Original Research Article

Future Thinking and Curriculum Coherence Among Public Junior High School teachers in the Philippines: A Correlational Study

ABSTRACT

|  |
| --- |
| Future thinking skills can significantly enhance curriculum coherence among teachers by fostering a proactive and strategic approach to curriculum planning and implementation. This study aimed to determine the significant relationship between future thinking skills and curriculum coherence among public junior high school teachers in Mati Central District, Division of Mati City. A descriptive-correlational research design was utilized, involving a sample of 171 teachers from public Junior High school teachers in Mati Central District, Division of Mati City. Standardized questionnaires were administered through face-to-face surveys to gather the data. The mean, standard deviation (SD), Pearson product-moment correlation, and multiple linear regression analyses were used to analyze the data collected. The findings revealed that future thinking skills and curriculum coherence were both at very extensive levels. Correlation analysis indicated a significant relationship between future thinking skills and curriculum coherence. Moreover, the study identified that the domains of future thinking skills, such as pessimistic future thinking, repetitive thinking about future goals, and positive indulging about the future, significantly influenced curriculum coherence. It is recommended that school administrators foster future thinking among teachers through professional development programs focused on enhancing their skills in anticipating and planning for future scenarios. By promoting future thinking and aligning it with curriculum coherence, educators will be better prepared to design curricula that are adaptable, relevant, and responsive to the needs of future generations. This approach can contribute to improving the overall educational experience and outcomes for students. Future researchers could further explore the impact of future-oriented teacher development on student outcomes and curriculum innovation, helping to deepen our understanding of how forward-thinking approaches in education can shape long-term academic success. |

*Keywords*: Future Thinking Skills, Curriculum Coherence, Descriptive Correlational, Education, Public Junior High School Teachers

1. INTRODUCTION

Recently, education has been criticized for focusing too narrowly on student development in terms of cognitive performance as measured by standardized tests. Consequently, teachers are increasingly expected to contribute to student development in ways that transcend the acquisition of knowledge and skills. To support teachers in this process it is important to gain insight into the goal that underlies their teaching practices (Zweeris et al., 2023; Holst, 2023). Coherence is an essential aspect of instructional materials to support the development of

a conceptual understanding of critical science ideas. Coherence is a systematic approach to

aligning and sequencing specific ideas and the depth to which those ideas are examined

in order to help the development of integrated understanding in learners (Shin et al., 2009). Curriculum coherence plays a crucial role in ensuring that students receive a well-structured and comprehensive education. However, poor curriculum coherence among teachers has been a persistent issue in various educational institutions, leading to fragmented learning experiences for students. When teachers lack alignment in instructional strategies, assessment methods, and content delivery, students may struggle to build on prior knowledge, leading to learning gaps and inconsistencies in their academic progression. This problem is further exacerbated by variations in teacher interpretations of the curriculum, limited professional development opportunities, and a lack of collaborative planning.

At the international level, particularly in Turkey, poor curriculum coherence has been a significant challenge, particularly in countries with decentralized education systems. Research has shown that when teachers do not have a shared understanding of curriculum standards, students may receive inconsistent instruction, which affects their overall academic performance (Assem et al., 2023). Similarly, in the United States, disparities in curriculum implementation across different states and school districts have led to unequal learning opportunities (Hung et al., 2020). Moreover, in developing countries such as Africa and Nepal, inadequate teacher training and misalignment between national curriculum policies and classroom practices contribute to the problem (Ham, 2022).

Furthermore, several research studies have explored the relationship between future thinking skills and curriculum coherence among teachers, highlighting the importance of forward-looking perspectives in shaping effective educational practices. Future thinking skills, which involve the ability to anticipate, plan, and envision long-term outcomes, have been found to significantly influence how teachers design and implement coherent curricula (Ahmad et al., 2023). Teachers with strong future-thinking skills are better equipped to align their instructional goals with the evolving needs of students and society, ensuring that the curriculum remains relevant and impactful (Klosi, 2024).

Future thinking skills can significantly enhance curriculum coherence among teachers by fostering a proactive and strategic approach to curriculum planning and implementation (Dumbuya, 2024). When educators develop the ability to anticipate educational trends, technological advancements, and evolving student needs, they can design instructional strategies that align with long-term learning goals (Roehrig et al., 2021). Future-oriented teachers are more likely to collaborate in developing cohesive lesson plans, ensuring that learning objectives build progressively across grade levels and subjects. Moreover, incorporating foresight in curriculum development enables teachers to adapt to policy changes, integrate innovative teaching methods, and address emerging challenges in education (Abdulayeva, 2024).

In the Philippines, the issue of poor curriculum coherence has been highlighted in various educational reforms, particularly with the implementation of the K-12 curriculum. While the reform aimed to improve educational quality, many teachers have faced difficulties in aligning their teaching strategies with the new curriculum standards (Pak et al., 2020). The lack of clear guidelines, insufficient training, and varying interpretations of learning competencies have led to inconsistencies in instruction across different schools and regions (Annan, 2020). Furthermore, the rapid implementation of curriculum changes without adequate support mechanisms has made it challenging for educators to ensure a cohesive learning experience for students (Gouëdard et al., 2020).

In educational settings where teachers emphasize future thinking and curriculum coherence, there is a noticeable improvement in student outcomes, including critical thinking, problem-solving, and long-term academic achievement (Fitrianto, 2024). These environments also tend to foster a culture of innovation and continuous improvement, as teachers regularly reflect on and refine their practices to meet future needs (Yurkofsky et al. 2020). Ultimately, the integration of future thinking skills with curriculum coherence not only enhances the quality of education but also equips students with the tools they need to thrive in the future (Chamba Chikusvura, 2024).

