Centre, the College has become successful to promote cultural tourism centering to the centuries-old practices of Magic and Medicine. 5. Through College Museum, the College has become successful to preserve a good number of cultural, historical and archeological findings of mystic Mayong region. Through Herbal Medicinal Garden the College has enabled to preserve a good number of rare medicinal plants identified by the local healers.	pandemic students could not attend classes due to lack of internetconnectivity. This was true for all the departments. The teachers after discourses came up with severalstrategies to deal with the problem.	

Source: SSR of sample colleges

Table no.11: Key Evidences of Success of the Best Practices no.02

NAAC Grade A^{+}: Mayang Anchalik College	**NAAC Grade B^{++}: LCB College**	**NAAC Grade C: Janata College**
Best Practice no.02: 1. Successful to inculcate skill consciousness and entrepreneurship abilityamong local women through Skill Awareness and Field Visit Programmes. 2. Through Different Training Programmes on Handicraft (Water Hyacinth), the College hassuccessfully offered training to a total of 85poor girls and Women of the locality. 3. The College has become successful in creating market link of water hyacinth products producedby local Women through its initiatives taken with Pobitora Village Handicraft Store. 4. The College has setup a Jacquard Handloom Lab for training, research and development of handloom and textile technology. 5. In collaboration with IIE, Guwahati, has successfully distributed 50 Jacquard	**Best Practice no.02:** 1. The mutualism of the institution and the neighbourhood is an indicator of success in its practice ofsocial responsibilities. The institution has been appraised by the local people through letters ofappreciation. 2. The college has also conducted survey in the neighbourhood about the opinions about the extensionactivities performed for their betterment. The survey report itself is an evidence of success in thiscontext. 3. This mutualism can further be emphasized by the fact that the college celebrates importantlandmark events like Independence Day, Republic Day together with neighborhood in collaborationwith the Nilachalpur Bezbaruah Nagar Unnayan Samiti.	**Best Practice no.02:** 1. Created appositive impact on the functioning of the college and havebrought holistic development of the students. 2. The college evaluated the student continuously throughinternal test to improve the academic performances and it is seen that all the development processes bringsabout qualitative improvement in academic performances of the students. 3. Participation of students in collegeactivities seminars, workshops, publication of papers etc. shows an interesting height and overwhelming response. They are able to express their literally and artistic ability.

Table no.11: Key Evidences of Success of the Best Practices no.02

NAAC Grade A^{+}: Mayang Anchalik College	NAAC Grade B^{++}: LCB College	NAAC Grade C: Janata College
Handloom sets to 50 numbers of selected poor weavers of the locality freely under TechnologyUpgradation Project of NBCFDC, New Delhi. 6. The College, in collaboration with IIE, GUwahati has successfully distributed Free Yearn sponsored by NBCFDC, New Delhi to a total of 50 selected weavers from poor families ofthe locality. 7. The College has opened an Outlet in collaboration with Mibong Eco-Resort to create a marketlink for the Jacquard loom's & water hyacinth's products of the local women.	4. The increasing number of volunteers in the different social activities of NSS and NCC areindicative of the growing awareness among the students in community engagement. 5. The college has also received the feedback from the Assam Central Jail, Guwahati about thebenefits they have derived from our library extension services in the jail premises. The feedbackspeaks of success of our endeavor and encourages the college community.	

Source: SSR of sample colleges

Constraints and Limitations in implementing the Best Practices: The major constraints and limitations in implementing the best practices are highlighted in Table no.12 and Table no.13.

Table no.12: Constraints and Limitations in implementing the Best Practices no.01

