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**Editor-in-Chief
Dr. S.K. Bhatia**



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Would like to appeal to the learned readers to send us their views, counter views, suggestions, comments, and observations etc. via “Letters to Editor” (which will be published in the next Issue) on the articles published in this Journal so that an academic discussion may start and our efforts may become more participative and thereby more meaningful and interesting.

Editor-in-Chief

The Themes for the next Issue July-2025

Section I.

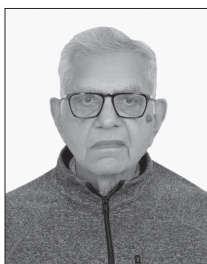
1. Valuing professionalism and training in Teacher Education courses.
2. Changes in perspectives on areas of research in Teacher Education.
3. Perspectives on how learning in Curriculum and Pedagogy are demonstrated in Teacher Certification Programs.
4. Perspectives on effective Evaluation Practices in Teacher Education Programs.
5. Innovations and Innovative practices in Teacher Education Programs.
6. Diversity and Inclusion: Different International perspectives.
7. Ensuring access and equity in high quality Teacher Education programs.
8. ICT-related Innovations and practices in Teacher Education Programs.
9. Policy Perspectives in Teacher and School Education.
10. Reports on related conferences, seminars and workshops, including International offerings.
11. The Prolonged Online Mode of Teaching-learning - Challenges, Innovative experiments, Findings.
12. Tailored Interventions in Learner-centered Education.
13. Blended Learning as an outcome of Online Learning during the ongoing pandemic.
14. Scope of starting B. Ed for Vocational Teachers (B.Ed.Voc.)
15. AI in Education - The Role of Teachers in the Age of Machines

Section II. Innovative Experiments in Schools:

1. Teachers’ Professional Growth
2. Optimising Students’ Achievement
3. Holistic Learning
4. Experiments in the area of Experiential Learning.
5. Objective Evaluative Strategies During the Prolonged Closure of schools.
6. Solving School Problems through Action Research
7. Measuring Students’ all-round Achievements through Ensemble assessments.
8. Literacy and Numeracy Challenges and their Remedies in schools
9. Integrating the inputs of Arts, Music and Play during the classroom teaching-learning processes
10. Starting Job-linked Courses in Schools at the Secondary Level

Thanks and Regards
Editor-in-Chief
Dr. S.K. Bhatia

Editorial



As we welcome the dawn of 2025, we extend our heartfelt wishes for a year filled with joy and success to everyone connected with the *Journal of Teacher Education and Teaching*—our esteemed authors, dedicated subscribers, insightful reviewers, valued advisors, and the diligent administrative team. Your collective efforts enable us to consistently deliver timely and impactful issues that contribute meaningfully to the field of education. Each new issue brings forth innovative ideas, whether through creative approaches, ground breaking experimental results, or critical explorations that challenge existing theories and models, further enriching the body of knowledge in teacher education and teaching.

As with previous issues, we received a substantial number of papers and articles for this edition. While some authors selected topics from those proposed in the call for submissions, the majority of contributions are drawn from the ongoing research of the scholars involved. Additionally, a few project reports from schools were submitted. The papers featured in this issue were carefully shortlisted based on the expert evaluations of our esteemed reviewers. Each submission was assessed for its relevance, originality, and contribution to the field of teacher education. We believe the diverse range of topics covered in this issue reflects the dynamic and evolving landscape of research in teacher education and teaching-learning in schools. We are confident that the insights shared will enrich the ongoing dialogue in this vital area of study.

We extend our heartfelt gratitude to all the authors who have contributed their original papers, articles, and project reports to this edition. Their versatile ideas, eloquent expressions, meticulously crafted statistical tables, and insightful diagrams enrich this journal and provide a treasure trove of knowledge for the academic community. We would like to specially commend Dr. Jonathan Edwin V. Remegi and Edner R Corpuz & Jed Madlambayan for their exemplary research findings, which not only push the boundaries of their respective fields but also offer valuable guidance to scholars in assimilating and utilizing these insights in their scholarly endeavors. It is through such dedicated efforts that this journal continues to serve as a beacon of inspiration and a platform for meaningful academic discourse.

Artificial Intelligence (AI) is permeating nearly every aspect of human life, and education is no exception. Its potential to revolutionize education is immense, with applications ranging from enhancing study materials and transforming teaching-learning processes to fostering student engagement, developing innovative teaching aids, and refining evaluation techniques. There is virtually no area in education that cannot benefit from AI's intervention. However, it is crucial to acknowledge the dual nature of this technology. While its positive applications can elevate educational standards, its misuse can lead to serious consequences, as devastating as any catastrophic technological failure.

As authors contributing to this journal, you bear a significant responsibility. While embracing AI to enrich your research and enhance the quality of your work, it is imperative to ensure that its use is ethical, purposeful, and aligned with the welfare of educators and learners alike. Above all, your originality and intellectual contribution must remain uncompromised. Let AI serve as a tool to augment your creativity, not replace it. We urge you to harness AI responsibly and thoughtfully, ensuring that your work contributes meaningfully to the evolving landscape of education while upholding the highest standards of academic integrity.

Our office has begun preparations for the upcoming issue of **IJTET**, scheduled for publication in July 2025. The tentative themes for this edition are outlined on the page adjacent to the editorial. While contributors

are encouraged to explore the suggested themes, they are also welcome to write on any topic within the broad domains of teacher education or school education. We invite all stakeholders—academicians, practitioners, and policymakers alike—to share their insights and contribute to enriching the discourse. Your valuable perspectives will help ensure that our journal continues to advance the cause of teacher and school education in meaningful and impactful ways.

Dr. S. K. Bhatia
Editor-in-Chief

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Ms. Neha Madan

RESEARCH ARTICLES

‘Old but still Gold’: The Pedagogy Styles and Secrets of Seasoned Teachers

Ednar R. Corpuz¹ and Jed V. Madlambayan²

Abstract

This study utilized case study and phenomenological methods. Similarly, the present study used ontological philosophical stance as a sub-branch of phenomenological research. Ten (10) participants were identified using exponential non-discriminative snowball technique. Findings revealed that majority of the seasoned teachers had described the changes and modification of curriculum in view of the modern pedagogy. Majority of the respondents also have positive description regarding changes they observed with the current education. The use of power point presentation is still the number one strategy being used by the teacher in the facilitation of their lessons followed by using videos and software. Negative reaction was found among seasoned teachers as they are unaccustomed, challenged, and aghast with the use of the technology as part of teaching. A mixture of individualized and collaborative learning approach was also seen from the pedagogy styles among the strategies of the seasoned teachers. It was also found that majority of the seasoned teachers use restrictive management styles and are authoritative in nature. Heavy emphasis on classroom management and discipline were also the salient. Trainings and seminars in modern teaching, handling unmotivated and passive students were among the recommendations of the present study.

Introduction

“With the crown of snow, there cometh wisdom!”

-The Story of the Aged Mother

While it is indisputable and undebatable that the educational system has met paradigm of shift and changes throughout centuries, questions about the validity of different teaching strategies, curriculum content and classroom management are among the fascinating subjects of research and pedagogy. These modifications in pedagogy were termed “transformative change” in the study conducted by O’Connor and Zeichner as cited in Varadharajan and Buchanan (2017).

So to speak, these changes towards a more student-focused pedagogy in teaching and in education have been the effect of critical challenges obtainable by numerous researchers and experts in education to long-held beliefs about both teaching-learning processes. More so, the inundation of the lecture-based has been a dominant form of teaching/instruction and being viewed as the most effective pedagogical

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teaching approach. These challenges to traditional pedagogical practices in education are not a novice story to tell. Certainly, there has been a long story and history of passionate and outspoken believers for re-designing and re-thinking how schoolchildren in pedagogy and education have conventionally been expected to acquire knowledge and learn (Bergtrom, 2011; Hooks, 1994; Kember, 2009; McLaren, 1989).

More so, the pedagogy and assessment evolved into a new facet. To this date, Information and Communication Technology (ICT) integration in pedagogy has been the basis of crux of assessing and facilitating students' academic development. Beyond the shadow of doubt, major researchers and experts in the field of learning see the positive roles and impact of ICT in education (Mocanu & Deaconu, 2017; Nana, Gilbert, Amevi, Wisdom, & Kwame, 2018).

In most cases, there are always two sides of the coin. Pedagogy is not an exemption to this perennial belief. While it is interesting to note and study the impact of change and modification in the educational realm brought about by modernization and globalization; time tested methodologies, strategies, and management remain to be perplexed ideas to investigate. Its complexities lie on a multidimensionality of the issues which can only be facilitated and managed by the seasoned teachers in education. The teachers' profession entails numerous tasks, including how they manage their classes. This is an indispensable reality in every teacher's journey. The idea of classroom management is more concretized in the knowledge that can be grasped by how a teacher enhances students' involvement and cooperation in classroom tasks and how s/he established a productive working environment. Ersozlu and Dilara (2016) in their study noted that neophyte teachers, including those who are more experienced, are often being challenged and confronted in making and maintaining a well-managed and organized classroom setting whereby students can maximize their learning. On the other hand, experienced and seasoned teachers see the establishment of the classroom management as one of the most important objectives and activities that should be prioritized and established on the very first week of the academic year (Unal & Unal, 2012).

As Brophy (2006) put in, a classroom environment which established a well-managed and task-oriented learning environment will likely improve students' performance and achievement. The groups that are being described by re-current and with unruly behaviors possessed with a lower study habits and the students who belong in those classes have been seen and reported to receive significantly lower scores and significantly perform poorer on the administered standardized tests (Patterson, DeBaryshe, & Ramsey, 1990).

Since seasoned teachers are being viewed as epitome of excellence as they possessed excellence and mastery in classroom management and in their areas of expertise, they are often viewed by, if not all, but by many as "mentors". This research also reviewed existing studies to shed light to the question such as "what motivates the seasoned teacher to mentor?" Hammer and Williams as cited in Garza, Ramirez, and Ovando (2009) affirmed that one of the rewarding, yet unexpected, benefits of mentoring is watching mentors become recharged and rejuvenated is to observe their mentee excelling in their chosen endeavor. Similarly, in some school situations, school heads and administrators take advantage to the wisdom and talents of experienced teachers as they are being assigned to novice teacher, to provide and deliver provisions and support during the first year of teaching.

Zachary (2000) also articulated in his book the following potential reasons why experienced teachers feel gratification in mentoring the novice teacher. This assumption is in concert with previous studies that mentor teachers' feel the sense of satisfaction by bridging the gap to the novice teachers as they established personal links and professional link by transferring vital knowledge to their mentees (Bey & Holmes, 1992; Galvez-Hjornevik, 1986; Klausmeier, 1994; Reiman & Edelfelt, 1990).

Although class management, positive effects of technology, and the characteristics of an effective teachers are widely being studied in general, limited and very few researches investigate on the qualities and pedagogy styles of seasoned and expert teachers. The current research and study consequently pursued to take a step in filling the gap and in finding the missing piece in pedagogy in particular and in research at large. Seasoned teachers in the field of teaching must not be seen as part of man power alone in any educational institutions, but priceless trinkets that must be treasured and valued. Consequently, the present study aimed to present the pedagogy secrets and styles of seasoned teachers specifically on how they manage and facilitate their class in the advent of modern world brought about by modernization and different changes in millennial education. Similarly, it delves deeper into the inner world of pedagogy with respect to the seasoned teachers. It is with this reason that the researcher was motivated to explore and investigate these time tested strategies, methodologies, forms of assessments and add to the limited repertoire of research in pedagogy. For beneath those silver hairs, a vast wisdom can be mined perfected and intertwined with their burning passion, time, experiences, and genuine dedications towards their chosen craft.

Statement of the problem

This study aimed to develop a framework that will explain the pedagogy secrets and styles of seasoned teachers. Specifically, it sought to give answer the following questions:

1. How do seasoned teachers perceive education in today's context?
2. What are the problems of seasoned teachers in today's pedagogy?
3. How do seasoned teachers carry out their lessons with the advent of technology?
4. How do seasoned teachers facilitate their teaching instruction?
5. How do seasoned teachers manage their classes?
6. How do seasoned teachers assess students' scholastic performance?

Method

The present study aimed to identify the pedagogy secrets and styles of seasoned teachers as such dealt with the lived experiences of the seasoned teachers on how they managed and adapt on the current trends and changes in the realm of education. This qualitative study utilized both phenomenological and case study method. Case study method is empirical and experiential inquiry that explores, investigates and examines contemporary real-life phenomenon through detailed contextual analysis (Zainal, 2007).

In addition, the present study utilized ontological philosophical stance of phenomenological qualitative design of research. Ontology as sub-branch of phenomenological study explains the overall nature of existence of a

particular phenomenon under its nature of reality. The consciousness of the seasoned teacher which includes their pedagogy secrets and their styles were constructed and interpreted in a subjective, multiple and relative manner.

Participants and Sampling Technique

In determining and selecting the participants of the study, the researcher utilized the exponential non-discriminative snowball technique. This sampling technique involves the referral of participants' and other informants who fit on the given qualification set for the study. Ten participants met the qualifications of being a seasoned teacher: (1) A teacher who is in the teaching career for at least 15 years (Accumulated years both in public and private schools); (2) A teacher who obtained at least '*Very Satisfactory*' rating in their latest Individual Performance Commitment and Review Form Rating (IPCRF) as prescribed by the mandates of DepEd Memo no. 2 s. 2015; (3) A recipient of award in exemplary performance in his/her teaching (School Based, Division Level, Regional or National Level); (4) Must have served as a resource speaker and other ancillary functions (past or present); (5) Must have served as a coach and bagged awards and recognitions; and (6) A full time teacher (Teacher III, Master Teacher I-IV).

In order to quantify and to define the definition of the term "seasoned teachers", the researcher examined previous researches and studies (Mehrpour & Moghaddam, 2018; Rosa, 2016). Based from the description of these studies, a seasoned teacher is a teacher who is in the service for about 15 years. This is also the basis that the present study used. Similarly, the term "old" does not refer to the age of the participants rather on the number of teaching years of the respondents.

Data Gathering Procedures and Ethical Consideration

In data gathering, the most suitable data collection scheme for a phenomenological research is through a "profound interview", which the present study also utilized. In an existing literature (Marshall & Rossman, 2010) coincide in that the phenomenological interview must be semi-structured or opened interview guide. Similarly, it provided a space of aperture for the informants to freely express their experiences in details (Padilla-Díaz, 2015).

Two processes were involved in analyzing the data for the study. The first process is individual case study. In this process, the researcher analyzed and presented the participants' direct answers based on the interview guide adhering to the arrangement of the objectives of the current study. Ergo, it allows the researcher to narrate and describe in detail the individual case of participants.

In the study conducted by Madlambayan (2013), the researcher clearly conveyed the processes of gathering pertinent data which were utilized in this study as the second process of analyzing the data.

First, consideration of experts' review of the interview guide. The researcher sought the expertise of four (4) experts in different fields in validating the questions: (1) One (1) expert in the field of Qualitative Research (Methodologist); (2) One (1) expert in the field of pedagogy; (3) two (2) language and curriculum experts; and (4) One (1) seasoned teacher. **Second**, selection of case and rapport building. The researcher sought an informed consent from the participants. Informed consent is a pre-requisite for all research involving

identifiable subjects, the participants then had an adequate information regarding the research (Beck, 2004). **Third**, transcription of the interviews. The researcher listened three (3) times to the audio recording to ensure the completeness and reliability of the transcriptions. **Fourth**, verification of data source. After transcribing interviews, the researcher met the participants to verify the accuracy of the transcripts.

The second step in analyzing the data was adopted from the phenomenological processes postulated by Hycner (1985).

Bracketing and phenomenological reduction. This phase required interpretation of data, repeatedly and recurrently as needed, to attain a general, holistic and intuitive understanding of the phenomena under examination. This is essential that all judgments/ preconceptions should be bracketed (Giorgi, 1997; Schweitzer, 1998).

Listening to the interview for a sense of the whole. The researcher validated the worth of the transcript by listening to the audio recording of each participant in order to arrive to a holistic sense.

Delineating units of general meaning. This process involved crystallization and condensation of what the participants said paying attention to the sense of meaning communicated by through verbal and non-verbal languages. Assistance of two (2) language experts were asked in order to validate the results of crystallization and condensation of participants' responses.

Delineating units of meaning relevant to the research question. The researcher reflected on the objectives of his study and carefully analyzed the answers of the participants if the answers clearly answered the research objectives. Expertise from a registered psychometrician and qualitative researcher to validate the result and responses of the participants were asked by the researcher.

Defining codes for categories. The researcher looked at the predominant characteristics of conceptual theme or classification of the messages extracted from the participants. Integral information and profiles from each participant were gathered and used as a foundation in constructing a Thematic Index. This then will highlight main/major themes (Giorgi, 1997; Schweitzer, 1998).

Grouping data into categories. This stage asserted the veracity of coded themes by establishing inter-rater reliability (second elimination) stage. An expert in the field of pedagogy, qualitative research and language experts were asked in order to validate the emerging categories and themes from the transcript.

Eliminating redundancies. This stage validated and analyzed "poorly structured" themes/messages based on the following criteria: (a) mention of themes/messages but no provision of rationale, (b) fuzzy/hybrid themes/messages or those that overlap with two or more conceptual classifications, and (c) nonsense themes/messages or no contribution to the understanding of the topic.

Clustering units of relevant meaning. The gathered themes/messages were organized using frequency. The major aim in this stage was to abstract from the themes/messages of the conceptual theme/classifications they represented.

Outlining the framework. The final stage of a phenomenological study is to draw a framework that best illustrated the themes and categories which emerged from the study.

Results

Table 1 Summary of Respondents' Theme and Categories	
A. Seasoned Teachers' Perception of Education in Today's Context	
Themes/Categories	Number of Responses
Modification in Curriculum	12
Accessibility to Quality Information	2
Negative Revamp of Education	3
B. Participants' Identified Changes in Pedagogy Context	
Themes/Categories	Number of Responses
Positive Paradigm Shift	11
Negative Paradigm Shift	5
C. Participants' Identified Problem/Challenges in Today's Pedagogy	
Themes/ Categories	Number of Responses
Adverse Effect of Modification in Education among Teachers	16
Adverse Effect of Modification in Education among Students	10
D. Participants' Identified Ways of Adapting Towards Their Identified Problem/Challenges	
Themes/ Categories	Number of Responses
Desirable Adaptation	17
Undesirable Adaptation	1
E. Participants' Identified Ways on How They Facilitate Their Lessons with the Integration of Technology	
Themes/ Categories	Number of Responses
Catering Audio-Visual Learners	14
Getting Digital	6
Replacing Outmoded Materials	5
F. Seasoned Teachers' Identified Perceptions Regarding Technology in Modern Pedagogy	
Themes/ Categories	Number of Responses
Primal of Education	3
Comfortability with Technology	1
Negative Reaction towards Modern Pedagogy	5
G. Participants' Identified Perception about the Usability of Technology in Pedagogy	
Themes/ Categories	Number of Responses
Aid in the Simplification of Lesson	8
Requisites in Today's Education	5

Table 1 Summary of Respondents' Theme and Categories—cont'd

H. Seasoned Teachers' Identified Strategies in Facilitating their Lessons	
Themes/ Categories	Number of Responses
Individualized Learning Approach	11
Group-based Learning Approach	6
Technology-based Learning Approach	4
Principle-based Learning Approach	4
I. Seasoned Teachers' Perception Regard How Their Strategies Contribute to the Learning of Students	
Themes/ Categories	Number of Responses
Creating Positive Milieu	4
Generating Transformative Education	9
J. Seasoned Teachers' Description of their Teaching Milieu	
Themes/ Categories	Number of Responses
Maintaining a Well-managed Pedagogy Process	5
Establishing Classroom Climate	5
K. Seasoned Teachers' Styles in Managing Students' Behavior	
Themes/ Categories	Number of Responses
Restrictive-management Style	4
Non-restrictive Management Style	3
Reflective-management Style	4
L. Participants' Identified Rules in Managing Class Effectively	
Themes/ Categories	Number of Responses
Credo of a Smooth Flow of Pedagogy Process	19
Credo in Treating Others and Fellows	3
M. Seasoned Teachers' Identified Ways in Assessing Students	
Themes/ Categories	Number of Responses
Outcome-based Assessments	11
Group-based Assessment	4
Teacher-initiated Assessment	6
N. Seasoned Teachers' Identified Ways in Communicating Students' Scholastic Assessment	
Themes/ Categories	Number of Responses
Providing Compliments and Approvals	5
Administering Teacher-Initiated Activities	14

The principal objective of the present study is to provide comprehensive and meaningful characteristics on the pedagogy styles and secrets of the seasoned teachers. Out of this research, there emerged salient points that shed light on the experiences, challenges, management style, and assessment styles of these precious trinkets in realm of education. The starting point of understanding the pedagogy styles and secrets of the seasoned teachers is to determine how they perceived education in today's context. Out of the responses provided by the participants, this study offers wide range of observations and perception with regard to today's education.

With regard to how seasoned teachers describe education in today's context, three (3) themes emerged under this objective: *Modification in Curriculum*, *Accessibility to information*, and *Negative Revamp of Education*. Seasoned teachers noticed positive changes in the educational system. Adherence to international standards, additional competencies to learn, and fast pace education were also observed in the study conducted by Govender and Sookrajh (2014).

Accessibility to information was the second category noted by the seasoned teachers. While positive description was provided by the seasoned teachers, they also pointed out some negative description. According to one of the seasoned teachers, the education in today's context has a lesser focus on the formation of values (Sutrop, Harro-Loit, and Jung 2013). In the study conducted by, Nurdin (2015) the researcher noted the challenges being faced by the teachers in the application of values education is based on the commitment, quality and learning approaches. This belief was also supported in the study conducted by Suyatno, Jumintono, Pambudi, Mardati, and Wantini (2019). Previous pedagogy heavily depends on paper-based documents, but because of the technology paper-based becomes paper less (Eteokleous, 2008; Young and Goering, 2018) this observation was observed by participants D, I, E, F.

Among the negative experiences of seasoned teachers, they narrated that they are facing *Technological constraints*. These pressures among seasoned teachers were evident in the findings of Carr (2010) and Dhaliwal (2013). *Change in teaching strategies, change in competencies and greater demands from the teachers* were among the negative changes that the seasoned teachers personally experienced. These challenges were also reflected among the challenges of teachers of 200 Romanian teachers in the study conducted by Voinea and Toader (2014). Also, seasoned teachers noted that the present educational system focuses on the formation of Higher Order Thinking Skills or (HOTS) but put little emphasis on the lower competencies which are seen to be important and essential in the acquisition of learning. This observation negates the findings of Cummins (2007) among the 23 English language students in Michigan Language School of Arts. In his study, he found out that students devoted more time in acquiring and learning basic reading skills and insufficient time in developing HOTS.

On the other hand, seasoned teachers are also facing constraints on the present curriculum. This notion was supported in the study of Goodwin (2012) among the 8,000 American Educators. Seasoned teachers noted that the present curriculum is unfit to the needs of the students (Au, 2011).

Adverse Effect of Modification in Education among students were also identified among the responses of teachers towards students. Among these were students' diverted attention, unmotivated students, less efforts from the students, change in the behavior of students, problems with students' retention, students' involvement delivery of the lesson, shorter attention span among students, and change in the choice of words. The present findings among the seasoned teachers support the studies of Al-amarat (2011); Goodwin (2012); Manna (2015); and Moore (2012).

When asked about what they feel and how they respond towards the changes they experience towards the present pedagogy, seasoned teachers identified several positive themes. *Modification of appropriate strategies, performs explicit teaching, student centered teaching, holistic learning, adopting to the trends of educational system, understandings students' behavior* and providing real-life learning situations were among the identified themes of the seasoned teachers that were supported by the previous studies of Gebre, Saroyan, and Aulls (2015) and Kumar, Rose, and D'Silva (2008).

It is also noteworthy to mention that while majority of the seasoned teachers have positively adopted to the changes brought about by the modern education, one seasoned teacher mentioned that he opted to go back to his lessons in traditional manner. Surprisingly, this however supports the study and claim of Chinelo and Nwanneka (2015). This then can be gleaned that though majority of the seasoned teachers positively adapt to the changes, the use of traditional way of teaching is still inevitable.

Since technology has been the number one contributing factor in the modern pedagogy. Seasoned teachers were asked how they carry out their lessons in the integration of technology. The use of power point was the number one tool being used by the teacher in presenting and in delivering their lessons. This finding was adjacent to the findings both in the studies conducted by Martin and Carr (2015).

Similarly, seasoned teachers' responses were geared toward the formation of another category which is Getting Digital; this category reflects how the modern pedagogy through the integration of ICT and technology replaces or substitutes the conventional way of teaching. Of these responses are: giving assessment through online, use of technology in computing grades, uploading videos in the facebook, integrating ICT in creation of IMS, and better communication through ICT and technology. The identified responses of the seasoned teachers substantiate the claim of Hue and Ab Jalil (2013).

Another identified response was the use of new gadgets and other devices among seasoned teachers, replacing outdated materials. The use of new gadgets and other devices as part of the new teaching is similar with the claim of Lowther, Strahl, Zoblotsky, and Huang (2008) in their study among the K-12 teacher who use and facilitate the use technology and multimedia/program in the their respective classroom in two southern countries in the Southeastern United States (US) and that of Shapley, Sheehan, Sturges, Caranikas-walker, Hutsberger and Malony (2010).

Based on the identified categories, seasoned teachers have negative feelings towards the integration of ICT and technology in today's education. Despite boundless possibilities and growing accessibility of technology in schools, majority of the teachers are generally described as reluctant and skeptical users of technology (Eteokleous, 2008; Lei, 2009). Based from the responses of the seasoned teachers, it can be gleaned that uncertainty about technology has become a prominent question in education. In addition, seasoned teachers viewed technology as a necessity in today's education. This view was similar in the claim of Kayalar (2016). However, Kemp et. al., (2014) concluded that technologies (Internet and personal computer), do not positively increase access or improve the process and acquisition of learning among students.

When inquired about the teaching strategies of the seasoned teachers, four emerging categories were concluded: Individualized, group-based, technology-based and principle-based learning approach. Numerous researches suggest that there are precise classroom management cultures and practices that intensify the likelihood of students' participation and engagement. This also decrease the probability of

disruptive behavior, including percentage of time teaching. These assumptions were reflected among one of the strategies in managing students' behavior among seasoned teachers. In connection to this, Oliver, Reschly, and Wehby (2011) studied the possible relationship between classroom management and disruptive and aggressive behavior. Finding suggested that a relatively high quality of classroom management has an average effect having a $p=0.80$ ($p < .05$). This view also supported the results of the study conducted by Conroy, Alter, and Sutherland (2014).

As per with the strategies that the seasoned teachers used in managing students behavior inside their classroom, three emerging categories were recorded: Restrictive-Management Style, Non-Restrictive-Management Style and Reflective Management Style. Restrictive management style was among the style being used by majority of the seasoned to teachers in handling their classes. This management style supports the findings of previous researchers with regard to how teachers managed the behavior of their students inside the classroom (Denga, 2005).

Outcome-based assessment is the first emerging category among seasoned teachers' identified assessment strategies. This strategy underscored the importance of a tangible or a performance outcome as a manifestation with the learning of the students. This is followed by the use of group-based which supports the study conducted by Retnawati, Hadi, and Nugraha (2016). Teacher-initiated assessment was the last identified category based from the respondents of the participants.

When asked about the method and styles on how seasoned teachers communicate students' scholastic progress, two identified categories were noted in the present study: providing compliments and approvals, and administering teacher-initiated activities. Homer, Hew, and Tan, (2018), stated that providing incentives and recognition were both proven to increase students' learning and participation. Similarly, the use of written remarks as their main technique in giving feedback were observed among teachers in the study of Saefurrohman and Balinas (2016). They also concluded in their study that most of Junior High School (JHS) English teachers (Filipino Teachers) prepared and created their own validation and evaluation instrument. On the other hand, Indonesian Junior High School (JHS) English teachers prepared and selected items from textbooks which are published and used these as their main sources for constructing and creating different forms of assessment items.

Conclusions

1. Majority of the seasoned teachers describe the changes and modification of curriculum in view of the modern pedagogy. This is primarily because of the integration of the new educational system known as the K-12 program. Majority of them also have a positive description with regard to these changes. Positive adaptation is obtained from the responses of teachers regarding the challenges they encounter and how they respond to these modifications.
2. Seasoned teachers observe lenient, unmotivated and unfocused students in today's pedagogy with regard to their learning and acquisition of knowledge.
3. The use of power point presentation is still the number one strategy being used by the teachers in the facilitation of their lessons followed by using videos and softwares. The use of technology is also being integrated and seen as an important ingredient in teaching among seasoned teachers. Negative reaction

among seasoned teachers includes being unaccustomed, challenged, and aghast with the use of the technology as part of teaching.

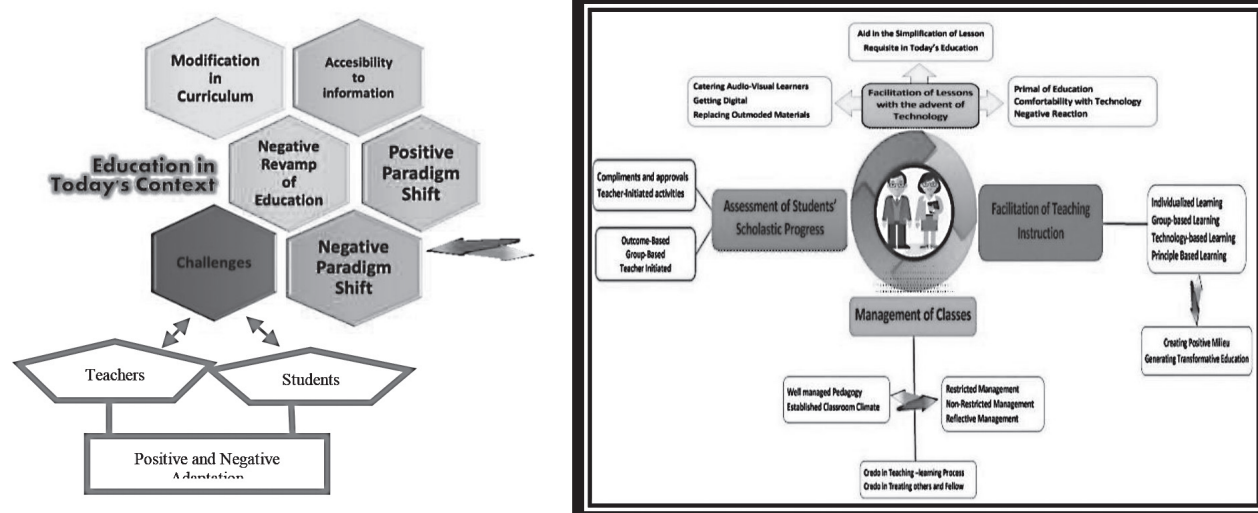
4. A mixture of individualized and collaborative learning approach is seen from the pedagogy styles among the strategies of the seasoned teachers.
5. Majority of the seasoned teachers use restrictive management styles and are authoritative in nature. They show heavy emphasis on classroom management and discipline.
6. Performance task and outcome-based assessment are the most frequently used strategies in providing assessments among students' scholastic progress apart from the traditional and conventional way. Feed backing, provision of remedial program and providing verbal recognition/praises are the most common strategies being used by the seasoned teachers in communicating students' scholastic progress.

Recommendations

1. A comprehensive and well-designed retooling and reforming trainings for the seasoned teachers in the area of pedagogy should be planned, implemented, monitored, and evaluated with the cooperation of different agencies.
2. The Department of Education including the Heads of the different schools may conduct a seminar or trainings in handling passive, unmotivated and lenient students.
3. Seminar or trainings may be conducted and provided among seasoned teachers in order to address and solve their negative feelings in relation with the integration of technology and ICT in modern pedagogy. The curriculum planners, school administrators and principals may provide series of ICT based trainings in order for the seasoned teachers, including the neophyte teachers, to have a myriad ways of presenting their lessons aside from the power point presentation.
4. The study is restricted to the secondary school public teachers/instructors, future study may further explore elementary seasoned teachers or seasoned teachers in the private schools or universities including those teaching in the college level.
5. The present study is also limited with the lived experiences of the seasoned teachers inside the classroom. Future study may further explore the lived experiences of seasoned teachers outside the school. Further, triangulation may be utilized to provide additional information on the experiences of the seasoned teachers.

Emerging Framework

Figure 1 now shows the study's emerging framework which encapsulates the pedagogy styles and secrets of seasoned teachers. The descriptions of the seasoned teachers in today's pedagogy were encapsulated using a honey comb figure. This for the reason that the education evolved through time and that their description is brought about and a by-product of time they spent in the field of pedagogy. In addition, the changes they experienced were mixture of both positive and negative paradigm shifts. As for their challenges, seasoned teachers were able to identify both adverse effects of modification among themselves (the teachers) and



on the part of the students. Further, their challenges and current problems were connected using a double headed arrow. This relationship is deemed that seasoned teachers were able to develop their own ways in providing solutions to their existing or current problems. A double headed arrow was also used to show the relationship on how they manifest their pedagogy styles and secrets in today's context subdivided in the four areas of education: facilitation of lesson in the advent of technology, facilitation of their teaching instruction, management of classes and assessment of scholastic progress. These four areas were the vital elements of pedagogy in which the present study sought to explore to provide a whole picture on how seasoned teachers are carrying out their lessons in today's context. A circular arrow was used in the present study to present the totality of the pedagogy cycle. As for the how seasoned teachers facilitated their lessons in the advent of technology, three emerging categories were developed: catering to audio-visual learners, getting digital, and replacing outdated material. These three emerging categories substantiate the ability of the teachers to provide answers and adaptation to the ever changing process of education and that they were able to foster solutions to the need of the 21st century education and learners. While their feelings towards the integration of technology is another salient feature of this study, three categories were identified by the respondents: primal of education, Comfortability with technology, and negative reaction towards modern pedagogy. Though majority of the seasoned teachers underscored their frustration and challenges in the presence of technology in modern pedagogy, they still view the importance of it and they still grasp the vital value of technology and ICT as requisite and aid in the acquisition and simplification of lessons and education.