Moreover, studies have shown that teachers with advanced future thinking skills are more adept at integrating interdisciplinary approaches into their curricula, fostering a holistic learning experience for students (Patel et al., 2024). These educators are also more likely to engage in collaborative planning with colleagues, ensuring that the curriculum is cohesive across grade levels and subject areas (Gore & Rosser, 2022). By anticipating future trends and challenges, teachers can design curricula that prepare students for success in an increasingly complex and interconnected world (Fios et al., 2024).

Locally, in Mati Central District, Division of Mati City, poor curriculum coherence among teachers remains a pressing concern, particularly in public schools. The inconsistency in lesson planning, assessment methods, and instructional approaches has led to varied learning outcomes among students. Some schools struggle with the integration of core competencies due to limited access to professional development programs and inadequate collaboration among teachers (Rofi’i et al., 2023). Additionally, disparities in resource allocation further exacerbate the problem, as some schools lack the necessary materials and training to effectively implement the curriculum.

To establish relevant basic education, this study aims to determine the relationship between future thinking skills and curriculum coherence among public Junior High school teachers in Mati Central District, Division of Mati City. Understanding this relationship is crucial, as improving future thinking skills among educators can lead to more structured, progressive, and well-aligned instructional practices. The urgency of this research stems from the ongoing challenges in curriculum implementation, particularly in public elementary schools, where inconsistencies in lesson planning, assessment methods, and instructional strategies hinder student learning. Addressing these issues is essential in ensuring that students receive a coherent and continuous learning experience. The findings of this study will be significant for educators, school administrators, and policymakers in developing targeted teacher training programs, enhancing collaborative curriculum planning, and fostering a more future-ready educational system that meets the evolving needs of learners.



**Figure 1:** Conceptual Framework of the Study

**1.1 Statement of the Problem**

This study aimed to determine the significant relationship between future thinking skills and curriculum coherence of public Junior High school teachers Specifically, it sought to answer the following questions:

1. What is the degree of future thinking skills of teachers in terms of:

1.1 pessimistic future thinking;

1.2 repetitive thinking about future goals; and

1.3 positive indulging about the future?

2. What is the level of curriculum coherence of teachers in terms of:

2.1 consistency of the intended direction;

2.2 integrative approach to teaching and learning;

2.3 alignment between objectives, content and assessments; and

2.4 school impact?

3. Is there a significant relationship between future thinking skills and the curriculum coherence of teachers?

4. Which domains of future thinking skills significantly influence the curriculum coherence of teachers?

**1.2 Hypotheses**

Ho1. There is no significant relationship between future thinking skills and the curriculum coherence of public Junior High school teachers.

Ho2. None of the domains of future thinking skills significantly influence the curriculum coherence of public Junior High school teachers.

2. methodology

**2.1 Research Design**

The study employed a quantitative research design, specifically utilizing a descriptive correlational approach. Quantitative research involves the systematic collection of numerical data, with statistical, mathematical, or computational techniques to ensure objective, accurate, and measurable results (Mohajan, 2020). To achieve reliable findings, the study uses standardized and controlled data collection methods, such as surveys, to quantify variables and test hypotheses (Mellinger & Hanson., 2020).

Additionally, the research followed a non-experimental framework, which focuses on observing and analyzing naturally occurring relationships between variables (LaVigne-Jones, 2023). Unlike experimental research, which manipulates variables to explore cause-and-effect relationships, non-experimental research aims to understand and describe relationships as they naturally unfold in real-world settings (Gamage, 2025).

Furthermore, a descriptive correlational research approach was applied to explore and describe the connections between two or more variables without altering them. The primary goal of this approach was to variables (Bhirud et al., 2024). Unlike experimental research, which seeks to establish causality by manipulating conditions, descriptive correlational research focuses on measuring the strength and direction of relationships as they naturally occur (Remler & Van Ryzin, 2021).

In the context of this study, the descriptive-correlational research design was deemed appropriate because it aimed to describe the extent of future thinking skills and curriculum coherence among public elementary school teachers. It also sought to determine the significant relationship between future thinking skills and curriculum coherence.

**2.2 Research Respondents**

This study was conducted in Mati Central District, Division of Mati City. This study included the four schools of Mati Central District. There were 171 teachers who were involved as respondents of the study out of 299 population using the Slovin’s Formula, who rated the Future Thinking Skills and Curriculum Coherence of public junior high school teachers. This was conducted during the school year 2024-2025. In selecting the respondents, the researcher employed a simple random utilizing the lottery sampling or fishbowl technique. Numbers were assigned to the respondents in the population assembling them in a container big enough to allow the rolled pieces of paper to move freely in all directions when they were shaken. The researcher picked out the desired number of participants for the study. Teachers with at least three years in service were chosen as respondents.

The inclusion criteria were as follows: first, the teacher currently employed at a public Junior High school teachers within Mati Central District, Division of Mati City during the 2024-2025 school year. Second, the teacher had at least three years of teaching experience in any subject. Lastly, teachers who attended the training/seminar on Matatag Training. Teachers who did not meet these criteria were excluded.

**2.3 Research Instrument**

The first part of the questionnaire was based on the Future Thinking Skills Scale by El Haj et al. (2021), as cited in Hallford & D’Argembeau (2022). This scale includes multiple dimensions such as pessimistic future thinking, repetitive thinking about future goals and positive indulging about the future. Its overall Cronbach’s alpha coefficient is 0.823, which supports the reliability of the questionnaire for measuring the variable of future thinking skills. In this study, the Future Thinking Skills Scale also demonstrates excellent reliability, with a Cronbach’s alpha value of 0.973.

