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Assessing the Effectiveness of Curriculum Implementation Across Global Educational Systems

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Joevie R. Alvarado
Science 8 Teacher, McKinley Institute of Technology, Redwood City California, USA
violetgurl20@gmail.com

Regina P. Galigao
Professor, Graduate School, Cebu Technological University – Main Campus Cebu City, Cebu Philippines
reginpgaligao@gmail.com

Abstract

This study investigates the effectiveness of curriculum implementation across selected countries in Asia, Europe, North America, and South America, focusing on how educational frameworks are applied in classrooms to enhance learning outcomes. Using a qualitative comparative research design and a systematic literature review, this research identifies patterns and challenges in curriculum implementation worldwide, emphasizing content knowledge, pedagogical skills, and teaching methods. Findings reveal that successful implementation requires coherence between policy and practice, as well as access to resources and continuous professional development. In developing regions, challenges such as inadequate infrastructure and teacher training hinder effective curriculum delivery, whereas in developed countries, evolving standards and technological integration create additional pressures. The study highlights distinct approaches across continents: Asia's focus on STEM and innovation, Europe's balanced emphasis on foundational and advanced skills, North America's critical thinking and social development frameworks, and South America's commitment to inclusivity and practical education. These insights underscore the importance of context-specific strategies and a global recognition of critical thinking, problem-solving, and collaborative learning as core competencies. This comparative analysis provides valuable recommendations for educators and policymakers to address disparities, enhance implementation quality, and foster equitable access to quality education globally.

Keywords: Curriculum implementation, comparative analysis, educational frameworks, and pedagogical skills

Introduction

The effectiveness of curriculum implementation, defined as the process by which educational frameworks are practically applied in classrooms to achieve desired learning outcomes, is a critical factor influencing global education quality (Fullan, 2007). This process involves the translation of curriculum designs into teaching strategies, the provision of adequate resources, and the alignment of educational policies with classroom practices (Spillane et al., 2002). Effective implementation is characterized by well-prepared educators, sufficient materials, and continuous assessment mechanisms to ensure that educational objectives are met (Guskey, 2002). However, the success of curriculum implementation varies worldwide due to differing socio-economic conditions, teacher training quality, and resource availability (UNESCO, 2015). In developed countries, structured educational systems often facilitate better implementation and higher student achievement (OECD, 2019). In contrast, developing regions face significant challenges, such as inadequate infrastructure and lack of trained teachers, which impede effective curriculum delivery (Wang, 2011). Research highlights the need for coherent policy alignment, ongoing professional development, and robust support systems to enhance curriculum implementation globally (Darling-Hammond, 2010; Sup Ovitz & Turner, 2000). Understanding these dynamics is essential for improving educational outcomes and ensuring equitable access to quality education worldwide (Schweisfurth, 2013).

The study on assessing the effectiveness of curriculum implementation in selected countries in Asia, Europe, North America and South America was conducted to address significant gaps and challenges that impede optimal educational outcomes across various contexts. Despite extensive efforts to develop comprehensive curricula, discrepancies in implementation quality persist due to factors such as inadequate teacher training, insufficient resources, and lack of alignment between educational policies and classroom practices (Fullan, 2007; Guskey, 2002). In many developing regions, these issues are exacerbated by socio-economic constraints and infrastructural deficiencies, leading to subpar student performance and educational inequities (UNESCO, 2015; Wang, 2011). Even in developed countries, the complexity of translating curriculum design into effective teaching strategies remains a concern, as teachers often struggle with adapting to evolving educational standards and integrating new technologies (Darling-Hammond, 2010; Supovitz & Turner, 2000). Furthermore, the lack of continuous assessment and feedback mechanisms hinders the ability to identify and address implementation gaps promptly (Spillane et al., 2002). Therefore, this study aims to explore these challenges in-depth and propose solutions to enhance the overall effectiveness of curriculum implementation globally, thereby improving educational quality and equity (Schweisfurth, 2013; OECD, 2019).