NAAC Grade A^{+}: Mayang Anchalik College	NAAC Grade B^{++}: LCB College	NAAC Grade C: Janata College
Best Practice no.01: 1. The older generation's reluctance to pass on their knowledge, teachings and secrets of magic andmedicine to the new generation. 2. Most of the teachings and secrets of magic and medicine were in oral form and those went intooblivion with the death of the magicians of older generation. 3. Some written manuscripts on Mantras and medicine were also burnt by the magicians themselvesbecause of the fear of falling these into some under-serving hands after their death. 4. Absence of urge for traditional knowledge and practices among new generation falling incomplex situation between development and modernity. 5. Flood occurs every year in this locality which has created a problem in nursering the plants inherbal medicinal garden. 6. Deforestation due to rapid rate of population increase which may cause for disappearance of somerare medicinal plants etc.	**Best Practice no.01:** 1. A mutual discussion on periodic basis to plan out the ways to deal with challenges and continuousupgradation is important. Such periodical analysis was not sufficient and this was mostly due to thepandemic. 2. Another major hurdle encountered was that many vacancies in the college have long not been filled. Sothis has hampered the planning and execution of the courses of the different disciplines.	**Best Practice no.01:** 1. Parents not ready to send their children while inviting to the camp. 2. Arranging the various resource persons such as art teacher, PT teacher etc.

Source: SSR of sample colleges

Table no.13: Constraints and Limitations in implementing the Best Practices no.01

NAAC Grade A+: Mayang Anchalik College	NAAC Grade B++: LCB College	NAAC Grade C: Janata College
Best Practice no.02: 1. Difficulty in mobilizing the village women, because almost all of them like to stay athome with their kitchen and homely environment. 2. There was lack awareness among the village women that they could contribute lots to theirfamilies' economy, and that they could also be a part of nation building. 3. There was lack of consciousness among the village women regarding the up gradation of theirtechnology, skill and capacity. 4. Most of the households are so poor that they could not buy a Jacquard Handloom set to replacetheir less productive old traditional handloom.	**Best Practice no.02:** 1. The extension activities and outreach programs have always been affected by the paucity of funds.Managing financial resources to meet the priorities of the day-to-day affairs along with meeting the needsfor these activities and programs have been a major challenge for the administration. 2. The staff and students of the college are ever eager to participate in such activities. Butthe scheduledacademic activities cause paucity of time despite the will. Thus, manpower and time constraints are othermajor limitations in this regard.	**Best Practice no.02:** Resources in terms of finance are continuously requiredfor introduction of technological innovations and to bring about infrastructural development of the college. Resources in terms of manpower and technical persons to handle the sophisticated technologies, ICT applications and modern tools are also required for adoption of innovative teaching learning methods.

Source: SSR of sample colleges

Interpretation: It is found in Table no.12 that Mayang Anchalik College faced many constraints in implementing the best practices like the older generation's reluctance to pass on their knowledge, teachings and secrets of magic and medicine to the new generation. Most of the teachings and secrets of magic and medicine were in oral form,some written manuscripts on Mantras and medicine were also burnt by the magicians etc. Besides, Table no.13 reveals that the college faced difficulty in mobilizing the village women and economic condition of these women are very poor to replace old traditional handloom. Again, the LCB College could not go for periodic review due to the pandemic and shortages of sufficient staff due to vacancies are not fulfilled. The paucity of fund is another hurdle in implementing the best practices by LCB College. While, Janata College found difficulty in arranging various resource persons and non-cooperation from parent's part. The college is also faced problem of paucity of fund in implementing the best practices.

NAAC Grade Sheet for Best Practices&Criterion 7: Institutional Values and Best Practices:

NAAC Grade Points in Best Practices: The NAAC Grade points in best practices secured by the sample colleges are highlighted in Table no.14.

Table no.14: NAAC Grade Points in Best Practices

NAAC Grade	Cycle	Year	Sample Colleges	Criteria and Key Indicators	Key Indicator Weightage	Key Indicator Wise Grade Points	Key Indicator Wise Weighted Grade Points (KIWGP)i
Grade A^+	1st Cycle	2022	Mayang Anchalik College	Best Practices	30	120	1.2 (120/100)
Grade B^{++}	2nd Cycle	2022	LCB College	Best Practices	30	90	0.9 (90/100)
Grade C	2nd Cycle	2023	Janata College	Best Practices	30	90	0.9 (90/100)

Source: NAAC Grade Sheet of sample colleges

Note: Total weight in Criterion 7: Institutional Values and Best Practices are 100.

Interpretation: It can be observed from Table no.14 that Mayang Anchalik College secured 120 (1.2 grade point) which is the maximum weightage, whereas, LCB College and Janata College secured 90 (0.9 grade point) respectively.