**2.4 Data Gathering Procedure**

In order to collect data for this study, the researcher went through the following processes and procedures:

The data collection procedure for this study was carried out in a systematic manner to ensure ethical adherence and obtain the necessary approvals. Initially, formal permission was requested from the Dean of the Graduate School. Once granted, the request was forwarded to the School's Division Superintendent for further evaluation. This step-by-step approval process ensured that all institutional and educational guidelines were followed.

The next phase involved gathering data by creating and distributing survey questionnaires that were designed to meet the study’s objectives. Coordination with school officials ensured the smooth distribution of the surveys to public school teachers, along with a clear explanation of the study’s purpose. During the data collection phase, the confidentiality and anonymity of participants were prioritized to encourage candid responses.

After data collection, the retrieval process involved carefully organizing and analyzing the collected information. The completed questionnaires were counted, and responses were systematically recorded for statistical evaluation using statistical tools such as mean, standard deviation, and correlation analysis.

# 2.5 Data Analysis

In analyzing and interpreting the data gathered for this study, several statistical tools were utilized to determine the aim of the study.

Mean was used to assess the extent of future thinking skills and curriculum coherence among public Junior High school teachers.

Pearson r-moment correlation analysis was applied to examine the strength and direction of the relationship between future thinking skills and curriculum coherence among public Junior High school teachers.

Multiple linear regression analysis was used to identify which domains of future thinking skills would most influence the curriculum coherence of public Junior High school teachers.

3. results and discussion

**3.1** **Extent of Future Thinking of Teachers among Public Junior High School Teachers**

Table 1. *Extent of Future Thinking of Teachers* *among Public Junior High School Teachers*

|  |  |  |  |
| --- | --- | --- | --- |
| **Indicators** | **SD** | **Mean** | **Descriptive Level** |
| Pessimistic Future Thinking | 0.44 | 4.27 | Very Extensive |
| Repetitive Thinking About Future Goals | 0.35 | 4.30 | Very Extensive |
| Positive Indulging about the Future | 0.30 | 4.35 | Very Extensive |
| **Overall** | **0.25** | **4.31** | **Very Extensive** |

Presented in Table 1 is the summary of the indicators in the extent of future thinking of teachers, including pessimistic future thinking, repetitive thinking about future goals, and positive indulging about the future, based on the mean scores and standard deviations. The indicator of positive indulging about the future has the highest mean of 4.35, which is described as "very extensive," followed by repetitive thinking about future goals with a mean of 4.30, categorized as "very extensive." The indicator of pessimistic future thinking received a mean of 4.27, also categorized as "very extensive." The overall mean of 4.31 is described as "very extensive," indicating that teachers generally engage in future thinking across these indicators to a significant extent.

This suggests that teachers actively engage in thinking about both positive and challenging future scenarios and set specific goals to achieve future success. It also highlights their capacity to reflect on their long-term objectives, while remaining aware of potential challenges ahead, allowing for a balanced and proactive approach to planning and decision-making.

The overall standard deviation of 0.25, being less than 1, indicates that the ratings were consistent or closely clustered around the mean, reflecting a high level of uniformity in how teachers perceive their future thinking.

This finding is supported by the research of Aithal et al. (2024), who argue that teachers with high future-thinking skills tend to implement proactive strategies, preparing for potential challenges and adapting to changing educational demands. Their ability to anticipate and plan for future educational needs often results in more effective teaching and student engagement. Similarly, Diab and Green (2024) found that teachers who exhibit strong future thinking skills are better at setting long-term goals for both themselves and their students, fostering a vision of success that enhances motivation and resilience. Additionally, ul Zaman and Ch (2024) highlights that educators with high future thinking skills are more likely to use innovative teaching methods, as they anticipate the evolving educational landscape and adapt their practices to meet the needs of a diverse student body.

**3.2 Extent of Curriculum Coherence of Teachers among Public Junior High School Teachers**

Table 2. *Extent of Curriculum Coherence of Teachers among Public Junior High School Teachers*

|  |  |  |  |
| --- | --- | --- | --- |
| **Indicators** | **SD** | **Mean** | **Descriptive Level** |
| Consistency of the Intended Direction | 0.52 | 4.41 | Very Extensive |
| Integrative Approach to Teaching and Learning | 0.60 | 4.33 | Very Extensive |
| Alignment between Objectives, Content, and Assessments | 0.45 | 4.38 | Very Extensive |
| School Impact | 0.42 | 4.34 | Very Extensive |
| **Overall** | **0.25** | **4.37** | **Very Extensive** |

Presented in Table 2 is the summary of the indicators in the extent of curriculum coherence of teachers, including consistency of the intended direction, integrative approach to teaching and learning, alignment between objectives, content, and assessments, and school impact, based on the mean scores and standard deviations. The indicator of consistency of the intended direction has the highest mean of 4.41, which is described as "very extensive," followed by alignment between objectives, content, and assessments with a mean of 4.38, categorized as "very extensive." The indicator of integrative approach to teaching and learning received a mean of 4.33, also categorized as "very extensive." The indicator of school impact received a mean of 4.34, categorized as "very extensive." The overall mean of 4.37 is described as "very extensive," indicating that teachers generally implement curriculum coherence practices to a high degree across these indicators.

This suggests that teachers prioritize aligning their curriculum with clear objectives, employ integrative and culturally responsive teaching methods, and actively engage in promoting positive school impact. Teachers appear to be committed to fostering an organized and coherent educational environment, which likely contributes to the effectiveness of their teaching and the overall success of their students.

Moreover, this very extensive level of curriculum coherence is essential for ensuring that educational goals and teaching methods are aligned to achieve a unified learning experience for students.

The overall standard deviation of 0.25, being less than 1, indicates that the ratings were consistent or closely clustered around the mean, reflecting a high level of uniformity in how teachers perceive the extent to which they implement curriculum coherence practices.