The necessity to conduct an in-depth analysis of the conclusions drawn from various studies on the effectiveness of curriculum implementation worldwide arises from the persistent and multifaceted gaps identified in the literature. Despite numerous research efforts, significant disparities remain in how effectively curricula are implemented across different educational contexts, influenced by factors such as teacher preparedness, resource availability, and policy coherence (Fullan, 2007; Guskey, 2002). Moreover, the conclusions of existing studies often highlight regional disparities and suggest the need for more tailored and context-specific strategies, yet a comprehensive synthesis and comparative analysis of these findings are lacking (UNESCO, 2015; Wang, 2011). By systematically analyzing the conclusions of these articles, this research aims to identify commonalities and divergences, uncover underlying reasons for implementation challenges, and propose more universally applicable recommendations for enhancing curriculum effectiveness globally (Darling-Hammond, 2010; Supovitz & Turner, 2000). Such an analysis is crucial for informing policymakers, educators, and stakeholders to bridge the implementation gaps and promote equitable and high-quality education worldwide (Schweisfurth, 2013; OECD, 2019).

Objectives

This study explores the curriculum implementation in terms of content knowledge, pedagogical skills, and teaching methods across selected countries in Asia, Europe, North America and South America that can identify commonalities of curriculum implementation.

Methodology

This study employed a qualitative comparative research design, specifically the systematic literature review and data mining method as the primary method to analyze and compare curriculum implementation across different countries. The methodology involved the following steps; comprehensive literature review conducted on various academic databases to identify peer-reviewed articles and published studies from 2014-2024, extracting date from relevant curriculum implementation across countries in the world to identify patterns and common curriculum implementation practices such as content knowledge, pedagogical skills and teaching methods, summarize the key findings, highlighting similarities and differences in curriculum implementation across countries and lastly, results of systematic reviews across different countries were interpreted in the context of educational policies.

Presentation of Data, Interpretation and Analysis

This section presents a comparative analysis of curriculum implementation of various countries in terms of the content knowledge taught at every educational level.

In curriculum implementation, content analysis provides an essential perspective for understanding educational approaches and priorities in various Asian, European, South America, and Asian countries. In order to find themes, patterns, and the emphasis put on different subjects and competencies, this strategy entails methodologically examines the curriculum, including the competences, educational system, and the goal of education.

Table 1: Content Knowledge

ASIA	**Reasons**
Japan	Developing social competencies for survival; developing human resources for a brighter future; building safety nets for learning; and building bonds and establishing vibrant communities (Naiki, 2016).
Taiwan	Developing moral, cognitive, physical, social, and aesthetic development of the citizens (Chen, H., & Fan, H. H., 2014).
Singapore	Emphasizes values of respect, responsibility, resilience, integrity, care and harmony (Salamanca, B. S. SEAMEO AND ASIAN REGIONALISM: A HISTORICAL OVERVIEW).
Analysis Points to consider for interpretation and analysis	Human Resources Building safety nets for learning Building bonds Establishing vibrant communities Developing moral, cognitive, physical, social, and aesthetic development of the citizens Emphasizing values of respect, responsibility, resilience, integrity, care and harmony.
EUROPE	**Reasons**
England	Within the foundation stage/phase, many students in England and Wales attend a "reception class" in primary school (Hood, C., & Dixon, R. (2015).
Italy	Students are tracked in academic as well as technical and vocational schools in Italy and may attend specialized art schools, at the upper secondary level (Stephens, M., Warren, L. K., & Harner, A. L. (2015).

