Modern Multidisciplinary Education: Challenges and Opportunities of Modern Learning Pedagogy

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ABSTRACT

Purpose: The objective of this paper is to study the need for modern multidisciplinary education and how different is modern education from traditional conventional education. The basic focus of traditional education was passing information, skills, and practices to the next generation. Traditional education was based on customs, traditions, and religions. Modern education on the other hand is multidisciplinary and is based on a knowledge-based society. The advancement of technology coupled with Industry 4.0 has brought radical changes in the modern education system.

Approach: A review of the literature is performed using keywords, modern education, multidisciplinary education, innovation, entrepreneurship education, and outcome-based education to assess the modern learning pedagogy. Based on the literature review, a questionnaire was framed to collect primary data from 100 faculty members to analyse their assessment of outcome-based education, its importance, and preparedness. Along similar lines, data was collected from 100 students to understand the practical impact of outcome-based modern education.

Findings: Case-based learning, problem-solving skills, simulation-based learning, experiential learning, role play, and project–based learning are some innovative teaching pedagogies, to be implemented early in the education system to develop outcome-based education for better employability.

Value: Modern multidisciplinary learning pedagogy is imperative for higher education. Integrating the concept of multidisciplinary learning and modern learning pedagogy can address the differences in the learning styles of students and improve their employability skills. Techniques like case-based learning, experiential learning, project-based learning, and roleplay motivate students to think and link theory to real-life situations. Multidisciplinary education also helps to provide freedom to explore knowledge and choose courses by choice.

Type of Paper: Exploratory Empirical Study

Keywords: Modern Education, Multidisciplinary Education, Experiential learning, Problem-solving skills.

1. INTRODUCTION :

The National Education Policy, also known as New Education Policy, or NEP 2020, that was released by the Ministry of Human Resources is encouraging, as it sets the dawn for wide spread of outcome-based education. To address and close the major gaps in the current educational system, NEP 2020 was created. The NEP refers to the necessity of industry institute partnerships and entrepreneurial education at various academic levels. In particular, the curriculum's learning outcomes of knowledge, skills, self-confidence, and entrepreneurial endeavours are highlighted by the NEP, which also places a strong emphasis on research, innovation, entrepreneurship, and professional education.

The NEP was released following lengthy discussions and a thorough procedure. The prior 1986 policy has been replaced with the new one. Generally speaking, we were known as the children of Lord Macaulay's and had inherited the British Colonial tradition in learning and teaching.

In this paradigm, HEI must reshape the educational ecosystem by enhancing student learning, emphasizing employable skills, and offering possibilities for outstanding research. There will inevitably be a fee rise to include the highly requested components. Only Rs 11,524 is the monthly per capita income in India, which is insufficient for any household to be able to afford the country's escalating costs for higher education. Between 1989 and 2018, earnings climbed by 0.3%, but the expense of schooling increased eight times more quickly. The government can significantly influence this by lowering barriers to higher education, which will help people develop their skills.

If we look at the proposal from 2019, we discover that there was a strategy for gradually integrating employability training and vocational education into regular schooling. Nowadays, having skills is expected; it is no longer a trendy concept. A policy supported by a skill-development project is being pushed to improve employability. According to the 2019 skill report, only 4.69% of the workforce in India is skilled, while 45.6% of graduating students are employable. In contrast, 24% of the workforce in China, 52% in the US, 68% in the UK, 80% in Japan, and 96% in South Korea are skilled workers. Due to a mismatch between skill training and employability, the percentage is low in India. The objective of this paper is to study the features of the modern education system based on outcome-based education for better employability [Skill Report and NEP Document].

2. LITERATURE REVIEW :

The Kothari Commission in 1966, suggested that 6 % of the national income should be spent on education. It was felt that a large investment in education is necessary for the progress and growth of the economy, (Tilak 2007). India has a long history in the field of higher education. In ancient times, the country was home to socially famous universities. But even today the GER (Gross Enrolment Ratio) is low and modern education focuses not only on improving the GER but also on providing holistic development and focus on multiple intelligence and multiple languages (Hossain & Mondal (2019). [1]).

Improvements in economic reforms and the introduction of education programmes that boosted people's status quo perceptions were two major trends of the 1990s. This is due to the beginning of the relationship between higher education and employability, which promotes economic independence.

This increases per capita income in a direct proportion. A focus on total economic growth was placed alongside the development of human capital, particularly under the influence of the knowledge-based society. Along with quality, quantifiability was considered in order to maintain expansion because higher education cannot be a viable industry without quantifiable outcomes.