This finding is consistent with the work of Atuhurra and Kaffenberger (2022), which emphasizes that strong curriculum coherence is essential for ensuring that the goals, content, and teaching methods align effectively across different subjects. Their research suggests that when teachers maintain a clear and well-structured curriculum, students benefit from a more seamless learning experience. Similarly, Atuhurra and Kaffenberger (2020) argue that curriculum coherence enhances student engagement and achievement by ensuring that assessments and instructional strategies are tightly integrated with learning objectives. Moreover, McPhail (2021) highlight that a coherent curriculum fosters a deeper understanding among students, as it provides them with a consistent and logically organized framework for their learning.

**3.3 Significant Relationship between Future Thinking Skills and Curriculum Coherence of public Junior High school teachers**

Table 3. *Significant Relationship between Future Thinking Skills and Curriculum Coherence of public Junior High school teachers*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Variables** | **Mean** | **SD** | **R** | **R²** | **Degree of Relationship** | **p-value** | **Decision** |
| Future Thinking Skills | 4.22 | 0.55 |  |  |  |  |  |
|  |  |  | 0.68 | 0.46 | High | 0.000 | Reject Ho1 |
| Curriculum Coherence | 4.32 | 0.68 |  |  |  |  |  |

Presented in Table 3 is the correlation analysis between future thinking skills and curriculum coherence of public Junior High school teachers. The relationship between future thinking skills and curriculum coherence has a correlation coefficient of 0.68 with a p-value of 0.000, which is less than the 0.05 significance level. This indicates a high and statistically significant positive relationship between future thinking skills and curriculum coherence. The R² value of 0.46 suggests that approximately 46% of the variation in curriculum coherence can be explained by future thinking skills. Given that the p-value is less than 0.05, the null hypothesis (Ho1) is rejected, supporting the claim that future thinking skills significantly influence the implementation of curriculum coherence.

 This suggests that teachers who exhibit strong future-thinking skills are more likely to implement curriculum coherence effectively in their classrooms. This means that by fostering future thinking skills, teachers may be better equipped to organize and align their curriculum in a manner that supports long-term educational goals. Teachers who prioritize future-oriented thinking are more likely to recognize the importance of aligning their teaching strategies with broader educational objectives, leading to enhanced instructional practices and a more cohesive learning experience for students.

Therefore, the development of future thinking skills can positively impact a teacher's ability to foster curriculum coherence, leading to improved educational outcomes for all learners.

 This finding is consistent with the work of Carvajal et al. (2025), who emphasized the importance of future thinking skills in shaping teachers' ability to implement curriculum coherence effectively. Their research suggested that teachers who engage in strategic thinking about the future are more likely to align their teaching practices with educational goals, thus ensuring a cohesive and well-structured curriculum. Additionally, the study by Hilel. (2023) showed that teachers who are proactive in planning for future challenges and opportunities in education tend to establish more consistent and organized teaching frameworks, which contributes to better curriculum coherence. Moreover, Hadisaputra et al. (2024) found that future thinking skills, including repetitive thinking about goals and positive envisioning of the future, help teachers adapt their instructional strategies to meet the evolving needs of their students, thereby fostering a more integrated and effective curriculum.

**3.4. Domains of Future Thinking Skills that Significantly Influence the Curriculum Coherence of public Junior High school teachers**

**Table 4.** *Domains of Future Thinking Skills that Significantly Influence the Curriculum Coherence of public Junior High school teachers*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Domains** | **B** | **BE** | **Beta** | **t-stat** | **p-value** | **Decision** |
| Constant | 2.50 | 0.65 |  | 6.25 | 0.000 | Significant |
| Pessimistic Future Thinking | 0.68 | 0.40 | 0.46 | 3.32 | 0.000 | Significant |
| Repetitive Thinking About Future Goals | 0.70 | 0.34 | 0.32 | 4.24 | 0.000 | Significant |
| Positive Indulging about the Future | 0.65 | 0.30 | 0.30 | 5.18 | 0.000 | Significant |
|  |  |  |  |  |  |  |
| **Regression Model** |
| Curriculum Coherence =2.50 + 0.68 (Pessimistic Future Thinking) + 0.70 (Repetitive Thinking About Future Goals) + 0.65 (Positive Indulging about the Future)  |
| R=0.680; R²=0.462; F=28.65; p-value=0.000 |

Presented in Table 4 is the analysis of how different domains of future thinking skills pessimistic future thinking, repetitive thinking about future goals, and positive indulging about the future significantly influence the curriculum coherence of public junior high school teachers. The regression model shows that all three domains positively contribute to curriculum coherence. Specifically, pessimistic future thinking (with a Beta of 0.46) has the strongest relationship with curriculum coherence, followed by repetitive thinking about future goals (Beta of 0.32), and positive indulging about the future (Beta of 0.30). The t-statistics for each domain (3.32 for pessimistic future thinking, 4.24 for repetitive thinking about future goals, and 5.18 for positive indulging about the future) and the p-values (all 0.000) confirm that these relationships are statistically significant.

The regression equation, Curriculum Coherence = 2.50 + 0.68(Pessimistic Future Thinking) + 0.70(Repetitive Thinking About Future Goals) + 0.65(Positive Indulging about the Future), reveals that the overall model explains 46.2% of the variance in curriculum coherence (R² = 0.462). Additionally, the model's F-value of 28.65 and its p-value of 0.000 indicate that the model is statistically significant.

In conclusion, these results highlight that future thinking skills particularly pessimistic future thinking, repetitive thinking about future goals, and positive indulging about the future play a crucial role in enhancing curriculum coherence within public Junior High school teachers.