France	The education system in France have three types of upper secondary school to qualify a student to enter university, although certain tracks are more likely to lead to university: the academic branch typically leads to university and other forms of higher education; the technological branch may also lead to specialized technological or professional forms of higher education; and the vocational branch more often leads to the labor force and/or job training (Stephens, M., Warren, L. K., & Harner, A. L.., 2015).
Points to consider for interpretation and analysis	Attend a "reception class" in primary school May attend specialized art schools, at the upper secondary level Leads to university and other forms of higher education; the technological branch may also lead to specialized technological or professional forms of higher education; and the vocational branch
NORTH AMERICA	**Reasons**
Canada	Core competencies, together with literacy, numeracy and essential content and concepts are at the center of the new curriculum (Comparative Indicators of Education in the United States and Other G-20 Countries: 2015)
United States	The school curriculum focuses on developing fundamental skills in subjects like English Language Arts (ELA), math, science, and physical education. Along with academics, elementary schools focus on social and emotional development, helping students build life skills such as teamwork, communication, etc.
Mexico	Professional technical education is intended to train students for technical employment and students have the option to take general subjects in addition to their vocational training.
Points to consider for interpretation and analysis	Literacy and numeracy center of the curriculum Focus on developing fundamental skills in various subjects and focus on social and emotional development. Focuses on professional technical education.
SOUTH AMERICA	**Reasons**
Argentina	The organizational structure of the higher education system consists of the university institutions and non-university institutions that pursue activities in a variety of disciplines and offer degree programs, undergraduate programs, and graduate programs, and university institutes are confined to a single discipline (Acosta & Marquina, 2011).
Brazil	The 9 years of education is compulsory and are known as the "fundamental education" in in which students equips with the foundational skills in reading, writing and numeracy (In Brazil, Teaching and Learning Happen Outside the Box, 2014).
Peru	The education system mirrors these political and economic developments. That lacks government support, receiving poor education without regulation and are often overwhelmed by large class size (Monroy & Mackie, 2022).
Points to consider for interpretation and analysis	The establishment of university and non-university institutions with variety of of disciplines. Fundamental education was implemented to help students acquire foundational skills Curriculum implementation reflects political and economic developments.

The educational system worldwide through curriculum implementation reflects the diverse educational priorities and cultural contexts, each aiming to equip students with the skills and knowledge needed to succeed in a globalized world while fostering innovation, research, and practical skills development at different stages of education.

The countries in Asia like Japan, Taiwan, and Singapore center around a comprehensive improvement that incorporates moral, mental, physical, social, and tasteful perspectives. The vital information and specialized subjects are evident in a critical interest on development of research, and innovations. The instruction commonly incorporates subjects like language, math, science, and social examinations, while optional schooling grows to center subjects and electives, with advanced education being serious and research arranged.

The content knowledge in the curricula of Japan, Taiwan, and Singapore reflects distinct yet interconnected educational goals, shaped by each country's socio-cultural context and long-term national objectives.

Based on various literature review, both Japan and Singapore emphasize the development of human resources and social competencies, though with different nuances. Japan's approach is broader, incorporating the idea of community and collective well-being, while Singapore focuses more on individual character development and resilience. In addition, compared to Japan and Singapore, which emphasize specific competencies and values. And also, Taiwan implemented various comprehensive approach to education that aims to develop the development aspects of an individual's personality and skills. Thus, it reflects a more integrated view of what constitutes a well-educated citizen.

However, the curriculum implementation in Taiwan and Singapore both highlighted the importance of moral and ethical development, which deeply rooted in traditional values, and oriented towards contemporary societal needs, such as social harmony and personal responsibility.

By comparing content across different countries, educators and policymakers can gain knowledge into the cultural, social, and economic factors that shape educational goals. In regions like Asia, with its focus on STEM and rote learning, to North America's emphasis on critical thinking and holistic education, Europe's balanced approach to traditional and modern competencies, and South America's focus on inclusive and social justice, content analysis reveals the unique educational paradigms that influence student learning and development globally.

In Europe, nations like Britain, Italy, and France consolidate an extensive educational program in essential and optional training with subjects like language, math, science, history, topography, and expressions. Optional schooling frequently incorporates tracks and thorough scholastic projects, planning understudies for advanced education, which centers around scholarly greatness and exploration.

