



Traditional vs. Modern Education: A Comparative Analysis

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Abstract:

This review paper critically examines the dichotomy between traditional and modern educational methodologies, with a specific emphasis on the integration of technology-based approaches. While modern education harnesses the power of technological advancements to deliver personalized and interactive learning experiences tailored to the diverse needs of students, traditional education often falls short in adapting to individual learning styles, relying heavily on conformity and rote learning. By delving into the transformative potential of technology in education, this paper underscores its role in fostering critical thinking and nurturing creativity among students. Moreover, it acknowledges the necessity of striking a delicate balance between the rigidity of traditional pedagogy and the innovation of modern educational practices to achieve optimal learning outcomes in today's dynamic educational landscape. Through this exploration, the paper aims to provide insights into effectively leveraging technology to enhance educational experiences while preserving the essence of traditional learning principles.

Keywords: *Educational Technology, E-learning, Digital learning, Online learning platforms, Virtual classrooms, Mobile learning (m-learning).*

1 Introduction:

This study aims to describe the importance[1] education comes in two main flavors: traditional and modern. Traditional education sticks to old ways, like memorizing facts, while modern education is all about trying new things and adapting to student needs. Let's dive into why these approaches matter and how they shape learning.

The research aims to develop an effective recommendation system that provides[2], Traditional education is old-school, focusing on memorization and following rules. It's like listening to lectures and taking tests based on what you've memorized from textbooks. Modern education is different. It uses technology and interactive methods to engage students. It encourages creativity and problem-solving.

Why does education matter? Well, it's the key to personal growth and success. Traditional education lays down a strong foundation and respects our cultural heritage. It's like building a sturdy house with bricks.

Modern education, on the other hand, prepares us for today's world by teaching us how to think critically and adapt to change. It's like adding cool gadgets to our toolkit.

In the end, both traditional and modern education have their strengths. By blending the best of both worlds, educators can create a balanced approach that meets the needs of all students. So, whether it's old-school or cutting-edge, education is all about helping us reach our full potential in a fast-changing world.

1.1 Difference between Traditional & Modern Education:

Types of filtering-methods[3]:

Aspect	Traditional Education	Modern Education
Old-School Learning	Stick to the old ways of learning, like listening to the teacher and memorizing facts.	Explore new ideas and ways of learning, encouraging students to think outside the box.
Trying New Things	Often hesitant to try different teaching methods, preferring to stick to what's familiar.	Embrace new teaching techniques and technologies, making learning more dynamic and interactive.
Student Needs	Treat all students alike, with the same teaching methods regardless of individual differences.	Recognize that each student learns differently, and adapt teaching to suit their unique needs and strengths.
Teaching Methods	Mostly involve lectures, note-taking, and reading from textbooks.	Incorporate activities, discussions, group work, and technology to make learning more engaging and practical.
Success Criteria	Judge success mainly by grades and how well students do on tests and exams.	Measure success not just by grades, but also by how well students can think critically, solve problems, and apply what they've learned in real life.
Traditional Education	Prefers to stick with established methods and practices, often resistant to change.	Values tradition and stability, believing that tried-and-tested methods are the most reliable.
Modern Education	Embraces innovation and is open to trying new approaches to teaching and learning.	Values progress and adaptation, recognizing the need to evolve with changing times and technologies.

2 Literature Review:

In their systematic review, Ifenthaler and Yau (2020) critically examine the utilization of learning-analytics to enhance study success in higher education. Employing a rigorous methodology across various international databases including GoogleScholar, ACM Digital Library, and ERIC, the review highlights the significance of learning analytics in improving academic outcomes. However, it also acknowledges limitations such as language barriers and the dynamic nature of research, necessitating ongoing meta-discussions and future systematic reviews to capture emerging trends. The review underscores the importance of theoretical clarity in defining key constructs and advocates for stronger methodological focus in future studies. Moreover, it recognizes the existence of supporting evidence from studies not encompassed in the review and suggests the establishment of a comprehensive database to facilitate broader access to findings, thereby contributing to the advancement of research in the field of learning analytics and study success in higher education. [4]