Another vessel of pedagogy among seasoned teachers is how they facilitate their lessons. Three categories emerged from the identified responses of seasoned teachers: individualized-learning approach, collaborative-learning approach, technology-based learning approach and principle-based learning approach. As gleaned from the figure, a double headed arrow was used as the aforesaid categories show relationship on how these contribute to the students' acquisition and understanding of their lessons. As for the management of discipline and students behavior, four categories were identified: Restrictive-management styles, non-restrictive management styles, and reflective management styles. A double headed arrow was also used in the present study to show the relationship that these said styles contribute to the management of a well-managed pedagogy and classroom climates. The last feature of the present

study explored the assessment styles of seasoned teachers aside from the regular and conventional way of assessments. Three categories were identified by the seasoned teachers: outcome-based assessment, group-based assessment and teacher-based assessment. Providing compliments and approvals and administering teacher initiated activities were the two categories emerged on how seasoned teachers communicate students' scholastic progress.

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‘To Win a War, You Need to Train Your Army First’: An Exploration of Teacher Development in South Africa

Kerishka Govender¹

Abstract

Teachers are critical to reforming the South African educational system and enhancing learners’ academic outcomes. However, current teacher development strategies face challenges such as poor implementation, lack of contextual relevance, and failure to meet educators’ needs. The Integrated Strategic Policy Framework for Teacher Education and Development (ISPFTED) represents a positive shift, promoting Professional Learning Communities (PLCs) as the future of teacher development. Based on social learning theories, PLCs encourage ongoing, collaborative learning, offering an alternative to the one-time seminars that have proven ineffective in South Africa. This study investigates existing teacher development methods and explores the potential of PLCs to foster long-term, contextually appropriate growth. It evaluates the effectiveness of PLCs in enhancing teacher performance through a comprehensive systematic literature review.

Keywords: Teacher Development, Professional Learning Committees, South African Teachers, Social Learning Theories

Introduction/Background

Teachers today encounter a myriad of complex challenges, including the need to work effectively with multilingual learners, address low literacy rates, manage overcrowded classrooms, and adapt to diverse learning needs (Du Plessis et al., 2020; Du Plessis & Mestry, 2019; Spaul, 2013). In South Africa, these challenges are compounded by resource constraints and disparities within the education system, particularly in historically disadvantaged schools (Bantwini & King-McKenzie, 2011; Du Plessis & Mestry, 2019). Teacher development is a critical means of equipping educators with the skills and knowledge to navigate these obstacles, fostering improved teaching practices and enhancing overall learner outcomes (Geldenhuys & Oosthuizen, 2015; Jita & Mokhele, 2014).

Teacher development, as a form of professional development, is specifically designed to support teachers’ ongoing learning and foster their professional growth (Jovanova-Mitkovska, 2010; Xaso et al., 2017). Through this process, teachers adopt new beliefs, explore innovative classroom practices, and refine their teaching strategies (Evans, 2002; Sims, 2021). Such development is essential for enhancing school effectiveness, as it improves teaching practices, enriches learner experiences, and contributes positively to overall school performance (Gnawali, 2008; Singh & Mukeredzi, 2024).

In South Africa, the legacy of apartheid education has left lasting challenges that hinder a culture of robust professional development. Post-democratic reforms have introduced various approaches to teacher

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development to address these issues. In 2003, the Department of Basic Education introduced the Integrated Quality Management System (IQMS), followed by the National Policy Framework for Teacher Education and Development (NPFTED) in 2006. This framework includes Initial Professional Education of Teachers (IPET) and Continuing Professional Development for Teachers (CPDT). These policies aim to equip teachers with essential skills and tools to excel in their roles and support ongoing professional competence and performance through structured development programs (NPFTED, 2006). However, many of these initiatives have seen limited success in effectively advancing teacher development (Jita & Ndlalane, 2009; Tapala, 2024).

This study adopts a twofold approach: firstly, it examines the policies that currently drive teacher development in South Africa; secondly, it explores the potential of PLCs as emerging, sustainable drivers of teacher development in the future.

Statement of Problem

The South African education system faces a twofold responsibility: establishing an equitable educational environment and keeping pace with the evolving demands of a globalized world (Pretorius, 2008). As central agents of educational change, teachers play a critical role in realizing these goals. Effective teacher development is essential—to enhance teachers' knowledge and skills and improve the quality of teaching and learning in schools, directly contributing to student outcomes and overall school effectiveness (Gnawali, 2008; Singh & Mukeredzi, 2024).

Historically, teacher development programs in South Africa were limited to one-off, generic workshops that lacked alignment with teachers' individual learning needs and offered little ongoing support (De Clercq & Phiri, 2013). These shortcomings have left teachers underprepared to meet contemporary challenges such as teaching multilingual learners and addressing low literacy rates. Although recent initiatives have introduced new frameworks to address these gaps, many development efforts have yet to yield substantial changes in classroom practice (Bertram, 2011).

Given these ongoing challenges, this study aims to examine the current framework for teacher development in South Africa and explore innovative, contextually appropriate approaches that can sustain teacher growth. Specifically, this study will use a systematic literature review to evaluate the use of PLCs as potential drivers of effective, long-term teacher development.

Methodology

This study adopts a qualitative methodology under the interpretivist paradigm, which is suitable for interpreting complex phenomena such as teacher development through the lens of context and experience (Creswell, 2013). This study used a systematic literature review as its methodological approach. A systematic review of literature seeks to identify, evaluate, and interpret available research that is relevant to the phenomenon of interest (Mutula, 2015). This process involves searching for and selecting relevant studies, evaluating their quality, and connecting their findings to address research questions outlined in the study (Liberati et al., 2009).

Data for the literature review will be acquired from scholarly articles, policy documents, and grey literature, such as government reports and publications from relevant educational organizations. This ensures that both peer-reviewed research and important policy documents are incorporated into the analysis.

The findings will be analyzed using a thematic analysis approach, a prominent qualitative research method for detecting, analyzing, and reporting patterns (themes) within data (Braun & Clarke, 2006). This technique will allow for identifying important challenges, obstacles, and trends in South African teacher development programs, as well as evaluating PLCs' potential to drive future growth.

The research will focus on answering the following questions:

1. What are the current practices and strategies for teacher development in South Africa?
2. To what extent can PLCs effectively drive and support future teacher development initiatives in South Africa?

Literature Review

Initial Professional Educational Training (IPET)

In South Africa, teacher development starts at the IPET phase. The Department of Higher Education and Training (DHET) is responsible for this initial phase of teacher development. According to Deacon (2012), IPET is a process whereby future teachers are selected and trained to begin teaching at schools. The formal period of IPET begins when a student enrolls in a teacher education program. Depending on the course selected in the teacher educational program, future teachers are equipped with curriculum knowledge, pedagogic content knowledge, and professional knowledge through teacher induction programs.

IPET programs set the foundation for the quality of teachers produced. Sharma, Phillion, and Malewski (2011) argue that IPET programs provided by teacher educational programs provide future teachers with only the basic knowledge of teaching. Flórez and Bastos (2017) state that the way future teachers experience teacher development at the initial stages of their careers determines the pace at which teachers progress from a novice teacher to an expert teacher. This form of pre-service training is not enough to provide future teachers with a smooth transition into their teaching career, as all schools differ in context and culture. However, it is important to highlight that while IPET programs allow future teachers to familiarize themselves with and prepare themselves for future work environments, it does not cater to the varied contexts in which schools exist.

A technical report released by the Department of Basic Education (DBE) and DHET in 2011 concurred with this view, indicating that '*capacity, quality, cooperation, relevance, and reach of all initial teacher education programmes*' (p. 15) need to be improved. Furthermore, the report found that there was a lack of amalgamation between initial and continued education teacher development; some initial teacher education programs offered by institutions were weak and focused too much on theoretical content; IPET programs offered by universities had limited focus on school-based practices; and that only a few initial teacher education programs have been created to move beyond skills training to develop competences and reflective practices.

The failing IPET programs highlight the need for further emphasis to be placed on continuous professional teacher development. This is appropriate as learning is a continuous process and should not be limited at IPET.

Continuous Professional Teacher Development (CPTD)

The CPTD system has been designed to equip teachers with competencies to face the ever-changing challenges and demands of the 21st-century South African education system (Nhlumayo & Chikoko, 2022; Steyn, 2008).

Teachers are encouraged through the CPTD system to take responsibility for their self-development by identifying their needs using the Quality Management System (QMS). The CPTD system is made available to all South African teachers. However, it is only compulsory for teachers in the public sector to participate in the CPTD system.

The framework provided by the South African Council for Educators (SACE) identifies three types of CPTD activities:

Teacher-initiated activities (Type 1) - These activities are self-chosen. Teachers are required to identify their own developmental needs and engage in self-development activities, thus taking responsibility for their professional growth. These activities include reading journal articles, books, newspapers, magazines, etc. (SACE, 2008).

School-initiated activities (Type 2) - These are activities that the school leads. It is used to address the common needs of teachers, as identified by the School Management Team (SMT) or a group of teachers. Examples of activities include attending a workshop, attending staff meetings, etc. This type of teacher development activity encourages collaboration among teachers, inspiring them to work in unison to respond to the needs of the school (SACE, 2008).

Externally initiated (Type 3) - This is employer-initiated, offered by the Department of Education, School Governing Bodies (SGBs), etc. Private providers such as universities, NGOs, and others also fall under this category. These activities are subjected to SACEs' evaluation processes. It includes full qualifications, short courses, and skills programs. This type of program/activity is six days or longer (SACE, 2008).

What is QMS?

QMS, previously known as IQMS, is a performance management system that consists of three instruments: Developmental Appraisal (DA), Performance Measurement (PM), and Whole School Evaluation (WSE). Each element of the QMS serves a different purpose.

The DA is a tool that must be used transparently to ascertain areas of strengths and weaknesses held by the teacher. This is then used to design programs for individual development. PM is a tool used to evaluate teachers for salary progression. This is used as an incentive for teachers to continue their professional development. WSE is a tool that is used to scrutinize the effectiveness of the school; SMT/district officials use the findings from the WSE to design school improvement plans (Steyn & Van Niekerk, 2018; Republic of South Africa, 2001).

The QMS has been designed with the goal of preparing a conducive environment for teacher development. This performance management system is used to evaluate the overall effectiveness of the school and the performance of the teacher, to identify the precise needs of teachers to support and develop their professional competencies, and to promote accountability (Nhlumayo & Chikoko, 2022; Tlhakanelo, 2014).

QMS and its Relation to CPTD

The QMS and CPTD systems are designed to work in conjunction with one another. The QMS appraises individual teachers who intend to identify their areas of strength and weakness in order to design programs

for their individual development. The CPTD system gives teachers a list of providers who are SACE-certified and a list of professional development programs/activities which are SACE-endorsed. These programs/activities can be used to tackle the needs of the individual teacher, which were identified during the QMS process.

Teachers mostly use teacher-initiated teacher development programs/activities to tackle their needs in their professional growth plan. SMTs largely use the school-initiated professional development programs/activities to tackle the growing and ever-changing needs stated in the school improvement plan. District and provincial officials typically use the SACE externally initiated professional development activities to tackle the needs identified and stated in the district/province improvement plan (Mofolo & Mosala, 2019).

Challenges Faced Using the QMS and CPTD System

While the relationship between QMS and CPTD sounds great in theory, research by the Centre for Development and Enterprise (CDE) in 2015 indicated that this system is not successfully implemented throughout all South African schools. Principals and teachers were not successfully workshopped on how to implement the QMS in their schools, leading to the non-implementation/poor implementation of the QMS. In addition, reviews of the QMS indicated that the professional development part of the QMS has been mostly ignored, largely because schools do not have the resources or time necessary to address professional development issues (CDE, 2015).

Bernadine (2019) highlights that poor participation in CPTD systems at the school level is largely because most teachers do not have access to computers and resources, and CPTD is an electronic-driven system. Furthermore, the CPTD system does not offer any monetary benefit to teachers like the QMS; therefore, teachers do not value it.

According to CDE (2015), teachers indicated that neither the SMT nor departmental officials support and monitor CPTD taking place in schools. Therefore, the system does not provide the professional development needed to improve teacher effectiveness, as identified by international research (Zindi & Sibanda, 2023).

The State of Teacher Development in South Africa

Teacher development in South Africa is regarded as a fundamentally important aspect of teacher education and embodies principles as laid down by democracy while prioritizing stakeholder involvement (Christiansen & Bertram, 2015; Maistry, 2008).

According to a report released by the Southern African Review of Education (SARE) in 2008, teacher development in South Africa has been sporadic and poorly coordinated. Ono and Ferriera (2010) note that this is the case in many developing countries, largely due to budget constraints and the heavy emphasis placed on IPET.

Bertram (2011) asserts that current teacher development initiatives have not been successful in improving the quality of South African education. In addition, Maistry (2008) draws attention to the policy-practice gap in teacher education by indicating that the vision for CPTD in South Africa is only clear in policy, and while this vision for CPTD looks good on paper, it is not being actualized in teacher education. In reality, teachers have limited access to quality Continuous Professional Development (CPD) opportunities. The

current system in place is not sufficient to attain the enhancements needed to produce quality teaching and learning in schools. CPD programs/activities are still largely conducted through isolated and once-off training initiatives. Furthermore, these initiatives lack coherent strategies, monitoring, and follow-ups (DBE, 2015).

The Integrated Strategic Planning Framework for Teacher Education and Development (ISPFTED) was developed in 2011 to improve teacher development in South Africa. The goal was to improve the teacher development initiatives by re-envisioning current teacher development practices to suit the needs and improve the quality of South African teachers.

SARE (2008) noted that collaboration among teachers in learning communities was beginning to emerge as a strategic response to overcome the professional development challenges faced by teachers and that the use of PLCs was beginning to take root in South Africa. In support, the DBE released guideline PLCs in 2015 as an instrument for teacher development. The DBE advocated for the use of PLCs as a teacher development instrument, stating that it is more relevant and effective for teacher development in the changing context of South African education.

What are PLCs?

Schools are continuously subjected to new educational changes. Principals must ensure that their staff is equipped with tools to cope with new changes. This requires ongoing professional development (Rayiramkandath, 2017).

Organizational learning programs such as PLCs provide principals and teachers with a platform to share knowledge, learn, and grow as teachers. The ISPFTED (2011) states that “PLCs are communities that provide the setting and necessary support for groups of classroom teachers, school managers, and subject advisors to participate collectively in determining their developmental trajectories and to set up activities that will drive their development.” (p.14)

According to Hord (1997) PLCs are characterized by five elements:

3. Shared and supportive leadership, whereby teachers and management work in collaboration to make decisions.
4. Shared vision and values are centered around how learners learn.
5. Collective learning, whereby teachers work together with one another and learn from each other daily and apply newly learned skills.
6. Supportive conditions are necessary as school culture plays a significant part in how PLCs are conducted.
7. Shared personal practices, whereby teachers share their personal experiences and discuss what works and what does not.

PLCs are based on the culture of learning. Whereby teachers learn, for their learners and themselves. They are driven by knowledge and research. PLCs provide a platform for teachers to share new ideas and get critical feedback and multiple perspectives on a wide range of matters. (Jita & Mokhele, 2014; Lee & Louis, 2019).

Teachers can add to research through introspection and reflection on their own teaching and learning practices. This research can be conducted in their classrooms; for example, teachers can examine the effectiveness of different pedagogies in their classrooms. (DBE, 2015).

Theories Embedded in PLCs

Social learning theories are grounded in the foundation of PLCs, in particular, Wenger's social learning theory and Vygotsky's social development theory.

Wenger's Social Learning Theory

Wenger's (1998) theory of social learning states that learning is a form of social and active participation. For knowledge to be successfully grasped and practised, participants must be active during the knowledge-sharing sessions and work together to create and implement practices that work in a particular context.

According to Wenger (2007), Communities of Practice (COP) are created when individuals participate in the process of collective learning in a particular learning area. Steyn (2008) states that learning is a significant part of people's participation in COP and their environment. In addition, Steyn (2008) argues that COPs are a prerequisite for learning and are also at the centre of making people capable of meaningful learning.

Nguyen et al. (2024) state that teacher development programs that are created for groups of teachers within the same school have numerous developmental advantages. Members within the community are familiar enough with one another; hence, they can cooperate efficiently and effectively with one another. Furthermore, they are able to recognize people who may need assistance (Steyn, 2013). Moreover, teachers can use this platform to share school and community-bound experiences, skills, and issues faced during the program; it also promotes the schools' mission and significantly impacts teachers' practice (Lee, 2005).

Vygotsky's Social Development Theory

According to Sweigart (2012), Vygotsky's social development theory provides the base for collaborative learning, professional learning communities, collective efficacy, and the achievement of improved academic outcomes.

Vygotsky's social development theory is based on the assumption that as members interact with their colleagues, they begin to internalize new information and new ways of thinking and learn problem-solving strategies that can be utilized in their environment (Vygotsky, 1978; Sweigart, 2012; Hudson, 2015).

Vygotsky's theory implies that when learning takes place through social interactions, knowledge is acquired over time by collaborating with others (Hudson, 2015). He believed that both children and adults can advance their intellectual capabilities more proficiently through interaction with their colleagues (Vygotsky, 1978).

In line with the theory, Hudson (2015) states that PLCs allow teachers to collaborate with their colleagues, and through this collaboration, they enhance their learning and grow professionally. Furthermore, by sharing their experiences and skills, they also guided the learning of their colleagues.

Benefits and Challenges of Implementing PLCs

According to the DBE (2015), PLCs have one main goal: improving teacher practices and ultimately improving learner outcomes. PLCs provide teachers with the opportunity to gain experience through the introduction of new practices and the generation of new knowledge (Harris & Jones, 2010). It also helps in bridging the gap between educational theories, policies, and practice.

PLCs create a space whereby teachers can address issues by connecting pedagogical practice with subject content knowledge. In addition, PLCs can be used as a platform for teachers to share their ideas with senior teachers, whereby junior teachers get mentored by more experienced teachers. This, in turn, prompts teachers to evaluate and assess their current practices rather than use outdated ideas (DBE, 2015; Hudson, 2015).

PLCs allow teachers “to customize and personalize their professional development, and they can develop a sense of ownership through self-directed learning” (Linder, Post, & Calabrese, 2012, p. 20). Erlangsen (2018) asserts that when a teacher feels as if they are supported in their own learning and teaching practices, they are more devoted towards learning and more successful in their practice than those teachers who do not feel as if they are supported. Furthermore, Hellner (2008) notes that teachers experience positive outcomes from successful PLCs, such as improved job satisfaction, morale, learners’ academic outcomes, and decreased absenteeism rate.

A study by Jita and Mokhele (2014), which explored cluster-based PLCs in the South African context, highlighted the positive impact of collaborative learning on teachers’ confidence and practices. One teacher remarked, *“You see, coming together helped us a great deal; it was good to share ideas because we are all not the same. Some have knowledge on what others do not have. I really enjoyed them, because as I said, in a circuit, teachers come together and prepare together what we were going to do in school”* (Jita & Mokhele, 2014, p. 10). Similarly, an earlier study by Zwane (2012) corroborated this study, underscoring the value of PLCs in fostering professional growth. One teacher noted the benefits of participating in a PLC: *“The committees provided a platform for teachers to discuss teaching strategies, new curriculum changes, subject content problems and learners’ performance”* (Zwane, 2012, p. 49). These findings demonstrate how PLCs encourage collective problem-solving, leading to improvements in teaching practices and learner outcomes.

Despite the notable success of PLC implementation, systemic barriers continue to hinder the effectiveness of PLCs. Research by De Clercq and Phiri (2013) identified factors such as time constraints and a lack of leadership support as major obstacles to successful PLC implementation. Similarly, a case study conducted by Zulu and Mukeredzi (2021) in South African schools highlights the limitations of department-initiated PLCs, noting that departmental officials rather than teachers often steer them. This top-down approach restricts teacher autonomy and hampers genuine collaboration between teachers. Furthermore, department-led PLC meetings often consist of a large group of teachers and are held irregularly, further undermining the effectiveness of PLCs.

To address barriers to effective PLC implementation, it is recommended that principals receive training on supporting PLCs as part of their role as school leaders (Department of Basic Education, 2019). Practical support from principals is crucial and should include adapting teachers’ timetables, providing a dedicated space for PLC meetings, and ensuring that teachers have access to the necessary resources. Additionally, school leaders should actively encourage and motivate teachers to participate in PLCs, fostering a collaborative environment that supports professional growth and improved teaching practices (Department of Basic Education, 2019). To mitigate the challenges associated with department-led PLC meetings, *Professional*

Learning Communities: A Guideline for South African Schools (2015) proposes the formation of school-based PLCs. This approach reduces transport costs and organizational challenges for participating members while providing an effective platform to exchange knowledge and resources.

Findings

Teacher Development in South Africa

The onset of teacher development takes place through IPET programs. Once future teachers conclude the IPET program, they will continue their professional development through CPTD programs/activities.

The Onset of Teacher Education

Successful IPET programs have many benefits. Effective IPET programs can reduce the cost of lucrative long-term teacher development initiatives by providing future teachers with the skills needed to face the ever-changing educational system. In addition, these programs can assist future teachers in bridging the gap from a student to a teacher (Deacon, 2012; Dillard, 2016).

The technical report released by the DBE in 2011 highlighted the sad reality of South African IPET programs. The report indicated that current IPET programs are failing future teachers, emphasizing the need for a drastic change in current IPET programs, as IPET programs do not equip future teachers with the tools needed to teach in an imbalanced educational system. This is one of the many reasons young, skilled teachers are leaving South African education in search of greener pastures.

Policy Framework of CPTD

Times are constantly changing, and these changes force modifications in education. To stay abreast of these changes, teachers should engage in CPTD.

CPTD programs should be aimed at providing teachers with subject and pedagogical competencies to guide them in implementing updated and context-suited teaching practices that enhance learner outcomes. It is important to recognize that learning is a dynamic, life-long process (Kimmerle et al., 2015). Therefore, teacher education should go beyond IPET. In accordance with this statement, the DBE created the QMS policy, which was released in 2003, and, in partnership with SACE, created the NPFTED in 2007. However, these well-formulated policies were highly flawed in their implementation.

Firstly, with regards to the implementation of CPTD programs, as highlighted in the NPFTED, teachers and SMT did not receive adequate training or support from the DBE to guide them in the successful implementation of CPTD programs. Secondly, this policy does not affect teachers in the private sector, further widening the gap between public and private schools. Lastly, this policy does not cater to teachers situated in areas with poor technological advancement and for teachers who have poor technological skills. Consequently, teachers who do not have access to a computer or the internet, or teachers who do not have computer skills, are disadvantaged (CDE, 2015), thus questioning the context suitability of this policy.

The QMS was designed to identify teachers' needs and support teacher development. However, the flawed implementation of the policy has created further divisions in teachers' competencies (CDE, 2011).

Research conducted by the CDE in 2015 and Ngema and Lekhetho in 2019 notes that this policy was not equally implemented across all South African schools. Many schools did not know how to implement this system because of poor training or simply did not have the time to implement it. Bernadine (2019) states that the salary increment that teachers and principals receive remains the main motivation behind the implementation of the QMS policy.

The policy-practice gap in teacher development highlights a growing problem in teacher education. Fortunately, these issues have been identified by the DBE, and in response, the DBE formed the ISPFTED. This framework seeks to improve the future of teacher development by setting realistic goals and context suited to teacher development initiatives. The ISPFTED uses context-suited approaches such as implementing PLCs to facilitate teachers' continuous professional growth and enhance collaboration among teachers. Furthermore, the ISPFTED seeks to bridge the gap between policy intentions and practical implementation, ensuring that teacher development initiatives yield significant improvements, ultimately improving learning outcomes.

PLCs are the Future of Teacher Development.

Modern teacher development programs are moving away from generic teacher development programs, such as workshops with one-way communication. Social learning theories seem to underpin modern-day teacher development initiatives (De Clercq & Phiri, 2013). Social learning, such as Wenger and Vygotsky's social learning theories, emphasizes the importance of collaborative organizational learning, stating that learning is a social process whereby colleagues share knowledge and experiences, which is then internalized, producing new knowledge.

Based on these theories, PLCs seem to be the future of teacher development programs, particularly for South African teacher development, as noted by the ISPFTED in 2011. PLCs offer a platform for teachers with varying expertise to come together and share their experiences, practices, and challenges. Through this process, teachers learn how to support each other and learn to work together to identify issues and solve them. They assist in building a collaborative culture of learning in schools, which is conducive to successful PLC programs and school improvement (Rayiramkandath, 2017; Lee & Louis, 2019).

Conclusion

Teachers are key role players in transforming the South African educational system and improving the education results of learners. But before they take on this mammoth task, they first need to be equipped with knowledge and skills required.

South Africa has policies in place to guide teacher development, although the current policies are poorly implemented, not contextually suited, and do not meet the demands of the educational system and the developmental needs of the teachers. Fortunately, the ISPFTED policy brings hope to the dismal state of teacher development in South Africa.

The ISPFTED policy looks at PLCs as the future of teacher development in South Africa. PLCs are a form of teacher development that is derived from social learning theories. This is a long way from previous approaches to teacher development, such as departmental-led, generic workshops. Organizational learning is the future of teacher development, and PLCs speak directly to the nature of organizational learning.

Given the benefits of PLCs, I strongly believe that South African education has finally initiated a contextually suitable teacher development program. It is important to note that the success of PLCs is dependent on how they are implemented and the type of culture adopted by principals in schools.

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Adoption of Computer Assisted Instruction in Teaching Business Education Courses at Tertiary Institutions in North-East Nigeria

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Abstract

The study examined the intention of business education lecturers for adopting computer assisted instruction in teaching business education courses at tertiary institutions in North-East Nigeria. A survey research design was adopted where 120 business education lecturers were randomly selected from twelve tertiary institutions offering business education in North-Eastern Nigeria. A structured questionnaire was used as instrument for data collection. The data collected was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results revealed that perceived usefulness, perceived ease of use and computer self-efficacy had significant and positive relationship with adoption of CAI in teaching business education courses at tertiary institutions in North-East Nigeria. By implications, business education lecturers believed that technology usefulness, ease of use and their self-efficacy in computer are important determinants of CAI adoption. This study suggested that predominant use of traditional lecture method among business education lecturers should be discouraged and encourage the use of modern technologies, particularly computer assisted instruction in teaching business education courses because it is an interactive instructional technique that allow students to fully participate in the learning process and makes the learning environment more engaging for both students and teachers unlike the traditional lecture method that is less effective in improving students' learning outcomes and students are less involved in the learning process.

Keywords: Computer Assisted Instruction, Business Education, Tertiary Institutions

Introduction

Business education is an aspect of vocational education that prepares individual with relevant knowledge, skill, and attitude to become self-reliant citizen. Business education equips students with appropriate knowledge, skills, and value for performing specific roles in order to become a self-reliant and to develop their intellectual capacity which would help them to make informed decisions in all sphere of life. (Ajisafe, Bolarinwa & Tuke, 2015). It is one of the tertiary institutions program in Nigeria design to provide learners with desirable skills for employment and prepare them to function intelligently as consumers and citizens in a business economy (Okoli, 2016). Therefore, business education is the course of study at tertiary institutions that focused on competencies and knowledge needed by individuals to become meaningful and self-reliant citizen within society (Etonyeaku, 2012).

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Business education lecturers in Nigerian tertiary institutions adopted several instructional techniques for instructional delivery (Ajisafe, Bolarinwa & Tuke, 2015). The technique adopted by business educators is determined by the number of factors such as readiness of the lecturers to adopt an instructional method, nature of the course and students' level (Samuel, Adenubi & Olubode, 2018). Even though the use of information and communication technology (ICT) in schools has been one of the greatest innovations in teaching and learning but the huge investment by government in modern technologies, particularly in tertiary institutions is not yielding the desired results because lecturers in Nigeria are still left behind in terms of utilizing ICT facilities because most of them prepare the use of conventional lecture methods (Okolocha & Nwadiani, 2019). This is in line with argument of Iheonunekwu, Kevin and Uche (2019) that business educators are predominantly using the traditional instructional method where lecturer dominates the class and does not allow students to fully engage in the learning process. Previous studies (see, for example, Abimbola & Abidoye, 2018; Hossain & Ahmad, 2016) have observed that traditional instructional approach is less effective in improving students' learning outcomes. This is due to the fact that in traditional instructional approach, students are less involved in the learning process. Scholars (see, for example, Musa, Inuwa & Bello, 2020; Iheonunekwu, Kevin & Uche, 2019) suggested the departure from the traditional instructional approach to a more interactive spirally structured approach where students will fully participate in the learning process.

Computer assisted instruction (CAI) is one of the interactive instructional techniques that shift a learning approach from teacher-centred to student-centred where students are allowed to fully participate in the learning process, improve their performance, retention and learning rate, it also makes the learning environment more engaging for both students and teachers (Usman, & Madudili, 2020). Similarly, Musa et al. (2020) suggested that business educators should adopt the use of ICT in teaching and learning process because ICT creates new opportunities for teachers and learners. It improves the efficiency and productivity of teachers and makes it easier for learners to collaborate and work in team. Some studies (Fokides, 2017; Summak, & Baglibel, 2018) on the hand, maintained that perceived ease of use, perceived usefulness and computer self-efficacy are factors that lead to the utilization of ICT facilities in teaching learning. Nonetheless, no published study was found to focus on perceived ease of use, perceived usefulness, computer self-efficacy and adoption of computer assisted instruction in teaching business education courses. Therefore, the present study intends to investigate the intention of business education lecturers for adopting computer assisted instruction in teaching business education courses at tertiary institutions in North-East Nigeria.

Purpose of the Study

The study assessed the adoption of computer assisted instruction in teaching business education courses at tertiary institutions in North-East Nigeria. Specifically, the study examined:

1. The relationship between perceived ease of use and adoption of CAI in teaching business education courses.
2. The relationship between perceived usefulness and adoption of CAI in teaching business education courses.
3. The relationship between computer self-efficacy and adoption of CAI in teaching business education courses.

Hypotheses

Based on the objectives of the study the following hypotheses are formulated to guide the study:

- H1:** There is a significant relationship between perceived ease of use and adoption of CAI in teaching business education courses.
- H2:** There is a significant relationship between perceived usefulness and adoption of CAI in teaching business education courses.
- H3:** There is a significant relationship between computer self-efficacy and adoption of CAI in teaching business education courses.

Significance of the Study

The outcomes of the study will be significance to the business education students of tertiary institution because a good instructional technique has a positive impact on the students' learning outcome. Also the outcomes of this study will be importance to stakeholders in tertiary institutions, particularly, business education lecturers, supervisory agencies of tertiary institutions like national universities commission and national commission for colleges of education in terms of adopting interactive instructional technique in teaching business education courses. It is also expected that the performance, retention and learning rate of business education students of tertiary institution will be boost.

Literature Review

Perceived Ease of Use

The term ease of use refers to the amount of effort user's need to use the system (Sondakh, 2017). It can also view as the degree to which a teacher expected the use of computer technology to be free of effort (Ma, Andersson, & Streith, 2015). On the other hand, King (2018) defined perceived ease of use is the extent to which a person believes that the use of given technology will be free from effort. Hao, Dennen & Mei (2016) argued that perceived ease of use is a significant determinant technology adoption. Similarly, several studies established the relationship between perceived ease of use and new technology adoption for example, Samuel, Onasanya, and Olumori (2018) in their study of perceived ease of use and perceived usefulness of using mobile technologies. among university lecturers proved that a positive and significant relationship existed between perceived ease of use and utilization of mobile technologies among university lecturers in Nigeria. Similar finding was reported in the study of Sugandini et al. (2018) that technology adoption is significantly affected by perceived ease.

Perceived Usefulness

Perceived usefulness is one of the constructs of technology acceptance model that has a significant influence on technology use. Perceived usefulness is perception of individual that using technology will lead to performance improvement (Chong, 2013). According to Ma, Andersson, and Streith, (2015) perceived usefulness is the teacher's belief that using technology would enhance the job performance of teacher within the school context. The relationship between perceived usefulness and technology use has always

been a topic of interest in the fields of research. A number of studies have established the relationships between perceived usefulness and use of new technology, but no study has focused solely on perceived usefulness and adoption of CAI in teaching business education courses. Therefore, it is hoped that the present research can provide further insights on the phenomenon. Hamid et al. (2016) in the context of Malaysia investigated the effects of perceived usefulness and perceived ease of use on intention to use e-government in public schools. The study found that perceived usefulness was a significant predictor of intention to use e-government. In the context of in Hungary Nagy (2018) conducted a study on online video usage and the study proved empirically that perceived usefulness had a direct effect on the video usage.

Computer Self-Efficacy

Scholars viewed computer self-efficacy in different perspectives for instance, Sarfo, Amankwah and Konin (2017) defined computer self-efficacy as person confidence and belief to use the computer skills and knowledge already possess to execute a particular task. Teachers' computer self-efficacy is a teachers' confidence and belief to use computer and technology related skills to facilitate instructional delivery (Teo & Koh, 2010). Several studies established the relationship between computer self-efficacy and technology adoption. For example, Yau and Leung (2018) in the context of Hong Kong conducted a study on self-efficacy and attitudes towards the use of technology in learning. They found a significant and positive relationship between self-efficacy and attitudes towards the use of technology in learning.

Methodology

This study used a survey research design to investigate the intention of business education lecturers for adopting computer assisted instruction in teaching business education courses at tertiary institutions in North-East Nigeria. A survey method is used when a researcher administered a survey or questionnaire to a sample or to the entire population in order to describe the opinions, feelings, and thoughts of the respondents about a particular situation (Creswell 2012). In survey method the researchers collect and analyze quantitative data to ascertain the relationship between the variables of interest (Saunders et al., 2009). This study collected and analyzed quantitative data from business education lecturers regarding their intention to adopt computer assisted instruction in teaching business education courses at tertiary institutions. Hence, a survey method is appropriate for achieving the objective of this study.

Population and Sample

The target population of this study comprised 226 business education lecturers from twelve tertiary institutions offering business education in North-Eastern Nigeria. The business education lecturers were considered in this study because they are the people handle/teach business education courses at the institutions under investigation. Hence, they are in better position to provide the information needed for this study.