The curriculum structures in England, Italy, and France highlight diverse educational pathways designed to meet the specific needs of students at various stages of their academic journey. Each country's approach reflects a balance between general education and specialized training, preparing students for both higher education and the labor market.

When analyzing the curriculum implementation in these three European countries, several ideas emerge such as across England, Italy, and France, there is a clear emphasis on providing students with the skills and knowledge needed to succeed in both higher education and the workforce. The differences in these approaches highlight how each country tailors its educational system to meet the needs of the students, while also addressing national priorities such as workforce development and social integration. This comparative analysis underscores the importance of aligning educational pathways with both individual student needs and broader societal goals.

In North America specifically in Canada, United States, and Mexico, the curriculum implementation through teaching content knowledge to students emphasizes the core skills such as literacy and numeracy among students. The educational curriculum in necessary and optional training includes language expressions, math, science, social studies, and expressions, with advanced education focusing on research, critical thinking, and expert abilities.

Based on systematic review on curriculum implementation, countries focus on literacy and numeracy center of the curriculum, focus on developing fundamental skills in various subjects and focus on social and emotional development, and focuses on professional technical education. Thus, according to Tuithof, et al. (2021) experienced teachers are well versed on how to teach the content of an existing curriculum to facilitate the understanding of their students. Teachers choose and develop strategies, explain content to a specific group of students, and effectively delivers activities that enhances students' literacy and numeracy as the center of the curriculum. Further , it also focuses on developing fundamental skills in various subjects and focus on social and emotional development.

In countries like Argentina, Brazil, and Peru all have a similar structure of mandatory and voluntary education that includes core courses such as language, math, science, social exams, and expressions. Advanced education in these countries is centered on research, development, practical skills, and social responsibility, with a focus on improving instructional quality and providing support for instructors.

In general, countries in different continents or worldwide demonstrate a commitment to providing comprehensive training that equips students with the necessary information and abilities for individual. The establishment of university and non-university institutions and fundamental education was implemented to help students acquire foundational skills that reflects political and economic developments. According to Rahman et al. (2022), the teachers in various fields should be equipped with the necessary knowledge to be more confident in implementing in teaching and learning process in their respective schools..

Table 2: Pedagogical Skills

ASIA	Reasons
Japan	Proactive, interactive and authentic learning is often described as active learning is used in most schools in Japan. Emphasis on rote learning, critical thinking, moral education, collaborative learning, and problem-solving.MEXT (2016)
Taiwan	Teachers uses teaching strategies that emphasizes on holistic educational approach, critical thinking, problem-solving, creativity, and moral education. Teachers should create a caring, secure environment for learner's appropriate curriculum design should provide learners with meaningful learning experiences, and authentic assessment. Educational System. (2018)