The COVID-19 pandemic catalyzed a rapid shift in traditional education towards remote learning, prompting educators and institutions to reassess pedagogical approaches and technological integration. Despite this paradigm shift, limitations such as geographical barriers, sample size constraints, and data access issues have been noted in studies examining its impact, as exemplified by Vishwakarma, Singh, and Joshi's (2021) review focusing on senior college students in Pune. Through questionnaire surveys and secondary data analysis, their study highlights key themes in the literature, including the challenges and opportunities of technological integration, pedagogical adaptation, student experiences, and equity considerations. While remote learning offers flexibility and innovation, addressing disparities in access and engagement remains imperative for fostering inclusive educational environments beyond the pandemic. [5]

In their systematic literature review titled "Teaching and Learning Research Methodologies iEducation," Matos et al. (2023) investigate the pedagogical cultures surrounding research methods instruction in higher education. Through a comprehensive exploration, they aim to identify trends and pitfalls within the field. Addressing specific research questions, the authors delve into various dimensions, including methodological content knowledge, research competencies, and pedagogical practices[6]. The review uncovers challenges such as negative student attitudes towards statistical methods, a lack of preparation, and misconceptions about research courses. Moreover, issues regarding the design and teaching of research methods courses, such as pedagogical innovation and instructor biases, are highlighted. The study emphasizes the need for clarity in defining methodological knowledge and advocates for the formulation of research problems to foster understanding and critical inquiry. Ultimately, the authors call for the development of a comprehensive framework to guide the design and teaching of research methods courses in higher education, underscoring the importance of addressing these challenges to enhance the effectiveness of research methodology instruction.[7]

The systematic review conducted by Huang et al. (2019) provides valuable insights into the evolution of topics in education research through bibliometric analysis. The study employs a multi-faceted methodology comprising three key steps: collecting journal publication data from core journals in the education field, constructing keyword co-occurrence networks to identify core research topics, and analyzing topic development trends based on the density distribution of these networks. Through this approach, the study reveals persistent themes such as interactive learning environments, human capital, teacher education, higher education, and equity and social justice, while also highlighting emerging interdisciplinary research areas like intelligent tutoring systems and dyslexia. Moreover, secondary topics gaining attention, including secondary education, mathematics, and self-efficacy, are identified. However, the study acknowledges limitations such as its descriptive nature, clarity issues in journal selection, and potential improvements through the inclusion of topic terms from publication texts and expert knowledge. Overall, Huang et al.'s review offers valuable insights into the trajectory of education research topics and trends, laying a foundation for future investigations in the field. [8]

In their comprehensive literature review titled "Predicting academic success in higher education," Alyahyan and Düşteğör (2020) highlight the importance of early prediction of students' performance to facilitate timely interventions and tailored training programs aimed at improving success rates. The review focuses on studies employing data mining methods to predict academic success, covering various levels of prediction, including degree, year, and course levels. Notably, the literature excludes the prediction of students' success at the exam level due to the potential limitations of inferring negative outcomes from a single exam. The authors conducted an extensive search across multiple databases, including Science Direct, ProQuest, IEEE Xplore, Springer Link, EBSCO, JSTOR, and Google Scholar, using keywords related to academic success and data mining techniques. Seventeen key articles were reviewed, with a specific emphasis on publications from the last five years to streamline the search space. Despite potential limitations in the scope of the review, the study aims to bridge the accessibility gap of machine learning techniques for educators by providing a step-by-step guide for predicting student success. Through a systematic process outlined in the review, educators can gain insights into decision-making parameters and effectively apply data mining methods to enhance student outcomes in higher education.[9]

In contemporary society, the widespread adoption of intelligent mobile devices has transformed the Internet into a ubiquitous learning tool, overcoming constraints of time and space. Ming-Hung Lin, Huang-Cheng Chen, and Kuang-Sheng Liu conducted a study to investigate student perceptions of digital learning and its impact. Employing quasi-experimental methods, they surveyed 116 students from 4 classes. The results of their study demonstrate that digital learning yields more favorable effects on learning motivation and outcomes compared to traditional teaching. Notably, they found that learning motivation significantly influences learning outcomes and gains. These findings underscore the importance of integrating digital learning into teaching strategies to enhance effectiveness in accordance with current trends.[10]