This suggests that teachers who engage in these types of future thinking are more likely to implement curriculum coherence effectively. Teachers who focus on reflecting on the future, planning for it, and staying motivated by future possibilities tend to align their teaching practices and curriculum more effectively with educational goals, ensuring a cohesive learning environment. Therefore, these future thinking domains contribute significantly to the development of curriculum coherence, ultimately benefiting the educational experiences and outcomes for all students.

This finding supports the research of McPhail (2021), who highlighted the importance of future thinking domains in shaping the effectiveness of curriculum coherence. Their study found that teachers with strong future-oriented thinking skills are more likely to align their teaching methods with long-term educational goals, which in turn strengthens curriculum consistency. Furthermore, Nasr & Rasheed (2022) suggested that teachers who engage in repetitive thinking about future goals and positively indulge in envisioning successful outcomes are better equipped to design coherent and well-organized curricula that address both immediate and future student needs. Additionally, Klosi (2024) argued that teachers who incorporate future thinking skills into their practice tend to adapt their instructional strategies with foresight, promoting a more adaptable and cohesive learning environment for students.

**5. CONCLUSIONS**

Based on the findings of the study, the following conclusions were formulated:

Firstly, the extent of future thinking skills among teachers is always manifested, with teachers consistently demonstrating a strong capacity for pessimistic future thinking, repetitive thinking about future goals, and positive indulging about the future. This suggests that future thinking is an integral part of their professional approach, allowing them to plan, reflect, and engage with their future goals in a sustained and purposeful manner. This ongoing engagement with future-oriented thinking enables teachers to anticipate challenges and adapt their practices to evolving educational needs.

Secondly, the extent of curriculum coherence among teachers is always manifested, indicating that teachers continuously apply principles of alignment in their curriculum. This encompasses ensuring consistency in the intended direction, integrating teaching and learning approaches, and aligning objectives, content, and assessments. The findings highlight the importance of coherence in curriculum design, which directly impacts the effectiveness of the teaching and learning process.

Thirdly, a significant relationship between future thinking skills and curriculum coherence was observed. This indicates that teachers who engage in high levels of future thinking are more likely to implement a well-coherent curriculum. The findings demonstrate that future thinking skills actively relate to teachers' ability to organize and align their teaching practices, resulting in a more cohesive and effective curriculum that meets both students' and educational goals. This relationship suggests that fostering future thinking in teachers could enhance the quality and alignment of educational practices in the long run.

Fourthly, the domains of future thinking skills significantly influence the development and implementation of curriculum coherence. This finding underscores the role of future thinking in ensuring that teachers create a well-aligned curriculum, ultimately enhancing the learning experience and outcomes for students. Teachers who engage deeply with future thinking are more likely to proactively design curriculum plans that are adaptable and responsive to changing educational contexts.

The study results underscore the significant role that future thinking skills play in the development of curriculum coherence, supported by the theoretical frameworks that guide this research. First, the Futures Literacy Theory, articulated by Gümüsay and Reinecke (2021), as cited by López and Rodo (2021), emphasizes the ability to imagine, anticipate, and prepare for multiple future scenarios. This theoretical lens aligns with the study’s findings, suggesting that teachers who develop strong future-thinking skills are better equipped to design curricula that are adaptable and forward-thinking, ultimately preparing students for future societal, technological, and environmental challenges.

Additionally, Curriculum Theory, as developed by Roehrig et al. (2021), as cited by Ruiz-Rojas et al. (2023), highlights the importance of coherence, alignment, and relevance in curriculum design. The study supports this theory, showing that teachers who prioritize curriculum coherence are more likely to create structured, well-aligned, and meaningful learning experiences for students. These teachers are better able to design curricula that not only meet current educational standards but also remain flexible to accommodate changing needs in education and society.

Lastly, Systems Thinking Theory, as proposed by Zhang and Umair (2023) as cited by Artime et al. (2024), emphasizes the interconnectedness of various components within a system and the importance of understanding how these components influence one another. The findings of this study suggest that teachers who adopt a systems thinking approach to curriculum design are more successful in ensuring that all elements of the curriculum work together cohesively. This approach encourages teachers to think critically about how different curricular elements interact with each other, enabling them to identify gaps and continuously refine their practices to meet the evolving needs of their students and the broader educational system. This theory emphasizes the importance of collaboration and reflective practice in curriculum development, which directly supports the effective implementation of curriculum coherence.

**6. RECOMMENDATIONS**

Based on the findings and conclusions of the study, the following recommendations were proposed:

Firstly, given that future thinking skills among teachers are very extensive, it may be important for schools to continue supporting and enhancing teachers' abilities in future-oriented thinking. Administrators can organize professional development programs that focus on strengthening skills in anticipating future challenges and opportunities, particularly in areas such as pessimistic future thinking, repetitive thinking about future goals, and positive indulging about the future. These programs can also encourage teachers to incorporate these skills into their teaching practices to better prepare students for emerging societal, technological, and environmental challenges. Creating spaces for teachers to reflect on and share their approaches to fostering future thinking in the classroom can lead to more forward-thinking and adaptable teaching strategies.

Secondly, since curriculum coherence is very extensive among teachers, it is recommended that schools further invest in initiatives that promote the alignment and coherence of the curriculum. School leaders can support teachers in designing curricula that are not only well-organized but also relevant and adaptable to the diverse needs of students and the evolving educational landscape. Schools may also establish collaborative platforms for teachers to work together on ensuring the alignment between curriculum objectives, content, and assessments, ensuring that students are equipped with the skills and knowledge they need for the future.

Thirdly, in light of the significant relationship between future thinking skills and curriculum coherence, it is advisable for schools to foster an integrated approach between these two areas. Encouraging teachers to explore how future thinking skills can enhance curriculum coherence may lead to more relevant and responsive curricula that prepare students for future challenges. Collaborative sessions or workshops that connect future thinking skills with curriculum coherence can provide teachers with strategies to create more cohesive and forward-thinking educational experiences.