NAAC Grade Sheet for Criterion 7: Institutional Values and Best Practices

The calculated Criterion wise weighted grade point ($CrWGP_i$), Criterion wise Grade Point Averages ($CrWGP_i/W_i$) and CrGPA of the sample colleges are highlighted in Figure no.01, Figure no.02 and Figure no.03. It can be found in Figure no.01 that Mayang Anchalik College secured calculated CrGPA 3.73 in Criterion 7: Institutional Values and Best Practices. Likewise, the LCB College and Janata College secured CrGPA 2.76 and CrGPA 3.1 respectively.

Criterion 7: Institutional Values and Best Practices			
7.1	Institutional Values and Social Responsibilities	50	173
7.2	Best Practices	30	120
7.3	Institutional Distinctiveness	20	80
	Total	**$\sum W_7$=100**	**$\sum (KIWGP)_7$ =373**
Calculated $CrGPA_7$ = $\sum (KIWGP)_7 / \sum W_7$ = 373 /100 = 3.73			

Fig.01: MayongAnchalik College

Criterion 7: Institutional Values and Best Practices			
7.1	Institutional Values and Social Responsibilities	50	126
7.2	Best Practices	30	90
7.3	Institutional Distinctiveness	20	60
	Total	**$\sum W_7$=100**	**$\sum (KIWGP)_7$ =276**
Calculated $CrGPA_7$ = $\sum (KIWGP)_7 / \sum W_7$ = 276 /100 = 2.76			

Fig.02: LCB College

Criterion 7: Institutional Values and Best Practices			
7.1	Institutional Values and Social Responsibilities	50	160
7.2	Best Practices	30	90
7.3	Institutional Distinctiveness	20	60
	Total	**$\sum W_7$=100**	**$\sum (KIWGP)_7$ =310**
Calculated $CrGPA_7$ = $\sum (KIWGP)_7 / \sum W_7$ = 310 /100 = 3.1			

Fig.03: Janata College

Policy implications and conclusion

The present study examined the different components of the best practices implemented by the sample colleges. The study found that the objectives/intended outcomes, underlying principles or concepts, contextual features, constraints &

limitations and evidences of success of the best practices have an impact on the credit point given by NAAC. Therefore, while preparing SSR and writing the two best practices one should strictly follow the format given in the NAAC Manual and must cover all areas of the best practices. A careful observation of the best practices implemented by the sample colleges reveal that Mayang Anchalik College (secured Grade A^{+}) strictly followed the NAAC Manual, whereas, LCB College (Grade B^{++}) and Janata College (Grade C) did not mention about Underlying Principles or Concepts section. Further, Mayang Anchalik College has provided many quantitative evidences of successful implementation of the best practices as compared to LCB College and Janata College. The present study will act as a torchbearer in incorporating the best practices in higher education institutions to enhance quality and make the institutions ready for future.

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16

Innovative Teaching Strategies : Its Significant Role for Better Student Engagement

Hiranmoyee Medhi

Abstract

Every student is not equal. To deal with different types of students and their varied needs, teacher should have a flexible and creative mind. From last few decades, the use of innovative teaching strategies has been a very important influence in educational fields. The innovative teaching strategies are not only meant for the use of latest and greatest technological inventions and techniques in teaching, but also encourage students to actively participate in teaching learning environment. The main purpose of these techniques and methods is to improve academic achievements of the students in different levels. Teachers also identify different scopes for improve their skills by creating something new and adopt best ways to motivate and teaching their students. As a student-centric approach, the innovative teaching strategies have a positive impact on students' development. There are many innovative strategies, such as, flip classroom, personalized learning, peer teaching, blended learning etc. this paper is attempted to draw a clear picture on different types of innovative teaching strategies and their significant role for better students engagement. A discussion method on secondary data was followed to develop this study.

Keywords: *Innovative Strategies, Effective Teaching, Students' Engagement*

Introduction

Teaching is the noblest profession. Teaching is a process of interaction between teacher and a learner. Thus, it is said that, learning is the outcome of teaching in a particular set up or context. Teaching involves many processes, such as planning for a unit or chapter, preparation for teaching, selection for different types of aids, practicing teaching in the actual classroom, helping students for further learning, facing types of challenges related to students and greater school environment and so on.