Delgado, Wardlow, McKnight, and O'Malley examine the impact of the digital revolution on K-12 education, scrutinizing technology integration, resource allocation, and effectiveness. They highlight challenges in practical implementation despite substantial investments and discuss various instructional strategies. The paper addresses low technology utilization due to teacher skills and resource limitations, proposing solutions like professional development. Meta-analyses explore technology's effectiveness in enhancing student achievement, indicating mixed results and the need for further research. Additionally, the authors discuss the potential benefits of technological tools and instructional strategies, emphasizing the importance of equipping students with technological skills. Overall, the paper underscores the complexities of integrating technology effectively in education and the necessity of addressing challenges to realize its full potential.[11]

In their paper titled "A Critical Look at Educational Technology from a Distance Education Perspective," Terry Anderson and Pablo Rivera-Vargas scrutinize the impact of digital tools within the realm of distance education. They emphasize the profound influence of digitalization on contemporary education and the unique challenges it poses to distance learning. The authors address two fundamental questions: the inadequacies in the transition from traditional campus-based education to digital formats, and the future challenges confronting distance education's sustainability. Through theoretical analysis and literature review, they highlight limitations and future hurdles in utilizing digital technologies effectively in distance education. Their examination reveals a disparity between the initial promises of digital technology and its practical implementation in distance learning settings. Furthermore, they outline three significant challenges for the future: the potential and pitfalls of learning analytics, the role of social media in distance education, and the struggle to maintain uniqueness amidst the proliferation of online offerings. The authors stress the vulnerability of distance education institutions to commercial pressures and advocate for addressing issues of online privacy, copyrighting, and digital competition. Overall, their paper offers a comprehensive analysis of the complexities and vulnerabilities inherent in integrating educational technology into distance education.[12]

In their working paper, "Education Technology: An Evidence-Based Review," The researcher's delve into the realm of education technology with a focus on synthesizing experimental evidence regarding its effectiveness. Recognizing the widespread interest in leveraging technology to transform learning, the authors aim to provide a comprehensive overview of randomized controlled trials (RCTs) across various categories of education technology. The paper underscores the importance of advancing understanding about how technology can support education, identifying areas for further experimental inquiry, and informing the development of policies and programs conducive to successful teaching and learning.

The transformative impact of technology on education has sparked widespread interest in leveraging ed-tech to revolutionize learning. In their review, the authors aim to consolidate the experimental evidence in this evolving field and identify promising applications of educational technology. Categorized into access to technology, computer-assisted learning, behavioral interventions, and online courses, the review scrutinizes existing literature to discern efficacy and areas for further exploration. While providing students with technology access yields mixed results, computer-assisted learning and behavioral interventions show promise, particularly in personalized learning and low-cost behavioral nudges. However, evaluations of online learning courses reveal nuanced outcomes, suggesting blended learning may be more effective than fully online courses. As the ed-tech landscape evolves rapidly, the review calls for timely, relevant research and emphasizes the importance of focusing on mechanisms that enhance learning outcomes rather than specific products or technologies.[13]

Cloud computing has emerged as a transformative force in the realm of information technology, revolutionizing the delivery of services over the internet and fulfilling the long-standing vision of utility computing. Its impact extends significantly to education, offering unprecedented access to knowledge for teachers and students worldwide through cloud-based platforms accessible from any device. By streamlining educational delivery and reducing costs, cloud computing equips students globally with the skills needed to excel in today's information-driven society.