Singapore	Singapore's school system means to support each kid, assist all understudies with finding their gifts, understand their maximum capacity, and foster an enthusiasm for long-lasting learning (Singapore. (n.d.). NCEE.
Points to consider for interpretation and analysis	Focuses on proactive, interactive and authentic learning Holistic educational approach, curriculum design was used Emphasis on inquiry-based learning, critical thinking, creativity, and collaborative learning.
EUROPE	**Reasons**
England	Student-centered teaching is used that focuses on teaching students' critical thinking, creativity, problem-solving, collaborative learning, and practical skills.(la Velle, L., Newman, S., Montgomery, C., & Hyatt, D. (2020)
Italy	Pedagogical skills of teachers follow a communicative method in teaching in which lessons are interesting, interactive and fun that is organized in a relaxed atmosphere in which learning is done naturally (Italian language school teaching methods., n.d.).
France	The French way to deal with essential schooling clearly underscores memorization, repetition learning, and conventional teaching strategies, especially in the early years. Pedagogical skills in teaching draws on critical thinking, creativity, problem-solving, cultural education, and collaborative learning on students. Zhou, J. (2023)
Points to consider for interpretation and analysis	Emphasis on communicative method Encourages critical thinking, creativity, problem-solving, and cultural education Uses of collaborative learning method
NORTH AMERICA	**Reasons**
Canada	Teachers manages the class through theoretical knowledge to practical applications in real-world setting and gives emphasis on critical thinking, creativity, inclusive, collaborative learning, and practical skills. (How the Canadian Education System Is Different Than the United States, 2015).
United States	The education system is more flexible and emphasizes critical, analytical thinking and interactive learning. Teaching method that focuses on critical thinking, problem-solving, creativity, collaborative learning, and practical skills. (Education System in the USA: Understanding the Schooling System in the USA - Leap Scholar, 2022).
Mexico	The Emphasis on critical thinking, inclusive, cultural education, problem-solving, and collaborative learning and school attendance is obligatory from pre-primary to upper-secondary education (Pozas, M., González, C., & Letzel, V., 2021).
Points to consider for interpretation and analysis	Practical applications and emphasizes on critical thinking Educational institutions and colleges that strongly focus on analytical and interactive learning. Focuses on cultural education, problem solving and collaborative learning
SOUTH AMERICA	**Reasons**
Argentina	Focus on critical thinking, cultural education, problem-solving, creativity, and collaborative learning (Miguel, 2021).
Brazil	Emphasis on critical thinking, social inclusion, problem-solving, creativity, and collaborative learning every level includes grammar, reading, and writing activities as well as interactive role-playing activities for all group members. Speaking, listening, comprehension practice, and Brazilian music complement the more formal parts of the lesson (Minniti, L. F. S., Melo, J. S. M., Oliveira, R. D., & Salles, J. , 2017)
Peru	Focus on critical thinking, cultural identity, problem-solving, creativity, and collaborative learning (Cavalcanti-Bandos, M.F., Quispe-Prieto, S., Paucar-Caceres, A., Burrowes-Cromwel, T. and Rojas-Jiménez, H.H., 2021).
Points to consider for interpretation and analysis	Critical thinking, cultural education, problem solving and collaborative learning Gives value on grammar, reading, and writing activities as well as interactive role-playing activities Gives emphasis on cultural identity, problem solving and collaborative learning.

The curriculum implementation through teachers' pedagogical skills implemented in various countries around the world show some similarities and place emphasis on encouraging students to acquire academic improvement and excellence.

Based on the results, in Asia, countries in Japan, Taiwan, and Singapore focuses on dynamic and inquiry-based learning, logical reasoning, and improving critical thinking among students. In Japan, teachers' instruction enhances rational learning, which highlights logical reasoning and cooperative learning (MEXT, 2016). And Taiwan's comprehensive informative teaching focuses on critical reasoning, innovation, and moral training, with teachers creating informative teaching techniques for students to learn (School System, 2018). In addition, in Singapore, the educational system upholds advancing inquiry-based learning, imagination, and cooperative learning (NCEE, n.d.). Thus, the use of interactive activities is regarded as helpful in creating the conditions in which interaction, participation and collaboration are increased to create effective collaborative learning (Zubiri-Esnaola et al., 2020).

European countries that include England, Italy, and France emphasizes on critical thinking activities and intuitive educational strategies. Such as communicative method. In Britain, the focus in teaching is on differentiated instruction that empowers dynamic support, decisive reasoning, imagination, and down-to-earth abilities (La Velle et al., 2020). In Italy, diverse teaching technique are intuitive and delivers in a spontaneous manner, enhancing critical reasoning, social awareness, and promotes cooperative learning (Italian language school showing strategies, n.d.). French teachers utilize different techniques including the communicative-based learning, with a solid emphasis on retention and redundancy in the early years in level of education (Zhou, 2023).