The sample was statistically determined using GPower, a statistical procedure used for determining the appropriate minimum sample size required for a study, with respect to the number of the predicting variables. Thus, to determine the minimum sample size required for this study, considering the number of the predicting variables, a priori power analysis was conducted using the G*Power 3.1.9.2 software application (Faul, Erdfelder, Lang, & Buchner, 2017). A priori analysis was based on these parameters: Power (1- β err prob;

0.95), an alpha significance level (α err prob; 0.05), medium effect size f^2 (0.15), the number of the predictors are three based on the research framework. This statistical test is commonly used in the social and behavioral sciences (Faul et al., 2017). Hence, it was appropriate for this study. From the outcome of the analysis, a minimum of 110 sample is required for this study. The sample was increased to 120 in order to have equal number of respondents from each tertiary institution under investigation and to avoid non-response problem and sample size error as suggested by Salkind in 2018, that is, 10 business education lecturers were drawn from each tertiary institutions offering business education in North-Eastern Nigeria to form the sample size. Simple random sampling technique was used in this study, because this sampling technique is believed to produce sample which is free from bias (Sekaran & Bougie, 2016). Following this argument, the study randomly selected 120 business education lecturers. Out of 120 questionnaires distributed, 115 were retrieved, representing 96 % response rate. The response rate is significant. The treatment of missing data was conducted as suggested by Hair, Hult, Ringle and Sarstedt (2013). No outliers case was detected, the final data for analysis become 115 cases.

Measurement

The instrument, comprising of four constructs was adapted from the prior studies, for instance, Adoption of CAI was measured with 10 items and they were adapted from Gress, Fior, Hadwin, and Winne (2010) and were tested and found to be reliable by Musa et al. (2020). Perceived Usefulness consist of 5 items developed by Adams, Nelson, and Todd (1992) and tested by Rahmat, (2019); Lanlan, Ahmi, and Popoola (2019). The items of Perceived Ease of Use were adapted from Rahmat, (2019); Lanlan, et al. (2019). The construct was represented by 5 items and found to valid and reliable. The construct computer self-efficacy was represented by 6 items adapted from Compeau and Higgins (1995). The construct was tested by Howard (2014) for internal consistency reliability. In this study, the Likert scale was adopted for all the items, the respondents were asked to indicate their responses to each item on a five-point scale. Krosnick and Fabrigar (1997) opine that a scale between five and seven points is more reliable than higher or lower scales and a scale with no midpoint may increase the measurement error. Similarly, Dawes (2008) states that a five or seven scale is likely to produce better results.

Analysis Method

Due to the small sample size of the study, Structural Equation Modeling (SEM) through Partial Least Squares (Smart PLS 3.3.3.) was used to analyze the data collected as suggested by Ringle, Da Silva, and Bido (2015).

Data Analysis and Findings

Goodness of Measurements

This study established the construct validity using the two-step approach recommended by Hair, Black, Babin and Anderson (2017). Firstly, the convergent validity was assessed by this study, followed by the assessment of discriminant validity. Loadings, average variance extracted (AVE) and reliability were used to assess the convergent validity while discriminant validity was assess using Fornell-Larcker criterion (see, table 1 & 2). The construct validity is established if the loadings are above 0.7, average variance extracted above 0.5, composite reliability (CR) and Cronbach alpha above 0.7 (Hair et al., 2017; Nunnally & Bernstein, 1994).

Table 1 Result of CFA for measurement model

Constructs	Items	Loadings	Alpha	CR	AVE
Adoption of CAI	ACAI1	0.738	0.901	0.920	0.592
	ACAI2	0.771			
	ACAI3	0.816			
	ACAI4	0.789			
	ACAI5	0.800			
	ACAI6	0.736			
	ACAI9	0.723			
Computer Self-efficacy	ACAI10	0.774			
	CSE1	0.791	0.912	0.932	0.695
	CSE2	0.859			
	CSE3	0.893			
	CSE4	0.845			
	CSE5	0.771			
Perceived Ease of Use	CSE6	0.838			
	PEU2	0.870	0.814	0.889	0.728
	PEU3	0.862			
Perceived Usefulness	PEU4	0.827			
	PU1	0.883			
	PU2	0.935			
	PU3	0.927	0.947	0.959	0.825
	PU4	0.902			
	PU5	0.892			

The loadings of ACAI7, ACAI8, PEU1 and PEU5 are less than 0.50 and they were deleted (Hair et al., 2013).

This study established discriminant validity using the square root of AVE of each latent construct (Hair et al., 2017). Therefore, in this study, discriminant validity was assessed by comparing the square root of the AVE for each construct with the correlations presented in the correlation matrix. Table 2 showed the results of Fornell-Larcker Criterion assessment with the square root of AVE of each constructs. The square root of AVE in bold is greater than its correlation with any other constructs. Hence, it is concluded that discriminant validity of the constructs has been established (Hair et al., 2017).

Table 2 Discriminant validity of construct

	ACAI	CSE	PEU	PU
ACAI	0.769			
CSE	0.560	0.834		
PEU	0.558	0.448	0.853	
PU	0.516	0.502	0.484	0.908

ACAI= Adoption of CAI, CSE= Computer Self-efficacy, PEU= Perceived Ease of Use, PU= Perceived Usefulness.

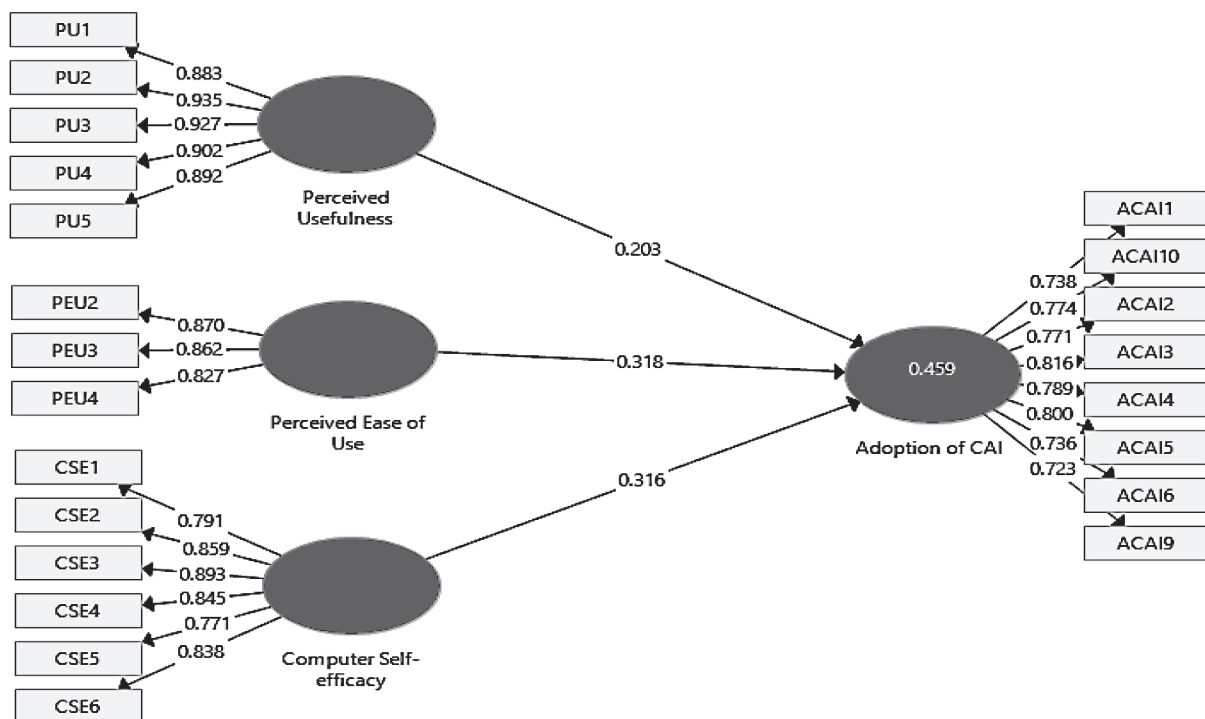
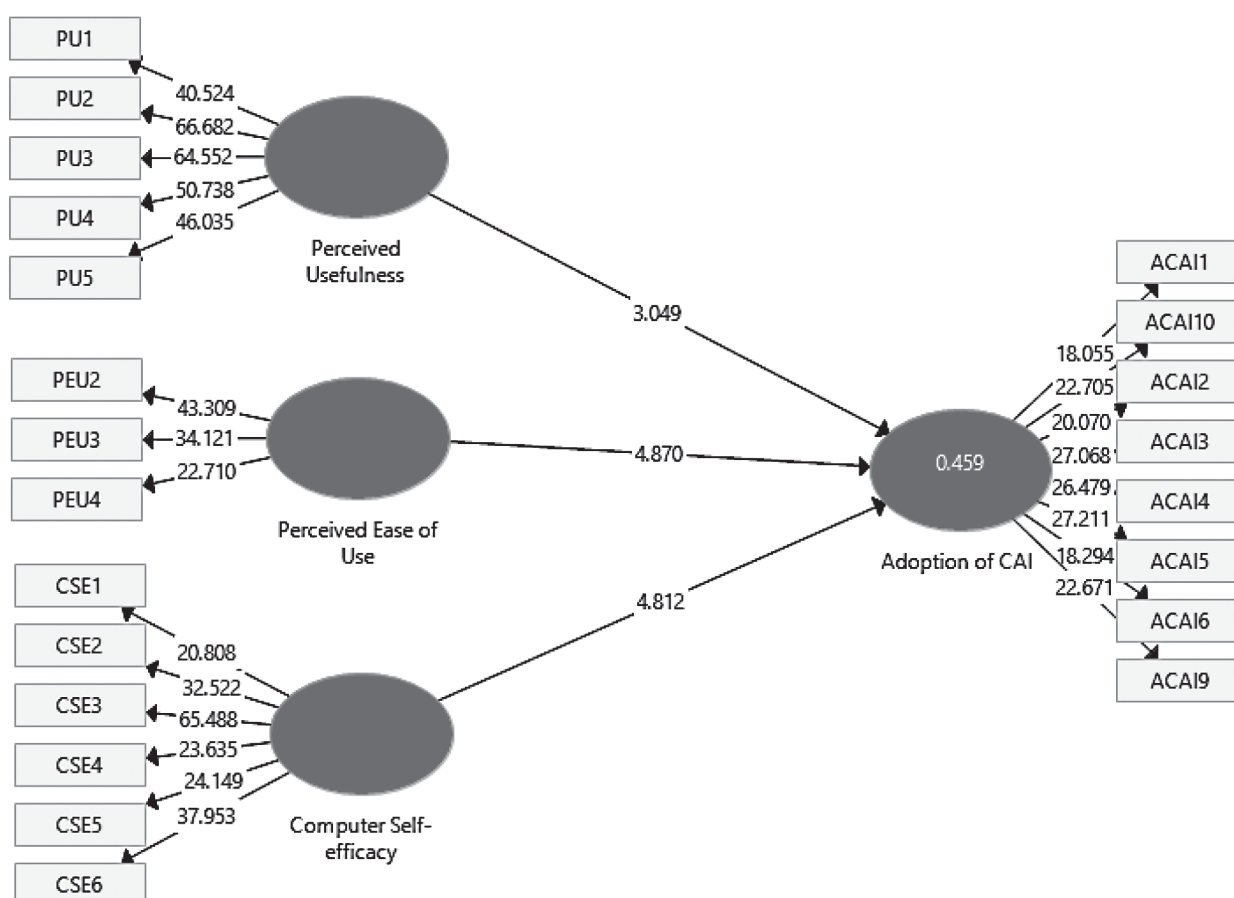
**Figure 1:** Measurement Model

Table 3 and Figure 2 shows the result generated with the help of Smart PLS 3.3.3. The results indicate the p-value, t-value, coefficient value. Based on p-value and t-value the hypothesis decision has been made. The result was obtained from the bootstrapping procedure with 5000 sampling iterations for 115 cases as recommended by Hair et al. (2017). The statistical evidence documented in table 3 revealed that the relationship between perceived usefulness and adoption of CAI in teaching business education was found to be positively significant ($\beta = 0.203$, $t = 3.049$, $p < 0.05$). This suggests that the hypothesized relationship between the two constructs was supported. Similarly, the relationship between perceived ease of use and adoption of CAI was found to be positively significant ($\beta = 0.318$, $t = 4.870$, $p < 0.05$). The hypothesis 2 was supported. Again, computer self-efficacy has confirmed to have a significant and positive relationship with adoption of CAI in teaching business education ($\beta = 0.316$, $t = 4.812$, $p < 0.05$). The hypothesized relationship between the two constructs was supported.

Table 3 Hypotheses testing

Hypotheses	Std. Beta	T value	P value	Decision
PU->ACAI	0.203	3.049	0.002	Supported
PEU->ACAI	0.318	4.870	0.000	Supported
CSE->ACAI	0.316	4.812	0.000	Supported

**Figure 2:** Structural Model

Discussion

This study proved that perceived ease of use has a significant and positive relationship with adoption of CAI in teaching business education courses at tertiary institutions. The finding suggests that, when business education lecturers believe that the use of CAI in teaching business education courses is free from effort, they will develop positive attitude towards adoption of CAI in their teaching job. The findings concurred with the findings of existing studies such as Samuel et al. (2018) that a positive and significant relationship existed between perceived ease of use and utilization of mobile technologies among university lecturers in Nigeria. The finding is in line with the study of Sugandini et al. (2018) that technology adoption is significantly

affected by perceived ease. Similar finding was reported by Kazoka and Mwantimwa (2019) in the context of Tanzania that perceived ease of use is important predictor of the adoption of Web 2.0 technologies in teaching and learning. Also the finding is in agreement with the finding of Islami and Baumaspe (2021) that perceived ease of use has a positive and significant effect on online tutorial application usage.

The present study further proved that perceived usefulness has a significant and positive relationship with adoption of CAI in teaching business education courses at tertiary institutions. This finding suggests that business education lecturers had positive perception towards using CAI in teaching business education courses. The finding concurred with the finding of Samuel et al. (2018) who established a positive and significant relationship between perceived usefulness and utilization of mobile technologies among lecturers. The finding also agreed with the finding of the study of Hwa, Hwei and Peck (2015) in the context of Malaysia that a significant relationship existed between perceived usefulness and university students' intention to use Learning Management System. Similar finding was reported by Agufana (2021) in the context of Kenya. The findings also agreed with study of Hamid et al. (2016) that perceived usefulness was a significant predictors of intention to use e-government.

In addition, this study examined the relationship between computer self-efficacy and adoption of CAI in teaching business education courses. The study suggested that computer self-efficacy has a significant and positive relationship with adoption of CAI in teaching business education. This finding supported the finding of the study of Yau and Leung (2018) in the context of Hong Kong that there was a significant and positive relationship between computer self-efficacy and attitudes towards the use of technology in learning. The finding of the present study concurred with finding of Chinaza et al. (2015) who observed that a positive and significant relationship existed between computer self-efficacy and online learning readiness. Similar finding was reported by John (2013) in the context of Thailand that computer self-efficacy directly influenced the adoption of information technology. Similarly, the finding supported the finding of the study of Akpan (2018) that computer self-efficacy and attitude towards internet had a significant positive relationship.

Conclusion

The study investigated the intention of business education lecturers to adopt computer assisted instruction in teaching business education courses at tertiary institutions in North-East Nigeria. The study proved empirically that perceived usefulness, perceived ease of use and computer self-efficacy have a significant and positive relationship with adoption of CAI in teaching business education courses at tertiary institutions. The results indicate that business education lecturers believed that technology usefulness, ease of use and their self-efficacy in computer are important determinants of CAI adoption. Therefore, predominant use of traditional lecture method among business education lecturers of tertiary institutions should be discouraged and encourage the use of modern technologies, particularly computer assisted instruction in teaching business education courses because it is an interactive instructional technique that allow students to fully participate in the learning process and makes the learning environment more engaging for both students and teachers unlike the traditional lecture method that is less effective in improving students' learning outcomes and students are less involved in the learning process. Furthermore, departure from the traditional instructional approach to computer assisted instruction would facilitate the lecturers' instructional delivery, improve their efficiency and productivity and make it easier for learners to collaborate and work in team Which would lead to a better learning outcome.

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An Introduction To The Australian Qualifications Framework (AQF)

Dr. Sudesh Kumar Garg¹

Abstract

1995 saw the introduction of the Australian Qualifications Framework (AQF). It offered standards for characterising qualifications according to the features and results of education for every qualification. The primary objectives of the AQF were to enable student mobility between educational sectors and the labour market and to provide nationally consistent recognition of qualifications.

2011 saw the release of an updated AQF after a two-year review period, and 2013 saw the release of a second edition. A ten-level structure came into existence and brought the AQF closer to conformity with global standards. The updated AQF placed more emphasis on learning descriptor volume in addition to knowledge and skill descriptors and how they were applied across the ten qualification levels in progressively more complex ways.

Australia's international education standing is largely attributed to the AQF, which continues to be a crucial component of the country's framework for quality assurance in training and education. Australia's skill requirements have changed since the last revision due to innovations in international qualification frameworks and shifts in the nature of work. Along with pertinent regulatory frameworks, practices in education and training have also changed.

Keywords: Qualifications, Frameworks, Standards, Skills, Descriptors, Levels, Regulators

Introduction

Regulated qualifications are governed by the Australian Qualifications Framework (AQF), the national policy in Australia. Students, businesses, and educators are all impacted by this. The AQF is agreed by the Council of Australian Governments (COAG). If the AQF recommends any changes, they must be approved by the COAG, Industry and Skills Council as well as the COAG Education Council.

The AQF provides an integrated policy that comprises:

- the learning outcomes for each AQF level and qualification type
- the specifications for the application of the AQF in the accreditation and development of qualifications
- the policy requirements for issuing AQF qualifications
- the policy requirements for qualification linkages and student pathways
- AQF qualifications and qualification pathways

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- the policy requirements for the addition or removal of qualification types in the AQF, and the definitions of the terminology used in the policy.

The AQF unifies qualifications from senior secondary school, higher education, and vocational education and training (VET) into a single, national framework. It outlines the nature and goals of senior secondary education and has been crucial in maintaining the high standard of Australia's renowned tertiary education system. The AQF has been a model for the creation of qualifications frameworks worldwide and is used to facilitate the Australian qualifications be recognized in other nations.

Ten levels make up the AQF, and each level describes a learning result in terms of knowledge, skills, and applications at ever higher complexity levels. Within the 10-level framework, each sort of qualification—aside from the senior secondary certificate of education—has a designated level.

The AQF includes the following learning outcomes for each AQF level: knowledge, skills, and application of knowledge and skills.

- A volume of learning for each AQF qualification type, as well as learning goals (knowledge, skills, and the application of knowledge and skills);
- requirements for the bodies that create, accredit, and award each form of qualification;
- guidelines for the inclusion or deletion of AQF qualification types, AQF qualification paths, registries of accrediting and issuing organisations, policies for providing AQF qualifications, and guidelines for conforming with the qualifications frameworks of other nations; and
- clarifications that help in understanding how the AQF should be applied.

The Taxonomy of Learning Outcomes is Formed by the AQF Levels and Descriptions

The AQF's goals are comparable to those of numerous other certification frameworks worldwide. They will offer a modern, adaptable framework that:

- supports the development and upkeep of pathways that provide access to qualifications and help people move easily and readily between different education and training sectors and between those sectors and the labour market.
- supports lifelong learning goals of people by giving them the foundation to advance in their career through education and training and gain recognition for their prior learning and experiences.
- supports the diversity of purposes of Australian education and training now and in the future.
- contributes to national economic performance by supporting modern, relevant, and nationally consistent qualification outcomes that build confidence in qualifications.
- facilitates the alignment of the AQF with international qualifications frameworks.
- supports and enhances the mobility of graduates and workers both nationally and internationally by increasing recognition of the value and comparability of Australian qualifications.
- underpins national regulatory and quality assurance arrangements for education and training.

- Increases the value and comparability of Australian qualifications, which promotes and improves the mobility of workers and graduates both domestically and internationally. and
- It makes it possible for the AQF to be in line with global qualification systems.

Table 1 10 Australian Qualifications Framework (AQF) Levels			
Higher Education	Vocational Education and Training	Secondary Schools	AQF Level
-	Certificate I	Senior Secondary Certificate of Education	
-	Certificate II		
-	Certificate III	-	
-	Certificate IV	-	
Diploma	Diploma	-	
Associate degree	Advanced Diploma	-	
Bachelor's degree	-	-	
Graduate Certificate	Graduate Certificate	-	
Graduate Diploma	Graduate Diploma		
Master's Degree	-	-	
Doctoral Degree	-	-	

AQF Evolution and Application

The AQF was created to encourage openness and connections throughout the various education sectors. The Australian Qualifications Framework (AQF) replaced the Register of Australian Tertiary Education (RATE) when it was first introduced in 1995, drawing inspiration from the Australian Standards Framework (ASF). Part of the transition to competency-based training was the development of the ASF, a levelled vocational system. All qualifications from the RATE up to and including a bachelor's degree were transferred, while the first six AQF qualifications matched the first six ASF levels.

The AQF was developed in Australia due to a variety of circumstances. There was a demand for nationally recognized VET certificates connected to competency standards since the VET system was being changed to implement competency-based training. The number of Year 12 graduates was rising, and the tertiary education industry was expanding quickly. This demonstrated that to facilitate credit transfer and recognition of prior learning (RPL), there is a need for increased uniformity and openness across qualifications.

When the AQF was first established, it was a somewhat flexible structure. With learning outcome levels integrated into the certification types, it mirrored the features of the current qualification types given in each sector.

The credentials were categorised according to industry and included knowledge descriptions applicable to that industry. This contrasted with the uniform, level-based learning and skill taxonomies that other nations employ, which the AQF would start using in 2011.

The Goals of the AQF to Support the Development of A More Cohesive Tertiary System

Australia should create a more cohesive tertiary education system, according to the Bradley Review of Higher Education (2008). It suggested a single regulator and funding source for the VET and higher education sectors and acknowledged the necessity of a continuum of tertiary skills. Taking note of the AQF's shortcomings at the time, it also suggested reviewing the AQF. A stronger custodian of a stronger AQF was desired by stakeholders, leading to the establishment of the AQF Council, which oversaw the AQF Review between 2009 and 2011.

2011 saw the implementation of an updated AQF that included the elements listed as well as a more uniform classification of learning objectives. The AQF is now a more intricate and detailed document because the taxonomy was applied to both levels and qualifications.

These modifications envisioned improved governance structures for an AQF body to guarantee AQF compliance. However, distinct regulatory systems for higher education and VET have continued to develop under separate national regulators, in contrast to the more integrated tertiary education system that the Bradley Review recommended. While both sectors' provider standards refer to the AQF, it is possible that they also reinforce sector-specific variations in the goals, structures, and pedagogies of qualifications.

The patterns and advancements have curtailed the efficacy of the updated AQF in attaining enhanced coherence throughout Australia's higher education sector. Numerous reports indicate that the desire for a more cohesive tertiary sector has recently resurfaced. The AQF might offer more assistance for a more cohesive tertiary system, but to fully reap the benefits of the AQF, financing and governance structures would need to be reevaluated. A noteworthy and distinct advancement has been the continuous expansion of VET programs offered as part of senior secondary certifications.

The AQF is Frequently Used

The primary users of the AQF are those who create, issue, and accredit qualifications. Governments, unions, businesses, licensing authorities, and professional associations are among the other users. Students, especially those from overseas, can benefit from the AQF as it illustrates the connections between different types of qualifications in Australia, which can help with study selection.

Knowledge and Abilities are Becoming More and More Crucial

Current knowledge and abilities are more crucial to Australian economy and society than they have ever been. Individuals utilise them for employment, education, and social interactions. Knowledge and skills, when used effectively, can raise worker productivity. People with the knowledge and skills of today have better job security, income, and job satisfaction, all of which have an impact on quality of life. According to

the Department of Jobs and Small Business, most of the job growth over the next five years is expected to occur in fields that frequently require post-secondary education.

Both Experience and Qualifications are Helpful in Landing a Job

Qualifications demonstrate to potential employers and others what an individual is capable of and has accomplished. Education providers certify, by means of qualifications, that students have met or exceeded the necessary standard for learning outcomes. Graduates present their qualifications as proof of their accomplishments and as a means of pursuing career advancement; employers and the public view them as markers of success and potential.

Certifications may have economic, or exchange value related to job outcomes associated with the qualification, in addition to intrinsic value derived from the standing of the education provider. Although qualifications are a weaker indicator of initial job competence, employers believe that they demonstrate a greater capacity for learning and skill acquisition.

Academic credentials are not the only indicator of success; experience is needed for about two thirds of open positions. Most of the job growth over the past five years has been in positions that typically call for post-secondary education. Although certain jobs requiring lower AQF level qualifications can also attract high pay, people with higher AQF level qualifications (degree or above) tend to have higher employment rates and earn more. Employers may choose between job applicants based on their qualifications.

The Nature of Labour is Evolving

Australian working environment is changing due to globalisation, technology, and demographic changes. The AQF has adapted to these changes in the workforce because they will impact the knowledge and skills that graduates need as well as the methods used by providers to deliver education. Less manual labour and routine jobs are being created by technological advancement, which is also propelling the growth of professional and technical fields and the shift from physical skills to interpersonal, while raising the need for social workers' and healthcare providers' professional and interpersonal skills. Increased competition from skilled workers abroad results from globalisation and a more mobile labour market, which puts pressure on Australian businesses' labour costs and supply chains.

Indigenous and regional populations are being impacted by population shifts and competition for limited resources brought about by globalisation. There is typically a greater percentage of elderly residents in regional areas. The percentage of older people in regional areas is rising because of young adults from other areas relocating to large cities for work, education, other opportunities, and enhancing creative, and decision-making skills.

Raising educational attainment levels is essential to addressing disadvantaged communities and promoting effective social and economic participation. People are more likely to have multiple jobs or careers as more tasks become automated and some relocate overseas. Through a flexible, industry-responsive process of lifelong learning, people will need to retrain, upskill, and maintain their skills in their respective industry workplace.

The AQF Do Need to Acknowledge Fresh Competencies and Pedagogies

Learners will need to master new material and take advantage of new learning opportunities as the nature of work changes and demands new knowledge and skills.

Professional, technical, interpersonal, and creative skills are in greater demand, as was already mentioned. They are referred to as social and enterprise skills. Social and enterprise skills are applicable to all job roles. These include the ability to work with people, deal with data and technology, and adapt to change. It is imperative that all adolescents and adults who are returning to school be given the chance to develop the competencies needed for the workforce of the future.

People want faster, less expensive, self-directed, and on-demand learning because changes in the workplace may necessitate more reskilling or upskilling. Employers favour shorter, more focused courses of study and training, but only as an addition to a full qualification such as a Bachelor's degree or a Certificate III.

Innovative Techniques for Instruction and Learning

Modifications in technology are also affecting how education is imparted and learned. In order to prepare for the skills required in the workforce of the future, the Ai Group has predicted the need for new learning experiences to be delivered more quickly, more affordably, and on demand. Massive Open Online Courses and other forms of online education are already being used more frequently, and digital badges and micro-credentials are becoming more and more well-liked.

Online learning is becoming more and more popular because, in comparison to in-person instruction, it can be either free (not including certification of acquired skills and knowledge) or less expensive (including certification of acquired skills and knowledge). Those who are working, have caring responsibilities, or are geographically distant, or who want to undertake a course at a speed that suits them.

There seems to be a growing need for quick courses and micro-credentials. This is because they are brief, just-in-time, and appropriate for upskilling employees in response to shifting market demands, all of which may improve job security. Shorter learning courses are also appropriate for those who want to gradually expand their knowledge and skill set throughout their professional lives (lifelong learning). Formal qualifications could be created by combining these credentials.

Upskilling versus Reskilling

Upskilling is giving employees new abilities to improve their current roles by teaching them new skills. On the other hand, reskilling comprises teaching people for different roles or learning new skills to enable them to move into a different line of work. Employers must use both strategies to successfully address the projected skills shortage.

People with “adjacent skills,” or those that are closely related to the new skills the employer needs, are the target audience for reskilling. It provides a lateral learning experience, which is necessary to satisfy the

labour market's extensive reskilling requirements. According to estimates from the World Economic Forum, technological advancements will require reskilling for half of all employees by 2025.

In contrast, giving workers advanced skills closes the talent gap and promotes an upskilling culture. This strategy places a strong emphasis on lifelong learning, allowing staff members to advance along their current career path. Organisations are employing a variety of tactics to upskill their workforce, and one such tactic is employee development through gamification platforms. Investing in the professional development of employees increases retention rates while also fostering loyalty. Most of employees would prefer to stay longer with organisations that actively support their professional development.

Financial limitations and insufficient technology impede the implementation of workforce development programmes, even though many organisations acknowledge their significance in mitigating the skills gap. But waiting time to gain competencies will make it more difficult for businesses to meet long-term objectives if the required skills are not readily available.

Social and Entrepreneurial Abilities

The need for social and enterprise skills is rising. Along with their discipline or vocational based skills, graduates are strongly encouraged to acquire these skills. The AQF looks after how to mention or incorporate enterprise and social skills in the qualification's domain. Depending on the qualification's intended use, these skills should be included in the AQF or represented in specific qualifications.

Numerous Entrepreneurship and Social Skills

The proposed VET training product reforms acknowledge the growing demand from employers for workers possessing a broad range of skills. Three categories of skills are suggested as being required for VET graduates in proposed training product reforms. These include future work skills, technical skills, and fundamental skills like literacy, numeracy, and digital literacy. Comparably, research students will benefit from courses in leadership and communication offered by the Australian Technology Network universities, which will help them become more employable.

Many social and enterprise skills are not brand-new, and there is no approved list of them. It shows how social, and enterprise skills can encompass interpersonal abilities like empathy, creativity, and communication as well as moral principles and behaviours like responsibility, integrity, teamwork, and resilience. They also include the abilities required to utilise technology and reap its benefits.

Context Determines How Business and Social Skills are Applied

The application of social and enterprise skills will vary depending on the discipline or vocational field (context) in which they are used, even with a more comprehensive list. Effective problem-solving techniques utilised by a preschool teacher to get past the typical difficulties of running a preschool could be very different from those employed by a mining engineer to address an uncontrollably burning oil rig.

As it stands, the AQF implies that the use of social and enterprise skills is limited to the education and training industry. Nonetheless, a lot of jobs cross these sectors, and people advance through them. This

implies that the sector in which social and enterprise skills are provided has less bearing on them than does their relationship to degrees in related fields of study. Furthermore, it is probably not possible to teach and evaluate enterprise and social skills at different levels and to present them in a taxonomy that is applicable to all qualifications because they seem to be context dependent.

Applying enterprise and social skills would therefore seem to warrant changing the AQF reference to sector dependence. It might be replaced with instructions on how particular social and enterprise skills could be used in various qualifications, considering the discipline and goal of the qualification as well as the main learner cohort for which it is meant. The range of social and enterprise skills would need to be updated and reviewed on a regular basis under this approach.

Summary

According to preliminary deliberations, many people view the AQF as a ladder where higher education credentials are at the top and VET qualifications are at the bottom. This suggests an implicit hierarchy that favours higher education over VET.

These perceptions are unrelated to the vocational nature of the qualification, since vocational qualifications are offered in both the VET and higher education sectors. Considering that qualifications frameworks are based on a taxonomy of increasing levels of skills and knowledge as well as the application of skills and knowledge, it is challenging to overcome the perception of a hierarchy of qualification types in the AQF.

Views of prestige between the VET and higher education sectors in Australia and many other countries also mirror broader social and cultural attitudes. Over the past ten years, funding and policy disparities between the sectors may have impacted Australia. Contrary to what some have claimed, these perceptions are unlikely to be affected by simple presentational or even design changes in the AQF.

Qualifications developers oversee determining the standard at which qualifications are established. Similarly, it is the duty of the parties to the award, occupational regulators, and professional bodies, to link qualifications to occupations through industrial awards for occupational licensing or professional certification.

As was previously mentioned, the process of matching qualifications to levels may be limited and may reflect broader social and cultural attitudes regarding these qualifications if the AQF taxonomy does not fairly represent the degree of autonomy and responsibility of some VET sector qualifications.

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Assessment of Climate Change Awareness in Urban Versus Rural Populations: A Comparative Study

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Abstract

In this study, the researchers explore and contrast climate change awareness in the urban and rural populations by looking into their knowledge, perception, and engagement. Using a structured survey instrument, data were collected from 500 respondents irrespective of age gender location and with equal distribution. Results indicate awareness differences, with urban respondents being more informed on the causes of climate change than the rural respondents who were more aware of the effects in their immediate environment. From the results, it can be concluded that any attempts in marketing climate change strategies needs to be targeted to the respective areas of the two groups studied. This emphasizes how critical educational and outreach programs geared towards climate change issues in specific regions are.

Introduction

The phenomenon of climate change has changed the way people handle the environment, tolerate economic activities and interact with each other as human beings. It has been noted that knowledge and understanding of climate changes influences the sustainable practices and affirmative attitudes (Kim et al., 2021). But it's also reasonable to assume that awareness and knowledge can differ significantly by various demographic and geographic groups. Previous Studies have established that there are variances in climate change and its impacts in urban and rural settings which in turn affects their levels of perception and awareness (Garcia & Patel, 2020).

So for instance urban dwellers may understand climate change from the perspective of increased pollution levels, experiencing more intense heat waves and increased pressure on infrastructure. Explanation for climate change in the context of rural areas may be provided in terms of effects on agricultural systems, reduced availability of water and loss of wildlife (Wang et al., 2023). For these reasons, you assess the awareness of climate change in urban and rural populations. This study aims to investigate these differences in order to develop appropriate educational and policy strategies suited to different groups characteristics.

Methodology

Research Design

The research adopts a descriptive correlational research design with a greater emphasis on the quantitative survey which seeks to collect data on climate change awareness levels among the urban and rural inhabitants.

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This design permits the comparison of knowledge, perception, and engagement between settings thus shedding light on how each group interprets climate change and interacts with or addresses it (Smith et al., 2022).

Participants

The participants were chosen from an assortment of 500 individuals between the ages of 18 and 65. Half of the sample consisted of the respondents from rural and urban backgrounds respectively. A proportionate quota sampling technique was applied so as to include people with different levels and types of societal engagements that were captured in the study thus enhancing the external validity of the research (Li et al., 2021).