Therefore, the government's main duty was to disseminate both basic, secondary, and higher education. In 2013, Ruxandra Bejinaru did a study on the effects of digitalization on the knowledge economy in education. The main goal of the study was to clarify the fundamental ideas of the digital economy while also showing how they applied to work and educational processes. This paper's major goal was to highlight how the digital economy has affected the field of education. To attain personal development and professional skills in the digital age, one must possess digital competencies and skills. The research on the educational sector was done with both the European and Romanian contexts in mind. The necessity of meeting the 2020 target is the subject under discussion and how modern multidisciplinary education is made possible through digital development. Swapnil Jain in 2019 conducted a study on the Digital media impact on new generation education. He concluded that, with the help of technology, the education system is changing a lot. New teaching methods are being used for the overall education system and the delivery of the educational programs has also been improved.

An interdisciplinary and holistic education will aid in aid in the development of well-rounded individuals with critical 21st-century capacities in the arts, humanities, languages, sciences, social sciences, and professional, technical, and vocational fields; a value system for social engagement; soft skills, like communication, discussion, and debate; with rigorous specialisation in a chosen field or fields should be the new education policy (Mishra (2020). [2]). Bloom's Taxonomy is the foundation of the present management education system. In 1956, Dr. Benjamin Bloom developed the Bloom's Taxonomy to advance critical thinking in the classroom. In 1956, the study only recognised three domains: cognitive, affective, and psychomotor. The three elements are frequently referred to as KSAs—knowledge, skills, and attitudes. The six levels of complexity within the cognitive domain are knowledge, comprehension, application, analysis, synthesis, and evaluation. The attitudes, emotions, and feelings are the main topics of the affective domain. The five levels of the affective domain are

receiving, responding, valuing, organising, and characterising. (Mishra (2020). [2]). Modern day education should be based on Bloom's Taxonomy and the pedagogy should be designed to assess all the six levels of learning.

Entrepreneurship education gives people skills, educates them to think creatively, and develops uncommon skills like creativity and problem-solving. Additionally, it expands opportunities, upholds social fairness, inspires confidence, and boosts the economy. The need is greater because employability numbers are concerning and traditional jobs are disappearing, and because huge global firms' attitudes towards academia are rapidly altering. Mishra (2020). [2]). The challenges and opportunities for continual improvement in curriculum development, design, and effective implementation in HEI is imperative. The idea of building industry-oriented effective curriculum in business management and information technology that includes both industry and research experience components is the need of the hour. The curriculum model addresses the increasing growth of both the business management and information technology disciplines, as well as the need to keep the curriculum up to date with current advancements (Aithal (2016). [3]).

Higher education is an important aspect in deciding the economy, social status, technology adoption, and healthy human behaviour in every country. Improving GER to include every person of the country in higher education offers is the obligation of the country's education department. The National Education Policy of India 2020 is working towards this goal by enacting innovative policies to improve quality, attractiveness, affordability, and supply by opening higher education to the private sector while enforcing strict quality controls in all higher education institutions. By supporting merit-based admissions, merit-based and research-based continuous performers as faculty members, merit-based proven leaders in regulating bodies, and tight quality monitoring (Aithal (2020). [4]).

This paper is aimed at addressing how modern multidisciplinary learning pedagogy is imperative for higher education and integrating the concept of multidisciplinary learning and modern learning pedagogy can address the differences in the learning style of students and improve their employability skills.

3. OBJECTIVE OF THE STUDY :

Objective of this paper is to study the need of the modern multidisciplinary education and how different is modern education from traditional conventional education. The study aims at:

(1) To explore the education structure in modern multidisciplinary education
(2) To study the different types of learning pedagogy in modern multidisciplinary education
(3) To assess the impact of different pedagogy on students' learning and skill development
(4) To evaluate the perception of faculty members for modern multidisciplinary education

4. METHODOLOGY :

A cross sectional design was administered, and the survey was collected through online Google forms. Two separate forms were designed, for faculty and students respectively. Overall probabilistic sampling technique was used to collect the samples. Survey sheets were shared with management graduates entering the industry and with faculty members in management institutions or departments of management in higher education institutions. A total of proper 100 filled-in forms for faculty respondents and another 100 filled-in forms for students were used in the study.

5. RESULTS AND DISCUSSIONS :

Case based learning, problem solving skills, simulation-based learning, experiential learning, role play and project – based learning are some innovative teaching pedagogies, to be implemented early in the education system to develop outcome-based education for better employability. Each of these pedagogies is discussed below in detail, according to survey results analysis and discussion.