The teaching is a process where the teacher is always concerned with some issues like, errors committed by the students, methods used in teaching-learning, evaluation and testing, protecting educational environment etc. Besides, an in-depth analysis and understanding is important related to each subject. The roles of a teacher as regard to improvement of efficiency in teaching learning situation and solve the classroom problem are very important and challenging. There are conflicting views on the role of error correction or problem solving in the classroom. The teacher has to diagnose the type of error committed by a group of learners. He should use the most effective means of content delivery based on student needs. Teacher should create interest and draw motivation to the learners, so that they acquire all the necessary information. The ultimate way to help and engage students learning is to use a combination of pedagogical avenues to reach the variety of students within the classroom.

Concept of Innovative Teaching Strategies or Pedagogies

Every teacher knows that no two students are exactly the same. The teachers should use the definite methods or pedagogy, so that, students in various levels can learn their best. With the expansion of knowledge, science and technology, there are new pedagogical trends or strategies introduced day by day. In relation to liberalization, privatization, globalization and digitalization, these trends or strategies have influenced our educational system in a broad extent. Today teaching strategies are not only confined to the product aspect, but also majority of instructional system is fully governed by pedagogical aspect which is nothing but process of learning. In this regard, we are to explore the modern pedagogical issues which may be practiced in our regular classroom instruction in order to achieve better learning outcome. Each student is different and therefore requires a unique teaching-learning approach to learning. The innovative teaching strategies come to suggest a more personalized, student-centered approach to teaching that is more effective than traditional methods. Innovative teaching strategies are those that deviate from the traditional methods of teaching in order to help the students in better engage and meet their individual needs. These strategies can be used in any subject and at any levels of teaching-learning. The best approach is the one that works best for teachers and their students. It is necessary for the teachers to trying new things and to be willing to adapt new methods or pedagogies as needed. Ultimately, the goal is to find what works best for their students so that they can reach their full potential.

Innovative teaching strategies or pedagogies are comparatively a new concept that introduced the latest and greatest technological inventions into the classroom.

Innovative teaching is the process of using new teaching methodologies into the classroom. Pedagogy or strategy of teaching refers to the study of teaching approaches and how they affect learners. A carefully considered pedagogy or strategy is essential in enabling students to learn more effectively and can help them developing high order thinking skills.

In the higher education, latest research findings proved that, students should be engaged more actively to achieve higher levels of knowledge. Students' engagement strategies are most important criteria to improve their learning and attitudes towards learning.

Meaning of Better Student Engagement

The National Survey of Student Engagement (NSSE), an annual analysis of student engagement in universities in America, measures and defines it as "Student engagement represents two critical features of collegiate quality: how much time and effort students put into their studies and other educationally motivated activities; and how the educational institution deploys its resources and organizes the curriculum and other learning opportunities in order for students to participate in activities that are linked to student learning."

Student engagement also refers to the degree of creating motivation; encourage to give attention, creation of curiosity, involvement in teaching-learning, passion for achieve in highest level of learning etc. it improves power of learn and retention, enjoyment in completing work. Full and enjoyable students' engagement is the more effective teaching strategy to adopt full clarity of learning.

Objectives of the Study

The present study aims to highlight major innovative teaching strategies in the present teaching learning environment. It also aims to find out the significance of innovative teaching strategies for better student engagement.

Methodology applied

This study is descriptive in nature. The secondary data were used in this study. Books, articles and research papers from online and offline journals, government and non- government websites were followed to develop this study.

Significance of the study

To enhance students' learning process, the innovative teaching strategies are significantly used. These new methods or strategies or pedagogical trends improve student engagement, motivation and attention and they are very fruitful ways of delivering and receiving teaching and learning for both teachers and students. Using innovative teaching strategies in the classroom, teachers can make teaching-learning easier and more effective. These strategies may assist teachers in promoting effective way of teaching and encourage students to engage actively in classroom activities. By following different literature review [Khan, IntakhabAlam(2011), Jayalaxmi. (2016), McMullen, K. (2022), Patni, A. (2022), Raihan, R. (2021), Thompson, S. (2023)], the investigator finds that there is a significant role of innovative teaching strategies for

better engagement of students in present context.