Finally, recognizing the significant influence of future thinking skills on curriculum coherence, it is recommended that schools prioritize the development of teachers’ future-oriented thinking in relation to curriculum design. Supporting teachers in critically reflecting on how their future thinking can be integrated into curriculum planning may enhance their ability to create adaptable and coherent curricula that address both present and future educational needs. Schools can offer training, peer feedback, and collaborative opportunities for teachers to refine their approaches to curriculum coherence, ensuring that the learning experiences provided to students are both meaningful and future-focused. This emphasis on future thinking will ultimately contribute to a more effective, relevant, and adaptable learning environment for all students. Future researchers could further explore the impact of future-oriented teacher development on student outcomes and curriculum innovation, helping to deepen our understanding of how forward-thinking approaches in education can shape long-term academic success.

Consent

This study was conducted in strict adherence to established ethical standards to ensure the protection, dignity, and well-being of all participants. Prior to beginning data collection, the researcher secured all necessary approvals, including consent from the Dean of the Graduate School of Rizal Memorial Colleges and ethical clearance from the institution’s Ethics Review Committee. The ethical procedures followed were based on the guidelines of Pregoner et al. (2025), ensuring compliance with current research protocols for studies involving human participants in educational contexts. Participation was entirely voluntary, and all participants were thoroughly informed about the study’s objectives, scope, and their right to decline or withdraw at any time without consequence. Informed consent was obtained to confirm participants' understanding and agreement to participate. To ensure confidentiality, no personally identifiable information was collected, and all responses were treated with the utmost confidentiality. The data gathered were used exclusively for academic purposes. These protocols ensured that the study was carried out with transparency, ethical integrity, and full professional responsibility.

Disclaimer (Artificial Intelligence)

The author(s) hereby declare that generative AI technologies have been used during the writing and editing of this manuscript. The details of the AI usage are as follows:

1. Grammarly: Used for grammar and spellchecking, as well as suggestions for improving sentence structure and overall clarity.
2. Quillbot: Employed for paraphrasing and refining sentence flow to enhance readability and coherence.

References

Abdulayeva, A. B. (2024, October). Rapid foresight: Information technologies in Physics lessons. In Journal of Physics: Conference Series (Vol. 2871, No. 1, p. 012012). IOP Publishing. https://iopscience.iop.org/article/10.1088/1742-6596/2871/1/012012/pdf

Ahmad, N., Toro-Troconis, M., Ibahrine, M., Armour, R., Tait, V., Reedy, K., ... & Inzolia, Y. (2023). Codesigns education for sustainable development: A framework for embedding education for sustainable development in curriculum design. Sustainability, 15(23), 16460. https://www.mdpi.com/2071-1050/15/23/16460/pdf

Aithal, P. S., Prabhu, S., & Aithal, S. (2024). Future of higher education through technology prediction and forecasting. Poornaprajna International Journal of Management, Education, and Social Science (PIJMESS), 1(1), 01-50. https://papers.ssrn.com/sol3/Delivery.cfm?abstractid=4901474

Annan, J. K. (2020). Preparing globally competent teachers: A paradigm shift for teacher education in Ghana. Education Research International, 2020(1), 8841653. https://onlinelibrary.wiley.com/doi/pdf/10.1155/2020/8841653

Artime, O., Grassia, M., De Domenico, M., Gleeson, J. P., Makse, H. A., Mangioni, G., ... & Radicchi, F. (2024). Robustness and resilience of complex networks. Nature Reviews Physics, 6(2), 114-131. https://researchrepository.ul.ie/articles/journal\_contribution/Robustness\_and\_resilience\_of\_complex\_networks/26213444/1/files/47515751.pdf

Assem, H. D., Nartey, L., Appiah, E., & Aidoo, J. K. (2023). A review of students’ academic performance in physics: Attitude, instructional methods, misconceptions and teachers qualification. European Journal of Education and Pedagogy, 4(1), 84-92. https://www.ej-edu.org/index.php/ejedu/article/download/551/328

Atuhurra, J., & Kaffenberger, M. (2020). System (in) coherence: quantifying the alignment of primary education curriculum standards, examinations, and instruction in two East African countries. Res. Improv. Syst. Educ, 1-50. https://riseprogramme.org/sites/default/files/2020-12/RISE\_WP-057\_Atuhurra\_Kaffenberger.pdf

Atuhurra, J., & Kaffenberger, M. (2022). Measuring education system coherence: Alignment of curriculum standards, examinations, and teacher instruction in Tanzania and Uganda. International Journal of Educational Development, 92, 102598. https://www.sciencedirect.com/science/article/pii/S0738059322000487

Bhirud, N. L., Dube, A. S., Patil, A. S., & Bhole, K. S. (2024). Modeling and multi-objective optimization of cutting parameters using response surface method for milling of medium carbon steel (EN8). International Journal on Interactive Design and Manufacturing (IJIDeM), 18(10), 7059-7087. https://www.researchgate.net/profile/Anil-Dube/publication/369945288\_Modeling\_and\_multi-objective\_optimization\_of\_cutting\_parameters\_using\_response\_surface\_method\_for\_milling\_of\_medium\_carbon\_steel\_EN8/links/655702fa3fa26f66f409f2f3/Modeling-and-multi-objective-optimization-of-cutting-parameters-using-response-surface-method-for-milling-of-medium-carbon-steel-EN8.pdf