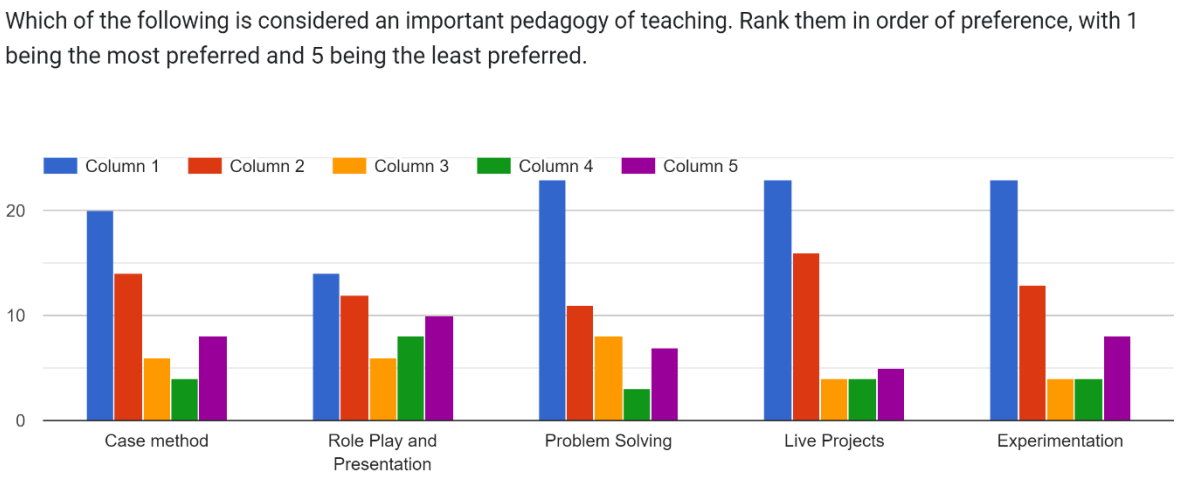

Fig. 1: Different Pedagogies in Teaching & Learning

Case-Based Learning: Case based learning is a teaching pedagogy where management and business cases are used to explain concepts, theories and applications. Around 55 % of faculty and 50 % of students feel case-based learning is the most effective teaching and learning pedagogy. On a scale of 5, case- based learning scored 3. Case based learning emphasises on analytical ability and critical thinking. Its also helps to develop decision making and communication skills, since the case is eventually presented, discussed, and strategized. Case based learning also promotes teamwork, presentation, and practice-based behaviour. The advantage of learning theory from case study is generating a more acceptable concept ability to measure the application of a theory and evidence based valid concept (Turnbull (2021). [5]).

Experiential Learning: In experiential learning the learner experiences the concepts and the theory and develops his own way of reacting and decision making. The learner reflects and analyses the situation. Board games, role plays, negotiation games, mock parliament and many more are kind of experiential learning. The internships and live projects which is a feature of modern multidisciplinary education are again another type of experiential learning. Around 60 % of the faculty feel that experiential learning is most effective way of teaching and learning. Experiential learning is very important in present day modern education and is more application oriented. It impacts learning through long lasing disciplined learning process. Experiential learning theory was developed by Kolb (1984), provides a hands-on model for relating knowledge and experience. Experiential learning supports students with deeper knowledge promotes logic based understanding and argumentation, it endorses academic growth and improves understanding (Radovic & Hummel (2021). [6]).

Project Based Learning: Project based learning system which combines classroom teaching with project (theory with practice). These projects can be desk based (pure research) where learning takes place through data analysis and interpretation, thus promoting analytical skills, decision making, and language skills. Project based learning can also be a live project in the form of a CSR project, social project or summer project. It is particularly aimed at improving the quality of education outcome, through collaboration, integrated, and self-directed learning. Application of knowledge is highest in project-based learning and gain 60 % of faculty have ranked project-based learning also as preferred method of teaching in multidisciplinary education. A significant relation is there between project based method and collaborative learning. A study by Almulla (2020) [7] shows the PBL, techniques improve students engagement through information and knowledge sharing.

Simulation Based Learning: Simulation is a man-made illustration of an actual world to attain instructional motives through simulation. It is an extension of experiential learning. Simulation exercises allows an individual to think holistically and enhance data-based decision-making skills based on management principles. Any simulation-based exercise helps to develop agility and adaptability and promote the spirit of collaboration, cooperation, and competition. Around 50 % of the faculty

respondent and 60 % of the student respondents have preferred simulation-based learning as the preferred method of learning and teaching.

