

Curricular Knowledge in Relation to Differential Instruction Capability of Public Elementary School Teachers

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Abstract. This study aimed to evaluate the influence of differential instruction capability among public elementary school teachers in Malita North District, Davao Occidental. Utilizing a non-experimental quantitative design with a descriptive-correlation technique, 274 teachers were selected through stratified random sampling. The research instrument was a modified survey questionnaire that was pilot tested for reliability and internal consistency. Findings revealed that teachers demonstrated extensive curricular knowledge, with integration of concepts across the curriculum being the most evident indicator. However, the application of knowledge to real-world situations was the least evident, indicating a need for practical learning connections. The extent of differential instruction capability among teachers was also rated as extensive, with the use of diverse teaching methods and student feedback being most evident. A strong positive relationship was found between curricular knowledge and differential instruction capability. The application of knowledge to real-world situations showed the strongest relationship with differential instruction, highlighting the importance of contextual learning. This study supports Shulman's Pedagogical Content Knowledge (PCK) Theory and Tomlinson's Differentiated Instruction Theory, emphasizing the need for strong content mastery and adaptive teaching. Schools are encouraged to provide training on contextual learning strategies to further enhance teachers' instructional capabilities.

KEY WORDS

1. Differential instruction 2. curricular knowledge 3. contextual learning

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1. Introduction

The capability of teachers to effectively implement differential instruction in public elementary schools is crucial for addressing diverse student needs, yet there remains a noticeable deficit in this area. Many educators display a low level of proficiency in applying differentiated strategies, which can hinder personalized learning and academic success among students with varied learning styles and abilities. This gap highlights the potential lack of comprehensive curricular knowledge that is

essential for crafting and executing effective differentiated instruction. Consequently, my study aims to explore the influence of curricular knowledge on the differential instruction capabilities of public elementary school teachers. By understanding this relationship, we can identify key areas for professional development that could enhance instructional practices and ultimately improve student outcomes. In the United States, several studies have revealed a concerning trend in the low level of differen-

tial instruction capability among teachers. According to Zelalem (2024), only about 40% across Africa, research has shown similar issues regarding differential instruction capabilities among teachers. Onyishi and Sefotho (2020) found that approximately 35% in Asia, evidence points to a moderate yet unsatisfactory level of differential instruction capability among teachers. Ahmed et al. (2022) reported that around 45% focusing on Luzon, statistical reports indicate that the differential instruction capability of public elementary school teachers remains a pressing concern. Potot et al. (2023) found that only about 42% in the Visayas region, studies have similarly revealed problems with low differential instruction capabilities among teachers. Pozas et al. (2020) observed that roughly 50% in Davao Occidental, the challenge of low differential instruction capability among teachers is notably acute. Only 30% The decision to investigate the influence of curricular knowledge on the differential instruction capability of public elementary school teachers, emerges from a critical research gap identified in existing educational studies. While extensive literature explores the broader concepts of differentiated instruction and curriculum design independently, limited research specifically addresses how teachers' understanding of curricular content affects their ability to implement differentiated instructional strategies effectively within the classroom. This gap is particularly evident in regional contexts like Malita North District, where unique cultural, socioeconomic, and educational dynamics play a pivotal role in shaping teaching practices. Existing studies often generalize findings from urban or more resource-rich settings, neglecting the challenges faced by educators in more rural or less affluent areas. This oversight provides a compelling rationale for a focused investigation into how deep curricular understanding can empower teachers to more effectively meet diverse student needs through tailored instruction. The urgency of conducting this study in

Malita North District is emphasized by the district's specific educational challenges and the potential impact of findings on local teaching practices. In regions like Davao Occidental, where educational resources and teacher training opportunities may be limited, enhancing teachers' curricular knowledge could serve as a lever to significantly improve educational outcomes by enabling more effective differentiated instruction. Moreover, the rapidly changing educational demands, including the integration of technology and new pedagogical approaches, necessitate up-to-date research that reflects current realities and provides actionable insights. Understanding the relationship between curricular knowledge and differential instruction capabilities in this specific setting not only fills a significant academic void but also offers practical benefits by informing targeted professional development programs and curriculum reforms. Therefore, the study is not just academically relevant but also urgently needed to enhance the quality of education in a district poised for transformative educational improvements.