According to Ghavifekr, (2020), in the 21st century education, students are required to be active learners in the learning process from various aspects. Therefore, besides planning for students' academic achievement, there is a need for development of their desired skills such as communication and interaction with the society. In this regard, collaborative learning plays an important role in developing students' social interaction skills.

North American school systems, especially in Canada, the US, and Mexico, feature logical reasoning, inclusive, and common sense abilities. Canadian educators' extent theoretical information with functional applications in real life settings, emphasizing on critical reasoning and collaborative learning (How the Canadian School System Is Unique, 2015). In United States, the educational system is adaptable, highlighting scientific reasoning and intuitive learning, with a substantial attention on different educational methodologies in science and innovation-related programs (Jump Researcher, 2022). And. In Mexico, the instructional structure in education focuses on inclusivity, social training, and critical thinking, with required tutoring from pre-essential to upper-auxiliary schooling (Pozas et al., 2021).

The curriculum implemented in North America emphasizes on practical applications, critical thinking, analytical, interactive learning in teaching, and focuses on cultural education, problem solving and collaborative learning. The pedagogical method has an existing practical application and emphasizes on critical thinking as well as the analytical and interactive learning.

On the other hand, South American countries like Argentina, Brazil, and Peru emphasize on logical reasoning, and cooperative learning. Argentina's instructional methods of education incorporates innovation and cultural education (Miguel, 2021), while Brazil focuses on critical thinking, social inclusion, problem-solving, creativity, and collaborative learning (Minniti et al., 2017). Peru's school system stresses on cultural identity, critical thinking, cooperative learning, and enhancing educational approach to learning (Cavalcanti-Bandos et al., 2021).

Based on the literature review across different continents, there is a consistent emphasis on critical thinking, creativity, problem-solving, and collaborative learning. These pedagogical skills are integral to developing well-rounded students capable of thriving in diverse, dynamic environments. The shared focus on these skills highlights a global recognition of their importance in preparing students for the challenges of the modern world. Thus, schools across the world should cope with an extremely diversified students who are differ not only in academic readiness, but also in cultural background, language competence, learning styles and motivation, as well as social, methodological, and self-regulatory competencies (Hardy et al., 2019). With the increasing student diversity, policymakers worldwide call to shift 'from focusing on the inclusion of students with special educational needs, to the inclusion, participation, and development of all learners' (Schwab & Alnahdi, 2020).

It presents the curriculum implementation through teachers' methods of teaching, which are vital and carried on across various countries. Table 9 shows that there is a significant emphasis on interactive and student-centered approaches, reflecting a worldwide trend toward engaging and holistic education.

Based on results of content analysis, the countries of Japan, Taiwan and Singapore in Asia depicts similarities in teaching methods use in curriculum implementation. Japan emphasizes a holistic approach to teaching, incorporating lecture-based methods, group work, and hands-on activities to foster an active collaborative effort among students (OECD Education Policy Outlook, 2019) while in Taiwan and Singapore it primarily utilized a teacher-centered methods which incorporates collaborative learning to make students engaged effectively and receives informative inputs from the teachers (Educational System, 2018).

Table 3: Curriculum Implementation

ASIA	Reasons
Japan	Teachers in Japan are responsible in extending effort beyond classroom-based learning and teaching to encompass a more holistic approach to practice such as lecture-based, group work, hands-on activities (OECD Education Policy Outlook 2019).
Taiwan	Teacher-centered, collaborative learning (Educational System, 2018).
Singapore	This set of reforms aims to ensure that all schools have adequate resources to develop customized programs for their students; raise professional standards for teachers; encourage innovation; and foster partnerships between schools and communities. Inquiry-based learning, problem-solving approachesSingapore (n.d). NCEE