Team Based Learning: Team based learning is turning out to be the finest learning technique that is gaining popularity in management education. Any kind of team projects ranging from group presentation, case study competition, event management, sports activities, CSR activities are all team based. The students can apply multiple educational concepts through various activities like, communication, teamwork, leadership roles, negotiation, decision making and critical thinking. In the study team-based learning is preferred by 60 % both of faculty and students. Team based learning improves students' grades, exam performance, and classroom performance. Team based learning allows deeper understanding and more confidence. Some students who find difficulty in free discussions or be forthcoming, perform better through team-based learning. This method moves beyond from a traditional mode of learning and provides learners with more academic learning in a practical way [8].

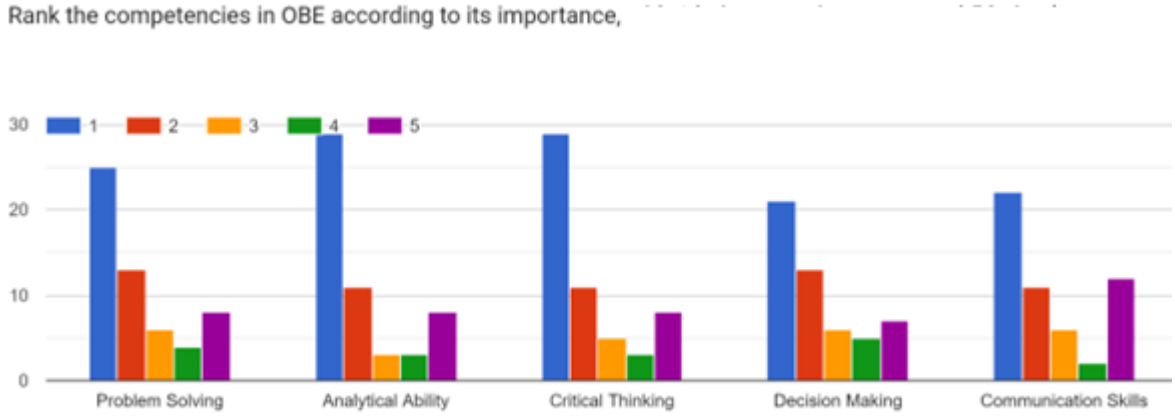

Fig. 2: Competencies & Skills

The effectiveness of the above-mentioned pedagogy depends upon the skills it develops in a student. These skills are required for better employability and job readiness. The different skills identified in outcome-based learning are, Problem Solving, Analytical Skills, Critical thinking, Decision Making, and Communication skills, The student respondents felt the Analytical Skill is most important of all the five skills and it scored an average of 4.5 on a scale of 5. The next most required skill is Critical Thinking, scoring 4.3 on a scale of 5. The first two skills were followed by Decision Making (3.5 on a scale of 5), Communication skills, 3.5 on a scale of 5 and problem-solving skills, 3.2 on a scale of 5. Learning outcomes in different pedagogy are described by the abilities, knowledge, and values a student can deliver.

6. THE ROLE OF FACULTY IN OUTCOME BASED EDUCATION- A MODERN MULTIDISCIPLINARY APPROACH :

This study will be beneficial because faculty engagement will bring more positivity and innovativeness in the Higher Education Institutions in terms of outcome-based education. What has been observed in the study is that faculty members are not individual workers, working in silos, they are integrated into a system that has students, management, institutions, and other stakeholders. Faculty engagement is required to realize higher levels of student learning attainment. What had happened earlier was the decoupling of teaching role and research role of faculty, even more because remuneration for faculty was low. So, it was not expected of faculty to accomplish both roles. But in the new career prospects under Sixth and Seventh pay commission, teaching, research, and institution building has been integrated. With increased faculty engagement, there are strategic collaborations between faculty and support professionals, thereby bringing more faculty engagement in academic institutions. The positivity of faculty engagement is transmitted to the students, thus making learning more student oriented.

A very important observation of the study was the survey of the faculty members, through whom the change in higher education is designed. What has been discussed and seen during the research interview

is that the faculty have expressed the support of the senior management and academic leaders in their meaningful contribution. Teachers mentioned that they expect respectful treatment and two-way communication for better engagement and performance. Hence HODs, Principals, Directors, and Deans, along with the Management has a big role to play in the effective employee engagement. High-quality leadership, proper governance and ethical practices in academic institutions can contribute towards better employee engagement. During the in-depth interview, many faculty members mentioned that behaviour of the senior academic leaders have impact on faculty engagement. Due to increased role of technology in teaching, young faculty /teachers are adept in it and reverse mentoring is on the rise. While senior academic leaders share knowledge and research skills with young faculty members, they in turn teach the senior members technology-based learning. This has improved faculty engagement in HEIs. The analysis of the research is discussed below.