Given the current economic landscape, educational institutions are increasingly considering the adoption of cloud solutions to meet their evolving needs. Evidence suggests that universities have already begun embracing this transition, experiencing notable cost reductions following the implementation of cloud technologies. This review paper, authored by Prof. Poonam R. Maskare and Prof. Sarika R. Sulke from Amravati University, India, explores the integration of cloud computing with e-learning. The authors highlight the importance of internet connectivity and advanced software in reshaping educational paradigms, proposing a cloud-based architecture aimed at creating a virtual learning environment conducive to effective teaching and learning practices. Future research endeavors will focus on understanding attitudes and strategies for migrating to such cloud-based educational architectures.[14]

The study investigates the adaptability of students to online education, a topic of growing importance in the wake of the COVID-19 pandemic. With educational institutions worldwide transitioning to online platforms, understanding students' ability to adapt to this mode of learning is crucial. The research, conducted by Md. Mahmudul Hasan Suzan, Nishat Ahmed Samrin, Al Amin Biswas, and Md. Aktaruzzaman Pramanik from Daffodil International University, Dhaka, Bangladesh, aims to contribute to this understanding by analyzing factors influencing students' adaptability. Data was collected through both online and physical surveys, capturing socio-demographic information across different educational levels, including school, college, and university. Random Forest emerged as the most accurate, achieving an accuracy of 89.63%. We will try to reduce the problem by using modern technology in place of tradition technology[15]. This study sheds light on the effectiveness of online education and provides insights for educational decision-makers to enhance students' learning experiences in online settings.[16]

3 Research methodology

The following are the key research issues that lead this work[17]

3.1 Traditional education is characterized by several key features, including:

The researcher mainly emphasizes two types of data those are primary and secondary as a part of the research methodology[18].

1. **Lecture-based instruction:** In traditional education, lectures are the primary mode of instruction, where teachers deliver content orally to students. This format typically involves one-way communication, with the teacher imparting knowledge to the students.
2. **Teacher-centered approach:** Traditional education often revolves around the teacher as the central authority figure in the classroom. The teacher holds the knowledge and directs the learning process, while students are expected to listen, take notes, and follow instructions.
3. **Memorization and rote learning:** Traditional education places a strong emphasis on memorization of facts, formulas, and information from textbooks. Students are often required to memorize and regurgitate information for tests and exams, rather than focus on understanding and critical thinking.
4. **Structured curriculum:** Traditional education follows a structured curriculum, typically outlined in textbooks and standardized syllabi. The content is organized into subjects and topics, with a predetermined sequence for instruction.
5. **Standardized assessment:** Evaluation in traditional education relies heavily on standardized tests and exams. These assessments measure students' ability to recall information and demonstrate proficiency in specific subjects according to predetermined criteria.
6. **Passive learning:** Students in traditional education are often passive recipients of information, expected to absorb knowledge through lectures and readings. There may be limited opportunities for active engagement, critical thinking, or hands-on learning experiences.
7. **Limited use of technology:** Traditional education may utilize basic educational technologies such as chalkboards, overhead projectors, and printed materials. However, the integration of technology for interactive learning experiences is typically minimal compared to modern educational approaches.

Overall, traditional education tends to prioritize stability, uniformity, and adherence to established methods, with a focus on transmitting existing knowledge through lecture-based instruction and standardized assessment practices.

3.2 Historical perspectives on traditional pedagogical methods

Historical perspectives on traditional pedagogical methods trace back to ancient civilizations such as Mesopotamia, Egypt, and Greece, where education was primarily reserved for the elite and focused on teaching subjects like reading, writing, arithmetic, and philosophy. In these early societies, education was often conducted through oral instruction, where teachers passed down knowledge and skills to students through storytelling and memorization. The apprentice system also played a significant role, particularly in trades and crafts, where young individuals learned from experienced masters through hands-on training.

During the Middle Ages, education was largely centered around the Church, with monasteries and cathedral schools serving as centers of learning. The curriculum emphasized religious studies, Latin, and classical literature, reflecting the dominance of the Church in medieval society. Instruction was often conducted in Latin, and teaching methods revolved around rote memorization and repetition.

The Renaissance period saw a revival of interest in classical learning and humanism, leading to the emergence of educational institutions such as universities. The curriculum expanded to include subjects like mathematics, science, and literature, and teaching methods began to incorporate lectures, discussions, and debates. However, education remained elitist, primarily catering to the wealthy and privileged classes.