Major Innovative Teaching Strategies, an overview

It is the biggest challenge for every teacher to capture each student's attention, and communicate in their knowledge level by engaging them in teaching learning environment. Teacher can used new teaching innovations or pedagogies to confirm full engagement of his students.

So here, some innovative teaching pedagogies or teaching strategies are given below that will help every teacher to reinvent his teaching methods which make his teaching more interesting and enjoyable.

❍ Playful Learning :

Playful learning provides creativity, imagination and happiness. It also explores freedom to express their definite way of acquiring knowledge and experience. It provides a good way of focusing their interest in learning activities. Self-learning and learning with peers are happened in playful learning environment.

❍ Learning with Robots :

Robots are the superior intelligent software that assistants a learner to understand a topic easily and accurately. An artificially intelligent robot can respond quickly to different quarries in a very intelligent manner. Teachers can free from the overload of teaching activities and direct more time towards other teaching-learning activities, like, providing emotional support to his students.

❍ Drone Based Learning :

Drones help students to collect data from inaccessible landscape or difficult to access areas. Drones can help learners to develop new skills, such as; interpreting visual information from a landscape and it enriches the exploration of many physical spaces.

❍ Problem Based Learning :

In this strategy of teaching, students are given a real life problem and suggested to work together to find a definite solution. Students can learn more in this method, because, they involved in the problem themselves and find out the method of solving their problems.

❍ MOOCs and E-Learning :

E-Learning and Massive Open Online Courses as effective learning strategy help the learners to analyze their knowledge, skill and attitude. MOOCs is an effective self-motivated learning access that can be used anywhere anytime in everyday life of the students. MOOCs can bring knowledge to students who may not have access otherwise, and be of use to learners who cannot afford the costs of higher education.

❍ Gamification :

As a motivational technique, games can help the students to explore themselves in their learning activities. it has an effective impact on designing projects taking into account of their age and knowledge level.

❍ Brainstorming :

As a superior technique, it is based on problem solving activity to create a different task of higher order thinking. Brainstorming leads to creative thinking, encourage sharing thoughts and skills, to gather ideas, force students to come up with creative, exciting and radical ideas. It is also helpful to handle issues and find out definite solution of a specific problem.

❍ Dramatization :

This is an execution technique particularly well suited to acting out of a particular story, event or theme. Students have to go towards in-depth learning to all about the event or theme or individual. Dramatization technique involves more excitement and suspense in telling the story. It is very common method of teaching history.

❍ Flip Classroom :

In a flipped classroom, students have to review learning materials at home and assign on projects and assignments in the classroom. Students in the flipped classroom, do their coursework well at home as homework. The flipped classroom provides a great role for peer and collaborative learning. Students can engage in group projects and learning activities to complete their knowledge level. Teachers play a partial role, advise them to go in right direction to complete their work.

❍ Project-Based Learning (PBL) :

It is an effective method that helps students to drive their own learning activity. Students are engaged in a real-world problem then develop a solution. Project-based learning relies on developing key skill sets such as research, critical thinking, problem-solving, and collaboration. As an active method of learning, students gain mastery through the application of their own knowledge rather than rote memorization. Like flipped classroom, the teachers play a partial role to guide his students to take ownership of their learning.

❍ Inquiry-Based Learning :

This teaching strategy develops thinking and problem-solving skills of the students. In this teaching pedagogy, the teacher poses questions, scenarios, and problems and students find out their definite means individually or in groups to formulate their answers. They can present their findings and supporting evidence to the class along with the other students. Students are then able to further develop their answers by listening to what other students have found as well as identifying areas that require more attention and detail.

❍ Blended Learning :

Blended learning is the combination of offline and online learning experiences. This teaching-learning strategy gives students more scope to control over their time, place, path, and pace of learning instruction. It is a flexible learning process that enables students to have more control over their learning methods. They engage online learning instruction at home and engage in peer groups for collaborative activities or can join lecture-based physical classes and do their learning activities independently.