Points to consider for interpretation and analysis	Holistic approach in teaching Teacher-centered teaching and collaborative learning Inquiry-based and problem-based learning method
EUROPE	**Reasons**
England	Teaching methods is unique since it focus on student-centered learning, small group tutorials, independent study, and varied assessment, inquiry-based learning, project-based learning. (Eurydice, 2014).
Italy	Teaching strategies used in teaching students involves collaborative learning strategies, alternative and experiential learning. (Nicolosi et al. (2022)
France	Teachers use a combination of lectures, group work, and independent study to engage students. Teaching methods involves communicative approach, active learning, and blended learning methods in teaching. (Zhou, J. (2023)
Points to consider for interpretation and analysis	Student-centered learning activities Collaborative learning Communicative Approach and interactive learning method
NORTH AMERICA	**Reasons**
Canada	Inquiry-based learning, flipped classrooms (How the Canadian Education System Is Different (and Better) Than the United States'. (2015).
United States	The teaching style is based on interactive learning, and teachers encourage students to actively participate in class discussions, brainstorming sessions, and debates. The class size is usually smaller and develops a closer relationship between the teachers and students, prompting personalized mentorship. Active learning, blended learning that embodies the nation's strong commitment, Innovation, inclusivity and pursuit of the American dream. (Education System in the USA: Understanding the Schooling System in the USA - Leap Scholar, 2022)
Mexico	Differentiated instruction practices that can be implemented to address classroom diversity, such as the use of tiered assignments, homogeneous or heterogeneous subgroups based on students' performance, readiness or interests (Pozas, M., González, C., & Letzel, V, 2021)
Points to consider for interpretation and analysis	Interactive and Active teaching and learning style Personalized mentorship Differentiated instruction
SOUTH AMERICA	**Reasons**
Argentina	Teacher-centered, experiential learning (Minniti, L. F. S., Melo, J. S. M., Oliveira, R. D., & Salles, J., 2017)
Brazil	Various teaching methods are used, including multimedia materials and communication systems. Our courses always include a wide range of social and cultural aspects so that, at every level, classes can provide the student the skills to handle everyday situations, to meet their needs and understand simple information Project-based learning, collaborative learning (Minniti, L. F. S., Melo, J. S. M., Oliveira, R. D., & Salles, J. A. A. (2017).
Peru	Experiential learning, group workavalcanti-Bandos, M.F., Quispe-Prieto, S., Paucar-Caceres, A., Burrowes-Cromwel, T. d Rojas- Jiménez, H.H., 2021)
Points to consider for interpretation and analysis	Experiential learning Technological advances in learning Collaborative learning method

The curriculum implementation through teachers' methods of teaching, which are vital and carried on across various countries. There is a significant emphasis on interactive and student-centered approaches, reflecting a worldwide trend toward engaging and holistic education.

Based on results of content analysis, the countries of Japan, Taiwan and Singapore in Asia depicts similarities in teaching methods use in curriculum implementation. Japan emphasizes a holistic approach to teaching, incorporating lecture-based methods, group work, and hands-on activities to foster an active collaborative effort among students (OECD Education Policy Outlook, 2019) while in Taiwan and Singapore it primarily utilized a teacher-centered methods which incorporates collaborative learning to make students engaged effectively and receives informative inputs from the teachers (Educational System, 2018).

In Europe, teaching methods also focus on student's class engagement and active learning. The education system in England and Italy are characterized by student-centered learning, small group tutorials, independent study, and varied assessments, including inquiry-based and project-based learning (Eurydice, 2013). While in France combines lectures, group work, and independent study, with a strong emphasis on academic achievement and competition, integrating communicative approaches and blended learning methods (Zhou, 2023).

The findings of the study present a constructive overview of teachers' digital competencies and technology use in teaching and learning in the time of the COVID-19 and also play a significant role in the integration of technology in the post-pandemic time in higher education. The study also suggests relevant educational

authorities and policymakers for assessing and enhancing the technological competencies of teachers for quality online education. (Akram, 2021).