The Industrial Revolution brought about significant changes in education, as the need for a literate and skilled workforce increased. Traditional pedagogical methods became more standardized and formalized, with the establishment of compulsory schooling and the development of national education systems. Instruction was often teacher-centered, with a focus on discipline, obedience, and memorization of facts and figures to prepare students for the demands of the industrial economy.

3.3 Strengths of Traditional Education in the Context of Technological Advancements:

Advantages of Traditional Education:

1. **Punctuality and Discipline:** Fixed schedules help students develop time management skills and discipline.
2. **Social Interactions:** Classroom settings encourage peer interactions, fostering character development and social skills.
3. **Extracurricular Activities:** Opportunities for showcasing talents and gaining recognition contribute to holistic development.
4. **Face-to-Face Interactions:** Direct communication with teachers allows students to seek clarification and deeper understanding.

Disadvantages of Traditional Education:

1. **Generalized Learning:** One-size-fits-all approach may not cater to individual interests and talents, hindering personalized growth.
2. **Passive Learning:** Students might become passive listeners, lacking engagement and interest in lectures.
3. **Lack of Flexibility:** Rigid schedules make it challenging for students to adapt and manage their time effectively.
4. **Costly:** Expense associated with facilities and tuition fees may make traditional education inaccessible to some, leading to financial burdens.
5. **Teacher-Centered:** Dependency on teachers and textbooks limits exposure to diverse knowledge sources, restricting learning potential. [19]

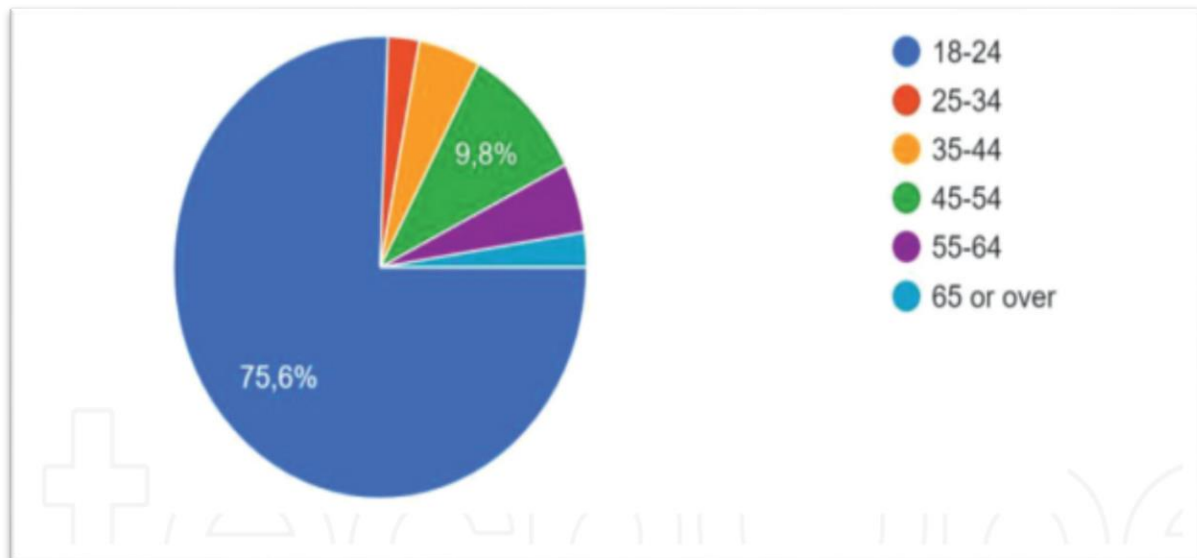
4 Results and discussion

The effectiveness of traditional versus modern education systems has been a subject of debate, with proponents of modern education often highlighting its emphasis on creativity and effectiveness. Traditional education, characterized by rote memorization and recitation, is perceived as outdated and less conducive to holistic learning experiences. In contrast, modern education methods prioritize critical thinking, problem-solving, and creativity, fostering a deeper understanding of concepts. Consequently, modern education is often preferred for its ability to engage students in more effective and innovative learning processes[20].