❍ Active Learning :

Most of the innovative learning strategies are active learning as we discussed above. The active learning strategies encourage students to engage fully in teaching-learning activities, discuss, participate and contribute their ideas toward different problems and create own ways of learning. These strategies engage students more effectively, create interest and motivation, and develop critical thinking and problem-solving abilities.

❍ QR codes :

QR or Quick Response Codes are very easy and economic way to collect data and information. Here, just by scanning a code in digital device, students can check their necessary data, question-answer, reply or engage in different discussion, get survey information, access video tutorials, buy learning materials, pay for admission or examination fees etc. QR codes help students to access information in their own place.

❍ Peer Teaching :

Students acquire more knowledge when they explain or teach a definite topic to others. Teachers should provide opportunities to engage in talks of different topics or research activities and perform a presentation on it. With peer teaching, students learn skills of speaking and express their thoughts in a more confident way.

❍ Teaching through collaboration :

In the global world, collaboration is an essential life skill. In collaborative learning, teachers encourage students to engage in various projects. They allow students to learn, act and complete their projects in group. They may ask students to group discussion and present a report on it. Teachers play the role of guides, mentors or supervisors for their students. This innovative teaching strategy helps to develop empathy, teamwork, we-felling and other social values.

❍Teaching through Virtual studios :

This teaching strategy extends physical learning environment to online environment and provides opportunity towards creativity, collaboration and social interaction. It increases access to a greater range of means to solve problems and provides opportunities to work with other learners and professionals around the world.

❍ Cloud Computing :

The use of cloud computing is another innovative method where teachers can save classroom resources in classroom cloud storage. Resources like, lesson plans, reading materials, audio speech, videos, assignments, projects can be saved and used later on wherever needed in a single click. Students can bring the classroom back to find the information and materials which they missed in any reason and stay updated in any time. It allows the students to learn in their convenient time and place.

Significance of innovative teaching strategies for better student engagement

The innovative teaching-learning strategies promote critical thinking, collaborative learning, create motivation and interest. It provides necessary means to tackle the challenges of the students in learning environment. It also promotes

confidence in self-learning and skills to adapt necessary information. The significance or importance of innovative teaching strategies are summarized below-

1. It improves creativity and problem-solving ability of the students. They are provided with active learning environment to involve or engage more to acquire knowledge and experience.
2. The innovative teaching strategies are learner centered. Teachers are placed as guide, mentor or supervisors to their students.
3. These strategies enhance analytical skills of the students. Teachers are regarded as facilitator in the classroom. Students' progress from basic to higher level of understanding in their own pace.
4. Through innovative teaching strategy, students are given problems and provide opportunities to solve them. Their high order thinking and problem-solving abilities are developed due to their individual involvement.
5. These strategies provide real experience to the students. They can distinguish what is reliable or not, what is applicable or not to find out definite solution.
6. Innovation in teaching learning encourages students and teachers to research, explore and use resources to overcome different issues.
7. Through using scientific and technological innovations, students and teachers can create new way of thinking, develop creativity and understand problem solving skills.
8. These strategies encourage students and teachers to research, explore ideas and use all the tools to uncover new applications in teaching and learning.
9. Most of the new strategies are individualized learning strategy. These strategies lead to a new way of thinking, reasoning, problem solving and creativity.
10. They encourage students to complete their learning independently. They can plan, design and prepare their projects according to their convenient time and place. Teachers help them by giving guidance and supervision.

Conclusion

The innovative teaching strategies enable students to learn by planning educational task, solving problems by discovering different means, develop critical thinking, and create imagination and motivation to learn. These strategies lead to student engagement that move away from the traditional lecture-based learning environment to science and technology based advanced learning environment. These strategies encourage developing curiosity, interest, attention and collaborative learning which are proven to improve better achievement in education.