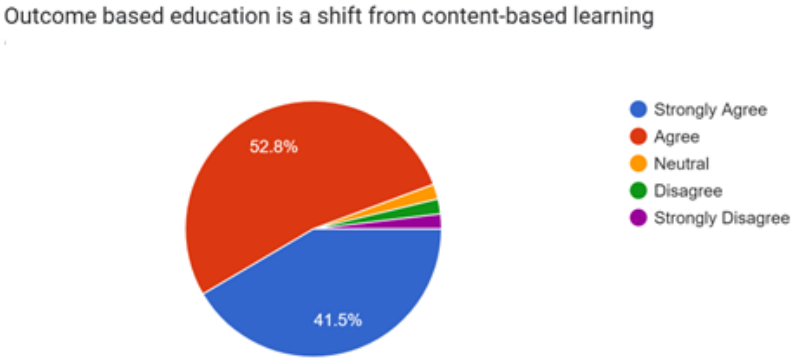

Fig. 3: Perception of Outcome Based Education

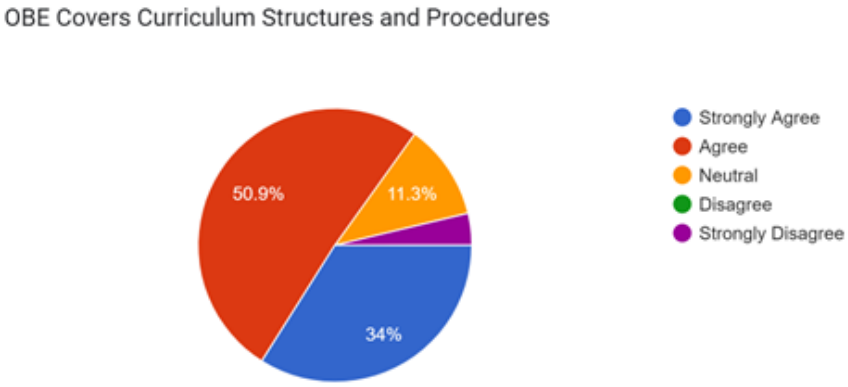

Fig. 4: Curriculum of Outcome Based Education

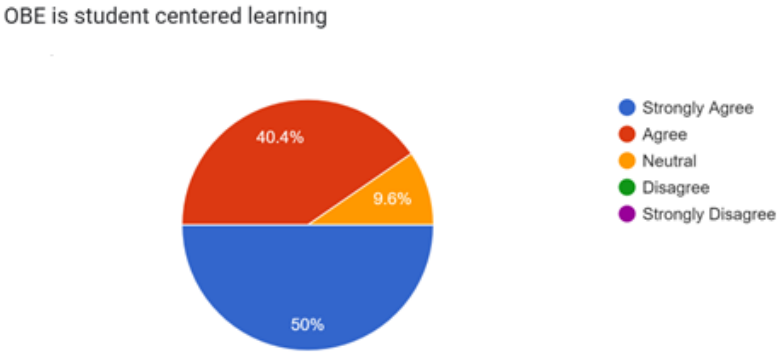

Fig. 5: Student Centric Learning

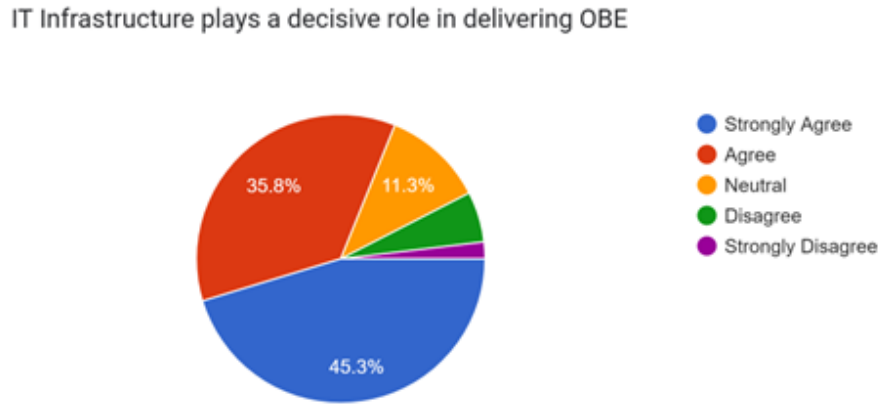

Fig. 6: Role of Infrastructure in OBE

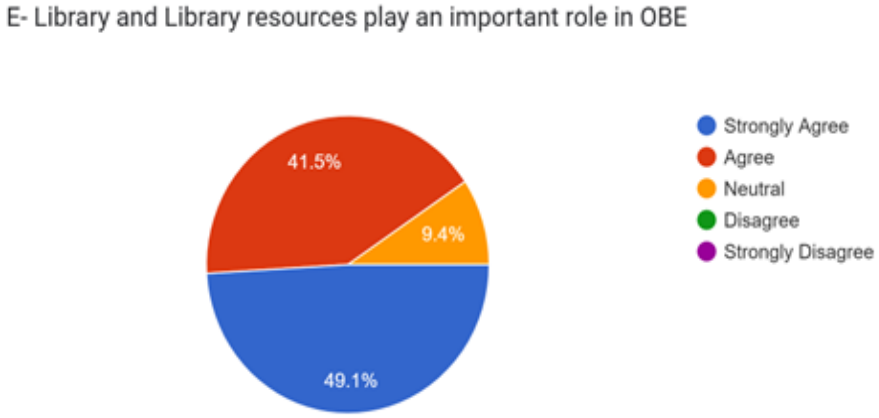

Fig. 7: Role of Library in OBE

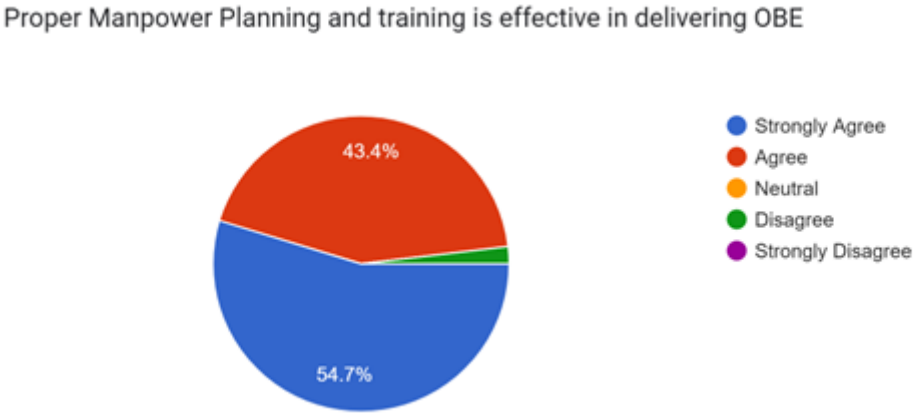

Fig. 8: Manpower Planning and Training in OBE

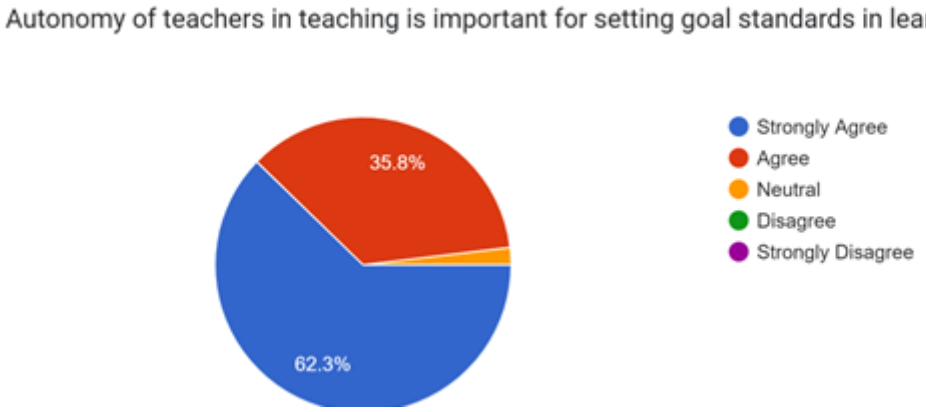

Fig. 9: Autonomy of Teachers in OBE

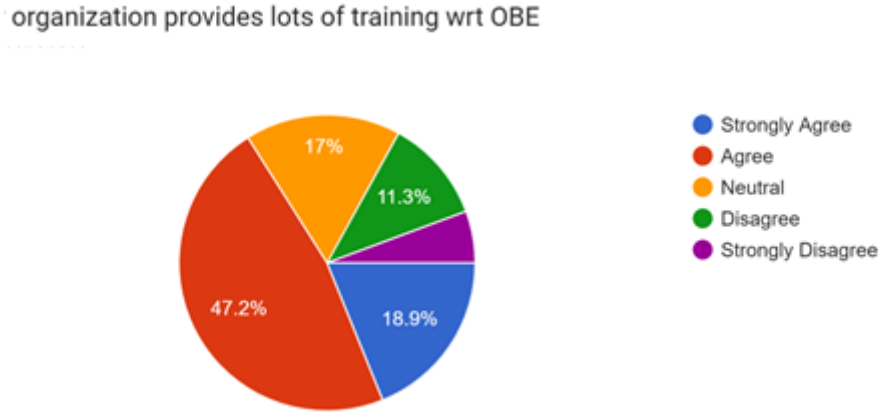

Fig. 10: Role of Training in OBE

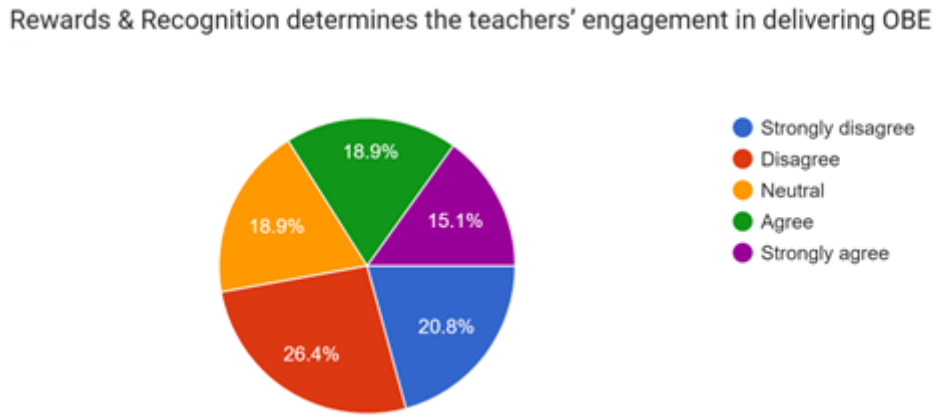

Fig. 11: Role of Rewards & Recognition in OBE

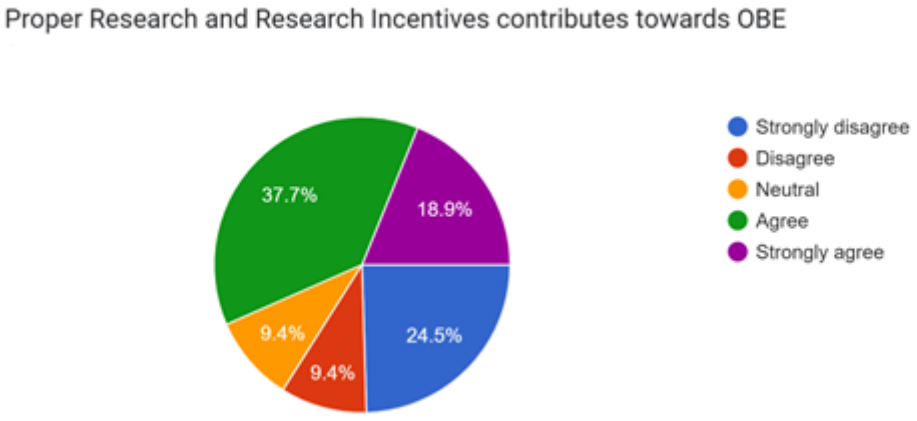

Fig. 12: Role of Research in OBE

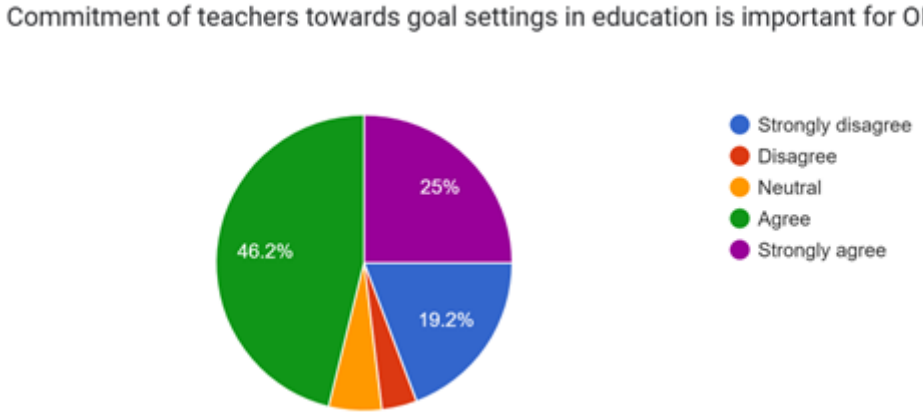

Fig. 13: Commitment of Teachers in Goal Setting

According to survey results, 52.8 % strongly agree and 41.8 % agree that outcome-based education is a shift from content-based education. Around 51 % of the faculty respondents agree that OBE follows proper curriculum structure and procedure. OBE is student centric learning and is thereby an important feature of modern multidisciplinary learning. The respondents, strongly agree (50 %) and agree (41%) that OBE is student centric learning. Around 80 % of the respondents agree that infrastructure and technology have a big role to play in OBE, assisted by proper library and E- library facilities, as expressed by 90 % of the respondents. To make OBE more effective, autonomy of teachers, proper man- power