The importance of modern education lies in its holistic approach, which extends beyond textbook knowledge to encompass interactive learning experiences that facilitate student engagement and socialization with their environment, ultimately fostering comprehensive personal and academic growth.

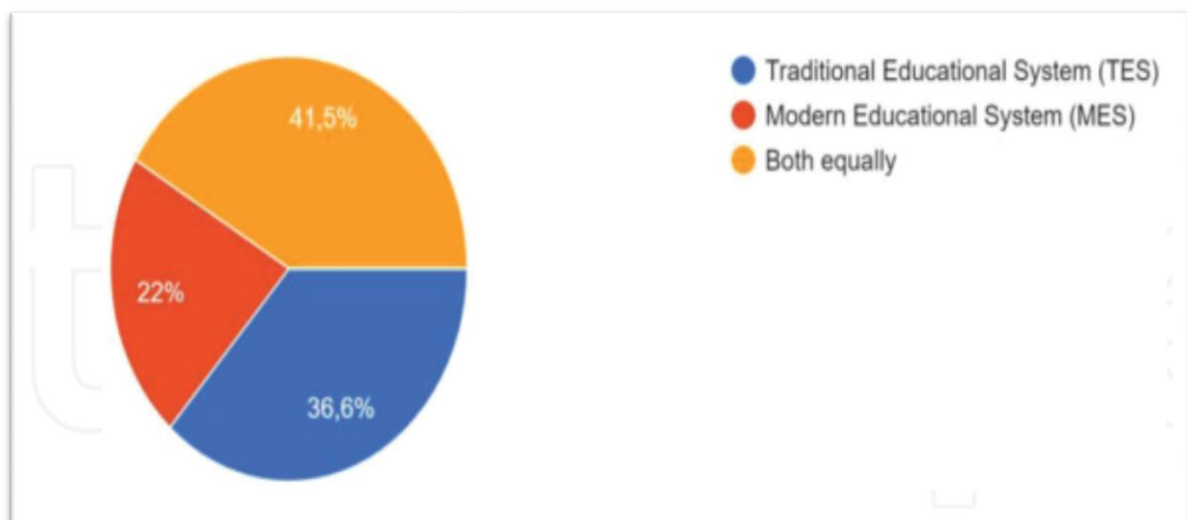
The importance of traditional education lies in its emphasis on peer-to-peer teaching and learning, facilitating an understanding of fundamental societal norms and dynamics, thus providing students with a foundational understanding of the society in which they live.

Figure 1. Demographic information: participants' age range



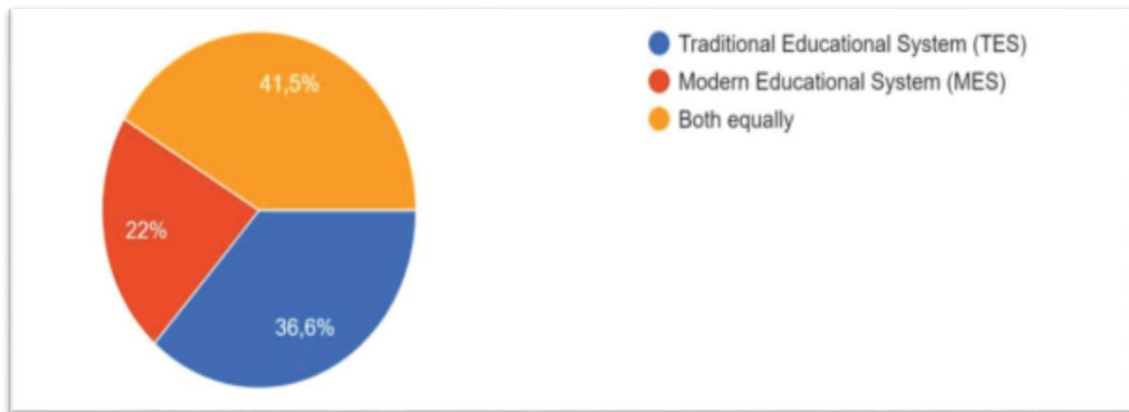
The passage highlights the differing approaches to education between Traditional Education System (TES) and Modern Education System (MES). TES is characterized by teacher-centered instruction, where seminars are conducted traditionally, with all students being asked questions to keep them engaged. On the other hand, MES embraces learner-centered and interactive approaches, offering personalized learning, integrating technology, and emphasizing critical thinking and problem-solving skills. This excerpt underscores the shift from traditional, teacher-centered methods to modern, learner-centered approaches in education, highlighting the importance of adapting to changing educational paradigms for more effective learning outcomes.