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IQAC's Role in Fostering Quality Initiatives and Accreditation in HEIs

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Abstract

Education is an important human activity for creating, adapting, spreading the knowledge in all spheres of life. Knowledge is mainly related to all developmental efforts for advancement of economic and social wellbeing in a developing country like India.Sustaining the quality in higher education is a growing concern in India as well as all over the world. The number of higher educational institutions has been increasing rapidly for the past five decades but quality of education seems to be declining quality of education .In 1994 the University Grants Commission (UGC) has established the National Assessment and Accreditation Council (NAAC) at Bangalore.The mandate of NAAC is to scientifically evaluate the quality of higher education at college and university level. The National Assessment and Accreditation Council emphasizes on making quality assurance as an integral part of the functioning of higher educational institutions. Quality enhancement is a continuous process, so Internal Quality Assurance Cell (IQAC) will become a major part of the higher institution's system and works towards the achievement of the goals of quality enhancement and sustenance of (HEIs). The investigators try to review the current Indian higher education system and the role of IQAC in improving the quality of (HEIs) in India.

Key words: *Quality Assurance, NAAC, UGC, IQAC, Higher Educational Institutions (HEIs)*

Introduction

The current era is characterized by a significant explosion of knowledge, driven by factors such as Liberalization, Privatization, and Globalization. In response, countries worldwide are consistently aiming to enhance the quality of their human resources and economic scenarios. Higher Education Institutions (HEIs) in India have played a prominent role in the development of knowledge and improving the quality of education. Ensuring overall quality in higher education is a key concern in policy formulation, leading to the mandatory accreditation of HEIs by the National Assessment and Accreditation Council (NAAC) to drive quality improvement. Many HEIs have already completed or are currently undergoing the first cycle of accreditation at the state and national levels. Sustaining quality is a long-term endeavor, and to achieve this objective, NAAC has established comprehensive guidelines over time.

The establishment of the Internal Quality Assurance Cell (IQAC) by accredited institutions, following the completion of the first accreditation cycle, represents a major step towards upholding long-term quality standards. IQAC serves as a significant administrative body entrusted with all matters related to quality. Its primary responsibility is to initiate, plan, and oversee various activities aimed at enhancing the quality of education imparted in institutions and colleges. IQAC facilitates and addresses quality-related activities and issues through diverse programs and events, including seminars, workshops, symposia, conferences, panel discussions, role-playing exercises, demonstrations, case studies, academic meetings, and other similar initiatives involving all stakeholders of the institution. The role of IQAC in maintaining quality standards in teaching, learning, and evaluation is of utmost importance.

Objectives of the study

a. To study the initiatives of Internal Quality Assurance Cell on quality enhancement and assurance of (HEIs).

b. To assess the activities of NAAC in the Accreditation of (HEIs).

Methodology of the study

The investigators have used the secondary data for this paper and the data were collected by re viewing thoroughly various journals, books, articles, magazines, published and unpublished papers, websites etc.

Role of IQACand NAAC in HEIs

Quality assurance in higher education institutions has become a critical issue in recent years, and the establishment of quality assurance mechanisms has been an essential element of national education policy in many countries. The two most common quality assurance mechanisms used by higher education institutions are the Internal Quality Assurance Cell (IQAC) and the National Assessment and Accreditation Council (NAAC), which focus on improving the quality of higher education in India. The concept of quality assurance in higher education institutions is not new, and it is widely accepted that the quality of education is crucial for the development of any nation. The Internal Quality Assurance Cell (IQAC) and National Assessment and Accreditation Council (NAAC) have emerged as quality assurance mechanisms in

higher education institutions in India. IQACs and NAACs are the most common tools recommended for higher education institutions to assess and monitor their quality measures regularly. In this paper, we discuss the roles of IQAC and NAAC in ensuring quality assurance in higher education.

The Internal Quality Assurance Cell (IQAC) and the National Assessment and Accreditation Council (NAAC) play a crucial role in ensuring the quality assurance of higher education institutions in India.

The IQAC is a mechanism set up by institutions to monitor and evaluate their own performance, identify areas for improvement, and take necessary actions to enhance the quality of education. It is responsible for developing and implementing quality assurance policies and procedures, conducting internal audits, and ensuring compliance with regulatory requirements. The IQAC also facilitates the organization of workshops, seminars, and training programs to enhance the skills and knowledge of faculty, staff, and students.