Instrument

The survey has been created to assess climate change awareness in three aspects:

1. Knowledge: Awareness of the conceptualization and effects of climate change.
2. Perception: Opinions on how serious the threat is and the dangers that climate change poses.
3. Engagement: The inclination to take active measures to mitigate climate change.

The survey in question is a modified version of already validated instruments (Garcia & Patel, 2020) and consequently it used the Likert scale to rate all the items for uniformity and for easy comparison of responses. Items were arranged as follows:

Section A: Demographics: Obtained information about participants' age, sex, education level, type of work, and also whether they live in an urban or rural area.

Section B: Knowledge: Measured level of awareness on the causes and effects of climate change among the respondents.

Section C: Perception: Assessed the extent to which the respondents regard climate change and its effects on the region seriously.

Section D: Engagement: Explored the degree to which the participants were ready to engage in ecological activities.

Data Collection

Over the course of four months (January to April 2023), data collection was carried out, and urban respondents provided responses in the online platform while rural respondents filled in paper questionnaires to ensure that both populations were catered for. Prior to the beginning of the data collection, consent was sought from each participant and confidentiality was observed throughout the study.

Data Analysis

Descriptive statistical means such as percentages, mean and standard deviation, were Used To Analyze The Levels Of Awareness. On The Contrary, Inferential Statistics, Which consisted of t-tests and ANOVA, were

applied to evaluate differences between urban and rural populations. Furthermore, demographic parameters were correlated with levels of awareness using Pearson's correlation (Kim et al., 2023).

Results

The results of the study reveal distinct differences in climate change awareness between urban and rural populations, particularly across the dimensions of knowledge, perception, and engagement. The findings are summarized in Table 1.

Table 1 Climate Change Awareness in Urban vs. Rural Populations (N = 500)				
Dimension	Urban Population (n = 250)	Rural Population (n = 250)	Total (N = 500)	p-value
Knowledge	Mean (SD) = 4.3 (0.8)	Mean (SD) = 3.5 (0.9)	Mean (SD) = 3.9 (0.9)	< 0.01
Scientific Causes Awareness	80% (200)	52% (130)	66% (330)	< 0.01
Local Impacts Awareness	55% (138)	78% (195)	66.6% (333)	< 0.05
Perception	Mean (SD) = 4.1 (0.7)	Mean (SD) = 3.8 (0.8)	Mean (SD) = 3.95 (0.75)	< 0.05
Global Impact Concern	76% (190)	60% (150)	68% (340)	< 0.05
Localized Impact Concern	68% (170)	85% (213)	71.6% (358)	< 0.01
Engagement	Mean (SD) = 3.9 (0.6)	Mean (SD) = 3.7 (0.7)	Mean (SD) = 3.8 (0.65)	< 0.05
Support for Policy Measures	70% (175)	45% (113)	57.6% (288)	< 0.05
Practical Local Actions	60% (150)	74% (185)	67% (335)	< 0.01

Note: SD = Standard Deviation; p-value indicates significance level of t-tests comparing means between urban and rural populations.

Knowledge

Urban participants outperformed their rural counterparts in understanding the science of climate change, especially with regard to fossil fuel combustion, deforestation, and industrial waste, where 80% of participants were able to identify these factors (Ochoa & Lee, 2021). On the other hand, more rural respondents identified climate change through its consequences, with 78% of respondents stating that they associate climate change with impacts on the environment, such as changes in crop and water supply. This is consistent with earlier evidence that suggests that awareness in rural contexts is often formed based on one's experience of environmental degradation (Garcia & Patel, 2020).

Perception

Responses among urban participants reflected a greater level of urgency; 76% of them regarded climate change as a situation requiring immediate attention globally. On the contrary, rural participants tended to concentrate on the most obvious effects of climate change on their communities, as 85% of them viewed climate change in terms of local effects such as droughts and loss of biodiversity. This understanding is consistent with existing literature that has found that the nearness of an individual to an environmental change correlates negatively with the individual's perception and concern towards climate issues (Tan & Green, 2022).

Engagement

Both urban and rural communities showed an inclination towards engaging in action for climate change, although the ways that they preferred doing this varied. Several policy measures, are more likely to be supported by urban respondents policy measures such as renewable energy and emission reduction (70%). On the other hand, rural participants seemed to prefer more proactive activities, like water and soil activities; a whopping 74% of these participants expressed a penchant for such context specific practices. After all, there is evidence supporting the notion that people participate in actions that best fit their lifestyles and environments (Singh & Nair, 2023).

Discussion

The research underscores the fact that urban dwellers are more aware of climate change than their rural counterparts due to their different lifestyles, resources and information access. It could also be noted that most urban dwellers tend to be of a higher scientific understanding than those in the rural areas due to their interaction with formal education and educational material regarding the environment which is available in most urban areas (Thomson & Ruiz, 2021). The same urban advantage in education and awareness stated by Yi et al. (2023) has been supported by the findings that orientation to climate education significantly improves climate understanding at least in all levels of education.

The level of consciousness displayed by the rural respondents with regard to the perceived changes in the environment is indicative of a climate change perception that is likely due to lived experience of its effects on agriculture and water (Martinez & Zhao, 2020). Some studies extend this in that such factors in the countryside help in acknowledging the local consequences but narrow knowledge about the global roots of climate change (Baker & Thomson, 2021).

Climate Education Interventions Based on the Results of the Study Climate education is very essential and thus the results of the study stressed the need sixty that such climate education is specific to the intended beneficiaries. Urban areas could benefit from the implementation of strategies which address the adverse impact of climate change globally as well as policies aimed at encouraging them to join the fight against climate change (Kim et al., 2021). In the case of rural territories, so much experience on climate change exists that programmes on education will be more descriptive on strategies of alleviation than on strategies of building resilience (Garcia & Patel, 2020).

In addition, the mutual readiness of the two populations to participate in climate-friendly activities demonstrates the existence of effective place-based interventions. Potentially this could create urban and

rural programs where such readiness is utilized by providing appropriate resources to the two regions, for example, offering community based water saving practices workshops in the rural setting or organizing programs on energy saving behaviors in the cities. A place-based framework is in conformity with Wang et al. (2023) who recommend an encultured education – education that is ethnically, regionally or culturally relevant.

Conclusion

The findings of the present study highlight the importance of geographic and experiential factors in the awareness of climate change. Information campaigns and other initiatives designed for cosmopolitan and local populations focusing on the different aspects of climate change will help eliminate the awareness and activities gap. Taking into cognizance the differences urban and rural populations have, help equip climate change preparedness in its people and thus its implementation to the actual programs of the particular community.

Recommendations

In light of the data and insights derived from the results, the researcher proposes the following recommendations:

4. The researcher believes that addressing climate change awareness requires localized solutions. Educational programs must be designed specifically for urban and rural populations, considering their unique experiences and challenges. Urban communities should focus on sustainable living practices, while rural populations should be educated on the direct effects of climate change on agriculture, ecosystems, and their immediate environment.
5. The researcher advocates for empowering local leaders, educators, and organizations in both urban and rural areas to lead climate change awareness initiatives. By involving these trusted figures, the researcher believes communities will be more likely to engage actively and adopt climate-resilient behaviors.
6. The researcher is convinced that early education plays a pivotal role in shaping perceptions and actions on climate change. Integrating climate change concepts into school curricula, tailored to urban and rural realities, is seen as a long-term investment in creating environmentally conscious citizens.
7. The researcher emphasizes that effective climate change awareness must be supported by sound government policies. Policies that promote green infrastructure in urban areas and sustainable agricultural practices in rural settings are vital to bridging the awareness-action gap. The researcher believes policy alignment will create a practical framework for communities to adopt meaningful changes.
8. Recognizing the influence of technology and media, the researcher believes these tools should be harnessed to disseminate climate change information effectively. Digital platforms can reach urban populations, while traditional channels like radio and community gatherings remain impactful in rural areas. This dual approach ensures inclusivity and accessibility.
9. The researcher stresses the importance of periodically assessing awareness levels to refine interventions. By incorporating community feedback, the researcher believes programs can remain relevant, responsive, and reflective of the evolving needs of both urban and rural populations.

Compliance with Ethical Standards

The researcher followed ethical standards such as informed permission, privacy, and debriefing when collecting the responses and identities of the participants. Since they had the option to participate or not in the study, participants were not compelled to take part. Those who consent to participate in the study were sent a survey questionnaire along with information about the study's objectives and methods. However, the participants were informed by the researcher that they have the option to withdraw from the study or refuse to participate, and that doing so will not compromise their confidentiality, even if they have already completed the informed consent form. Moreover, the participants were given the assurance by the researcher that whatever information they submitted would only serve the purpose of the study and would remain anonymous.

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Tailoring Calculus Instruction: A Study on the Relationship between Learning Styles and Assessments of Differentiated Instruction for Personalized Teaching Strategies

Dr. Jonathan Edwin V. Remegia¹

Abstract

The study investigated the correlations among students' learning styles, and their assessments of the elements of differentiated instruction utilized in teaching Calculus. The research was focused on the educational landscape of 108 STEM students at Talisay Senior High School in Tumaway, Talisay, Batangas during a specific academic year. This research aimed to provide a comprehensive overview of the students' experiences within a specific timeframe, with the outcomes intended to enhance the customization of educational content, process, product, and learning environment to better suit individual student preferences. The data collection involved the administration of a self-constructed questionnaire to assess the elements of differentiated instruction, along with the utilization of VARK version 8.01 to identify the students' learning styles.

A quantitative research method was used to examine the associations between students' learning styles and their assessments of the elements of differentiated instructions within the group of 108 STEM students. A convenience sampling technique was employed to select the participants, specifically focusing on the STEM students who are part of the researcher's academic institution and currently enrolled in the Calculus subject.

According to the results, there is a significant relationship between students' learning styles and their assessments of the elements of differentiated instructions in terms of content, process, product, and learning environment.

Based on the findings, the researcher suggested a customized teaching strategies for diverse learners in Calculus.

Keywords: Differentiated Instruction, Visual, Auditory, Read/Write, Kinesthetic

Introduction

Differentiated instruction recognizes the inherent diversity among learners. Students have unique learning styles, strengths, and preferences. Some students grasp concepts better through visual aids, while others may excel with auditory explanations (Chetty et al., 2019). Moreover, students' progress at different paces, making it essential to tailor teaching methods to individual learning speeds. Differentiated instruction emphasizes

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the use of a variety of teaching strategies that cater to different learning styles and paces. It promotes an inclusive environment where every student can thrive academically. By recognizing and accommodating these differences, educators can create a more engaging and effective learning experience for all students.

In the Philippines, the educational system is actively adapting to the diverse needs of learners. The Department of Education (DepEd) in 2022 has implemented initiatives and policies related to differentiated instruction, reflecting the national commitment to providing quality education to all students. These initiatives aim to enhance the teaching-learning process by recognizing and accommodating the diverse learning styles and abilities of students. By integrating differentiated instruction into the national curriculum, the Philippines is taking proactive steps to create an inclusive educational environment.

Despite the growing recognition of the importance of differentiated instruction, there exists a research gap concerning its application in teaching Calculus, particularly in the context of specific learning styles. While numerous studies have explored differentiated instruction in general, few have delved deeply into its implementation within the domain of Calculus education. Understanding how different learning styles—visual, auditory, read/write, and kinesthetic—affect the comprehension and retention of Calculus concepts is a significant gap in the existing literature.

In the context of Calculus education, students often struggle with abstract concepts and complex problem-solving (Case & Speer, 2021). Different learning styles can significantly influence how students' approach and understand these intricate mathematical ideas. Visual learners may benefit from graphical representations of functions and derivatives, while auditory learners might grasp concepts better through verbal explanations and discussions. Read/write learners may excel when provided with written explanations and textbooks, whereas kinesthetic learners could comprehend Calculus principles through interactive, hands-on activities.

Several studies have examined the impact of differentiated instruction on high school mathematics performance (Xue & Schimann, 2021; Hattie et al., 2021; Fehlaue et al., 2021; Firnberg & Steward, 2022; Leung & Yang, 2022). While their findings were significant, the studies did not specifically focus on calculus education, nor did they investigate the influence of different learning styles.

By examining the impact of tailored teaching methods on the understanding and performance of Calculus, this research aimed to contribute valuable insights to both the fields of mathematics education and differentiated instruction. The study will not only provide practical strategies for educators but also add theoretical depth to the existing body of knowledge, enhancing our understanding of how differentiated instruction can be effectively employed in advanced mathematical education.

Methodology

Research Design

For this study, the researcher used the quantitative research method. Quantitative research, as described by Cresswell (2020), is a technique utilized to explore the connections among variables through the collection and examination of data, typically employing statistical methods. This process entails the selection of a representative group of participants, the measurement of variables using standardized tools, and the analysis of data using statistical assessments to formulate conclusions.

Research Locale

The study was conducted at Talisay Senior High School in Tumaway, Talisay, Batangas. The population of the study comprised 108 STEM students enrolled in the school. This locale and population were chosen to ensure a focused and specific sample that aligned with the research objectives.

Research Participants

The respondents of the study were the 108 STEM students at Talisay Senior High School, who were considered as a main provider of data for this research. The data collected included evaluation of the elements of differentiated instruction in teaching Calculus. Additionally, their learning styles were determined through the utilization of VARK version 8.01 questionnaire. A convenience sampling technique was employed to select the participants for this study, specifically focusing on the STEM students who are part of the researcher's academic institution and currently enrolled in the Calculus subject.

Research Instrument

The survey instrument was chosen for quantitative assessment due to its cost-effective design and the ease with which conclusions can be extrapolated from a sample to a larger population. A survey additionally offered a swift turnaround time for gathering data and discussing characteristics of a population from a relatively limited sample of individuals (Cresswell, 2021).

Additionally, for the specific identification of students' learning styles, the VARK questionnaire version 8.01 was utilized. Developed by Neil D. Fleming and Colleen E. Mills, the VARK questionnaire is a well-established tool widely used in educational research. Its validity and reliability have been demonstrated through numerous studies, making it a trusted method for identifying diverse learning preferences. This standardized instrument aided in precisely categorizing students into visual, auditory, read/write, and kinesthetic learning styles, providing a nuanced understanding of their individual preferences and needs.

To test the reliability, the researcher performed pilot testing of the questionnaire on a cohort of 31 STEM students from Talisay High School, a privately owned educational institution located in Talisay, Batangas. It is worth noting that these 31 STEM students were distinct from 108 participants included in the study sample. The Cronbach Alpha coefficient was calculated to evaluate the internal consistency of the item statement. The resulting value of 0.884, which exceeded the threshold of 0.70, indicated that the questionnaire was sufficiently reliable.

Data Gathering Procedure

Upon completion of the validation and reliability testing of the questionnaire, the final version was administered to the respondents after obtaining prior permission from the principal of Talisay Senior High School. The permission granted allowed all 108 students to participate in the survey. The survey questionnaire was personally administered by the researcher, who provided an explanation of the study's objectives and the estimated completion time. Following the survey, the researcher compiled the data and meticulously analyzed it using appropriate statistical tools. Primary data was complemented with references to secondary sources like published articles and studies to validate survey findings.

Results and Discussion

Table 1 illustrates those 41 female responses in the VARK questionnaire, accounting for 37.96% have been identified as auditory learners, indicating a preference for auditory learning among the majority of female respondents. Conversely, 35 male responses in the VARK questionnaire, comprising 32.41%, are categorized as kinesthetic learners, showing a predominant inclination towards kinesthetic learning among male respondents.

Table 1 Description of Learners according to their Learning Styles				
Learning Style	Male	Female	Frequency	Percentage (%)
Visual	8	5	13	12.04
Auditory	-	41	41	37.96
Read/Write	13	6	19	17.59
Kinesthetic	35	-	35	32.41
TOTAL	56	52	108	100

Multiple studies have shown that male students exhibited a higher inclination to utilize the kinesthetic learning style than their female counterparts, which in turn favored the auditory learning style (Wilson & Wilson, 2022; Adescope and Nesbit, 2022; Kim and Lee, 2022; Ahmed and Khan, 2023; Lim and Johnson, 2023; Patel & Patel, 2023). Furthermore, Garcia and Rodriguez (2022) discovered that the variation in learning approaches was particularly noticeable in the fields of science and mathematics. This indicates that the differences in learning styles based on gender may also differ across various academic subjects.

Table 2 Students' Assessment of the Elements of Differentiated Instruction In Terms of Content				
Indicator	Mean	SD	VI	EI
1. Match Calculus lessons to match varying readiness levels that ensures all students grasp fundamental concepts.	3.34	0.71	SA	HP
2. Provide varied materials other than the standard text for handling differences in computing levels.	3.27	0.68	SA	HP
3. Provide supplementary materials that caters to different learning profiles such as visual aids for visual learners or interactive simulations for kinesthetic learners.	3.49	0.69	SA	HP
4. Offer additional readings or advanced problems for students who require more challenging tasks in Calculus.	3.46	0.70	SA	HP
5. Modify examples and exercises to relate to real-life scenarios that enhances students' understanding of complex Calculus concepts.	3.53	0.71	SA	HP
Overall	3.44	0.70	SA	HP

Legend: SD – Standard Deviation; VI – Verbal Interpretation; SA – Strongly Agree; EI – Extended Interpretation; HP- Highly Practiced

Table 2 shows that Differentiated Instruction in terms of content is highly practiced as revealed by an overall Mean of 3.44. Based on the results, it is evident that the students strongly agree that lessons in Calculus should be tailored to their individual readiness levels to enhance their understanding of key concepts.

Highest Mean was indicator 5, “modify examples and exercises to relate to real-life scenarios that enhances students’ understanding of complex Calculus concepts” as evidenced by a Weighted Mean of 3.53 or Highly Practiced. According to Arranz (2023), the act of connecting mathematics to real-life situations can effectively reduce the abstractness of the subject matter and increase student engagement.

Lowest Mean was indicator 2, “provide varied materials other than the standard text for handling differences in computing levels” as evidenced by a Weighted Mean of 3.27 or Highly Practiced. According to Smith and Johnson (2021), diversifying the materials utilized in mathematics instruction, such as hands-on tools, visuals, and real-world examples, has been linked to enhanced academic performance and more positive attitudes toward the subject.

Table 3 Students’ Assessment on the Elements of Differentiated Instruction In Terms of Process				
Indicator	Mean	SD	VI	EI
1. Incorporate varied teaching methods, such as lectures, discussions, and hands-on activities that accommodates different learning styles.	3.50	0.75	SA	HP
2. Implement peer-to-peer learning and collaborative projects that encourage students to learn from one another.	3.53	0.77	SA	HP
3. Allow flexibility in pacing that enable students to progress through Calculus topics at their own comfortable speed.	3.36	0.71	SA	HP
4. Provide differentiated instruction through multimedia resources which include videos, simulations, and interactive software.	3.35	0.75	SA	HP
5. Allow student multiple options for learning and understanding information.	3.34	0.75	SA	HP
Overall	3.42	0.75	SA	HP

Legend: SD – Standard Deviation; VI – Verbal Interpretation; SA – Strongly Agree; EI – Extended Interpretation; HP- Highly Practiced

Table 3. shows that Differentiated Instruction in terms of PROCESS is Highly Practiced as revealed by an overall Mean of 3.42. According to the findings, students have expressed a strong agreement towards integrating diverse instructional approaches to cater to the needs of various learning styles.

Highest Mean was indicator 2, “implement peer-to-peer learning and collaborative projects that encourage students to learn from one another” as evidenced by a Weighted Mean of 3.53 or Highly Practiced. Tarr and Stevens (2022) found that students who participated in peer learning and collaborative tasks demonstrated a deeper understanding of math concepts compared to those who did not engage in such activities.

Lowest Mean was indicator 5, “allow student multiple options for learning and understanding information” as evidenced by a Weighted Mean of 3.34 or Highly Practiced. According to a study by Johnson and Miller (2022), students who experienced different teaching approaches, such as direct instruction, problem-based learning, and cooperative learning, exhibited enhanced comprehension and a more positive outlook on mathematics.

Table 4	Students' Assessment on the Elements of Differentiated Instruction In Terms of Product			
Indicator	Mean	SD	VI	EI
1. Allow students to showcase their understanding of Calculus concepts through diverse forms such as presentations, reports, or creative projects.	3.38	0.74	SA	HP
2. Encourage students to create portfolios that demonstrate their progress and mastery of various Calculus topics.	3.36	0.77	SA	HP
3. Provide options for assessments that allow students to choose between traditional tests, practical applications, or research-based projects.	3.30	0.78	SA	HP
4. Facilitate student-led discussions or debates where they can articulate their understanding and viewpoints on Calculus topics.	3.22	0.79	A	P
5. Incorporate self-assessment tools that enable students to evaluate their own work and set personal goals for improvement.	3.52	0.67	SA	HP
Overall	3.36	0.75	SA	HP

Legend: SD – Standard Deviation; VI – Verbal Interpretation; SA – Strongly Agree; EI – Extended Interpretation; HP- Highly Practiced

Table 4. shows that Differentiated Instruction in terms of PRODUCT is Highly Practiced as revealed by an overall Mean of 3.36. Based on the results, it is evident that students have a strong consensus regarding the preferred methods to showcase their comprehension of Calculus principles.

Highest Mean was indicator 5, “incorporate self-assessment tools that enable students to evaluate their own work and set personal growth for improvement”. as evidenced by a Weighted Mean of 3.52 or Highly Practiced. According to Sun et al. (2022), students who utilized the self-assessment tools during their math problem-solving process were able to recognize their strengths and weaknesses, resulting in the implementation of more effective strategies and higher success rates.

Lowest Mean was indicator 4, “facilitate student-led discussions or debates where they can articulate their understanding and viewpoints on Calculus topics” as evidenced by a Weighted Mean of 3.22 or practiced. The study conducted by Hefel (2021) found an increase in academic performance because of student-led discussions.

Table 5	Students' Assessment of the Elements of Differentiated Instruction in Terms of Learning Environment			
Indicator	Mean	SD	VI	EI
1. Arrange the classroom seating to facilitate group discussions and collaborative activities that promote interactive learning.	3.37	0.77	SA	HP
2. Create a supportive and inclusive atmosphere where students feel comfortable expressing their thoughts and asking questions.	3.60	0.74	SA	HP
3. Establish an environment that allows students to feel more connected to the school, teachers, and school personnel.	3.30	0.74	SA	HP
4. Implement a flexible classroom layout that can be easily rearranged based on the day's planned activities that can accommodate different instructional needs.	3.70	0.74	SA	HP
5. Encourage open communication and active participation that nurture a positive learning environment where students feel valued and motivated.	3.41	0.76	SA	HP
Overall	3.48	0.75	SA	HP

Table 5. shows that Differentiated Instruction in terms of LEARNING ENVIRONMENT is Highly Practiced as revealed by an overall Mean of 3.48. Based on the findings, it is evident that students hold a strong agreement in the necessity of arranging seating in a manner that promotes group discussions and collaborative activities, fostering interactive learning.

Highest Mean was indicator 4, “implement a flexible classroom layout that can be easily rearranged based on the day’s planned activities that can accommodate different instructional needs” as evidenced by a Weighted Mean of 3.70 or Highly Practiced. Green and Jones (2022) explored the benefits of a flexible classroom layout for mathematics teachers and found that a well-structured classroom design, which can be easily adjusted, supports effective teaching methods, encourages student collaboration, and enhances the overall learning experience for students.

Lowest Mean was indicator 3, “establish an environment that allows students to feel more connected to the school, teachers, and school personnel” as evidenced by a Weighted Mean of 3.30 or Highly Practiced. Schonert-Reichl and Colasante (2021) discovered that students who established strong connections with their teachers demonstrate increased engagement and motivation in the classroom, resulting in enhanced academic performance and a heightened sense of belonging.

Table 6	Test of Significant Relationship between the Students' Learning Styles and their Assessments of the Elements of Differentiated Instruction Utilize in Teaching Calculus			
Variables	Computed F-value	p-value	Decision H_0	Conclusion
Content and Learning Styles	16.755	0.034	Reject null	Significant
Process and Learning Styles	20.393	0.015	Reject null	Significant
Product and Learning Styles	18.994	0.024	Reject null	Significant
Learning Environment and Learning Styles	16.800	0.049	Reject null	Significant

As indicated in the table, upon conducting a chi-square test with a significance level of 0.05, it was determined that the p-value for each variable surpassed the set probability level, as evidenced by the results of 0.034, 0.015, 0.024 and 0.049. Based on the findings, it can be inferred that there is a significant relationship between students' learning styles and their assessments of the elements of differentiated instruction in terms of content, process, product, and learning environment. Consequently, this prompts the rejection of the null hypothesis, which posits that there is no significant relationship between the students' learning styles and their assessments of the elements of differentiated instruction utilized in teaching Calculus.

Multiple studies underscore the significance of taking learning preferences into account when employing differentiated instruction to involve and assist all students in the mathematics classroom (Wang & Hart, 2021; Sayin & Yavuz, 2022; Cinar & Bozkurt, 2022; Whiting & Spence, 2023; Reddy & Wells, 2023).

ELEMENTS OF DIFFERENTIATED INSTRUCTION	VISUAL (V)	AUDITORY (A)	READ/WRITE (R)	KINESTHETIC (K)
CONTENT (C)	-Provide visual aids such as graphs, diagrams, and illustrations to explain concepts and problems in Calculus. -Use videos and animations to demonstrate graphical transformations and real-world applications of Calculus.	-Use verbal explanations and discussions to teach Calculus concepts and problem-solving strategies. -Provide opportunities for students to explain their thinking and reasoning out loud.	-Provide written instructions, examples, and practice problems for students to read and solve independently. -Encourage notetaking and use of graphic organizers to organize and summarize concepts.	-Provide hands-on activities such as building models or designing experiments to demonstrate Calculus concepts. -Allow students to physically manipulate objects to understand concepts such as limits and derivatives.

PROCESS (Pr)	-Use graphic organizers, mind maps, and visual organizers to help students organize and understand the steps of solving a Calculus problem. -Allow for group work and pair- shares to encourage visual discussions.	-Encourage students to explain their thought process out loud and engage in peer discussions. -Use oral presentations and debates to encourage critical thinking and argumentation.	-Provide written step-by-step instructions for solving problems and allow students to work at their own pace. -Use technology such as online tutorials and interactive whiteboards to provide written explanations and practice problems.	-Incorporate hands-on activities, such as creating graphs using graphing calculators or programming applications, to deepen understanding of Calculus concepts.
PRODUCT (Pd)	-Allow students to create visuals representations of Calculus concepts such as graphs, diagrams, and animations. -Assign projects or presentations that incorporate visuals to demonstrate understanding.	-Assign oral presentations or debates where students can explain a concept or problem to their peers. -Allow students to record their explanations using audio or video.	-Assign written responses to problem solving or concept questions. -Encourage students to summarize their understanding in written form using charts, diagrams, or text.	-Assign hands-on projects such as building models or designing experiments to demonstrate understanding of Calculus concepts. -Allow students to present their projects in a hands-on and interactive manner.
LEARNING ENVIRONMENT (LE)	-Provide a visually stimulating classroom with colorful posters and charts related to Calculus concepts. -Use technology and online resources to provide visual explanations and practice problems.	-Encourage discussions and debates in the classroom. -Use technology such as podcasts and audio recordings to provide additional explanations and examples.	-Provide a quiet and organized learning environment with access to written materials such as textbooks, handouts, and online resources. -Create a designated space for notetaking and encourage the use of graphic organizers.	- Incorporate movement and hands-on activities into the classroom. Allow students to work in groups or pairs to physically manipulate objects and create models to demonstrate concepts. -Allow flexible seating options to accommodate different learning styles.

Figure 1. Customized Teaching Strategies for Diverse Learners in Calculus Classes

Figure 1 represents the customized teaching strategies for Calculus classes developed by the researcher for visual, auditory, read/write, and kinesthetic learners. These strategies are aligned with the elements of differentiated instruction, which include content, process, product, and learning environment.

Conclusion

Female respondents prefer auditory learning, whereas male respondents show a preference for kinesthetic learning. Respondents expressed a strong agreement and assessed the item statements for differentiated instructions in terms of content, process, product, and learning environment as Highly Practiced. Statistical associations have been found between students' assessment of the elements of differentiated instructions and their learning styles.

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Study on Educational Implication of E-Learning at Elementary Level of Education In Odisha State, India

Dr. Sahadev Behera¹

1. Introduction

1.1 Background

Education plays a crucial role in the socio-economic development of any region, and elementary education forms the foundation for lifelong learning and skill development. In India, ensuring quality education at the elementary level has been a significant priority for both government and private sectors, particularly in states like Odisha, where education has historically faced challenges related to accessibility, quality, and infrastructure. Despite substantial progress in recent decades, Odisha's educational system continues to grapple with issues such as high dropout rates, poor learning outcomes, and disparities between urban and rural areas.

In recent years, however, the growing presence of Information and Communication Technology (ICT) has offered a promising solution to these challenges. E-learning, which refers to the use of digital technologies and online platforms for education, has emerged as a transformative tool in bridging gaps and expanding access to quality education. Globally, e-learning has demonstrated significant potential in enhancing student engagement, improving learning outcomes, and providing equitable access to educational resources. In India, e-learning has been increasingly recognized as an effective way to overcome the limitations of traditional classroom teaching, particularly in remote and underserved areas.

Odisha, a state located in the eastern part of India, has made strides in incorporating digital technologies into its education system. Through initiatives like the "Odisha State Open School" and the Digital India Campaign, the state government aims to improve access to educational content, digital literacy, and e-learning tools. These efforts are particularly crucial at the elementary level, where foundational skills in literacy, numeracy, and critical thinking are developed.

However, the integration of e-learning at the elementary level in Odisha remains a complex and multifaceted issue. While urban schools may have the infrastructure to support digital learning, rural and tribal areas continue to face challenges such as poor internet connectivity, inadequate digital devices, and limited digital literacy among both teachers and students. The adoption of e-learning in these regions is not just about access to technology but also about how it is effectively integrated into the curriculum, how teachers are trained to use digital tools, and how communities are engaged in this digital transformation.

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1.2 Problem Statement

The implementation of e-learning in elementary education in Odisha holds great promise, but it also presents significant challenges. While some urban and semi-urban schools have begun to adopt e-learning tools and digital platforms, a vast majority of schools in rural and tribal areas continue to face barriers in accessing and using these resources. The digital divide—marked by disparities in access to technology, internet connectivity, and digital literacy—remains one of the major obstacles to ensuring that e-learning benefits all students equitably.

At the same time, e-learning has the potential to address many of the long-standing issues in Odisha's educational system, such as teacher shortages, lack of instructional materials, and the need for personalized learning experiences. By providing teachers with resources to improve their teaching methods and by offering students a more engaging and interactive way of learning, e-learning could serve as a powerful tool for educational reform in the state. However, for e-learning to be effective at the elementary level, it must be contextualized to the specific needs and realities of Odisha's educational landscape.

1.3 Research Objectives

This study aims to explore the educational implications of e-learning at the elementary level in Odisha, focusing on both the opportunities and challenges that come with its implementation. The primary objectives of the research are as follows:

- 1 To examine the role of e-learning in enhancing the quality of elementary education in Odisha, particularly in terms of student engagement, learning outcomes, and teacher effectiveness.
- 2 To identify the key barriers and challenges to the widespread adoption and effective use of e-learning in rural and tribal schools in Odisha.
- 3 To assess the preparedness of teachers, students, and communities to integrate digital technologies into the classroom.
- 4 To explore the impact of e-learning on reducing educational disparities, particularly in marginalized and underserved communities in Odisha.
- 5 To provide recommendations for policymakers, educators, and stakeholders on how to improve and expand e-learning initiatives at the elementary level in Odisha.

1.4 Research Questions

To address the research objectives, this study will explore the following key research questions:

- 1 How does e-learning impact the teaching and learning outcomes at the elementary level in Odisha?
- 2 What are the main challenges and barriers to the implementation of e-learning in rural and tribal areas of Odisha?
- 3 How can e-learning contribute to reducing the educational divide between urban and rural schools in Odisha?

- 4 What strategies and interventions can be adopted to improve the infrastructure, training, and content required for effective e-learning in Odisha's elementary education system?
- 5 How do teachers, students, and parents perceive e-learning, and what factors influence their willingness and ability to engage with digital learning platforms?

1.5 Significance of the Study

This research is significant in several ways. First, it provides an in-depth understanding of how e-learning is transforming elementary education in Odisha, a state that faces unique challenges related to infrastructure, socio-economic conditions, and digital literacy. By exploring the impact of e-learning on teaching and learning, this study contributes valuable insights into the potential of digital education to improve educational outcomes in rural and underserved areas.

Second, the study highlights the specific barriers that impede the adoption of e-learning in Odisha, offering actionable recommendations for overcoming these challenges. These findings are crucial for policymakers and education authorities who are working to integrate technology into the state's education system. By addressing these barriers and creating an enabling environment for e-learning, the state can foster an education system that is more inclusive, equitable, and capable of meeting the needs of all students.

Lastly, the research provides practical recomme

2. E-Learning in Odisha

2.1 Overview of the Educational Landscape in Odisha

Odisha, a state in eastern India, is home to a diverse population, including large rural and tribal communities. While there has been significant progress in the state's education system over the past few decades, challenges persist, especially at the elementary education level. According to data from the Government of Odisha, the state has made considerable strides in improving enrollment rates, reducing dropout rates, and building educational infrastructure. However, issues such as poor quality of education, limited access to resources, and significant rural-urban disparities remain.

In recent years, the Odisha state government has launched a number of initiatives to enhance the quality of education and provide greater access to digital resources. The increasing integration of Information and Communication Technology (ICT) into schools, supported by both state and central government initiatives, is one of the key developments aimed at transforming education in the state.

2.2 Government Initiatives to Promote E-learning in Odisha

The Government of Odisha, recognizing the need to modernize and digitalize education, has implemented several key initiatives that focus on enhancing educational access and improving the quality of learning through e-learning. Some of the major initiatives include:

1. Odisha Knowledge Corporation Limited (OKCL):
 - o Established to promote digital literacy and bridge the gap between education and technology, OKCL has provided e-learning resources and digital education tools to schools across the state. It has worked

towards creating a knowledge-driven society by offering digital learning content, including educational videos, virtual classrooms, and online tests.