Figure 2. Education experience



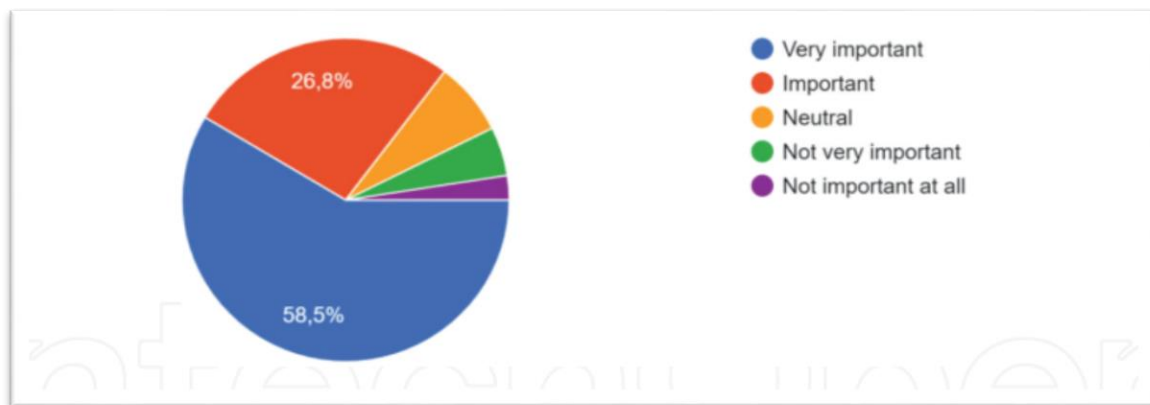
Additionally, 78% of participants had experience with both TES and MES systems, while 22% reported being well-acquainted with either TES or MES.

Figure 3. Familiarity with TES and MES.



When asked about their emotional experiences with TES and MES, as well as their awareness and preferences regarding these education systems, less than half (41.5%) said they felt comfortable and familiar with both systems. Among the rest, 36.6% preferred and understood TES better, while 22% favored MES.

Figure 4. Values in education



According to the survey, 85.3% of participants think that values are very important or important in education. In contrast, only 4.9% don't find them very important, and 2.4% believe they are not important at all, emphasizing that only technical knowledge and practical skills matter in today's job market (Figure 4). Additionally, 7.3% are neutral, commenting that values are a personal matter and have little role in education, though they may be important in family and work life in the future.[21]