On the other hand, NAAC is an autonomous body established by the University Grants Commission (UGC) to assess and accredit higher education institutions in India. It evaluates institutions based on various parameters such as curricular aspects, teaching-learning and evaluation, research, infrastructure, student support and progression, governance, leadership, and management. The accreditation process involves a rigorous evaluation of the institution's performance, based on which a grade is awarded. The accreditation status is valid for a period of five years, after which the institution has to undergo a re-accreditation process.

Both IQAC and NAAC work together to ensure the quality assurance of higher education institutions. The IQAC provides the necessary support and guidance to institutions to prepare for the NAAC accreditation process. It also helps institutions to implement the recommendations of the NAAC assessment report and improve their performance. NAAC, on the other hand, provides an external evaluation of the institution's performance and helps to benchmark it against national and international standards. The accreditation status awarded by NAAC is a recognition of the institution's commitment to quality and excellence in higher education.

In summary, the IQAC and NAAC work in tandem to promote quality assurance in higher education institutions. The IQAC focuses on internal quality assurance, while NAAC provides an external evaluation of the institution's performance. Together, they help institutions to improve their quality of education, enhance their reputation, and contribute to the overall development of the higher education sector in India.

Role of IQAC in quality assurance

An Internal Quality Assurance Cell (IQAC) is a central quality assurance mechanism that seeks to enhance and maintain the quality of higher education within institutions. The primary responsibility of IQAC is to develop, maintain, and apply quality benchmarks within the institution. IQACs ensure continuous quality improvement in various academic and administrative functions of an institution. The roles of an IQAC are as follows:

1. Developing and implementing quality benchmarks: IQACs are responsible for developing and implementing quality benchmarks for academic and administrative activities within the institution.
2. Promotion of quality culture: Providing a platform for educational institutions to promote quality culture among teachers, students, and other stakeholders.
3. Feedback mechanism: Developing appropriate feedback mechanisms to assess the quality of teaching, learning, and evaluation processes in the institution.
4. Promoting research culture: Encouraging and promoting research culture among faculty members of the institution.
5. Monitoring progress: Monitoring and evaluating the institution's quality enhancement activities and initiating necessary actions to improve the same.

Role of NAAC in quality assurance

The National Assessment and Accreditation Council (NAAC) is an autonomous body established by the University Grants Commission (UGC) in India to evaluate and assess higher education institutions' quality. NAAC assesses the quality of education provided by institutions based on specific parameters and assigns a grade to the institution. The roles of NAAC are as follows:

1. Evaluation of institutions: NAAC evaluates the quality of higher education institutions based on specific parameters such as academic, administrative, infrastructure, research, and innovation.
2. Accreditation: NAAC assigns grades to institutions based on the evaluation results. Accreditation is an essential tool that allows institutions to benchmark their performance against the best in their domain.
3. Quality enhancement: NAAC encourages institutions to undertake quality enhancement activities based on their accreditation status.
4. Promotion of excellence: NAAC promotes excellence in higher education institutions by providing guidelines, workshops, seminars to improve the quality of education in institutions.

Conclusion

Quality has become a defining element of education in the 21st century in the context of new and changing realities.The IQAC and NAAC are critical tools in ensuring quality assurance in higher education institutions. The primary focus of these mechanisms is to evaluate, monitor, and enhance the quality of education provided by institutions continually. In conclusion, this paper underscores the need for institutions to embrace IQAC and NAAC and encourage institutions to adopt them as tools that are essential for assessing, maintaining, and enhancing the quality of higher education.

The IQAC and NAAC play a crucial role in ensuring the quality of education imparted to students in higher education institutions. The IQAC is responsible for developing and implementing quality assurance measures internally, while the NAAC evaluates and accredits higher education institutions externally. Together, they ensure that the education imparted to students is of high quality and meets the standards set by the regulatory bodies.

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About the Book:

The proceeding of the NAAC Sponsored National Seminar on "Revised Accreditation Framework of NAAC: Understanding the Parameters of Quality Assessment" held on 25th & 26th April, 2023, have been compiled into a comprehensive book. This book offers valuable insights into the discussions, research, and presentations conducted during the seminar, providing a valuable resource for educators, administrators, and researchers seeking a deeper understanding of accreditation frameworks and quality assessment in the education sector.

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