2. DIKSHA (Digital Infrastructure for Knowledge Sharing):

- o DIKSHA is a national initiative launched by the Ministry of Education, which is also widely used in Odisha. It offers digital resources for teachers and students, such as lesson plans, interactive courses, and assessments. Through DIKSHA, teachers in Odisha can access training modules and teaching materials that help integrate technology into classrooms.

3. Smart Classrooms and e-Content Development:

- o The state government has supported the development of smart classrooms in select schools, especially in urban areas. These classrooms are equipped with digital projectors, computers, and internet access, facilitating the use of multimedia and interactive learning resources.
- o Additionally, Odisha has invested in the development of localized e-content, ensuring that students have access to region-specific learning material in both Odia and English.

4. Odisha State Open School (OSOS):

- o The Odisha State Open School is an initiative aimed at providing education through a distance learning model. This platform offers students access to a wide range of digital resources, including online lectures, study materials, and examinations. While initially aimed at higher education, OSOS has been expanding its reach to the elementary and secondary education sectors.

5. Internet Connectivity and Digital Infrastructure Development:

- o Under the “Digital India” and “BharatNet” initiatives, efforts have been made to improve internet connectivity in rural and tribal areas of Odisha. This connectivity is crucial for supporting e-learning, particularly in remote schools where internet access was previously limited or unavailable.

6. e-Pathshala and Swayam Prabha:

- o Initiatives like **e-Pathshala** (launched by the Ministry of Education) and **Swayam Prabha** provide online education resources that are available for free. These platforms offer digital textbooks, video lectures, and interactive learning tools that can be used by both students and teachers in Odisha to supplement traditional learning methods.

2.3 Current Use of E-learning in Schools in Odisha

While e-learning has seen an increasing presence in Odisha, its adoption remains uneven across the state, with urban areas typically having better access to digital infrastructure and resources compared to rural and tribal areas.

1. Urban vs. Rural Divide:

- o In urban schools, e-learning tools like interactive whiteboards, computers, and digital textbooks are more commonly used. These schools are generally equipped with better internet connectivity, making it easier for teachers to integrate e-learning into their daily lessons. Urban students often have

access to digital platforms such as DIKSHA, which allow them to learn at their own pace outside of the classroom.

- o In rural and tribal schools, however, the picture is different. While some schools in more developed districts have begun using e-learning tools, many others still lack the necessary infrastructure—such as computers, projectors, and reliable internet access—to implement digital learning. This digital divide exacerbates educational inequalities and prevents rural and tribal students from fully benefiting from e-learning opportunities.

2. Teacher Training and Capacity Building:

- o One of the challenges faced by schools in Odisha, particularly in rural areas, is the lack of digital literacy among teachers. Many teachers are not adequately trained to integrate technology into their teaching practices. Although training programs are available through platforms like DIKSHA and OKCL, the scale of the training programs and their reach remain limited. Additionally, many teachers are unfamiliar with how to use e-learning platforms effectively in the classroom, which can hinder the integration of technology into teaching.
- o Several training programs have been initiated, but the process is slow, and the lack of continuous professional development in this area means that teachers may struggle to adapt to new technologies. As a result, even when digital resources are available, they are often underutilized.

3. Engagement with Students:

- o E-learning in Odisha has demonstrated potential in improving student engagement, particularly in urban schools. Platforms like DIKSHA offer interactive content such as videos, quizzes, and games, which help students understand concepts in a more engaging and participatory way.
- o However, student engagement is lower in rural areas due to a lack of familiarity with digital tools and inconsistent access to the internet. In these regions, the use of e-learning resources is often limited to classroom hours, and students may not have access to digital devices or the internet at home for supplementary learning.

2.4 Barriers to Effective E-learning Implementation in Odisha

Despite the potential of e-learning to improve educational outcomes in Odisha, several barriers impede its widespread adoption and effective implementation:

1. Infrastructure Challenges:

- o Many schools, especially in rural and tribal areas, face challenges related to poor internet connectivity, inadequate electricity supply, and insufficient hardware (such as computers, tablets, or interactive whiteboards). This makes it difficult to implement e-learning programs consistently across schools.

2. Digital Divide:

- o The digital divide remains a significant obstacle in Odisha. While urban areas and some semi-urban districts have better access to technology, rural and tribal regions continue to lag behind. Students from low-income families often do not have access to smartphones or computers at home, limiting their ability to engage with online learning platforms outside school hours.

3. Limited Digital Literacy:

- o Both students and teachers in many parts of Odisha lack the basic digital literacy needed to make effective use of e-learning tools. This includes not only the ability to navigate online platforms but also an understanding of how to use digital resources for learning and teaching.

4. Teacher Training and Support:

- o The lack of comprehensive and continuous training for teachers on using e-learning tools effectively limits the success of digital education initiatives. In many cases, teachers are either not trained to use technology or are only given brief training sessions that do not equip them with the skills needed for ongoing integration of e-learning into their pedagogical practices.

5. Socio-economic Constraints:

- o For many students, especially in rural areas, a lack of electricity, poor network coverage, and limited access to digital devices are major constraints. Many families cannot afford the necessary technology, and for some, the cost of internet data or electricity may be prohibitive.

6. Content Localization:

- o While initiatives like DIKSHA and e-Pathshala provide high-quality digital resources, much of the content is not always available in regional languages or in culturally relevant formats. The lack of localized content makes it difficult for students in Odisha, especially those from tribal and rural communities, to fully benefit from e-learning platforms.

2.5 Future Prospects of E-learning in Odisha

Despite the challenges, the future of e-learning in Odisha holds promise. With continued investment in infrastructure, teacher training, and content development, the state can bridge the digital divide and provide more equitable access to education. Some of the key areas for future development include:

- **Expansion of Broadband Connectivity:** Ensuring that all schools, particularly those in remote and rural areas, have reliable internet access.
- **Improved Teacher Training:** Scaling up training programs to equip teachers with the skills to use digital tools effectively and integrate them into the curriculum.
- **Localized Content:** Developing more regional and culturally relevant e-learning content in local languages to ensure inclusivity.
- **Public-Private Partnerships:** Collaborating with tech companies and NGOs to provide low-cost technology solutions and expand the reach of e-learning initiatives.

4. Findings and Discussion

This section presents the key findings of the study on the educational implications of e-learning at the elementary level in Odisha, followed by a detailed discussion of these findings. The findings are based on the data collected from surveys, interviews with teachers, students, and parents, and classroom observations in various urban and rural schools across the state. The analysis of these findings sheds light

on both the opportunities and challenges related to the integration of e-learning in elementary education in Odisha.

4.1 Findings

4.1.1 Impact of E-learning on Teaching and Learning Outcomes

- **Enhanced Student Engagement:**

In urban schools, the use of e-learning tools has significantly improved student engagement. Interactive multimedia content, such as educational videos, quizzes, and digital games, has made lessons more dynamic and engaging. Teachers reported that students were more attentive and participated actively when digital tools were used in the classroom. For example, in a pilot program in Bhubaneswar, students exhibited better comprehension and retention of concepts in subjects like mathematics and science when interactive digital resources were incorporated.

- **Improvement in Learning Outcomes:**

While there was limited data on long-term academic performance, early observations indicated that e-learning had a positive impact on student learning outcomes in subjects like science, mathematics, and English. In schools where e-learning platforms like DIKSHA were used, students scored better on formative assessments, and their problem-solving skills showed improvement. In one case, students in an urban school scored 15-20% higher on post-test scores after participating in lessons that involved digital learning tools compared to traditional chalk-and-talk methods.

- **Personalized Learning:**

E-learning platforms provided an opportunity for personalized learning. Teachers noted that students were able to learn at their own pace, accessing supplementary materials that suited their learning needs. For example, students who struggled with specific topics in mathematics could revisit lessons on DIKSHA or watch educational videos that explained concepts in simpler terms.

4.1.2 Barriers to Effective E-learning in Rural and Tribal Areas

- **Infrastructure Limitations**

In rural and tribal areas, significant barriers to effective e-learning were identified. These include unreliable electricity supply, poor internet connectivity, and lack of hardware like computers and projectors. In interviews with teachers from rural schools in districts like Kalahandi and Malkangiri, it was reported that many schools had limited or no access to the internet, which made it nearly impossible to implement e-learning on a regular basis. In some cases, even where internet was available, slow speeds and frequent outages rendered online lessons ineffective.

- **Digital Divide**

A pronounced digital divide exists between urban and rural schools. While urban schools in cities like Bhubaneswar had the necessary infrastructure (computers, smartboards, internet), rural schools often lacked even the basic resources. In several rural schools, students did not have access to individual devices, making

it difficult to engage in personalized or self-paced learning. This digital divide exacerbates educational inequalities and limits the potential benefits of e-learning in rural and tribal regions.

- **Affordability Issues**

Many students in rural Odisha, especially those from economically disadvantaged families, do not own smartphones or other digital devices. Even if e-learning platforms like DIKSHA or e-Pathshala are accessible in schools, students often cannot engage with them outside of school hours due to the lack of devices at home. Additionally, internet data costs pose a significant barrier for many families. As a result, e-learning becomes a supplementary tool rather than a core part of students' learning experiences.

4.1.3 Teacher Preparedness and Training Needs

- **Lack of Digital Literacy Among Teachers**

A recurring theme across both urban and rural schools was the insufficient digital literacy among teachers. While some teachers in urban areas were able to effectively use e-learning tools, many rural teachers lacked the necessary skills to integrate technology into their classrooms. A survey of 50 teachers revealed that over 60% felt inadequately trained in using digital resources for teaching. Many teachers expressed a desire for more comprehensive and continuous training programs, especially in how to use e-learning platforms to create interactive lessons, monitor student progress, and integrate digital content into traditional lesson plans.

- **Need for Continuous Professional Development**

Teachers who had received initial training in e-learning tools, like DIKSHA, reported that the training was often brief and lacked follow-up support. In interviews, some teachers expressed frustration at the lack of ongoing professional development, which left them unsure about how to address new digital teaching challenges or how to keep up with rapidly evolving technologies.

4.1.4 Student and Parent Perceptions of E-learning

- **Positive Student Feedback in Urban Areas**

Students in urban schools expressed positive feedback about e-learning tools. They found digital content engaging and appreciated the interactive nature of lessons. Many students mentioned that they could revisit lessons and materials online, which helped them understand difficult concepts. A majority of students (over 75%) surveyed in urban schools indicated that they preferred learning through videos and interactive platforms as compared to traditional textbook-based learning.

- **Parental Support and Awareness**

While urban parents were generally supportive of e-learning, parents in rural areas were less informed about the benefits of digital education. In rural areas, many parents were concerned about

the affordability of devices and internet services, while others did not see the need for digital learning tools, particularly for younger children. A significant number of parents in rural areas were unfamiliar with e-learning platforms like DIKSHA and were unaware of how they could support their children's learning at home. This lack of awareness limits the potential for e-learning to make a meaningful impact in these communities.

4.2 Discussion

4.2.1 The Potential of E-learning to Enhance Educational Quality

The findings suggest that e-learning holds significant potential to enhance the quality of elementary education in Odisha, particularly in urban schools where the infrastructure supports its use. The positive impacts on student engagement, personalized learning, and academic performance observed in urban schools indicate that e-learning can be an effective tool for improving educational outcomes. The use of multimedia, interactive content, and digital assessments can make learning more engaging and accessible to students.

However, the unequal access to digital resources between urban and rural areas is a major concern. The disparity in infrastructure, digital devices, and internet connectivity between urban and rural areas creates a situation where the benefits of e-learning are unevenly distributed. This digital divide risks exacerbating existing educational inequalities in the state, as rural and tribal students are likely to miss out on the advantages that digital education offers.

To address these disparities, a more focused effort is needed to improve infrastructure in rural areas, particularly in terms of internet connectivity and access to digital devices. Government initiatives such as the expansion of broadband infrastructure through the "BharatNet" program can play a critical role in bridging the digital divide.

4.2.2 The Need for Comprehensive Teacher Training

The findings indicate that teacher preparedness is a crucial factor in the successful implementation of e-learning. While teachers in urban areas seem to have adapted well to digital tools, those in rural areas often lack the necessary skills and knowledge to use e-learning resources effectively. The absence of continuous professional development programs for teachers further hampers the integration of e-learning into the classroom.

A comprehensive and ongoing teacher training program is essential to equip educators with the skills needed to effectively use digital resources. These training programs should not only focus on how to use specific tools but also on pedagogical strategies for integrating technology into lesson planning and classroom management. Furthermore, professional development should be continuous, with teachers receiving regular updates on new tools, platforms, and best practices for using technology in education.

4.2.3 Overcoming Infrastructure and Accessibility Barriers

Infrastructure and accessibility remain the largest barriers to the widespread adoption of e-learning in rural Odisha. Without reliable electricity, internet connectivity, and access to digital devices, even the most

well-designed e-learning platforms are ineffective. Therefore, addressing these infrastructure challenges is a priority.

Public-private partnerships can play a pivotal role in overcoming these barriers. For example, collaborations with technology companies can help provide low-cost devices and internet solutions for schools in rural areas. Additionally, there is a need for state policies that prioritize digital infrastructure development, ensuring that rural schools are not left behind in the digital transformation of education.

4.2.4 The Role of Parents and Communities in Supporting E-learning

Parental support is essential for the successful implementation of e-learning, particularly in rural areas. The study highlighted that many parents in rural Odisha are either unaware of e-learning platforms or lack the resources to support their children's digital learning at home. To maximize the impact of e-learning, there needs to be greater community engagement and awareness-building efforts. Educating parents about the benefits of e-learning and providing them with the tools to support their children's learning can significantly enhance the effectiveness of digital education initiatives.

4.3 Conclusion

The integration of e-learning into elementary education in Odisha has the potential to improve student engagement, personalize learning, and enhance learning outcomes, particularly in urban areas. However, significant barriers exist, including infrastructure gaps, the digital divide, and insufficient teacher training. To fully realize the benefits of e-learning, the state must focus on addressing these barriers through targeted investments in infrastructure, teacher professional development, and community engagement. With the right policies and interventions, e-learning can help bridge educational disparities and provide all students in Odisha with the opportunity to succeed in the digital age.

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A Comprehensive Review of Teacher Preparation and Professional Development programs in Ethiopia

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Abstract

The aim of this study is to review the current status of teacher training and professional development programs in Ethiopia. By reviewing existing programs, the study seeks to give recommendations to enhance the quality of education in Ethiopia. In order to accomplish this objective, a desk review methodology is used to examine literature and documents pertaining to the subject. The study reveals challenges faced by Ethiopian teachers, including limited funding for professional development, high workloads, lack of support and mentorship, and inadequate infrastructure and technology. These obstacles hinder teachers' ability to effectively prepare for lessons and improve teaching practices, leading to decreased enthusiasm and satisfaction. In conclusion, Ethiopian teachers face barriers such as limited funding, high workloads, lack of support, and inadequate infrastructure, hindering their effectiveness. To address these challenges, increased funding, manageable class sizes, mentorship programs, improved infrastructure, and structured incentives are needed. Collaboration, continuous education, promoting women's participation, and ensuring access to quality training and resources are important policy directions. The recommendations call for increased funding for professional development, reduced teacher workloads, mentorship programs, and investment in infrastructure and technology. Policy suggestions include recruiting trainees with necessary skills, continuous education, and aligning programs with educational levels. Incentives for teachers in challenging areas are proposed to promote quality education. Further research is needed to identify factors leading to inadequate teacher training and to develop successful enhancement strategies.

Keywords: Teacher Preparation, Professional Development Programs

1. Introduction

In the realm of education, the quality of teacher preparation and professional development plays a vital role in enhancing teaching effectiveness and student learning outcomes (Sachs, 2003; Darling-Hammond, 2017). Middle level education in Ethiopia are no exception to this educational imperative, as the competence and skills of teachers directly impact the educational experiences of young learners (Tefera & Eaton, 2014).

Education is the process through which individuals share their experiences, discoveries, and values acquired over time, contributing to their survival and growth. It enables learning, encompassing the acquisition of knowledge, skills, values, beliefs, and habits. While traditionally guided by teachers, individuals can also

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educate themselves. Teaching involves active participation from both teachers and students. In addition to the student-teacher dynamic, the curriculum is now recognized as a crucial element facilitating interaction between educators and learners. Each component plays a vital role in education. The successful implementation of a high-quality curriculum hinges on the proficiency of teachers, teacher educators, and educational leaders. Therefore, continuous training and development are essential to enhance their abilities, adapt to evolving needs, and effectively support individual learners in curriculum implementation (MoE:ESDP VI, 2021).

Empirical evidence has substantiated the significant influence of teacher training and ongoing professional development on instructional practices, classroom management, and student achievement (McLeskey & Billingsley, 2008; Ingersoll & Strong, 2011). Thus, a comprehensive review of teacher preparation and professional development initiatives tailored specifically for middle primary schools in Ethiopia is warranted, aiming to identify strengths, challenges, and opportunities for improvement in enhancing the educational landscape (Ma & Macaro, 2018).

This article critically examines the existing literature on teacher preparation programs and professional development initiatives in Ethiopian middle level education, focusing on the unique context and educational needs of this schooling level. By synthesizing current knowledge and exploring best practices, this review seeks to contribute valuable insights to the ongoing efforts to elevate the quality of teacher education and professional growth in the Ethiopian educational system.

Statement of the Problem

The quality of education relies heavily on the quality of teachers, specifically their knowledge of the subject matter and teaching skills, which significantly impact students' learning outcomes. Effective teaching requires tailored training that meets individual teachers' needs, is linked to classroom practice, and includes regular follow-ups and personalized coaching. Unfortunately, a minimal number of teachers reported receiving any in-service training in the past year (World Bank, 2022). Moreover, research shows that only a small percentage of grade 4 teachers in Ethiopia are proficient in the content they teach, and less than a fifth demonstrate satisfactory pedagogical skills (World Bank, 2022).

The New Education and Training policy, implemented since February 2023, includes Middle Level Education for grades 7 and 8 (New Education and Training policy, 2023). These grade levels encompass a variety of subjects being taught to students. However, there is a notable lack of teacher preparation in key subjects such as General Science, Social Studies, Performing and Visual Arts, and Career and Technical Education. Furthermore, as outlined in the new education and training policy (2023), Performing and Visual Arts and Career and Technical Education are part of the new curriculum, leading to challenges in schools acquiring professional teachers in these areas.

Teacher preparation and professional development are crucial components in enhancing the quality of education in middle level education in Ethiopia. However, there is a lack of comprehensive research that specifically examines the effectiveness and adequacy of teacher preparation and professional development programs in this context (Tefera & Eaton, 2014).

The existing literature on teacher education in Ethiopia often focuses on general trends or specific aspects of teacher training, leaving a gap in understanding the specific needs and challenges faced by teachers in

middle level primary schools. Without a thorough review of current practices and their impact on teacher effectiveness, it is difficult to identify areas for improvement and implement targeted interventions to enhance the quality of education at this critical stage of schooling.

Research Objective

To review the trend of teacher preparation and professional development programs in Ethiopia.

Research Question

What is the trend of teacher preparation and professional development programs in Ethiopia?

Review of Teacher Preparation and Professional Development (TPPD)

Teacher professional development can be described as the process of enhancing teachers' understanding of the teaching and learning process, as well as the students they work with. It begins with pre-service education and continues throughout a teacher's career. Effective professional development involves teachers in both learning and teaching roles, allowing them to grapple with the uncertainties that come with each. This definition highlights the idea that teachers are both learners and educators, and that this dual role extends throughout their careers. It emphasizes that teaching is a profession that requires ongoing learning and development, with teachers constantly deepening their knowledge and skills (Dadi, 2015)

According to Serbessa (2009), education is widely regarded as a key driver of economic growth in countries, with access to high-quality schooling playing a pivotal role in national development. Parents understand the crucial impact that quality education can have on shaping their children's future and expanding their opportunities. As a result, many parents invest in their children's education, believing that a good education can lead to substantial improvements in their personal and social growth.

According to Harris and Sass (2006) and Mpokosa and Ndaruhutse (2008), the presence of well-trained teachers is essential for enhancing the quality of education at primary and secondary levels in various countries. Teacher professional development, including pre-service training, in-service programs, and informal on-the-job learning, is crucial for improving educational standards. Content-focused professional development for teachers is believed to positively impact the quality of education (Harris and Sass, 2006). Additionally, trained schoolteachers are considered a critical component in achieving the Millennium Development Goals and Education For All objectives (Mpokosa and Ndaruhutse, 2008). Therefore, the provision of quality education is closely linked to the presence of qualified educators.

According to Ankomah et al. (2005), schools that lack trained teachers are unable to effectively fulfill their educational responsibilities. This is due to the crucial role that teachers play in the provision of education, which has a significant impact on the quality of education. Indicators of quality in education include the availability of teachers, pupil-teacher ratios, and the personal attributes of teachers. These personal attributes encompass academic qualifications, pedagogical training, content knowledge, skills/aptitude, and teaching experience.

Teacher motivation and incentives play a crucial role in the effectiveness of teaching and learning. Research conducted by Mpokosa and Ndaruhutse (2008) in 13 developing countries highlighted the significant impact of teacher incentives on teaching quality and student achievement. They emphasized that the level and structure of incentives should be closely aligned with desired teacher behaviors to encourage extra effort. Furthermore, studies suggest that many sub-Saharan African countries face challenges related to poor teacher motivation (Mpokosa & Ndaruhutse, 2008).

According to Urwick and Mapuru (2005), the quality of teachers' professional relationships with their supervisors and colleagues can impact their motivation. Effective management and collaboration among teachers can help mitigate the negative effects of low pay on motivation. Additionally, differences in standards and expectations, influenced by better qualifications, may lead teachers to have higher expectations and, consequently, be more motivated to deliver high-quality teaching.

The Policy Direction on Teacher Preparation and Professional Development

The policy direction on teacher preparation practices in Ethiopia emphasizes the importance of ensuring that teacher trainees possess the necessary abilities, diligence, professional interest, and physical and mental fitness for the teaching profession. It advocates for collaboration between employers, training institutions, and the Teachers Association in the recruitment of trainees. The components of teacher education and training focus on basic knowledge, professional ethics, methodology, and practical training. Teachers are required to be certified before being assigned to teach at any level of education and must have the necessary qualifications and competency in the media of instruction through pre-service and in-service training (MOE: ETP, 1994).

Continuous education and training, professional ethics, and teaching performance are highlighted as criteria for the professional development of teachers. A professional career structure is to be developed to support the ongoing growth of teachers. Teacher training institutions, including higher education, are expected to function autonomously with the necessary authority, responsibility, and accountability. These institutions must align their programs with the educational level for which they are training teachers. Special attention is given to promoting the participation of women in teacher recruitment, training, and assignment. Special education training is integrated into regular teacher training programs, and incentives are provided to motivate teachers, especially those working in challenging or remote areas (MOE: ETP, 1994).

Education involves teachers guiding learners, but self-education is also important. Teaching is a collaborative process between teachers and students, with the curriculum playing a key role. Quality education relies on skilled teachers, teacher educators, and leaders who need training to meet student needs. This includes improving teacher quality, recruitment, professional development, and curriculum reform. Best practices will be shared, mentoring programs expanded, and teaching centers of excellence established to support teachers and students. The goal is to improve teacher distribution, equity, and skills nationwide (MoE: ESDP VI, 2021).

Factors Affecting Teachers' Professional Development

According to Arnold (2005a, as cited in Dadi, 2015), researchers have categorized the factors influencing teachers' professional development into three main groups: context, process, and content. Contextual factors

encompass societal, organizational, and school work culture aspects that influence when, where, and why professional development occurs. Understanding these contextual factors is crucial in planning teachers' learning activities. Process factors focus on how learning and development activities are designed, executed, and evaluated to achieve their goals, emphasizing that learning is a social process where learners actively engage and direct their own learning. Content factors pertain to the new knowledge, skills, attitudes, and experiences teachers acquire in their field of study and pedagogical aspects. Arnold (2005a) highlighted the importance of developing technical knowledge, skills, working techniques, and teamwork capabilities concurrently for effective professional preparation. These competencies are interdependent and cannot be developed in isolation.

Factors Affecting Teachers' Preparations and Professional Development in Ethiopia

According to the World Bank (2019), there are several factors that can affect teachers' preparations and professional development in Ethiopia. Some of these factors include:

1. Lack of access to quality training and resources: Many teachers in Ethiopia do not have access to high-quality training programs and resources that can help them improve their teaching practices. This can hinder their ability to effectively prepare for their lessons and develop professionally. Moreover, teacher's professional development program was encountered with so many challenges such as level of teacher's professional development of teachers, lack of facilities and lack of profound organization that includes materials and budget (Anna, 2000 cited in Mohammed, A. 2020).
2. Limited funding for professional development: The lack of adequate funding for professional development programs can also impact teachers' ability to improve their skills and knowledge. Without proper financial support, teachers may not be able to attend training sessions or workshops that could help them enhance their teaching practices. Moreover, Ministry of Education of Ethiopia has listed some of the challenges encountered like the following:
 - o Cluster resources not well organized
 - o Failure to synchronize the career structure and the CPD values and activities
 - o Time constraint for the teachers and the program leader to effectively implement the program
 - o Lack of coordination between the concerned stake holders and institutions
 - o Lack of resources and expertise
3. High teacher workload: Teachers in Ethiopia often have high workloads, with large class sizes and limited time for lesson planning and preparation. This can make it difficult for teachers to adequately prepare for their lessons and engage in professional development activities.
4. Lack of support and mentorship: Many teachers in Ethiopia may not have access to mentors or colleagues who can provide guidance and support in their professional development journey. This lack of support can hinder teachers' ability to improve their teaching practices and develop professionally.
5. Inadequate infrastructure and technology: Limited access to technology and inadequate infrastructure in schools can also impact teachers' preparations and professional development. Without proper tools

and resources, teachers may struggle to effectively prepare for their lessons and keep up with the latest teaching practices.

Moreover, the absence of incentives impacts teacher enthusiasm and satisfaction in their roles. This necessitates a reevaluation of incentives within the education field and the implementation of a structured incentive program for educators. Creating a sustainable incentive framework entails educators and administrators consistently demonstrating their passion and dedication to their profession (MoE: ESDP VI, 2021).

Due to various factors, teachers are leaving the teaching profession in Ethiopia. Tracking attrition can provide valuable insights into the number of teachers exiting the education system annually and the reasons behind their departure. This data is essential for understanding the extent of the teaching workforce gap. According to the Ministry of Education's Annual Abstract for 2021/2022, the national attrition rate for primary and middle school teachers in 2021/22 stood at 1.4%, marking a 0.3 percentage point decrease from the previous year. The attrition rate is higher among female teachers compared to male teachers. Regions such as Harari, Addis Ababa, and Dire Dawa reported the highest attrition rates, while Amhara, Somali, and Sidama had rates below 1%. The primary reasons for leaving the teaching profession were categorized as "Other" (reasons not listed), followed by "Change/Left teaching profession" and "Retirement". In secondary schools, the national attrition rate was approximately 1.3%, with similar reasons for attrition, including "Change/Left teaching profession" and "Retirement" being prominent at both national and regional levels. See the following tables.

Table 1 Attrition of Teachers in Primary and Middle Schools by Region and Sex, 2021/22									
	Total Attrition			All Primary Teachers			Attrition Rate (%)		
Region	Male	Female	Total	Male	Female	Total	Male	Female	Total
Afar	78	44	122	4,472	1,553	6,025	1.7	2.8	2.0
Amhara	304	215	519	79,683	75,499	155,182	0.4	0.3	0.3
Oromia	1,674	1674	3,348	103,709	73,078	176,787	1.6	2.3	1.9
Somali	1	1	2	11,504	2,168	13,672	0.0	0.0	0.0
Benishangul-Gumz	69	23	92	4,698	2,777	7,475	1.5	0.8	1.2
SNNP	1,037	574	1,611	49,747	31,165	80,912	2.1	1.8	2.0
Gambella	66	31	97	2,960	1,137	4,063	2.2	2.8	2.4
Harari	44	37	81	1,137	978	2,115	3.9	3.8	3.8
Addis Ababa	536	448	984	14,672	15,957	30,629	3.7	2.8	3.2
Dire Dawa	49	43	92	1,864	1,100	2,964	2.6	3.9	3.1
Sidama	191	47	238	25,120	10,392	35,512	0.8	0.5	0.7
SWEP	335	200	535	16,355	9,278	25,633	2.0	2.2	2.1
National	4,384	3,337	7,721	315,921	225,048	540,969	1.4	1.5	1.4

Source: MoE: Education Statistics Annual Abstract, 2021/22

Table 2		Reasons for Leaving the Profession in Primary and Middle School Teachers, 2021/22														
Change/Left				Prolonged												
Region	Teaching Profession		Death		Ethical Problem		Political Post		Sickness		Retirement		Other		Total Attrition	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Afar	31	18	6	3	3	1	4	1	3	2	1	1	30	18	78	44
Amhara	88	52	23	16	16	3	9	6	6	14	69	49	93	75	304	215
Oromia	264	263	201	201	123	125	120	120	104	105	306	305	556	555	1,674	1,674
Somali	-	-	1	1	-	-	-	-	-	-	-	-	-	-	1	1
Benishangul-Gumuz	32	6	13	2	-	-	6	2	2	3	6	-	10	10	69	23
SNNP	239	178	92	51	96	48	126	53	75	55	150	62	239	127	1,037	574
Gambella	18	12	10	5	8	3	8	2	6	1	-	1	16	7	66	31
Harari	10	11	5	1	8	5	4	-	2	3	6	11	9	6	44	37
Addis Ababa	172	133	42	30	32	19	25	18	15	28	60	68	190	152	536	448
Dire Dawa	12	15	7	6	5	1	2	2	5	2	4	7	14	10	49	43
Sidama	51	11	23	5	14	5	9	1	22	6	42	13	30	6	191	47
SWEP	66	40	18	8	21	6	27	8	9	9	21	7	173	122	335	200
National	4,384	3,337	441	319	326	216	340	213	249	228	665	524	1,360	1,088	4,384	3,337
																7,721

Source: MoE: Education Statistics Annual Abstract, 2021/22

Table 3 Attrition of Teachers in Secondary Schools by Region and Sex, 2021/22

Region	Total Attrition			All Secondary Teachers			Attrition Rate (%)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Afar	14	3	17	829	150	979	1.7	2.0	1.7
Amhara	94	33	127	31,343	10,494	41,837	0.3	0.3	0.3
Oromia	383	385	768	35,466	7,379	42,845	1.1	5.2	1.8
Somali	1	0	1	2,619	442	3,061	0.0	0.0	0.0
Benishangul-Gumuz	41	17	58	1,660	372	2,032	2.5	4.6	2.9
SNNP	275	80	355	17,891	4,494	22,385	1.5	1.8	1.6
Gambella	13	1	14	1,280	132	1,412	1.0	0.8	1.0
Harari	18	5	23	413	134	547	4.4	3.7	4.2
Addis Ababa	184	96	280	8,726	2,230	10,956	2.1	4.3	2.6
Dire Dawa	22	5	27	665	122	787	3.3	4.1	3.4
Sidama	56	15	71	5,360	1,331	6,691	1.0	1.1	1.1
SWEP	88	32	120	4,966	1,212	6,178	1.8	2.6	1.9
National	1,189	672	1,861	111,218	28,492	139,710	1.1	2.4	1.3

Source: MoE: Education Statistics Annual Abstract, 2021/22

Table 4	Reasons for Leaving the Profession in Secondary Teachers, 2021/22																	
	Change/Left				Prolonged													
	Region	Teaching Profession		Death		Ethical Problem		Political Post		Sickness		Retirement		Other		Total Attrition		
Male		Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Total	
Afar	7	1	2	1						1				4	1	14	3	17
Amhara	31	7	15	5	3		6	4			1	19	9	20	7	94	33	127
Oromia	55	55	34	35	17	17	34	33	23	23	84	86	136	136		383	385	768
Somali	-		1													1	0	1
Benishangul-Gumuz	19	6	2	1	1		3		1		2			13	10	41	17	58
SNNP	70	21	12	6	13	3	55	10	16	5	44	9	65	26	275	80	355	
Gambella	6				3		3		1					1	13	1	14	
Harari	3	1	1		3		1		2	1	3	1	5	1	18	5	23	
Addis Ababa	57	25	23	1	12	6	14	4	6	5	23	17	54	30	184	96	280	
Dire Dawa	7	1	1	9	4	1	1		2		1	2	4	1	22	5	27	
Sidama	20	5	5		3		1		4	1	10	4	13	5	56	15	71	
SWEP	18	5	5		2	1	15	6	2	1	8	2	35	17	88	32	120	
National	293	127	101	58	61	28		57	58	37	194	130	349	235	1,189	672	1,861	

Source: MoE: Education Statistics Annual Abstract, 2021/22

Conclusions

In conclusion, the challenges faced by teachers in Ethiopia, such as limited funding for professional development, high workload, lack of support and mentorship, and inadequate infrastructure and technology, significantly impact their ability to effectively prepare for lessons and enhance their teaching practices. Addressing these challenges requires prioritizing funding for professional development, reducing teacher workload, establishing mentorship programs, and investing in infrastructure and technology. Implementing a structured incentive program for educators can help boost morale and motivation. The policy direction on teacher preparation practices emphasizes collaboration among employers, training institutions, and the Teachers Association in recruiting trainees with necessary skills, continuous education, and aligning programs with educational levels. Factors influencing teachers' professional development include contextual, process, and content factors. Factors affecting teachers' preparations and professional development in Ethiopia include lack of access to quality training and resources.

Recommendations

- The Ministry of Education can offer bridge courses for graduates in natural sciences and Social Studies to prepare them for teaching **Integrated Science and Social Studies**. These courses will cover curriculum content, pedagogy, and assessment strategies specific to these subjects, attracting individuals with relevant backgrounds to become qualified teachers in these areas and addressing the shortage of professional teachers.
- **To address the challenges in acquiring professional teachers in Performing and Visual Arts and Career and Technical Education, the following recommendations can be made to policy makers and the Ministry of Education:**
 1. Develop specialized teacher training programs: Create specialized training programs for teachers in Performing and Visual Arts and Career and Technical Education. These programs should focus on both theoretical knowledge and practical skills to ensure teachers are well-equipped to teach these subjects effectively.
 2. Provide incentives for teachers: Offer incentives such as higher salaries, professional development opportunities, and career advancement options for teachers specializing in Performing and Visual Arts and Career and Technical Education. This will attract more educators to these fields and encourage them to stay in the profession.
 3. Collaborate with industry experts: Partner with industry experts and professionals in the fields of Performing and Visual Arts and Career and Technical Education to provide mentorship and training opportunities for teachers. This collaboration can help teachers stay updated on industry trends and best practices.
 4. Support schools in acquiring resources: Provide schools with the necessary resources, such as equipment, materials, and facilities, to effectively teach Performing and Visual Arts and Career and Technical Education. This will enable teachers to deliver high-quality instruction and engage students in hands-on learning experiences.