planning and training is necessary. Which means, sufficient time and resources must be invested. Regarding research incentives, rewards, and recognition of teachers are divided in their opinion Around, 37.7 % agree that research incentives should be there for teachers' commitment, while 24.5 % disagree that research incentives contribute towards OBE. One observation is that more than 70 % of faculty agree that commitment of teachers in goal setting is very important for OBE.

7. ANALYSIS OF MODERN MULTIDISCIPLINARY OUTCOME BASED EDUCATION USING ABCD FRAMEWORK :

In exploratory research, analysis refers to the process of examining and interpreting gathered information. Exploratory research is to gain insights, generate postulates, identify patterns or relationships, and generate new knowledge about a particular phenomenon or problem. There are many analysis frameworks used in scholarly research which include SWOC analysis framework for internal analysis [10], PESTEL analysis framework for external analysis [11], and ABCD analysis framework for stakeholder analysis [12-15]. Advantages, Benefits, Constraints, and Disadvantages (ABCD)

analysis framework is proposed in the year 2015 to analyse systems, concepts, ideas, strategies, products/services, materials, etc [12-15]. ABCD analysis framework can be used both qualitatively and quantitatively depending upon requirements [12-15]. The qualitative ABCD analysis framework consists of (1) ABCD listing from information gathering from primary and secondary sources [12-15], (2) ABCD listing from Stakeholders' point of view of a system [12-15], (3) Factor and Elemental analysis using ABCD framework [12-15]. In this section, we have used ABCD listing from stakeholders' points of view (both learners and teachers) on ancient education compared to modern education in Higher Education.