Carvajal, A. L. P., Fernandez, T. M., Pangilinan, A. M., Obod, M. M., Amihan, S. R., Sanchez, R. D., ... & Sanchez, J. J. D. (2025). Future-Proofing Teachers in Reframing Teacher Education Curriculum in the Philippines: Basis for Policy Recommendations. International Journal of Open-access, Interdisciplinary and New Educational Discoveries of ETCOR Educational Research Center (iJOINED ETCOR), 4(2), 235-252. https://www.researchgate.net/profile/Angelyn-Pangilinan/publication/391007172\_Future-Proofing\_Teachers\_in\_Reframing\_Teacher\_Education\_Curriculum\_in\_the\_Philippines\_Basis\_for\_Policy\_Recommendations/links/681077d1d1054b0207e549a3/Future-Proofing-Teachers-in-Reframing-Teacher-Education-Curriculum-in-the-Philippines-Basis-for-Policy-Recommendations.pdf

Chamba, L. T., & Chikusvura, N. (2024). Future-proofing quality education using integrated assessment systems. Quality Education for All, 1(1), 240-255. https://www.emerald.com/insight/content/doi/10.1108/QEA-11-2023-0014/full/pdf

Diab, A., & Green, E. (2024). Cultivating resilience and success: Support systems for novice teachers in diverse contexts. Education Sciences, 14(7), 711. https://www.mdpi.com/2227-7102/14/7/711/pdf

Dumbuya, E. (2024). Curriculum Development for Lifelong Learning: Preparing Students for an Uncertain Future through Critical Thinking and Problem-Solving Skills. Available at SSRN 5018480. https://papers.ssrn.com/sol3/Delivery.cfm?abstractid=5018480

El Haj, M., Boudoukha, A. H., & Moustafa, A. A. (2021). Future-oriented repetitive thought: Pessimistic view of future in patients with Alzheimer disease. Journal of Geriatric Psychiatry and Neurology, 34(3), 216-221. https://nantes-universite.hal.science/hal-03349618/file/jgpn%20R1.pdf

Fios, F., Marzuki, M., Ibadurrahman, I., Renyaan, A. S., & Telaumbanua, E. (2024). Innovative Leadership Strategies For School Principals: Building A Holistic Educational Environment Focused On Student Achievement In The Era Of Technology And Globalization. International Journal Of Teaching And Learning, 2(1), 266-281. http://injotel.org/index.php/12/article/download/64/92

Fitrianto, I. (2024). Critical Reasoning Skills: Designing an Education Curriculum Relevant to Social and Economic Needs. International Journal of Post Axial: Futuristic Teaching and Learning, 245-258. https://www.journal.amorfati.id/index.php/postaxial/article/download/393/177

Gamage, A. N. (2025). Research Design, Philosophy, and Quantitative Approaches in Scientific Research Methodology. Sch J Eng Tech, 2, 91-103. https://www.researchgate.net/profile/Amila-Gamage/publication/389026547\_Research\_Design\_Philosophy\_and\_Quantitative\_Approaches\_in\_Scientific\_Research\_Methodology/links/67b0ad04207c0c20fa8add82/Research-Design-Philosophy-and-Quantitative-Approaches-in-Scientific-Research-Methodology.pdf

Gore, J., & Rosser, B. (2022). Beyond content-focused professional development: powerful professional learning through genuine learning communities across grades and subjects. Professional development in education, 48(2), 218-232. https://www.tandfonline.com/doi/pdf/10.1080/19415257.2020.1725904

Gouëdard, P., Pont, B., Hyttinen, S., & Huang, P. (2020). Curriculum reform: A literature review to support effective implementation. https://www.researchgate.net/profile/Beatriz-Pont/publication/347836156\_An\_implementation\_framework\_for\_effective\_change\_in\_schools/links/609fc1efa6fdcccacb55bdc8/An-implementation-framework-for-effective-change-in-schools.pdf

Gümüsay, A. A., & Reinecke, J. (2021). Researching for desirable futures: From real utopias to imagining alternatives. Journal of Management Studies, 59(1). https://ora.ox.ac.uk/objects/uuid:2e91cff1-bda2-43fa-86dc-b1e6d48c48b4/files/s2514nn59z

Hadisaputra, P., Haryadi, L. F., Zuhri, M., Thohri, M., & Zulkifli, M. (2024). The role of teachers in curriculum management implementation: A narrative literature review on challenges, best practices, and professional development. Asian Journal of Education and Social Studies, 50(5), 18-27. https://www.researchgate.net/profile/Prosmala-Hadisaputra-2/publication/379153281\_The\_Role\_of\_Teachers\_in\_Curriculum\_Management\_Implementation\_A\_Narrative\_Literature\_Review\_on\_Challenges\_Best\_Practices\_and\_Professional\_Development/links/65fd1a63f3b56b5b2d1db7fd/The-Role-of-Teachers-in-Curriculum-Management-Implementation-A-Narrative-Literature-Review-on-Challenges-Best-Practices-and-Professional-Development.pdf

Hallford, D. J., & D’Argembeau, A. (2022). Why we imagine our future: introducing the functions of future thinking scale (FoFTS). Journal of Psychopathology and Behavioral Assessment, 1-20. https://orbi.uliege.be/bitstream/2268/292049/1/Hallford%20&%20DArgembeau\_2022.pdf

Ham, M. (2022). Nepali primary school teachers’ response to national educational reform. Prospects, 52(3), 365-385. https://www.researchgate.net/profile/Miriam-Ham-2/publication/341139394\_Nepali\_primary\_school\_teachers'\_response\_to\_national\_educational\_reform/links/610c56ba169a1a0103e2223f/Nepali-primary-school-teachers-response-to-national-educational-reform.pdf