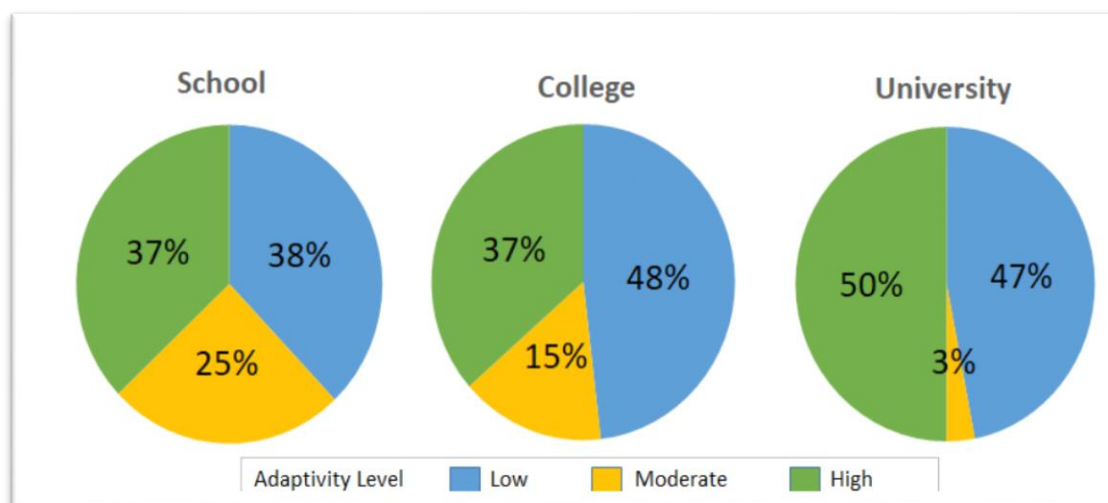


Figure 5: Pie chart of adaptability of several education levels

The distinction between the old and new education systems is evident in their respective focuses: the former prioritizes theoretical knowledge from books, whereas the latter emphasizes practical learning and critical thinking skills. While traditional education imparts values, modern education targets life skills and decision-making abilities. The integration of technology, such as apps and videos, in the new system enhances engagement but may incur additional costs. Unlike traditional education, which relies on a teacher's physical presence, modern education offers flexibility in its delivery methods. The ongoing debate revolves around achieving a harmonious balance between these two approaches to ensure effective learning outcomes.

The advantages of modern education over traditional education are manifold: it promotes hands-on learning experiences to enhance critical thinking skills, utilizes technology tools like computers and the internet to create engaging learning environments, offers flexibility through online learning options, potentially reducing costs by eliminating the need for physical classrooms and textbooks, ensures inclusivity by catering to all students, including girls, and provides opportunities for personalized learning approaches tailored to individual preferences and needs.[13]

4.1 In a review paper comparing traditional and modern education, the researcher contributes by Author:

1. **Bringing Together What's Already Known:** They gather and analyze information from existing studies, articles, and research about both types of education.
2. **Spotting Trends and Arguments:** They highlight the current trends and debates happening in education regarding traditional and modern methods.
3. **Looking at What Works and What Doesn't:** They check out how well traditional and modern education methods actually work. This means seeing if students learn better, perform well academically, and develop important skills using each approach.
4. **Checking Out Different Teaching Styles:** They explore the different ways teachers teach in traditional and modern settings, including what's in the lesson plans and how technology is used Different.
5. **Cultures and Situations:** They think about how cultural backgrounds and different situations affect how traditional and modern education methods are used.
6. **Finding What We Still Don't Know:** They figure out what we still need to learn more about in the world of traditional and modern education.
7. **Giving Advice:** Based on what they find, they offer suggestions for teachers, policymakers, and others involved in education. This might be about combining the best parts of both traditional and modern methods or finding ways to make education better for different kinds of learners.

Overall, the researcher helps us understand more about the debate between traditional and modern education, gives ideas for improving education, and points out what we need to learn more about in the future.

Conclusions:

In conclusion, In an objective to achieve higher accuracy for[22] this review paper provides a comprehensive examination of traditional and modern educational approaches, shedding light on their differences, strengths, and limitations. By scrutinizing key aspects such as teaching methods, student needs, and success criteria, the paper offers valuable insights into how these approaches shape learning outcomes. Traditional education, characterized by its adherence to established practices and emphasis on memorization, lays down a strong foundation and honors cultural heritage. On the other hand, modern education, with its focus on experimentation, innovation, and adaptability to student needs, prepares individuals for the dynamic challenges of the contemporary world. By comparing and contrasting these

approaches, educators and policymakers gain valuable insights into potential strategies for improvement, enabling them to create a balanced educational environment that meets the diverse needs of students. Furthermore, the review highlights the significance of ongoing research and methodological advancements in the field of education, emphasizing the importance of addressing challenges such as negative student attitudes, lack of preparation, and misconceptions about research courses. Future work may involve further customization options[23]. Ultimately, the paper underscores the importance of continually evolving educational practices to ensure the success and fulfillment of all learners in a rapidly changing society.

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