5. Promote awareness and advocacy: Raise awareness about the importance of Performing and Visual Arts and Career and Technical Education in the curriculum and advocate for increased support and investment in these subjects. This can help garner public support and commitment from stakeholders to address the challenges faced by schools in acquiring professional teachers in these areas.
- Therefore, to address the shortage of professional teachers in Integrated Science and Social Studies, the Ministry of Education should design new curricula for these subjects, as well as Performing and Visual Arts and Career and Technical Education, to attract and retain qualified educators in a sustainable manner.
 - **The policy direction on teacher preparation and professional development should focus on ensuring that teachers receive comprehensive training and ongoing support to enhance their knowledge and skills. This includes:**
 1. Investing in pre-service education programs to equip teachers with the necessary pedagogical knowledge and skills before entering the classroom.
 2. Implementing effective in-service professional development programs that provide opportunities for teachers to continuously improve their teaching practices and stay updated on the latest educational trends.
 3. Providing incentives and recognition for teachers to boost motivation and encourage high-quality teaching.
 4. Establishing clear standards and expectations for teachers, including qualifications, to ensure a high level of professionalism and commitment to delivering quality education.
 5. Promoting collaboration and effective communication among teachers, supervisors, and colleagues to create a supportive professional environment that fosters continuous learning and growth.
 - Further research is needed to identify the specific reasons behind insufficient teacher training and professional development in **Integrated Science and Social Studies, Performing and Visual Arts and Career and Technical Education**. This will help in developing effective strategies for improvement.

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Impact of Blended Learning Approach on Students' Metacognition and Academic Achievement in Science: A Meta-analysis During the COVID-19 Pandemic

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Abstract

Blended learning has become the new standard in education that combines both face-to-face and online-based instructions. As this learning approach emerged as a prominent trend in both K to 12 and higher education during the COVID-19 pandemic, its relative usefulness to different learning outcomes must be revisited. The current meta-analysis focuses on studies that answer a gap on the post-test effects of blended learning approach on students' metacognition and academic achievement in science in comparison to the conventional teaching approach. It includes eligible studies with a total of 25 experiments and 25 effect sizes. The literature is reviewed through different electronic databases to access relevant studies within a ten-year period. The study focused mainly on secondary and tertiary students with 1359 respondents under metacognition and 1082 under academic achievement. The results show that blended learning approach has a small effect size on students' metacognition (Hedges' $g = 0.25$) and a large effect size on academic achievement (Hedges' $g = 0.94$). Rosenthal's fail-safe N also shows large number of unpublished studies with zero mean effect that would be required to make the obtained overall effect statistically nonsignificant. Thus, blended learning approach may help facilitate educational continuity amidst potentially disruptive crises.

Keywords: Blended Learning Approach, Metacognition, Academic Achievement, COVID-19, Pandemic, Science Education, Meta-analysis

Introduction

The global education sector faced unprecedented challenges as a result of the COVID-19 pandemic (Crawford et al. 2020). In an effort to stop the spread of the virus and lower infection rates, the majority of nations temporarily shuttered their educational facilities (Tria, 2020). The pandemic has brought a big impact on about 98.5% of the world's student population (UNESCO, 2020). In the United States, the shift to online learning has staggeringly accelerated in preschools, K to 12 schools, and universities (Fausett, Nierenberg, & Pasick, 2020). Consequently, the major progress in the widescale roll-out of COVID-19 vaccines (WHO, 2023) have slowly facilitated the reopening of schools on a small scale (UNICEF, 2021). With this limited in-person schooling, blended learning is one of the teaching approaches that was employed to deliver

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instructional activities and enhance different learning outcomes while ensuring the safety of students and teachers (Garment, 2021).

Blended learning approach (BLA) has also become increasingly prevalent in Philippine education, particularly amidst the COVID-19 pandemic. The Department of Education (DepEd) has prioritized the transition to BLA, which combines traditional face-to-face teaching methods with online-based instructions. DepEd has been instrumental in implementing policies and providing support to facilitate the shift to blended learning. This includes the distribution of learning materials, the utilization of various online platforms for virtual classes, and the training of teachers to adapt to new teaching methodologies (Ignacio, 2021).

Despite the challenges posed by the digital divide and infrastructure limitations, many countries have made strides in embracing blended learning as the “new normal” in education. It not only provides flexibility but also enhances the in-person and online learning experiences of students. The transformative potential of BLA reported an increase in metacognitive knowledge, skills, and experiences (Camarao & Monterola, 2021) and academic achievement of students (Alsalihi, Eltahir, & Al-Qatawneh, 2019). These results have been accounted for the best elements of BLA that benefits both teachers and students such as the equal opportunities to thrive in a blended learning environment (equity); unforeseen disruptions that can be easily facilitated through centralized learning management system which can be reviewed by the students any time (flexibility); active engagement that encourages collaborative work and more accurate teacher’s monitoring of students’ completion of assigned work (engagement); centralized place to access instructional and leaning materials that can be reviewed by the students at their own pace (access); and greater opportunities for cost-efficiency since fewer classroom and school resources are needed (cost) (Garment, 2021).

Now that blended learning has emerged as a major trend in both K-12 and higher education, research studies on its different learning models before and during the pandemic should be investigated. This meta-analysis study was designed to produce a statistical synthesis of different empirical studies, within a ten-year period, related to the effects of blended learning on students’ metacognition and academic achievement in science. The statistical significance of the combined effect might now be examined as pieces of evidence that this specific intervention significantly improves learning outcomes. The meta-analytic results can also be the basis of a policy decision to invest in this type of educational intervention.

Literature Review

Blended learning is an approach that integrates e-learning into traditional classroom learning (Kavitha & Jaisingh, 2018). Similarly, it is a form of learning that combines the best of direct classroom learning in face-to-face setup and online-based learning through digital applications (Volchenkova, 2016). It uses more than one method to communicate information and activate learning outcomes through the interaction of students and teacher (Dziuban et al., 2018).

Several researchers have mentioned the advantages of BLA. It provides flexibility and convenience in the learning environment; increases academic achievement, knowledge permanence, learners’ interest, motivation, and interaction; and is cost efficient (Lilje & Peat, 2007). It also offers benefits to enhance teaching pedagogies and help learners work at their own pace. With blended learning practices, students can take part in the learning environment from their homes and can share recorded knowledge content without any time or place limitations (Osguthorpe & Graham, 2003). Moreover, it is more effective in its

use of classroom time in which students are more active, more creative, and better prepared (Susan & Chris, 2015).

Evidence on blended learning has been reported through different research studies. Werth and Kellerer (2013) conducted a study involving teachers and found that 53% of them believed that blended learning was effective in increasing students' academic achievement. A search was also conducted using the ERIC database to locate information on students' perceptions about blended learning and resulted to roughly 109 peer-reviewed articles. Only few studies referred to K to 12 student perceptions, majority of the studies referred to higher education. Chandra and Watters (2012) found that high school students were happy and satisfied on their blended learning experience in science and physics classes. Another study concluded that science learning with an Edmodo-based blended learning model can create a pleasant learning environment and motivate junior high school students to actively think scientifically (Wahyuni et al., 2019).

Moreover, blended learning is effective in higher education. The findings of the experimental study revealed that test scores of students enrolled in e-learning environments were significantly higher than the scores of students in the traditional classroom (Zhang, Zhao, & Zhou, 2004). This means that education can be more effective if the advantages of a web environment are blended with face-to-face interaction in courses that contain more visual elements. The study of Lee, Lau, and Yip (2016) on the design and evaluation of an inter-university collaborative project on science-related interdisciplinary subjects reported positive outcomes for certain attributes such as conceptual understanding, eagerness and confidence in learning science, and metacognitive reflection on students' learning.

Meta-analysis studies were also conducted to provide substantial evidence of the significant effect of blended learning approach. In the meta-analytic study of the U.S. Department of Education, 45 studies were synthesized that compared face-to-face with online learning. Although online learning had a modestly higher effect than traditional instruction, nine of the eleven individual studies with significant effects favoring the online condition used a blended learning approach (U.S. Department of Education, 2010).

Most of the educational research conducted are empirical studies and only few are meta-analysis studies. Meta-analysis is still a less explored research territory in Asia (Okwuduba & Okigbo, 2018). There is a need to undertake this study and look into the significant effect of blended learning approach on students' metacognition and academic achievement in science. It is important to examine the type of methods or strategies used and how it effectively fits into the students' needs and characteristics. This in turn will be the basis of the government to appropriate funds to different educational interventions that were empirically tested.

Methodology

Literature Search

This study utilized a meta-analysis research design to systematically investigate and produce statistical syntheses of previous studies related to the effects of blended learning approach on students' metacognition and academic achievement in science. The literature search was systematically done on five electronic databases such as CORE, IOP Science, ERIC, Google Scholar, and Open Access Theses and Dissertations for the period of 2011 to 2021 to include one decade of recent research studies. The final searches were conducted

using the following queries: “metacognition” AND “blended learning”, and “academic achievement” AND “blended learning”.

On the search stage, the electronic databases’ searches resulted in 612,069 hits for journal articles and 19,491 hits for theses and dissertations for both metacognition and academic achievement. However, 561,746 hits were removed upon the incorporation of the set scope of time. The 69,814 unique studies were eventually obtained and used in the screening of the titles, abstracts, and keywords during the first inclusion stage.

Eligibility Criteria

The eligible articles and dissertations for meta-analysis followed a paper selection process that (a) had to focus on blended learning approach. Only peer-reviewed studies that (b) had to deal with the dependent variables such as ‘metacognition’ and ‘academic achievement’ were included. Other papers such as book reviews, book chapters, conference papers, abstracts, editorials, and news were excluded. The scope of the study (c) had to focus on science areas that include General

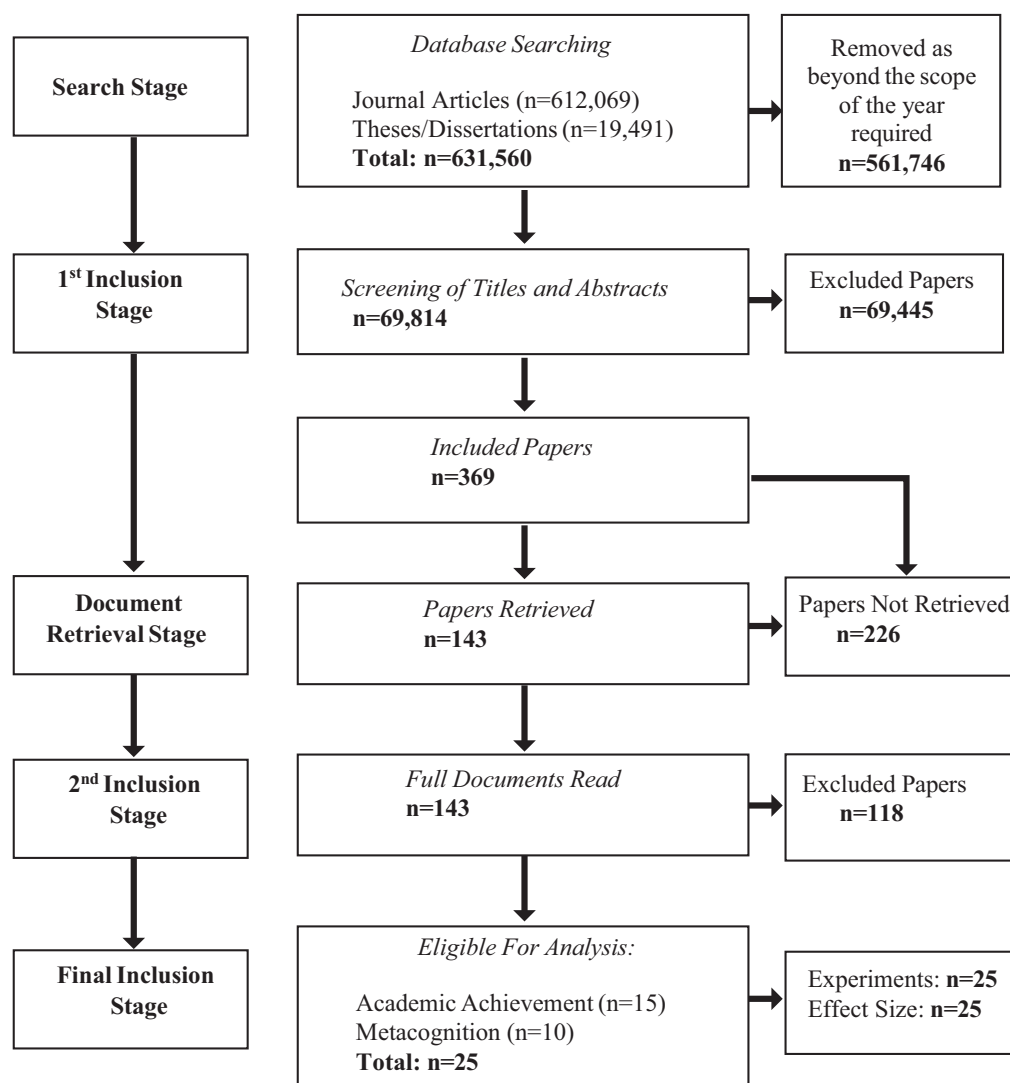


Figure 1. Flowchart for selection of studies

Science, Earth and Space Science, Biology, Chemistry, and Physics to investigate the cumulative effect of blended learning on the said learning outcomes for the past ten years (2011-2021). Moreover, the research (d) had to compare an experimental group that was exposed under the blended learning approach against a control group under the conventional teaching approach. The subjects of the study (e) had to consist primary, secondary, and/or tertiary school students with at least ten students per group to ensure that the effect size Cohen's *d* would be normally distributed (Hedges & Olkin, 1985; de Boer et al., 2018). Finally, the studies (f) had to provide posttest and/or delayed test measures that include mean and standard deviation/standard error, *t*-test value, or *F*-test value.

The first three criteria were used in the first inclusion stage. This selection stage resulted in the provisional inclusion of 369 studies. However, 226 studies were not retrieved during the document retrieval stage. The remaining 143 studies were accessed in full copies during the second inclusion stage and were subjected to full-text reading for the final inclusion stage following the last three criteria. Ten (10) studies met the eligibility criteria under metacognition and 15 under academic achievement. Generally, the eligible studies had employed a total of 25 experiments on blended learning approach and had 25 effect sizes for meta-analysis.

Data Analysis

Meta-Essentials Tools (MET) version 1.4, developed by Suurmond, van Rhee, and Hak (2017), were utilized to perform the meta-analysis. This statistical package was used to calculate the combined and individual effect sizes (Cohen's *d*/Hedges' *g*) with the corresponding standards of small (0.2), medium (0.5), and large (0.8); and variances of the interventions based on the statistical data obtained from the 25 eligible studies. Standard mean differences were computed for the students' metacognition and academic achievement in the posttests using a combination of means and standard deviations or means and standard errors. When descriptive statistics data were not reported, effect sizes were generated from inferential statistics such as the *F*-test and *t*-test values. Moreover, the significance of the summary effect was determined by *z*-test values and *p*-values at .05 level of significance. MET was also used to produce pictorial and graphical representations of the meta-analytic results, estimate the extent of heterogeneity, analyze publication bias, and perform the Rosenthal's (1979) fail-safe *N*.

Results and Discussion

This section presented the results of the study. The 25 studies included in the meta-analysis synthesized a total of 25 experiments and 25 effect sizes. The results of the empirical studies were discussed to answer these two research questions: (1) What are the post-test effects of Blended Learning Approach on students' metacognition? and (2) What are the post-test effects of Blended Learning Approach on students' academic achievement?

Posttest Effects of Blended Learning Approach on Students' Metacognition

The posttest measures of metacognition were acquired from a total of 10 studies and 10 effect sizes. It was shown in Table 1 that the combined effect size (adjusted) was 0.25 indicating a small effect according to Cohen (1988). However, blended learning approach had a significant overall effect on students' metacognition in

science compared to students under the conventional teaching approach as supported by z -test and p values. In addition, Rosenthal's *fail-safe N* showed that additional 628 studies, with zero mean effect, would be needed to make the combined effect size statistically nonsignificant.

Table 1	Posttest mean effect size for metacognition (n=1359)					
	k	d	SE	95% CI	z-value	p-value
Overall	10	0.25	0.27	[0.38, 1.60]	3.66	0.000

* $p < 0.05$, Fail-safe $N = 628$

Moreover, the overall results in Table 1 can be further explained in the forest plot showing the effect sizes' distribution of 10 studies in Fig. 2. It revealed that the confidence intervals of studies 4 and 5 touched the line of no effect. Thus, these studies had lower values of Hedges' g (0.10 and 0.11) indicating a shorter line of 95% confidence intervals. The control groups and the experimental groups in these studies did not observe a statistical difference. Thus, blended learning approach did not affect the metacognitive knowledge, skills, and experiences of students in science. However, eight studies (1, 2, 3, 6, 7, 8, 9, and 10) showed a statistically significant difference between the groups with a p -value less than the .05 threshold of significance. Study 8 has the largest Hedges' g equal to 2.89. The results of these studies imply that blended learning approach significantly improves the students' metacognition in science better than the conventional teaching approach.

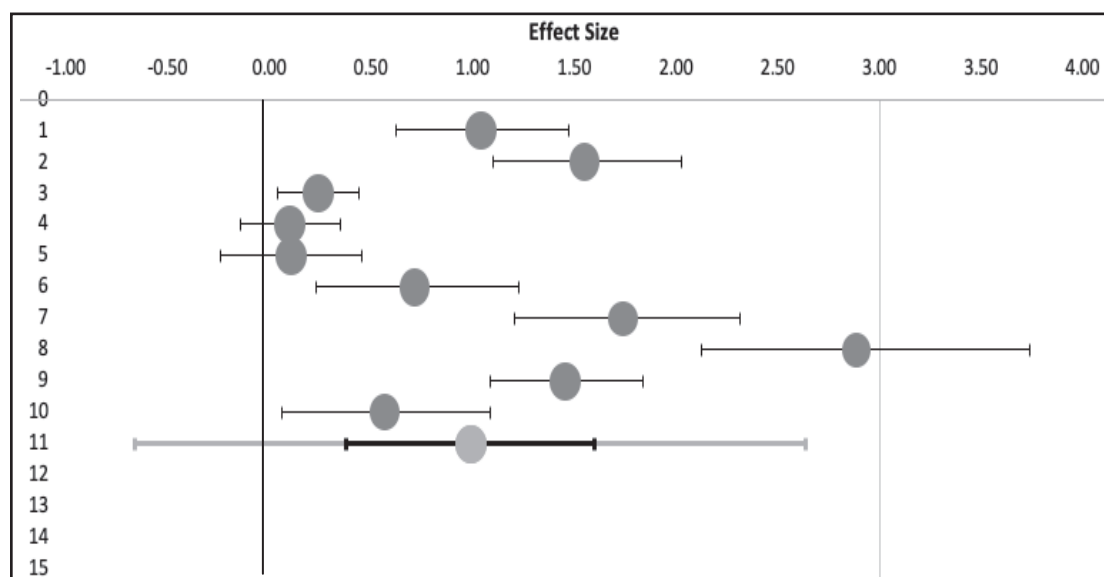


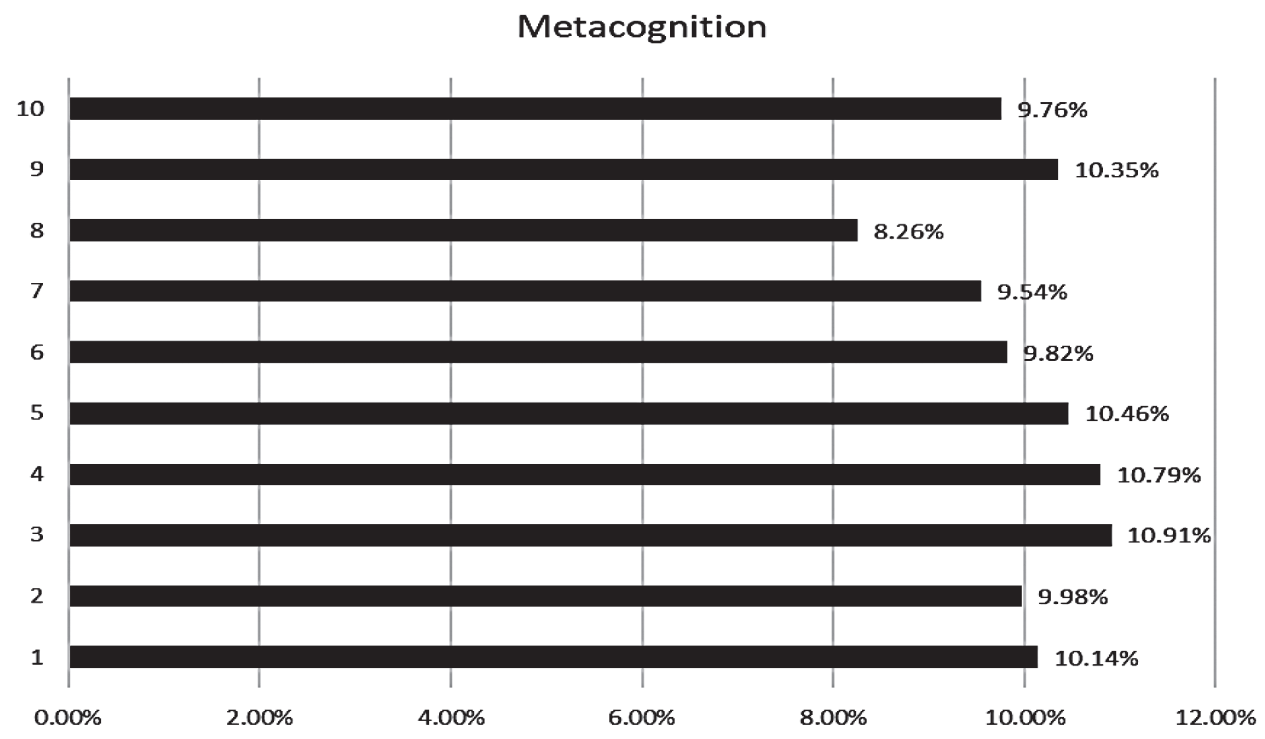
Figure 2. Forest plot of the effect sizes' distribution of 10 studies on metacognition

The ten (10) eligible studies under metacognition that include data on their effect sizes (Hedges' g), confidence intervals (lower limit and upper limit), and weights are specified in Table 2. Based on the data presented, the higher the value of the Hedges' g (2.89) like in study 8 and the wider the values of the 95% confidence interval (2.13, 3.74), the lower the weight of the study (8.26%). This indicates that the study has less precision (Bradburn, 2020). On the other hand, the lower the value of the Hedges' g (0.24) like in study 3 and the narrower the values of the confidence interval (0.04, 0.44), the higher the weight of the study (10.91%). This implies that the study has a high precision (Bradburn, 2020).

Table 2 Summary statistics of each study under metacognition

Study	Author (s)	Hedges' g	CI Lower Limit	CI Upper Limit	Weight (%)
1	Aldalalah et al. (2019)	1.04	0.62	1.47	10.14
2	Husamah (2015)	1.55	1.10	2.03	9.98
3	Gronlien et al. (2021)	0.24	0.04	0.44	10.91
4	Langdon et al. (2019)	0.10	-0.14	0.35	10.79
5	Musyaddad & Suyanto (2019)	0.11	-0.24	0.45	10.46
6	Vallejo, et al. (2019)	0.72	0.23	1.22	9.82
7	Lestari, U., Susanti, S., & Suwono (2017)	1.74	1.20	2.32	9.54
8	Lotfali & Ghanbarpour (2017)	2.89	2.13	3.74	8.26
9	Hajeh & Qarareh (2013)	1.46	1.09	1.84	10.35
10	Hidayatulloh, et al. (2020)	0.57	0.06	1.09	9.76

Furthermore, the weights of the 10 studies under metacognition are shown in Fig. 3. The weight given to each study is chosen to be the inverse of the variance of the effect estimate (Shaneyfelt, 2013).

**Figure 3.** Weights of each study under metacognition

Thus, larger studies, which have narrower 95% confidence intervals, are given higher weights (see studies 3, 4, and 5) than the smaller studies that have wider confidence intervals (see studies 6, 8, and 10). This means that they had the highest influence and made a big difference in the pooled results on metacognition. This choice of weights minimizes the uncertainty of the pooled effect estimate.

Evaluation of Heterogeneity Between Studies

It is also important to examine how heterogeneous the studies are with respect to each other to establish the assumption of heterogeneity. This meta-analytic study had adopted the value ranges of Higgins and Thomas (2003) where 25% - 50% was interpreted as low heterogeneity, 50% - 75% as medium heterogeneity, and 75% - 100% as high heterogeneity. Based on table 3, the total variance of the data set is $Q = 127.34$. It was also shown that the p-value of the chi-squared test is 0.000. Hence, the p-value is less than the .05 level of significance, which implies that the distribution of the populations was not the same and that the assumption of heterogeneity between studies was not violated.

Table 3 Heterogeneity test under metacognition					
	Q	p_Q	I^2	T^2	T
Overall	127.34	0.000	92.93%	0.46	0.68

* $p < 0.05$

Moreover, the I^2 value is 92.93% which means that the distribution of the effect sizes among the studies was highly heterogeneous. This high level of variability further indicated good differences in studies population, methodologies, interventions, or outcomes that can impact the overall results of the meta-analysis.

Analysis of the Publication Bias of the Studies

This analysis was also performed to identify potential bias that might occur after the study is completed. The probability that a statistically significant result will be reported and published is thought to be higher than a statistically nonsignificant finding. As a result, the total effect size of the study may be higher than the reality. Publication bias aims to signal this kind of error and adjust the combined effect size estimates (Hak, van Rhee, & Suurmond, 2016).

The funnel plot below indicates asymmetry in the distribution of effect sizes. This implied that there were missing studies. To impute one or more studies, the study applied a trim-and-fill method to adjust the combined effect size for the potentially missing studies (Hak, van Rhee, & Suurmond, 2016). In Fig. 4, it was shown that there were six (6) imputed data points. Thus, the trim-and-fill method adjusted the combined effect size from .60 to 0.25. In effect, the distribution of the studies was balanced, and the funnel plot turned symmetric. It suggests that the publication of the study sample was not biased in favor of blended learning approach on students' metacognition.

The aforementioned results on blended learning approach and metacognition are supported by the findings from the meta-analysis study of U.S. Department of Education (2010). It included 45 studies that compare face-to-face instruction with online and blended learning. It was reported that 34 studies on online learning

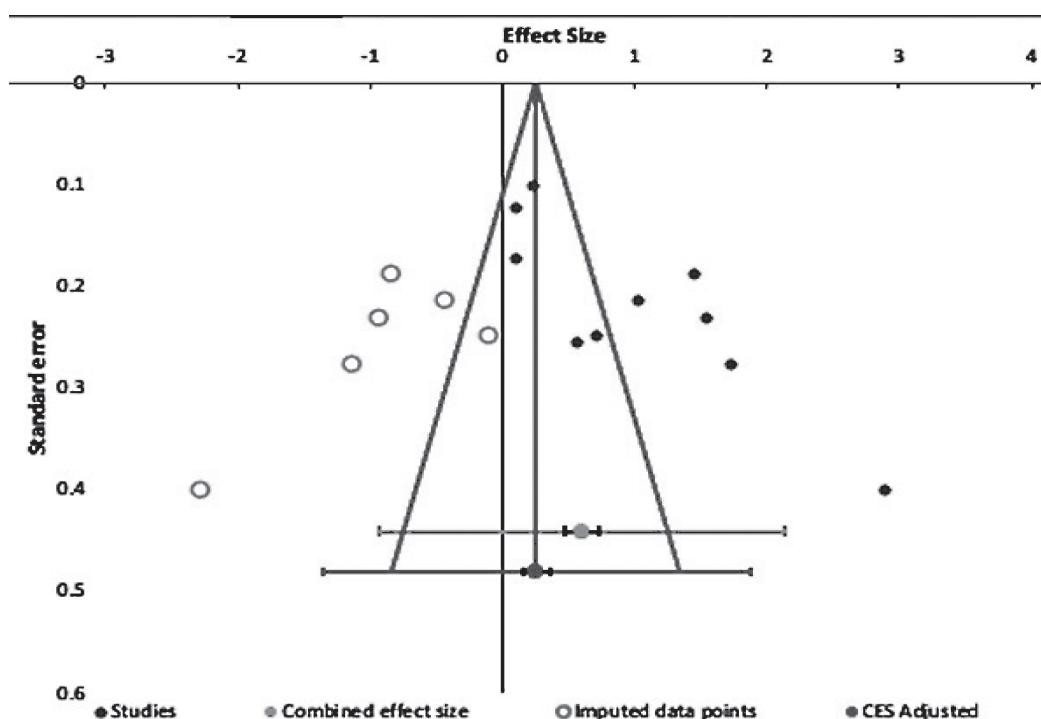


Figure 4. Funnel plot of studies' effect sizes under metacognition

and nine (9) out of the 11 studies on blended learning approach had a significantly higher effect than the traditional instruction. Moreover, a meta-analysis study on metacognition also found that the blended learning approach had a significant effect on students' metacognitive knowledge, skills, and experiences (Zhu et al., 2013) and metacognitive reflection on students' learning (Lee, Lau & Yip, 2016).

Posttest Effects of Blended Learning Approach on Students' Academic Achievement

The academic achievement posttest measures were obtained from 15 eligible studies and 15 effect sizes. The combined effect size (adjusted) was 0.94, manifesting a large effect size according to Cohen (1988). Therefore, blended learning approach had a significant overall effect on students' academic achievement in science higher than the students who were exposed under the conventional teaching approach as supported by *z*-test and *p*-values. Rosenthal's *fail-safe N* also showed that additional 2115 null-effect studies would be needed to bring the *p*-value beyond the 0.05 threshold of significance.

Table 4. Posttest mean effect size for academic achievement (n=1082)						
	k	d	SE	95% CI	z-value	p-value
Overall	15	0.94	0.38	[0.76, 2.38]	4.15	0.000

* $p < 0.05$, *Fail-safe N* = 2115

The overall results are further discussed in Fig. 5 showing the forest plot of the effect sizes' distribution of 15 studies. It was evident that the confidence intervals of studies 5, 8, and 10 hit the line of no effect, which means that they had lower values of Hedges' *g* (0.23, 0.06, and 0.35). In these three studies, students who

were exposed to blended learning approach and conventional teaching approach have the same academic achievement in science.

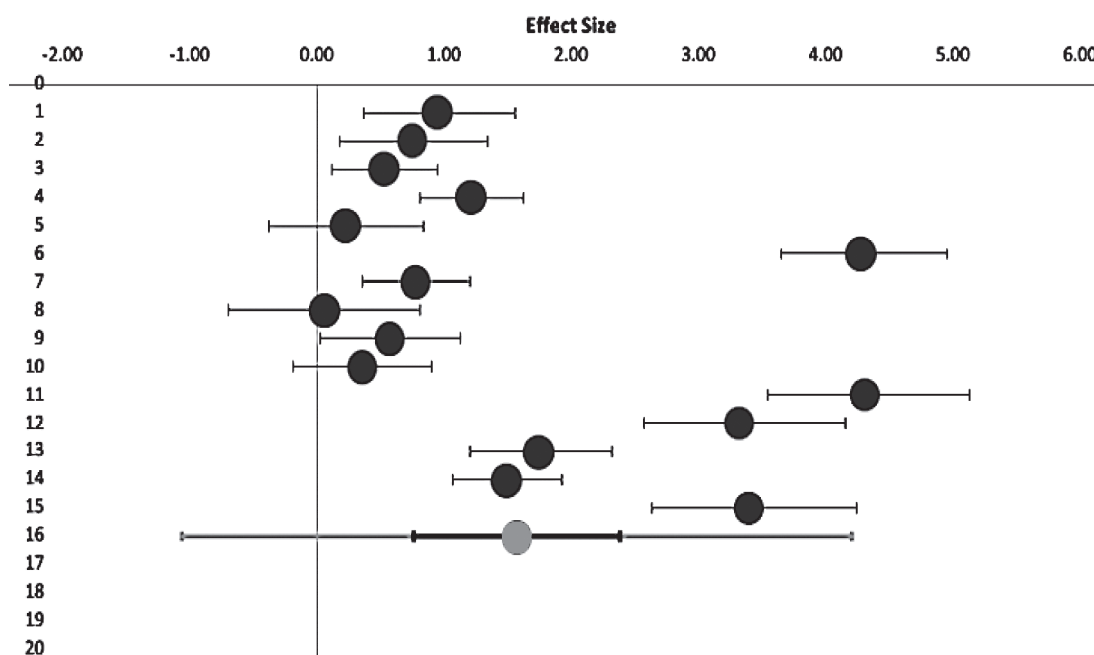


Figure 5. Forest plot of the effect sizes' distribution of 15 studies on academic achievement

Nevertheless, twelve studies such as 1, 2, 3, 4, 6, 7, 8, 11, 12, 13, 14, and 15 had confidence intervals that did not touch the line of no effect and had greater effect sizes. Thus, students who were exposed under the blended learning approach performed better in terms of academic achievement in science than students under the conventional teaching approach. This result was supported through a p-value that is less than the 0.05 threshold of significance.

Moreover, Table 5 presents the summary statistics of 15 studies under academic achievement. It is important to highlight that study 11 has the highest value of Hedges' g (4.30) with wider 95% confidence intervals (3.55, 5.13) and lower value of weight (6.38%), which indicates that the study has less precision (Bradburn, 2020). On the other hand, Study 3 has a Hedges' g of 0.53, which considered to have a medium effect size with narrower confidence intervals (0.11, 0.95). This in turn produced a higher value of weight (6.89%), which indicates that the study has a high precision (Bradburn, 2020).