In North American, teaching methods are similarly focused on interactive and student-centered learning which is similarly use as a strategy in teaching in Canada that emphasizes inquiry-based learning and flipped classrooms, encouraging students to take an active role in their education (How the Canadian Education System Is Different, 2015). Teachers in United States uses interactive learning approach in a smaller class size to foster positive teacher-students relationship that promotes adapted mentorship and active participation through discussions, brainstorming sessions, and debates (Leap Scholar, 2022). While in Mexico, teachers integrates traditional lectures with problem-based learning and differentiated instruction to address classroom diversity (Pozas et al., 2021).

The countries in South America specifically Brazil, Argentina and Peru teaching methods vary but maintain a focus on student engagement and practical learning experiences which makes learning more meaningful. Primarily, in Argentina teachers utilize teacher-centered approach in teaching and experiential learning methods to provide practical approach to education while Brazil, teachers incorporates multimedia in the delivery of the lesson and communication systems into its teaching, with an emphasis on project-based and collaborative learning to equip students with practical skills for everyday situations (Minniti et al., 2017). On the other hand, Peru utilizes experiential learning and collaborative approach to engage students and promote collaborative learning environments (Cavalcanti-Bandos et al., 2021).

The teaching methods across these countries highlight a common emphasis on interactive, student-centered, and experiential learning approaches. This global trend reflects the importance of engaging students actively in their education, fostering critical thinking, problem-solving, and collaborative skills essential for their future success.

Findings:

Based on literature review through data mining method, the study revealed that the various implementation of curriculum in various countries through teaching content knowledge focuses on developing fundamental and foundational skills such as literacy and numeracy in various subjects. In addition, pedagogical skills implemented by teachers in the different countries includes practical applications and collaborative teaching and learning process. Furthermore, various countries give emphasis and importance on the role in the integration of technology as a teaching method in collaborative and holistic teaching and learning process which can enhance the quality education.

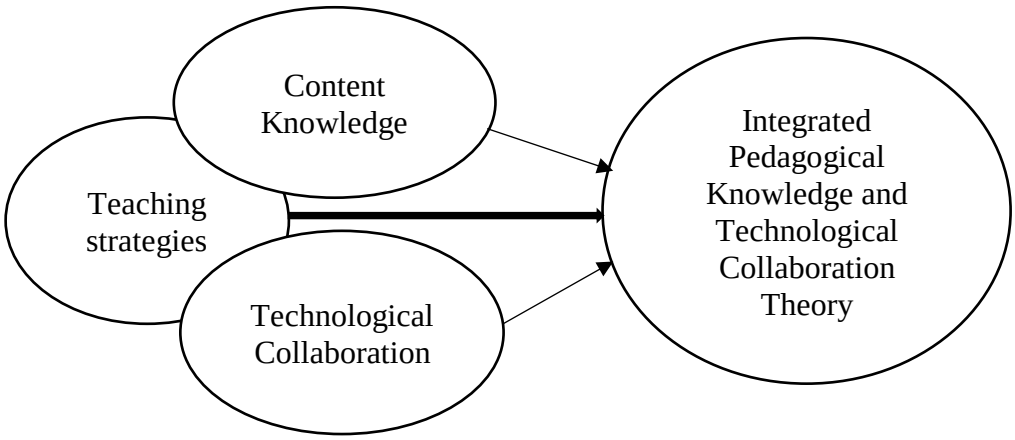

Figure 1: Integrated Pedagogical Knowledge and Technological Collaboration Theory (IPK-TC Theory)

The Integrated Pedagogical Knowledge and Technological Collaboration Theory (IPK-TC Theory) asserts that the success of curriculum implementation in different global educational systems relies on the harmonious integration of three key elements: content knowledge, teaching strategies, and technological collaboration.

Conclusion:

The study revealed that curriculum implementation in various countries in teaching different subjects or learning areas focuses on teaching fundamental skills in literacy and numeracy using collaborative, interactive and holistic teaching.

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