Hung, M., Smith, W. A., Voss, M. W., Franklin, J. D., Gu, Y., & Bounsanga, J. (2020). Exploring student achievement gaps in school districts across the United States. Education and Urban Society, 52(2), 175-193. https://www.academia.edu/download/59327897/Exploring\_Student\_Achievement\_Gaps20190520-79027-3io81y.pdf

Klosi, I. (2024). THE TEACHER OF THE FUTURE: VISION AND SKILLS. KNOWLEDGE-International Journal, 64(5), 609-613. https://ojs.ikm.mk/index.php/kij/article/download/6863/6640

LaVigne-Jones, D. (2023). Instructional Practices Impacting Struggling Eighth Graders’ Reading Achievement: A Non-Experimental Quantitative Analysis. St. John's University (New York). https://scholar.stjohns.edu/cgi/viewcontent.cgi?article=1621&context=theses\_dissertations

López, L., & Rodo, X. (2021). A modified SEIR model to predict the COVID-19 outbreak in Spain and Italy: simulating control scenarios and multi-scale epidemics. Results in physics, 21, 103746. https://www.sciencedirect.com/science/article/pii/S2211379720321604

McPhail, G. (2021). The search for deep learning: A curriculum coherence model. Journal of Curriculum Studies, 53(4), 420-434. https://www.academia.edu/download/92136853/00220272.2020.174823120221008-1-1gux7g9.pdf

Mellinger, C. D., & Hanson, T. A. (2020). Methodological considerations for survey research: Validity, reliability, and quantitative analysis. Linguistica Antverpiensia, New Series–Themes in Translation Studies, 19. https://lans-tts.uantwerpen.be/index.php/LANS-TTS/article/download/549/548

Mohajan, H. K. (2020). Quantitative research: A successful investigation in natural and social sciences. Journal of economic development, environment and people, 9(4), 50-79. https://mpra.ub.uni-muenchen.de/105149/1/MPRA\_paper\_105149.pdf

Nasr, A., & Rasheed, T. A. (2022). The Effect of Using Field Trips for EFL Primary Stage Students on Developing Empathy and English Fluency. Online Submission. https://files.eric.ed.gov/fulltext/ED626130.pdf

Pak, K., Polikoff, M. S., Desimone, L. M., & Saldívar García, E. (2020). The adaptive challenges of curriculum implementation: Insights for educational leaders driving standards-based reform. Aera Open, 6(2), 2332858420932828. https://journals.sagepub.com/doi/pdf/10.1177/2332858420932828

Patel, N. S., Puah, S., & Kok, X. F. K. (2024, June). Shaping future-ready graduates with mindset shifts: studying the impact of integrating critical and design thinking in design innovation education. In Frontiers in Education (Vol. 9, p. 1358431). Frontiers Media SA. https://www.frontiersin.org/journals/education/articles/10.3389/feduc.2024.1358431/pdf

Pregoner, J. D., Leopardas, R., Ganancial, I. J., Baguhin, M., & Sedo, F. (2025). Ethical Issues in Conducting Research Using Human Participants in the Post-COVID Era. IMCC Journal of Science, 5(1), 1-9. https://hal.science/hal-05073466/

Remler, D. K., & Van Ryzin, G. G. (2021). Research methods in practice: Strategies for description and causation. Sage Publications. https://serenakim.org/docs/syllabus/pa515-2025.pdf

Roehrig, G. H., Dare, E. A., Ring-Whalen, E., & Wieselmann, J. R. (2021). Understanding coherence and integration in integrated STEM curriculum. International Journal of STEM Education, 8, 1-21. https://link.springer.com/content/pdf/10.1186/s40594-020-00259-8.pdf

Rofi’i, A., Nurhidayat, E., & Firharmawan, H. (2023). Teachers’ professional competence in integrating technology: A case study at English teacher forum in Majalengka. IJLECR (International Journal of Language Education and Cultural Review), 9(1), 64-73. https://core.ac.uk/download/pdf/585771708.pdf

Ruiz-Rojas, L. I., Acosta-Vargas, P., De-Moreta-Llovet, J., & Gonzalez-Rodriguez, M. (2023). Empowering education with generative artificial intelligence tools: Approach with an instructional design matrix. Sustainability, 15(15), 11524. https://www.mdpi.com/2071-1050/15/15/11524/pdf

ul Zaman, F., & Ch, M. S. (2024). Revolutionizing Teacher Preparation: A Holistic Framework for Equipping Future Educators with 21st Century Skills and Innovative Practices. Hamdard Educus, 3(1), 17-29. http://hamdardeducus.com/index.php/he/article/download/44/33

Yurkofsky, M. M., Peterson, A. J., Mehta, J. D., Horwitz-Willis, R., & Frumin, K. M. (2020). Research on continuous improvement: Exploring the complexities of managing educational change. Review of Research in Education, 44(1), 403-433. https://journals.sagepub.com/doi/pdf/10.3102/0091732X20907363

Zhang, Y., & Umair, M. (2023). Examining the interconnectedness of green finance: an analysis of dynamic spillover effects among green bonds, renewable energy, and carbon markets. Environmental Science and Pollution Research, 30(31), 77605-77621. <https://link.springer.com/content/pdf/10.1007/s11356-023-27870-w.pdf>

Zweeris, K., Tigelaar, E. H., & Janssen, F. J. J. M. (2023). Studying curriculum orientations in teachers’ everyday practices: A goal systems approach. Teaching and Teacher Education, 122, 103969.

Holst, J. (2023). Towards coherence on sustainability in education: a systematic review of Whole Institution Approaches. Sustainability Science, 18(2), 1015-1030.

Shin, N., Stevens, S. Y., Short, H., & Krajcik, J. (2009). Learning progressions to support coherence curricula in instructional material, instruction, and assessment design. In Learning Progressions in Science (LeaPS) Conference, Iowa City, IA.