Table 5 Summary statistics of each study under academic achievement					
Study	Author (s)	Hedges' g	CI Lower Limit	CI Upper Limit	Weight (%)
1	Akgunduz & Akinoglu (2016)	0.94	0.36	1.56	6.68
2	Akgunduz & Akinoglu (2017)	0.75	0.17	1.35	6.70
3	Almasaeid (2016)	0.53	0.11	0.95	6.89

4	Alsahi, Eltahir & Al-Qatawneh (2019)	1.21	0.81	1.63	6.90
5	Bolley (2013)	0.23	-0.38	0.84	6.67
6	Accra & Chima (2020)	4.27	3.65	4.95	6.59
7	Harahap, Nasution & Marunung (2019)	0.77	0.36	1.20	6.88
8	Hinkhouse (2013)	0.06	-0.70	0.82	6.47
9	Kazu & Demirkol (2014)	0.57	0.03	1.13	6.74
10	Lin, Tseng & Chiang (2016)	0.35	0.18	0.90	6.75
11	Nair & Bindu (2016)	4.30	3.55	5.13	6.38
12	Sanwal (2019)	3.32	2.57	4.15	6.38
13	Lestari, U., Susanti, S., & Suwono (2017)	1.74	1.20	2.32	6.73
14	Yapici & Akbayin (2012)	1.49	1.06	1.93	6.87
15	Daphine, Selvakumar & Sivakumar (2020)	3.40	2.64	4.25	6.36

The results can be further elaborated through the weights of the 15 studies under academic achievement as depicted in Fig. 6. Studies are weighted differently in a meta-analysis and commonly the weight used is the inverse of the variance of the study (Shaneyfelt, 2013). The higher the weight of the study (see study 4), the shorter the line of 95% confidence interval. Whereas the lower the weight of the study (see study 15), the longer the line of 95% confidence interval. Thus, study 4 had the highest influence and made a large difference in the pooled results. It can also be observed that other studies had a greater influence on the results. The uncertainty of the pooled effect estimate was reduced by this weight selection.

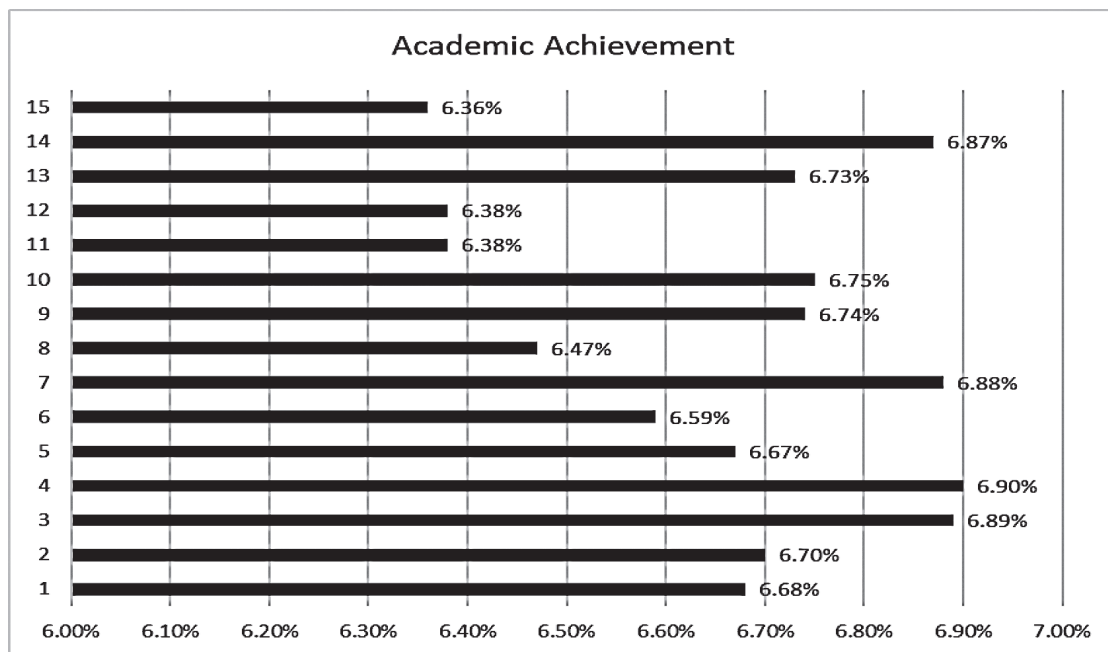


Figure. 6. Weights of each study under academic achievement

Evaluation of Heterogeneity Between Studies

Based on the table, the total variance of the data set is $Q = 264.72$. It was also shown that the p-value of the chi-squared test is 0.000 which is less than the .05 significance level. This indicates that the assumption of heterogeneity between studies was established. Moreover, the I^2 value is 94.71% suggesting a high heterogeneity (Higgins & Thomas, 2003) on the distribution of effect sizes among the studies. This high level of variability implies that some factors other than sampling error accounted for the variance that can impact the overall results of the blended learning approach on the students' academic achievement.

Table 6	Heterogeneity test under academic achievement				
	Q	p_Q	I^2	T^2	T
Overall	264.72	0.000	94.71%	1.37	1.17

* $p < 0.05$

Analysis of the Publication Bias of the Studies

Figure 7 shows the funnel plot of the effect sizes of 15 studies. The distribution of the effect sizes was asymmetric, which denotes that there were missing studies. To impute one or more studies, the meta-analysis study applied a trim-and-fill method to adjust the combined effect size for the potentially missing studies (Hak, van Rhee, & Suurmond, 2016). In Fig. 7, it was shown that there were only three (3) imputed data

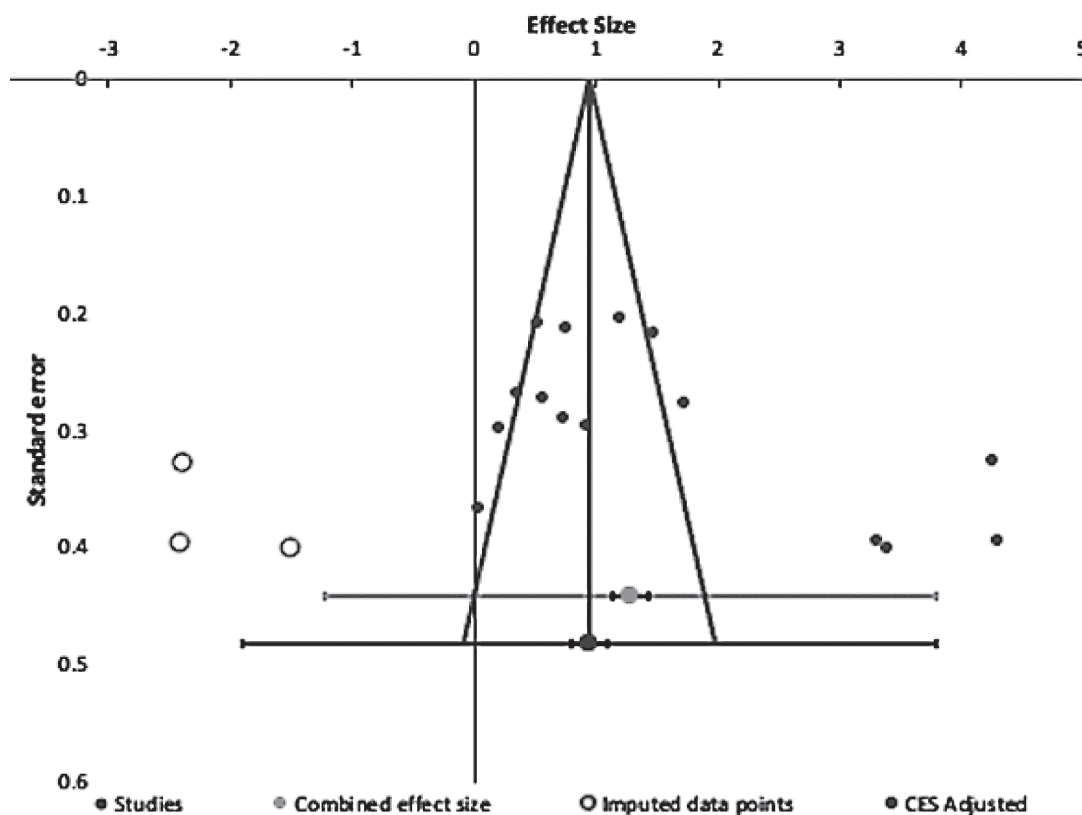


Figure 7. Funnel plot of studies' effect sizes under academic achievement

points. The trim-and-fill method adjusted the combined effect size from 1.28 to 0.94. As a result, there was balance and symmetry on the distribution of the studies. It suggests that the publication of the study sample was not biased in favor of blended learning approach on students' academic achievement.

The results of this meta-analysis study on blended learning approach and academic achievement are consistent with the findings of the study of Migalang (2018) that whenever a student is exposed to a blended learning approach, they exhibit academic excellence. Similarly, Siahaan et al. (2017) found that BLA increased the academic achievement posttest results of students in science. Moreover, Dagaang (2016) reported that students who experienced BLA obtained better scores after the intervention was given compared to students who were exposed to conventional teaching approach. Thus, the blended learning approach is effective in teaching science and in improving the academic achievement of students.

Conclusion

This meta-analysis of 25 studies has provided empirical evidence that blended learning approach has a positive effect on students' metacognition and academic achievement in science compared to the conventional teaching approach. The combined effect of e-learning and traditional classroom learning through this approach helps students to reflect more on their school performance through a positive change in their metacognitive knowledge, skills, and experiences. It also facilitates students to obtain higher test scores in general science, earth and space science, biology, chemistry, and physics. A large number of unpublished studies with a zero mean effect size would also be required to invalidate the significant overall effect of blended learning approach on both learning outcomes. Moreover, possible moderators should be identified to factor in other variables that reduce the unexplained variance. Finally, it is imperative to invest on educational interventions that are responsive to possible global crises.

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Conflict of Interest

The authors of this meta-analysis paper hereby declare that there is no conflict of interest concerning the publication of this paper.

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Analyzing Afghanistan's Conflict Since (2001) and Its Effect on Women's Empowerment and Education through Feminist Standpoint Theory

Nasima¹

Abstract

This Paper analyzes the Afghanistan conflict and its effect on women's empowerment and girls' education using the feminist standpoint theory. Over the past 20 years international community, the United States, and the Afghan government collectively worked toward girls' access to education, women's empowerment, and peacebuilding in Afghanistan. However, after the withdrawal of the United States from Afghanistan and the empowerment of the Taliban, everything changed back to 2001. The 20 years of work toward girls' education and women's empowerment just disappeared and the policies did not sustain either.

The study contextualized the Afghanistan conflict through feminist standpoint theory focusing on the importance of women's perspectives and standpoints during peacebuilding. Highlighted the significant role education plays in sustainable peacebuilding and women's empowerment.

Feminist standpoint theory in the conflict in Afghanistan since 2001 explains how the Patriarchal norms systemically marginalized women by excluding them from education, employment, and decision-making at all levels. The international community and Afghanistan government's approaches toward peacebuilding and women's empowerment did not fit the norms and ignored women's standpoint and uniqueness, therefore, resulting in a full gender-blind education system after political change.

This paper concludes that feminist standpoint theory is crucial to understanding the complex gender dynamics in the patriarchal background and conflict. Therefore, considering women's standpoint, (level of education, social and cultural background, marital status) is not only vital in conflict management but in the development of education policies to mitigate conflict impact on education, especially girls' education. Meanwhile, women's standpoint in peacebuilding is also vital as the conflict in Afghanistan highly affects women, and their rights to education, employment, and decision-making.

Keywords: Conflict, Women's empowerment, Education, Feminism, Peacebuilding, Standpoint

1. Introduction

Conflict in Afghanistan has a deep-rooted history and different forms, however, the conflict between 2001 and 2024 stands as the most significant. In 2001, the International Coalition with the support of the USA as part of peace bringing to Afghanistan, took the country from the Taliban and formed a new government system. After 20 years of work toward Afghanistan's sustainable peace development, Afghanistan reached back to the starting point (iwm.org, 2023).

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In 2001 Afghanistan was officially free from the Taliban, therefore, in 2014 Afghan National Defense and Security Forces (ANDSF) were assigned as the main security force for Afghanistan however, due to significant challenges in security management, the Taliban started their continuous attacks in different provinces, which left thousands of deaths, injuries and internal and external migrations behind during this time. After nonstop attacks and bomb blasts in almost all provinces of Afghanistan, in 2018 some of the provinces (Farah and Ghazni) were already in control of the Taliban for several weeks. Once the security issues around the country got out of control of all the collective work toward peacebuilding, in 2020 the official negotiations with the Taliban started in Duha which led to the agreement of US withdrawal from Afghanistan (Center for Preventive Action, 2021).

However, the agreement did not sustain even before the full withdrawal of US forces. As half of the US forces and international organizations workers were still in Afghanistan but the Taliban took over the country which again led to a huge number of Afghanistan citizens migrating to different countries around the world, schools and universities for girls were changed to Islamic studies Madrasas and women got officially ban from working (Special Inspector General for Afghanistan Reconstruction, 2021). However, from 2001 till 2021 the new changes were in favor of women and girls, and during the girls' school enrollment rate reached its highest level, women's role in the workplace was visible, and women's empowerment was seen in the government and non-governmental organizations (Center for Preventive Action, 2021).

However, what went wrong during the 20 years of work toward reconstructing Afghanistan with a sustainable peace is the question for every individual in Afghanistan and those who migrated to other countries. Afghan citizens paid a high cost for 20 years of conflict to come to an end however, The available data and reports indicate that

“After more than four decades of conflict and instability in Afghanistan, an estimated 28.3 million Afghans - two-thirds of the population, including women and girls - are in need of humanitarian and protection assistance. More than 1.6 million Afghans have fled the country since 2021, bringing the total number of Afghans in neighboring countries to 8.2 million since the start of the conflict” (UNHCR,2023).

Meanwhile, as per BBC News on UNICEF report, around 1.4 million Afghan girls in Afghanistan have been affected due to a band on all forms of education for girls in Afghanistan by the new government (Taliban) since 2021 (Farzan and Drury, 2024). Women's exclusion in public spaces is increasing day by day as per the APnews “The Taliban's education ministry marked the start of the new academic year with a ceremony that female journalists were not allowed to attend”(Faiez,2024)

Furthermore, “Since invading Afghanistan in 2001, the United States has spent \$2.313 trillion on the war, which includes operations in both Afghanistan and Pakistan” (Brown University, 2021). Around 47,600 Afghan civilians lost their lives during the 20 years of conflict (Saif, 2021). To explore the answer to what went wrong over the 20 years of conflict in Afghanistan, which resulted in the full exclusion of girls from schools, universities, workplaces, and social involvement.

2. Methodology

The secondary data analysis method is used to analyze the Conflict in Afghanistan Since (2001). and it's Effect on Women's empowerment and education. This research used secondary sources as to effectively

contextualize with available comprehensive data. Under the pressure of The Current government of Afghanistan, respondents are afraid to provide information on girls' access to education, education policies, and how the conflict-affected girls' access to education. Therefore, this research considered secondary data sources. as the secondary data sources have rich and valuable information. The feminism standpoint theory has been applied and contextualized in the Afghanistan conflict over 23 years with its effect on women's education. The secondary data, includes journal articles, books, official news, organization reports, and academically researched papers and journals.

Research Objectives

1. To raise the importance of women's standpoint in peacebuilding and peace sustainability in the 20 years of conflict in Afghanistan.
2. To analyze the effects of the 20-year conflict in Afghanistan on girls' education and women's empowerment.
3. To attract researchers and policymakers to further analyze women's standpoint for their peacebuilding and conflict management

3. Background

The conflict in Afghanistan since 2001 left many of us with several lessons learned that may help us understand the conflict and its effect on education and women's empowerment. Firstly, the peacebuilding approaches did not consider women's standpoint in Afghanistan which can be well explained through feminism theories (Sobat, 2022) The second is Education is a weapon for women to fight against exclusions from the workplace, education, and social spaces. However, women were continuously excluded from leadership and decision-making roles (Gonnella, 2022). As Enloe also her book "twelve feminist Lessons of War" mentioned educated women in the war in Afghanistan, Ukraine, and other countries would have experienced war differently(Enloe, 2023). For example, women suffered three times more than men at the war time, because of their limited education or no education. A high number of women in Afghanistan lost their male members in the war and at very young ages with no education got the responsibility for their children which highly challenged their well-being and left them with the trauma of war. while women with a level of education managed to survive and access income (Global History Dialogues,2023). Thirdly educated women play a significant role in sustainable peacebuilding approaches (Enloe, 2023). Fourthly, the standpoint of women is vital for Policies toward inclusive education, gender balance, and women's empowerment (Smith, 2002).

4. The Feminist Approach to the Afghanistan Conflict

Feminism as an inclusive approach focuses on the gendered aspects of conflict, focusing on the experiences of women and other marginalized identities in Afghanistan. In the Afghanistan conflict, the role of patriarchal norms negatively impacted women and resulted in exclusion from education, employment, and political participation (UN Women, 2022). Therefore, it was claimed that "The international community should ensure that parties to conflict respect the core principle of inclusivity, including women's active participation in the peace process and use different channels to ensure they are integrated into the discussions and have meaningful roles" (Azadmanesh and Ghafoori, 2020,p.9). Women standpoint is also one of the important

approaches for the peacebuilding as feminist standpoint theory focuses on the position one has within the social structure, believing that each person has unique needs and positions therefore, any generalizations based on gender, sex, age, social identity, or political power may lead to the exclusion of these groups (Gurung, 2020). Indeed, in the Duha agreement which was based on international policies, women were not seen as real participants but they were the listeners, and none of the concerns that women raised were seen after the agreement's finalization (Koofi, 2022). Certainly, it is to agree with the claim of feminists that "gender inequality could be attributed largely to women's exclusion from the processes of development and access to education and market economics" (Sjoberg and Tickner, 2012,p.181).

5. Effect of Conflict on Girls' Education

The never-ending conflict in Afghanistan opened the door to gender-based exclusion and gender-based violence and resulted in the systemic exclusion of women and girls from education by creating several barriers to accessing education. In 2019 around 39 million girls were excluded from primary and secondary education due to conflict and insecurities (Rodriguez, 2019). UNICEF Executive Director Henrietta Fore said "The senseless attacks on schools; the killing, injury, and abduction of teachers; and the threats against education are destroying the hopes and dreams of an entire generation of children" (Diallo, 2019). When the Taliban first government excluded girls from education for five years of their government, the 20 years of work toward girls' access to education and women empowerment projects with huge budgets were not able to fill the gap. As the data indicates most of the schools in Afghanistan lacked qualified teachers, The government had open posts for women but the qualifications of women did not fit the job criteria (Batha ,2021). Moreover as per the SIGAR reports United States' \$1.3 billion investment in Afghanistan contributed to significant improvements in the Afghan education sector from 2001 to August 2021" (Sopko, 2023) What now? Again girls are banned from all forms of education and how many more years from now it will take to fill this gap? (United Nation, 2023). It is important to learn from what went wrong and consider more sustainable approaches toward peacebuilding through education.

6. Role of Education in Sustainable Peace

Research indicates that education plays a significant role the sustainable peacebuilding, and promotes a clear understanding of different norms, beliefs, and ideologies which leads to reduced violence (Afshaneh, 2023). However, in the case of Afghanistan, the research indicates that around 3.7 million children ages 7 and 17 do not have access to education due to security issues and the current political instability (Diallo, 2019). In the Afghan conflict, the policies and social standards were seen as one structure. Therefore, the generalizations, considering states as main actors and international anarchy resulted in all the gender equality and women empowerment policies failing after the collapse of the Afghan Government (Sopko, 2023). Afghanistan throughout history remained patriarchal, therefore, the feminism standpoint theory to the context of Afghanistan was very significant. Feminism as a complete approach with a focus on inclusive power and structure would have resulted differently after the takeover of the Taliban. If we say that women were only excluded from social and political positions after the takeover of the Taliban in Afghanistan, it would be a false claim (Haqmal, 2012) Within the 20 years of the Afghanistan conflict women's exclusion were in all the government and none government areas, and the symbolic presence of women in the structure was there (Batha, 2021). Therefore, it is crucial to understand education plays a significant role in peacebuilding. Enloe

in her book “Twelve Feminist Lessons of War” raised a very valid point that Afghan women paid high prices for the war, gave up their rights to social rights, rights to education, and access to resources, and went through difficult times of war faced exclusion and all form of violence. But if the women were educated, they would have experienced war differently (Enloe, 2023, p.20). Meanwhile, since 2021 Schools in Afghanistan faced a shortage of qualified teachers, however, qualified teaching is crucial not only for the quality of education but also will motivate every individual to study and contribute to the development and peacebuilding (Alice, 2016).

7. Policies and Feminist Standpoint Theory in Education

If we see the Afghanistan conflict since 2001 from feminist Standpoint, it can be said that feminist Standpoint was not applied to the policies of peacebuilding and conflict reduction to the expected level. Indeed, women’s standpoint in the conflict in Afghanistan plays a very significant role. The core belief of feminism is to explain that women are part of the social world therefore, as other members of the world they need equal social, economic, and political rights and freedom (Soken, 2022). Shulamit Reinharz in his book (Feminist Methods in Social Research) claimed that “the aim of feminism is making the invisible visible, bringing women’s lives to the center, rendering the trivial important, putting the spotlight on women as competent actors, and understanding women as subjects rather than objects” (Reinharz, 1992, p.248)

The lessons learned report by the US from the gender equality and women empowerment policies and projects also indicates that some of the gender equality strategies did not consider well the social and cultural history of Afghanistan which is why most of the activities and initiatives are challenged by the new government (Sopko, 2021, p.42). Access to education applied the generalized rule and did not consider the standpoint of women in male-dominated cultural context therefore the girls as a marginalized identity never fitted the policies toward inclusive education (Haqmal, 2012)

Moreover, feminism gives high importance to the power structures and how marginalized identities are within these structures (Reinharz, 1992). This fits the conflict in Afghanistan where the power structures highly excluded the ethnic and religious minorities, women and girls and other gender identities needs during 20 years of conflict management. The right example of a feminist Standpoint in Afghanistan conflict management can be the advocacy for women’s rights and women empowerment projects of international organizations, where the international organizations highly considered the importance of women’s standpoint through different projects worked toward women’s inclusion in education, healthcare, and political decision-making (UN Women, 2022).

8. Conclusion

To conclude, it can be said that the conflict in Afghanistan from 2001 to the current time is very complex. While its effect on education especially girls’ education is huge. The never-ending conflict in Afghanistan despite many efforts by regional and global actors, the international community, and funding donors toward peace establishment had no result but the situation remained unstable and followed different forms of violence, insecurities, and external and internal migration, social and political exclusion of gendered minorities and women.

Feminism Standpoint in the conflict of Afghanistan can explain the complexity of gendered and marginalized groups' roles in conflict. It can be said that despite the collective work of the international community, human rights organizations, and state and non-state actors toward the inclusion and promotion of women's rights in peace-building and decision-making, visible outcomes would have not been there. However, considering the women's standpoint in a country with men dominant history would make a different result.

Applying Feminist Standpoint in education and access to educational facilities which are mostly women-centered or based on women's standpoints may have constructed a better future for girls' education considering the social and cultural norms of Afghanistan are mostly male-dominated. Therefore, hegemonizing women and their standpoints may not effectively be able to signify the role of women in the conflict resolution and decision-making process in the conflict. Therefore, some violence and women's exclusion from decision-making from the household level to the social and political level were part of Afghanistan's well-known practices since 2001 and continued for 20 years until the Taliban made it move in a different direction. Indeed, access to any form of education is restricted by the Taliban since 2021 and women in Afghanistan have been protesting for their education rights and approaching international organizations and the international community for the past three years however, there is no action from any of the international organization and regional and international actors toward girls education in Afghanistan (Congressional Research Service, 2023). This research findings indicate that , If the international community does not negotiate girls' access to education with the Afghanistan government and develop a clear policy toward girls' education considering Afghan women's standpoint, Afghanistan will again face a shortage of female-qualified teachers and professionals in the workplace.

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INNOVATIVE SCHOOL EXPERIMENTS

Rising Above the Challenges

The Hydraulic Home Lift

Abhisri Gupta¹, Jayati Damodar Thanki², Dr. Santosh Vyas³, Smita B Nair⁴

I. **Title:** Rising Above the Challenges- The Hydraulic Home Lift

II. **Nature of Work :** Novel solution/ indigenous design to a problem/challenge

III. **Scientific Principle(S)/ Concept:**

Scientific principle:

A hydraulic lift is a device used to move objects by applying force created through pressure on a liquid within a cylinder, which in turn moves a piston upward.

The principle behind hydraulic lifts is based on Pascal's Law, which states that any change in pressure applied to an incompressible liquid in a confined space is transmitted uniformly throughout the liquid in all directions.

IV. **Rationale:** India is highly vulnerable to floods. Floods are a recurrent phenomenon, which cause huge loss of lives and damage to livelihood systems, property, infrastructure and public utilities. They cause frayed electrical wiring, electrocution, cracks in foundations, damaged rooftops etc.

To flood-proof houses, though we can add a lot of protective exterior systems, interior barriers, and drainage solutions but the best way to minimize flooding is lifting a house to higher ground. The hydraulic house lift helps to reposition the home enough to minimize the risk of flood water getting into the structure.

Lifting a house in a flood zone above the flood level provides added protection from storms. It minimizes the amount of water trying to penetrate the structure, and that ultimately can make the home safer.

If a house is lifted above the ground in a flood zone, it decreases the amount of water entering the house during floods. So, the concept involves repositioning of home to reduce the damage caused by flood water.

A house lift can be done anytime but the house needs some structural changes. The reduction in damages to the property with the help of home lift is worth the investment.

Raising the house above the ground level has its own advantages. One of the impacts of flooding is the mould growth which can be prevented by this technique. Another advantage of the house lift is that the value of the property increases as it becomes a safer house in a flood zone.

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Pascal's Law - an overview | Science Direct Topics



Abhisri Gupta and Jayati Damodar Thanki
with their project “The Hydraulic Home Lift”

Transport & Communication

A Vision for the Future

Tanmeet Kaur¹, Deepanshika², Rajni Teckchandani³, Anjali Ahuja Sadhu⁴

In the next two decades, transportation will undergo a radical transformation. Our vision for a Futuristic Smart Transportation Hub envisions a world where multiple modes of transport, both on the ground and in the air, work together seamlessly. Cars, bikes, drones, rockets, and flying vehicles will no longer function as isolated systems but will be integrated through advanced communication networks to ensure safety, efficiency, and smooth coordination.

The core of this transformation lies in smart technology. With the help of sensors, satellites, and futuristic networks like 6G, traffic management will become far more advanced, reducing congestion, preventing accidents, and enabling faster, more efficient travel. Whether you're traveling in a car, riding a bike, or flying in a drone, everything will be connected, ensuring that all modes of transportation operate harmoniously in the same shared space.

In the future, intelligent systems will coordinate transportation, making travel safer and faster while using resources like space and energy more efficiently.

1. Drones and Flying Cars Soaring Above Us

The concept of drones and flying cars has long been a vision of science fiction, but it is becoming a reality. In the coming decades, these advanced vehicles will zoom above the ground, offering faster, more efficient ways to travel. These aerial modes of transport will not only alleviate traffic congestion but will also provide new avenues for delivering goods and people. Through integration with existing transportation systems, drones and flying cars will redefine urban mobility, bringing efficiency and innovation to our cities.

2. Helicopters Will Land Anywhere

In a world where vertical transportation becomes more main stream, helicopters will no longer require large, traditional helipads. Instead, these aircraft will be able to land in multiple locations, such as on rooftops, designated hubs, or even in open spaces within cities. This flexibility will make helicopter transportation more accessible and integrated into urban environments, allowing for quicker, more direct travel. As technology progresses, these flexible landing zones will enhance the overall flow of transportation, improving accessibility and reducing travel time.

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3. Vertical Traffic Lanes: A New Way to Navigate the Skies and Streets

As cities grow and expand, the need for space-efficient solutions becomes critical. One of the most promising innovations on the horizon is the concept of vertical traffic lanes, similar to the floors in a building. By utilizing the airspace above us and creating multi-level lanes, we can reduce congestion and optimize the use of available land. These vertical lanes will accommodate various forms of transportation—cars, drones, and flying vehicles—ensuring smooth travel through both ground and aerial routes. This innovative approach will help cities manage the increasing demand for transportation while reducing the environmental impact of urban sprawl.

4. Satellites and Sensors Controlling Traffic from Above

The future of transportation will not only be about advanced vehicles but also about the intelligent systems that manage them. Satellites and sensors will play a pivotal role in controlling traffic, both on the ground and in the air. These technologies will monitor traffic patterns, adjust routes in real-time, and ensure that vehicles of all types move in a coordinated manner. With the help of satellite communication and smart sensors, traffic flow will be optimized, accidents will be minimized, and transportation networks will become more efficient, safe, and connected.

These advancements, combining innovations in vehicle technology, traffic management, and urban planning, promise to transform transportation into a seamlessly connected system that is faster, safer, and more sustainable. As these technologies evolve, we can expect a future where transportation is no longer bound by the constraints of today's systems, offering exciting possibilities for cities and their inhabitants.

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Holistic Education - Role Played by Online and Offline Teaching

Kamaljeet Kaur¹ and Priyanka Goel²

Abstract

Holistic education is an approach to learning that emphasizes the development of a person- intellectually, emotionally, socially, physically, and sometimes spiritually.

This approach recognizes that individuals are complex and multifaceted, therefore; the education should strive to nurture all aspects of their being. Holistic education not only prepares students for academic success, but also enables the students to learn the challenges of living as an integrated whole. It is founded on the belief that learners may find their identity and purpose in life through making connections with their local community and the natural environment, as well as instilling universal human values like empathy, integrity and respect.

It has been experienced that holistic education gets a setback when teaching mode is shifted from offline to online.

Offline teaching involves physical classrooms and in-person learning of learners, direct teacher-student interactions, while online teaching opens cloud based learning programmes, access to educational resources globally, still Offline teaching is much better for Holistic development of learners in many aspects .

Keywords: Holistic Education, Multifaceted, Integrated, Empathy, Integrity, Community, Environment

Introduction

Holistic learning is a relatively recent method of education in which the educator tries to meet the learner's physiological, interpersonal, artistic, intellectual, ethical, cognitive, and religious requirements as well as his or her intellectual demands. It can be defined as a philosophy and pedagogy of education based on development of a person as an integrated whole.

Concept of Holistic Education

The concept of holistic education can be found in the notable works of some educationists, like John Dewey, Maria Montessori, Rudolf Steiner, Jean Piaget. These educationists have significantly contributed to the concept of holistic education, emphasizing the importance of integrating intellectual, emotional, social, physical, and spiritual development in the learning process.

“Education should no longer be mostly imparting of knowledge, but must take a new path, seeking the release of human potentialities.”- Maria Montessori (1870-1952)

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What Maria Montessori remarked is even more pertinent in the twenty-first century, because scholastic superiority is no longer sufficient to ensure success and pleasure in life and work. Holistic education is more vital today than it was a century ago.

This approach aims to focus on all aspects of personal learning, growth and development of an individual. The predominant objective of holistic education is not only to prepare students for academic excellence, but also enable them to acquire and learn the challenges of living as a whole, i.e., learning about themselves, about healthy relationships, social responsibilities and humanitarian values.

Holistic education prepares a student for lifelong learning and fosters them towards the life skills, attitudes and personal awareness that the student will need in this complex world. Therefore, the new role of educators ought to be facilitators of learning where students should have opportunities for real choice at every stage of the learning process.

In short, holistic education refers to cultivating all aspects of an individual for a well- rounded and fulfilling life. It also lays a strong foundation for the student's future endeavours.

The Key Principles of the Right Approach of Teaching for Holistic Development:

- (I) **Nature of Content:** Applies the right strategy
- (II) **Student-Centered:** The main focus is emphasized on the learner's needs, interests, and experiences.
- (III) **Inquiry-Based:** It paves and encourages curiosity, exploration, and discovery in learners.
- (IV) **Collaborative:** Fosters a sense of community and mutual respect.
- (V) **Reflective:** Encourages self-awareness, self-assessment, and growth.
- (VI) **Holistic:** Address the intellectual, emotional, social, physical, and spiritual aspects of the learner.

Benefits of the Right Approach of Teaching

Implementing the right approach to teaching can have a profound impact on students, educators, and the learning environment as a whole.

Some of the benefits include:

- (I) **Positive Learning Culture:** A positive learning culture is established, promoting a love of learning, creativity, and innovation.
- (II) **Increased Collaboration:** Collaboration among educators, students, and the broader community is fostered, leading to a more cohesive and supportive learning environment.
- (III) **Improved Academic Outcomes:** Academic outcomes improve, as students achieve higher grades, better test scores, and increased academic achievement.
- (IV) **Reduced Achievement Gaps:** Achievement gaps are reduced, as all students have access to high-quality instruction and support.

By adopting the right approach to teaching, educators can create a transformative learning environment that benefits students, educators, and the broader community.

Shifting from Traditional to Holistic

The traditional teaching-learning approach focused on transmitting knowledge from teacher to student. However, this approach had certain limitations and often neglected the complexities of the learning process.

The Role of the Teacher

- (I) **Facilitator:** Guides and supports students in their learning journey. -Mentor: Provides guidance, encouragement, and constructive feedback. -Co-Learner: Engages in the learning process alongside students.
- (II) **Benefits of the Right Perspective:**
- (III) **Deeper Learning:** Students develop a deeper understanding of subject matter.
- (IV) **Increased Engagement:** Students are more motivated and invested in the learning process. -Improved Outcomes: Students achieve better academic and personal outcomes.
- (V) **Lifelong Learning:** Students develop the skills and mindset necessary for lifelong learning.

Offline Learning and Its Role in Holistic Education

Offline teaching, which takes place in a physical classroom or setting, offers unique opportunities for holistic learning. Offline teaching allows for direct human interaction, which is essential for developing social skills, empathy, and emotional intelligence.