(A) Advantages:

(1) Focuses on problem solving and experiential learning.
(2) Is more practical and application oriented.
(3) Is student centric and optimises teaching and learning.
(4) The engagement process is continuous and less monotonous.
(5) Innovative teaching pedagogy is used in types of techniques.

(B) Benefits:

(1) Development of long-term knowledge retention and ability to retain and recall learning.
(2) Reinforces understanding of different subjects.
(3) Use of different and diverse pedagogy, thereby promoting self- paced learning.
(4) More participatory learning in a constructive manner.
(5) Development of transferable skills thereby making learners more confident

(C) Constraints:

(1) Huge cost and resources required for implementing outcome-based education.
(2) Training of all faculty in the various modules is time consuming and expensive.
(3) Unpreparedness of students and teachers due to unfamiliarity
(4) Difficulty in assessing the shortfall and short coming of the different pedagogies.
(5) Difficulty in mapping suitable pedagogy for candidates.

(D) Disadvantages:

(1) Challenge of time management between academic and non- academic activities.
(2) May lead to less academic orientation and poor performance in exams.
(3) Degree of relevancy and applicability may vary depending upon candidates' calibre.
(4) Training of faculty members across different organizations will be difficult and is a lengthy process.
(5) Skills and competencies developed will change from time to time and has to be developed accordingly.

8. CONCLUSION :

Modern multidisciplinary outcome-based education collaborates problem-solving, curriculum aligned topics, and diverse contexts. The different approaches to learning based on real-life problems facilitate faster and better learning, with knowledge creation and knowledge transfer. Setting goals and expectations for both the learner and the trainer and highlighting the purpose of problem-based learning is of utmost importance. The existing knowledge gap is filled with a logical approach, and students are given the opportunity to present their ideas and findings. Individual learning is thereby ensured through group learning. The challenges of modern outcome-based education in terms of time, resources, and willingness of the top management, can be addressed through proper manpower planning, resource allocation, and futuristic education. If education is for the next generation it has to be outcome-based, supporting Bloom's Taxonomy. According to Blooms Taxonomy (Blooms 1965), cognitive domains involve the development of new skills. Learning creates better knowledge, comprehension, application, analysis, synthesis, and evaluation. Outcome-based education focuses on cognitive; mental skills, i.e., knowledge, psychomotor, i.e., hard skills, and affective, i.e., attitude building. After any learning episode, the learner will acquire new skills, knowledge, or attitude.

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