Offline Teaching enables hands-on, experiential learning, which can be particularly effective for subjects like science, art, and physical education.

It allows teachers to pick up on non-verbal cues, such as body language and tone of voice, which supports students' emotional needs. Moreover, it fosters a sense of community and belonging among students, which is critical for their emotional and social development.

Effective Offline Teaching Methods

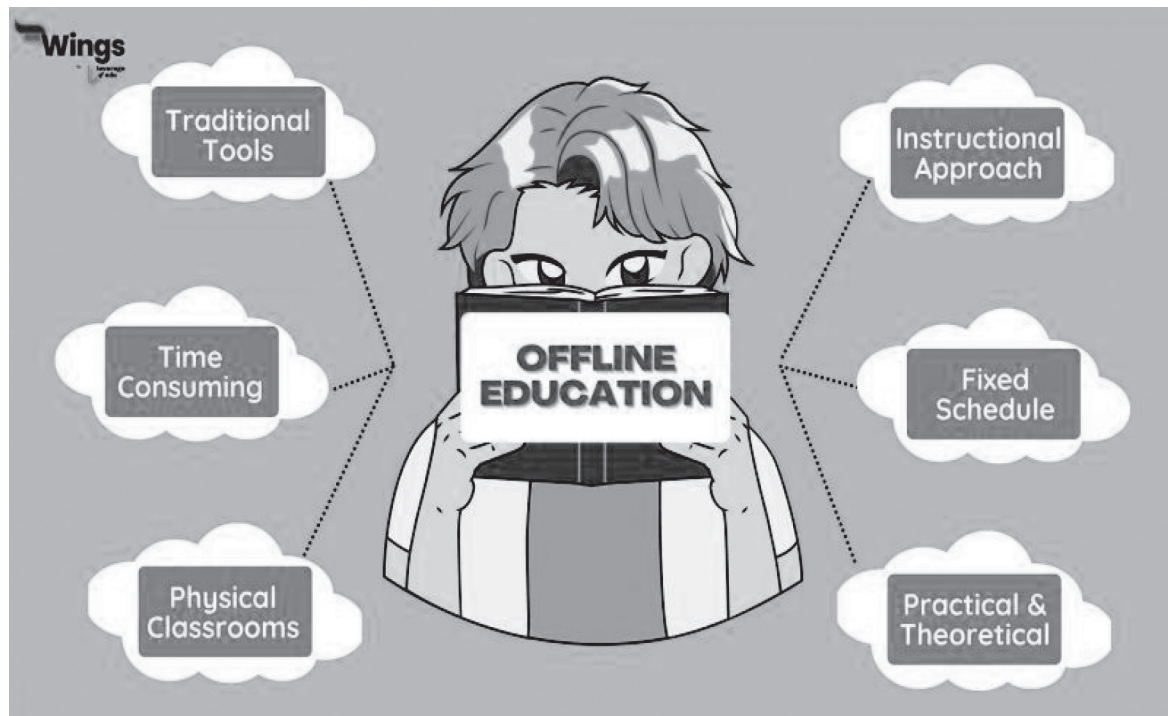
- (I) **Project-Based Learning:** This method encourage students to work on real-world projects, promoting critical thinking, problem-solving, and collaboration.
- (II) **Experiential Learning:** Students use hands-on experiences, such as field trips, experiments, and simulations, to promote deeper learning and engagement.
- (III) **Mindfulness and Meditation:** Helps to incorporate mindfulness and meditation practices to promote emotional well-being and reduce stress in learners.
- (IV) **Arts Integration:** Incorporate arts, such as music, dance, or visual arts, to promote creativity, self-expression, and emotional intelligence.

Strategies to Promote Consistency in Offline Teaching

- (I) **Standardized Curriculum:** By establishing a standardized curriculum to ensure consistency in content and instruction.
- (II) **Teacher Training and Support:** Providing ongoing teacher training and support to promote consistent teaching practices.

- (III) **Lesson Planning and Collaboration:** Encouraging teachers to plan lessons collaboratively and share resources to promote consistency.
- (IV) **Assessment and Feedback:** By regularly assessing student learning and providing feedback to teachers to help them refine their instruction and promote consistency.
- (V) **Classroom Observations and Coaching:** Conducting regular classroom observations and providing coaching to teachers to support consistent teaching practices.

Substantial Benefits of Offline Classes



The Covid-19 pandemic caused a seismic upheaval in the global educational system. Because of the implementation of lockdown, physical classrooms were closed, and online education became the new standard.

While online learning has kept education alive during these difficult times, it cannot totally replace the holistic aspect of offline education.

Offline classes hold significant advantages over online classes in many situations. Many subjects, like science or art, benefit greatly from in-person labs, workshops, and practical sessions that online platforms struggle to replicate. The classroom environment fosters social interaction and collaboration skills through group work and discussions, which are crucial for future success in many fields. Offline classes foster a sense of community and allow for dynamic discussions, brainstorming sessions, and building a strong learning network with classmates and instructors. Professors can answer questions and provide feedback in real-time, clarifying doubts and gauging understanding.

Moreover, offline education also allows teachers to monitor the responses and behaviour of their students and accordingly address them as and when required. Hence, no matter how advanced online education is, offline education will continue to play a vital role in the development of students.

Online Learning and Its Role in Holistic Education

Online teaching-learning requires a unique set of skills, strategies, and perspectives. To be effective educators one must adopt a student-centered, flexible, and technologically savvy approach.

Key Principles of Effective Online Teaching-Learning:

- (I) **Student-Centered:** The online teaching learning focused on the learner's needs, interests, and experiences.
- (II) **Flexibility:** It is more adaptable and responsive to students' diverse needs and learning styles. **Clear Communication:** Helps to establish clear expectations, provides regular feedbacks, and encourages open communication.
- (III) **Technical Proficiency:** Helps to develop skills in using digital tools, platforms, and multimedia resources.
- (IV) **Continuous Improvement:** Regular assessment and helps to refine online teaching practices to enhance student learning.

Strategies for Effective Online Teaching-Learning:

- (I) **To create Engaging Multimedia Content:** Use videos, podcasts, infographics, and interactive simulations to promote engagement.
- (II) **Foster Online Community:** Encourage collaboration, discussion, and social interaction through online forums, groups, and live sessions.
- (III) **Use Data Analytics:** Leverage data and analytics to inform instruction, identify areas for improvement, and enhance student outcomes.
- (IV) **Provide Personalized Feedback:** Offer regular, detailed, and actionable feedback to support students' growth and development.

Benefits of Online Teaching-Learning:

- (I) **Increased Accessibility:** Accessibility to reach students from diverse geographical locations and backgrounds.
- (II) **Flexibility and Autonomy:** Offering students the flexibility to learn at their own pace, anytime, anywhere.
- (III) **Scalability:** Reaching larger audiences and increase student enrollment.
- (IV) **Personalization:** Tailoring instructions to meet individual students' needs and learning styles.

By adopting the right perspective and strategies, educators can create effective online teaching-learning environments that promote student engagement, motivation, and success.

Online v/s Offline Teaching

During COVID-19 pandemic situation; schools were declared closed for offline teaching and students were shifted to online classes. When schools and colleges throughout the world were obliged to shut their doors in order to prevent the spread of the virus, alternate techniques and technologies had to be implemented relatively immediately. Online learning has evolved into a requirement rather than a choice.

Though online learning in India has seen significant growth, particularly with the integration of educational technology (Edtech) into traditional teaching methods, facilitating student-centered learning and fostering collaboration among teachers, students, and parents, cloud-based learning platforms and access to educational resources globally. Still it lacks hands-on experience, such as laboratory sciences, arts, logical and creative thinking and physical education. The structured environment and immediate feedback from teachers to enhance the learning process.

The responses, effectiveness and adaptability in concepts in learners reveals differences in online and offline learning.

1. Adaptability with concept :

Class with offline mode: It was found more effective for practical subjects like science that can provide Hands-on experiences and laboratory practical experience.

Students studied through offline mode were having more knowledge about displacement reactions and identifying the least reactive and most reactive metal through the observations.

Class with online mode: This mode shows effectiveness in access to a wide range of resources but is unable to provide conceptual understanding in theoretical subjects like science.

It was observed that online mode of learning is based on self-paced learning and self-discipline, so students who were attentive and were following instructions were able to respond well.

2. Gaining students' attention :

Class with offline mode: Immediate attention of students can be gained in offline mode of teaching as there are direct interactions, classroom discussions and activities related with the topic.

It was found that students with offline mode were retaining the concepts easily and were able recall also as they were practically involved in the discussions.

Class with online mode: It was challenging for students to gain attention as in online mode it requires more guidance for engagement. Only those students who were well versed with media tools, interactive tools and multimedia content were able to cope up with visual and auditory learning.

3. Managing screen time :

Class with offline mode: As there is zero exposure to screen , students were found to be less distracted while teaching and giving their 100% responses related to the topic.

Class with online mode: Online education requires staying logged in on the screen for an extended period regularly. Long-duration screen time becomes a great difficulty for the students and harmful for their health as well, especially the eyes. Poor Internet connectivity issues also arise multiple times during online sessions.

4. Effect on Creative Skills :

Class with offline mode: Students with offline mode are found to be more creative and can do activities more effectively like construction of models or any device as their mind can involve in imaginative thinking and produce more ideas.

Offline teaching promotes reading of books which enhances creative and imagination skills.

Class with online mode: Students with online mode lack in creative thinking as they are already exposed to online creative ideas so they try to either copy the same or modify that in the name of construction of models. This mode suppresses reading books and focuses on exposure to multimedia content, which is not beneficial for creative skills

5. Effect on ability to work as a Team :

Class with offline mode: It was observed that students who were taught through offline mode were more involved in face to face or in-person interaction so they developed the skill to work in peer group and team work. Students in offline mode were more productive in group projects.

Class with online mode: Students who were taught via Online class lack in effective peer interaction and group discussions , as they are involved in self-pacing learning which depends on self discipline so were less productive in group projects and team assignments.

Bridging the Gap Between Offline and Online Teaching

The integration of offline and online teaching methods can create a seamless and effective learning experience. Here are some strategies to bridge the gap:

1. **Curriculum Alignment:** Shared Learning Objectives ensure that offline and online lessons align with the same learning objectives. By implementation of the Consistent Assessment Methods that help to evaluate students' learning in both offline and online environments.
2. **Blended Learning Models:**
 - A) Flipped Classroom: Deliver instructional content online, reserving offline classes for discussions, activities, and hands-on learning.
 - B) Hybrid Learning: Combine offline and online instruction, using online resources to supplement offline teaching.
 - C) Rotational Model: Rotate students through offline and online learning stations, allowing for personalized instruction and flexibility.
 - D) Online Collaboration: Use online platforms to facilitate collaboration and communication among students, teachers, and parents.

3. Student Support and Resources

- A) Online Resources: Providing students with access to online resources, such as tutorials, videos, and interactive simulations, to supplement offline instruction.
- B) Technical Support : Offering technical support to students to ensure they can access and utilize online resources effectively.
- C) Academic Support: Providing academic support services, such as online tutoring and mentoring, to help students succeed in blended learning environments.

By implementing these strategies, educators can create a cohesive and effective learning environment that bridges the gap between offline and online teaching.

Impact of Online Teaching on Holistic Education

A school curriculum is designed based on the beliefs of Holistic Education but the sudden shift to online learning, due to environmental issues, has impacted the core of normal learning in some ways.

Students from different religions, castes, races, and ethnicities engage, communicate, and participate in an online class, boosting awareness and a feeling of connection for students from diverse backgrounds. Online learning serves the diverse requirements of individual learners even without the physical connection with the availability of customizable content, unlimited learning resources available online, and the freedom to discuss & sort any query one-on-one with the mentor. Texts, graphics, videos, lessons, and multimedia content all play an important part here in making the online learning environment engaging & interesting for learners.

Not only schools, colleges & universities are running online classes but people are finding it extremely beneficial in opting for upskilling courses, certifications & online tuitions from the safety of their home. Besides safety being an undeniable aspect of opting for online learning, the accessibility to quality learning & education is also a major factor.

One of the major positive impacts of online teaching is that it allows the students to learn at their own pace, which can be particularly beneficial for those who need to balance multiple responsibilities. Moreover, it enhances digital literacy as online teaching promotes the development of digital skills, which are essential for success in the modern workforce.

Still there are certain negative impacts and limitations of Online Teaching:

- Limited social interaction: Online teaching lacks the social interaction and human connection that is present in traditional classroom settings.
- Reduced physical activity: Online learning leads to a sedentary lifestyle, which can negatively impact physical health.
- Increased stress and anxiety: Online teaching can be stressful and anxiety-provoking, particularly for students who are not tech-savvy or who have limited access to digital resources.

Conclusion and Solution

The need of the hour is to incorporate certain strategies to promote Holistic Education during Online Teaching:

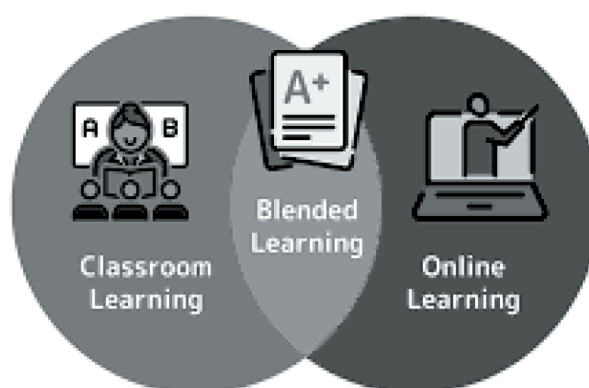
- **Incorporate Social-Emotional learning:** The educators need to integrate activities that promote social-emotional learning, such as mindfulness exercises, group discussions, and peer feedback.
- **Encourage Physical Activity:** The teachers need to devise some activities that will strengthen the physical endurance of students in online lessons, such as virtual fitness classes or outdoor activities that can be completed during breaks.
- **Foster a sense of Community:** To create online communities or discussion forums where students can connect with each other and share their experiences.
- **Provide Mental Health Support:** Offering of mental health support services, such as online counseling or stress management workshops to cater the emotional well-being of students.

Holistic Learning is the optimum learning derived from the holistic curriculum. By acknowledging the potential impacts of online teaching on holistic education and implementing strategies to promote social-emotional learning, physical activity, and community building, educators can help ensure that students receive a well-rounded education that prepares them for success in all aspects of life.

Keeping in view the present situation of weather and pandemic, online mode has become a necessity but switching the education system completely to online mode is not the solution. Blended or Integrated education system can be the solution for holistic learning.

Blended or Integrated Education System

Blended Learning



This method capitalizes on the strengths of both traditional classroom learning and digital education, offering a more dynamic and adaptable learning experience.

Blended learning, also known as b-Learning, is a combination of offline and online instruction where students interact with the instructor, the material, and other students through both a physical classroom and an online platform.

It is important to highlight its hybrid concept, that is, a methodology that adequately aggregates teaching by technological means, without replacing, but integrating with the traditional format. Blended Learning uses technology not only to supplement, but to transform and improve the learning process. Blended learning presents itself as a solution that mixes two possibilities of education and allows the teacher to experiment and increase his results.

Professionals can mix online modules with face-to-face classes, or create an online course as support material for the classroom teaching.

This combination of methodologies also contributes to another change in education that has been debated in recent years: The flipped learning.

Flipped learning is a **teaching methodology that makes the student protagonist in his own learning, promoting an active, investigative and collaborative learning.**

In this model, the student studies a certain topic at home, with the help of technology, and goes to the classroom prepared to debate, discuss his doubts, contribute with ideas and thus exercise an active role in the classroom, being a transmitter of knowledge, not just a receiver.

However, aware that many students and their families still do not have access to computers and a stable internet, blended learning is the best solution to guarantee the right to education for all.

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Exploring need for Enhancing Play Activity Time in School Settings for Holistic Development of Learners.

Ms. Neha Madan¹

Abstract

“Play is the work of the child.” – Maria Montessori.

There is no end to significant quotations embarked by Child Psychologists and experts related to play if we explore. And in depth understanding of these lines indicates that without Play life is meaningless for child. But in present time access to free time has been reduced due to impact of one or other factors such as current life style, changes in family pattern, increased academic pressure and unsafe spaces for children until and unless they are under close supervision of adults or care givers and place of physical aspects of play taken by digital world. In the present study researcher has probed to explore significance of play for holistic development of learners through observation schedule and focused group discussion as a tool in real school settings. Sample comprised of students from class VI-VIII and teachers of elementary classes from selected schools which comprised of approximately of 10 schools and locale for the study was Private Schools from North East Delhi which were part of Internship programme of B.Ed trainees of one of the GGSIP University affiliated B.Ed College in East Delhi. Observation schedule included items covering all aspects of development to analyse role of play activities Similarly FGD was conducted with school teacher to know their perspective about relevance of play activities and need for the same in school settings. From analysis and interpretations of findings it was revealed that in more than 50% schools playground was missing and hardly one games period in a week was given. Mostly students were indulged in their self created games as provision for outdoor games was less. Further findings through observation lead to conclusion that play activities contribute to holistic development of learners. On FGD with teachers it was interpreted that play activities helped them in dealing with socio psychological problems of learners but there is lack of human and non human resources for support of play activities for students in school environment both in term of physical and social resources. On the basis of findings of study researcher has also given few strategies so that play activities can be given due importance for holistic development of learners in school settings.

Keywords: Play, Aspects of learner Development and Holistic Development

Introduction

“Children need the freedom and time to play. Play is not a luxury. Play is a necessity.”

–Kay Redfield Jamison.

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“The creation of something new is not accomplished by the intellect but by the play instinct.”

–Carl Jung

“Play is the work of the child.”

–Maria Montessori

Necessity may be the mother of invention, but play is certainly the father.”

–Roger Von Oech

There is no end to significant quotations embarked by Child Psychologists and experts related to play if we explore. And in depth understanding of these lines indicates that without play life is meaningless for child. Play has always been a part of human culture and it is important from many different aspects for both children and adults, according to many researchers. For the optimal child development that it has been recognized by the United Nations High Commission for Human Rights as a right of every child.

But in present time access to free time has been reduced due to impact of one or other factors such as current life style, changes in family pattern, increased academic pressure and unsafe spaces for children until and unless they are under close supervision of adults or care givers and place of physical aspects of play taken by digital world. In one of the school survey report 1989 survey taken by the National Association of Elementary School Principals found that 96% of surveyed school systems had at least 1 recess period. Another survey a decade later found that only 70% of even kindergarten classrooms had a recess period and almost same reported in many schoolchildren are given less free time and fewer physical outlets at school; many school districts responded to the No Child Left Behind Act of 2001 by reducing time committed to recess, the creative arts, and even physical education in an effort to focus on reading and mathematics.

Hence in the present study researcher would highlight on significance of Play for holistic development of learner on the basis of observations made in real school environments and would identify barriers which hinder opportunity of children to play and stress on the strategies to enhance space for play activities in school

Thus the title of the paper **“Exploring the Impact of Enhanced Play Activity Time on Holistic Development in School Settings”**

The paper has been divided into following sections:

- **Introduction:** Play and its Significance in Holistic Development of Learners
- **Review of literature**
- **Significance of the study**
- **Methodology**
- **Research findings and Interpretation**
- **Suggestions**

Understanding about Play

As described in Bronfenbrenner's Ecological framework for Human Development.

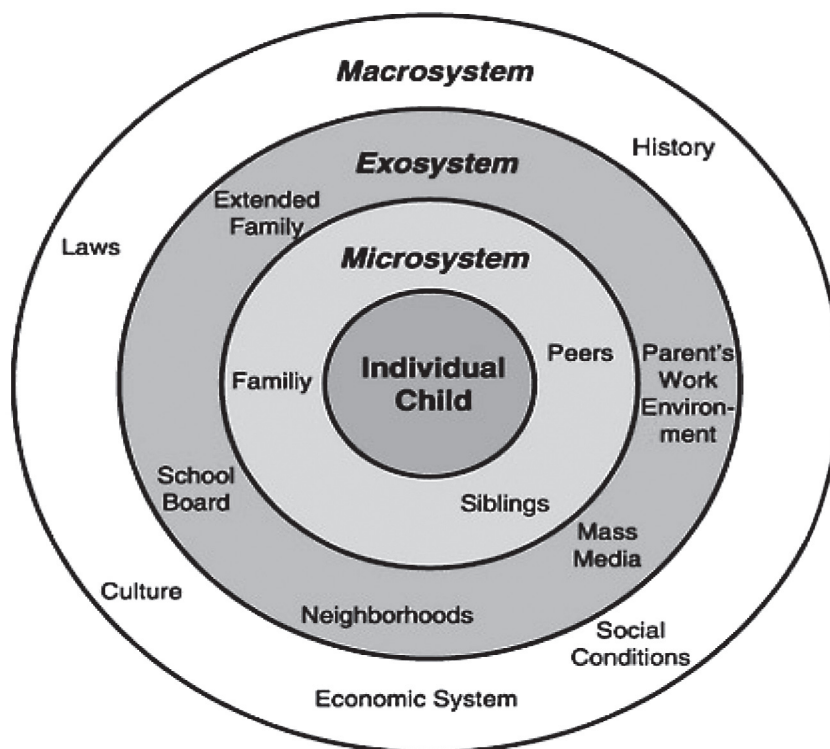


Figure 1: Bronfenbrenner's Ecological framework for Human Development.

Source: <https://www.google.com/search?q=bronfenbrenner%27s+ecological+model+of+human+development>.

And among all the one and only one kind of interaction which influences development of child is interaction during the **Play** be it isolated or in groups. Developing through play and finding one's own identity through it is one of several important components in the development and socialization of us as individuals according to George Herbert Mead (1995). It's not just waste of time. Nor is it just way to keep children busy or out of mischief while parents take care of their own responsibilities. Play has many values for children; one single activity of play is related not only to one aspect of development but has interlinked with *A to Z Components of Development*.

Review of Literature

Lunga, P., Esterhuizen, S. & Koen, M., 2022:

Children's holistic development includes physical, cognitive, socio-emotional, moral and affective development and lies in early childhood development education (ECDE). According to research, children learn through different age-appropriate teaching and learning pedagogies. With this objective study was underpinned by the theory of play as a spiral of learning to demonstrate how a play-based pedagogy could be utilised to enhance holistic development in young children and in the study qualitative approach within the participatory action learning and action research (PALAR) was adopted to interrogate the extent to which

a play-based pedagogy could be useful in enhancing the holistic development of young children in zones of South Africa and the results of this study proposed that to support holistic development in young children, practitioners and parents should maximise the use of a play-based methodology in both social and learning environments.

Ginsburg, 2007:

A survey conducted by the National Association of Elementary Principals found that 96% of surveyed school systems had at least one recess period, but nearly a decade later around **70% of students had one recess period**. Currently, many school age children are given less free time and fewer physical outlets throughout the school day. Because students have experienced a decrease in free time, implications on the **child's ability to store new information has also decrease. Reduced time for daily physical activity is a major contributing factor to the disconnect occurring in academic abilities especially between boys and girls.**

Significance of the Study

From the review and through analysis of the content related importance of play for holistic development of children and the overview of different type of play activities in which children's are involved in this digital world the key focus of the study is on to conceal information related to importance given to play in educational environment and variety of play activities in which children and indulge, the findings of the study would be helpful in making curriculum planners and educationists to provide space and time for play activities which could be helpful in development of holistic learners in society. Hence the title of the present study is **Exploring the Impact of Enhanced Play Activity Time on Holistic Development in School Settings**

Objectives of the Study

1. To probe about the concept and nature of Play in relevance to child Development.
2. To review research studies on impact of Play activities for Holistic Development of learners in School Environment.
3. To examine role of Play activities in holistic development of learners in school settings.
4. To explore strategies for enhancing span for Play Activities in School Environment for Holistic Development

Methodology:

- **Type of Study:** Descriptive
- **Locale of the study:** Private Schools from North East Delhi locale which were part of Internship programme of B.Ed trainees of one of the GGSIP University affiliated B.Ed College in East Delhi.
- **Sampling:** Purposive Sampling Technique was adopted and sample comprised of students from class VI-VIII and teachers of elementary classes from selected schools which comprised of approximately of 10 schools.

- **Tools:**
 - i. **Observation Schedule** for obtaining information related to different types of Play in which children are involved in school time and to analyze various aspects of development attained.
 - ii. **Focused Group Discussion** with school teachers of class VI-VIII to know their views about relevance of play time for holistic development of learners.

Research findings and Interpretation

The present study was descriptive in which **Observation schedule** was used one of the main tool in which observers (involved in collection of data i.e. B.Ed trainees) were expected to observe children during play in school time at different places and time period. The observation schedule included components focused on analyzing following:

- **Description About**
 - i. Types of Play in which children were involved
 - ii. Place and duration for Play time.
- **Contribution of Play at various aspects of Development mainly**
 - a) **Motor skills**
 - b) **Language used during play**
 - c) **Group structure**
 - d) **Individual and group behavior**
 - e) **Formation of rules and regulation**
 - f) **Negotiations and resolving conflict**
 - g) **Friendships and social relationships**

Another analysis **focused on Focused Group Discussion** with school teachers of class VI-VIII to know their views about relevance of play time for holistic development of learners. It included different statements on which data was collected through FGD with teachers.

Research Analysis about description of types of Play in which children were involved and Place and duration for Play time

- Through Observation of Play activities in different schools selected it was found that in majority of schools playground is not the part of the infrastructure most of the time students play within classrooms, in corridors or cemented floor of terrace within school campus.
- From the 10 schools as a part of study only in 4 schools separate games period was given in time table under guidance of sports teacher and in remaining students used to get play time during recess, free period or arrangement periods and at time day get over in cabs or busses etc. the maximum duration for which students get chance to play is 25- 30 minutes.
- Type of plays which were played included both outdoor and indoor games, mostly self created by students.

Outdoor Games	Indoor Games
Kho-Kho Chain-Chain Badminton Leg Raise Pakdam Pakddai Green light and Red light Touch and Run Touch and Pass Platform and Engine Football YoYO	Find words ATLAS Sit-Stand Dumb Charddas Gesture game Pen fighter

Research Analysis about description of Contribution of Play at various aspects of Development

Play observation was done with rational of analyzing how various types of play activities contributing on various aspects like cognitive, physical gross and fine motor, emotional, social, language development among learners resulting into holistic development. As in the process of observations done Major findings indicated –

S. No.	Developmental Skills	Description from Play Observation
1.	Motor skills	During observation of play activities in which students were indulged it was analysed that majority of them leads to inculcation of gross and fine motor skills like sitting, running, jumping, throwing ball, catching, eye hand coordination etc. for example games like Kho-Kho, Chain-Chain, Badminton, Leg Raise, Pakdam Pakddai etc few of them which were played outside classroom and others like Find words, ATLAS, Sit-Stand etc which were played inside classrooms. Play contributes to Physical Development among children which is most essential part of proper development of human being.
2.	Language used during play	It was analysed during observations that students used to remain formal in way of interaction when they were under guidance of sports or physical instructor like during sports period they used to speak in limits as per requirement of games. An observation made in most of the school leads to interpretation that social constructivism as revealed in Vygotsky's theory was actually taking place during play time. Though games can be consider as simple recreational medium for learners but actually with help of language either verbal or non verbal mode of expression used it leads to enhancement of vocabulary, exchange of words and most importantly positive impact on thought process. For example in games like find words, Atlas, Dumms Charddas etc thought process along with language was used along with emotional expression. Major role played by these activities is in inculcation of metalingustic awareness.

S. No.	Developmental Skills	Description from Play Observation
3	Group structure	Like in majority of observations it was found that group structure was formed on the basis of likeness, compatibility, understanding with each other. Groups formed were mainly small and closed except for outdoor games in which teams were formed as per requirement of games like in Kho-Kho, throw ball, football etc. Mixed group of boys and girls were very few in number to be observed mostly boys-boys, girls-girls used to form group. Group structure was also close mainly hardly any new member was given entry in group, they used statements like “<i>yeh hmara group hai hum kisi ko entry nahi dete</i>”, “<i>tum dusri team ke ho</i>” etc. Overall it was analyzed that social skills like of cooperation, coordination, we feeling, togetherness, caring for other team members, how to greet each other were developed as a result of play activities.
4	Individual and group behavior	In few of games like kho kho, table tennis, football etc development of leadership, self confidence, decision making power was also developed as they were leading, taking decisions which automatically involved integration of various aspects of development. Out of 10 schools observed as a part of study in 80% of the school observed it was found that gender biasness was part of play groups
5	Formation of rules and regulation	In most of the games rules formed were stated before beginning so that no confusions or clashes arise in between. Games like football, chess, and table tennis were used to have formal set of rules which used to remain fixed most of tie as instructed by sports instructor. While in games which were self created as peer influence rules were formed as per individual or group decision. Like <i>in game pakkadam pakdai certain code was formed for out and entry of another member similarly in pen fighter game rule was formed related to number of turns etc.</i> Through observation was analysed that these games were imparting various skill among learners which was much more than just playing game. In tenure of playing they were interlinking cognitive-socio-emotional aspects and most importantly inculcating values of adjustment from each other.
6	Negotiations and resolving conflict	Skill of compromising, adjustment, understanding each other emotions all were observed and concealed under umbrella of different play activities in which students were indulged. Varieties of emotions like aggression, failure, victory were expressed by learners’ during different games. The way conflicts were being resolved as putting them forward on learning skill of leadership, decision making and most importantly Moral Development.

S. No.	Developmental Skills	Description from Play Observation
7	Friendships and social relationships	During observation it was found that the most important mediator of developing social relationships and enabling learners to understand value of friendship and socialization with others is PLAY . As it was observed from group structures and way the conflicts were resolved and rules were formed that how important GROUP MEMBERS become for each other. For example KHO-KHO was game in which social relationships were strongly formed and observed among team members.

From the observations made it was analyzed and interperated that all play activities either in physical mode of action, cognitive in nature or expressive in nature leads to holistic development of learners’.

Analysis from FGD with Teachers: Relevance of Play Activities for Holistic Development of Learner

In the present study to know the perspective of teachers about relevance of Play time and activities in school for holistic development of learner’s focus group discussion was held primarily on the following key points:

1. From your perspective, how important do you think play activities are for the overall development of students?
2. In what ways do you believe play contributes to the academic and social growth of students?
3. Are there any challenges or obstacles you face in integrating play activities into daily time table of school?
4. Do you face challenges in from parents or administrators who may question you the educational value of play in school time?
5. Can you share any specific instances where you’ve noticed a positive impact of Play activities on student learning?
6. Your view about institutional changes or support systems which would further enhance the integration of play in school environment.

Data analysed was interpreted on the basis of **FGD** into following sections:

• Positive Impact of Play on overall Development of Learners

On the basis of FGD with teachers in most of the schools it was revealed that majority of the respondents considered that during play time children feel stress free, relax from overburden of academics activities, develop social bonding with each other, enhance creativity in designing and framing strategies to solve quizzes, puzzles etc.. As one of the respondent said some students keep on waiting entire week for games period, yoga period or free time so that they can relax and play. Especially after post pandemic student stamina to retain or pay attention in class and to attend one period after another has been reduced. During FGD one instance came in which one of the respondent said that through play activities it become for us to deal with behavioural problem of learners like bullying, aggression, lack of cooperation and patience to acceptance of others view points etc. few point during discussion also highlighted play activities also impact

students learning as after spending time in play activities students were able to connect themselves better in theory classes. It was concealed that play activities lead to holistic development of learners personality which would be in future better able to become productive citizen of society.

- **Challenges or obstacles faced in Integrating Play Activities into daily time table of school**

Though it was accepted urge by all respondents play is an vital element for learners holistic development but lot of challenge aroused in providing time for it to all classes and students. With lot of trial and errors trick only one period was possible in entire week that too in few schools. And even lunch breaks are short, students get very less time to interact with each other and physically move out. According to few of them there are so many academic and non academic activities to be conducted and time span is less and in near about 40% of schools respondent said that in era of digital technology students want to spend more time in ICT labs or in virtual world that there body has become more lethargic.

- **Institutional changes or support systems which would further enhance the integration of play in school environment.**

From the review of research studies it was indicated that most of time of child life is spend in school and in that environment of school plays crucial role in development of personality of learners. The positive and supporting environment in school results into welcoming culture for all stakeholders.

In the present study from the observation and with FGD with teachers as a respondent it was revealed that to maximize potential of Play activities for learners holistic development institutional need to support in form of both human and non human resources. It was mentioned during discussion that one need more space and time for play activities. As few of schools were constructed in residential areas in building form with no space for outdoor activities the need for creating and managing this is required. It was also reflected from discussion that need for sports professional is also there so that proper guidance can be provided to learners.

Strategies for Enhancement of Span for Play Activities in School Environment for Holistic Development of Learners.

From the findings of the present study conducted and data analysed on the basis of Observation and FGD following strategies can be considered for optimum utilization of potential of play activities:

- Orientating Parents, Teachers and other Stakeholders about the importance of play in child development by organizing conference, talk by experts, workshops and informational sessions.
- Ensuring Involvement of teachers in planning and implementing play-based activities.
- Emphasizing School management authorities to provide space for outdoor play and nature exploration to enhance physical well-being and appreciation for the environment by inculcating activities like gardening, nature walks, and outdoor games.
- Utilizing age-appropriate technology into play activities to enhance digital literacy and creativity and by usage of educational apps and interactive tools that align with learning goals.
- Integrate play into the curriculum to make learning more enjoyable and using educational games and activities that align with academic objectives.

Conclusion

Play is not only one of the important source of development but its provides a joyful experience for children, and it opens up the world to a child. From the findings of the study as a researcher in the present study there is utmost need to provide purposeful play opportunities for children that will enhance development and lead to learning and we as educators or caretakers never forget that one of the greatest gifts of childhood is the ability to pursue seemingly insignificant interests and to explore tiny details to one's heart's content.

Hence the present study **Exploring the Impact of Enhanced Play Activity Time on Holistic Development in School Settings** need to enhance space and time for play activities has been emphasized especially in this digital era where numerous health and psychosocial behavioural issues are on high peak stage. Through play children get opportunity for holistic development and to be on the path of self development. As play based pedagogy has been stressed in NEP 2020 also, so that learning becomes joyful an meaningful.

To conclude let's remember Quote

“Children learn as they play; most importantly, in play, children learn how to learn”.

---Fred Donaldson

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