1.1. Theoretical/Conceptual Framework of the Study—This study is anchored on Shulman's (1985) Pedagogical Content Knowledge (PCK) Theory. The concept of Pedagogical Content Knowledge (PCK) to describe the unique blend of content and pedagogy that effective teachers possess. PCK emphasizes the ability of teachers to convey subject matter in ways that are understandable and engaging to students. Shulman's PCK is highly relevant as it directly relates to teachers' understanding of how to present curriculum effectively. This theory highlights the intersection between knowing the subject and knowing how to teach it, which is crucial for implementing differentiated instruction. By focusing on PCK, the study can explore how teachers adapt their curricular knowledge to meet diverse learner needs, ensuring that instruction is both content-rich and pedagogically sound. In support, this study

is based on Differentiated Instruction Theory by Tomlinson (1999). The Differentiated Instruction Theory, which advocates for tailoring teaching environments and practices to create appropriately different learning experiences for diverse students. The theory emphasizes adjusting content, process, products, and learning environments based on individual student needs. Tomlinson's theory is directly aligned with the study's focus on differential instruction capability, providing a structured approach to understanding how teachers can modify their instruction to accommodate varying student abilities and learning styles. It offers practical strategies that can be examined in the context of public elementary schools, making it a suitable framework for assessing teachers' ability to implement differentiated practices. Additionally, the theory underscores the importance of ongoing assessment and flexibility in teaching, which are critical components of effective curricular knowledge application. Lastly, the study builds its foundation on Universal Design for Learning (UDL) Theory (Rose Meyer, 2001). Universal Design for Learning (UDL) is a framework aimed at designing curriculum that accommodates all learners from the outset. UDL emphasizes providing multiple means of representation, expression, and engagement to address the diverse needs of students. UDL is appropriate for this study as it provides a comprehensive approach to curriculum design that inherently supports differential instruction. By focusing

on flexibility and accessibility, UDL aligns with the goal of equipping teachers with the capability to adapt their instructional methods to diverse learner profiles. The theory's emphasis on proactive planning and inclusive practices allows the study to explore how curricular knowledge can be leveraged to create equitable learning environments in public elementary schools. This study is composed of two variables, as shown in Figure 1. The independent variable is curricular knowledge or the understanding and grasp of the curriculum they are required to teach, including the content, structure, and the pedagogical strategies best suited for delivering it. The measures of curricular knowledge are accuracy in information delivery or the precision and correctness with which teachers present subject matter during instruction; ability to answer questions thoroughly or a teacher's capacity to respond to students' queries with depth and accuracy, illustrating a thorough understanding of the subject; integration of concepts across curriculum or the skill of linking concepts from their subject area to other disciplinary content to create a more holistic learning experience; and application of knowledge to real-world situations or the ability to relate academic theories and principles to practical applications. The dependent variable is teachers' differential instruction capability or the ability of educators to adapt their teaching strategies and approaches based on the diverse learning needs, abilities, and preferences of their students.

2. Methodology

This section provides a comprehensive overview of the research design, including details on the research respondents, ethical considerations, research instruments, and procedural steps. It also outlines the methods for data collection and analysis, ensuring a clear framework for the study.

2.1. Research Design—In the context of this study, the researcher opted for a quantitative descriptive-correlational research design. Quantitative research design involved the systematic

collection and analysis of numerical data to identify patterns, relationships, and trends. It emphasized objectivity (Watson, 2015) which is cited by Abarca and Yazon (2021). Utiliz-

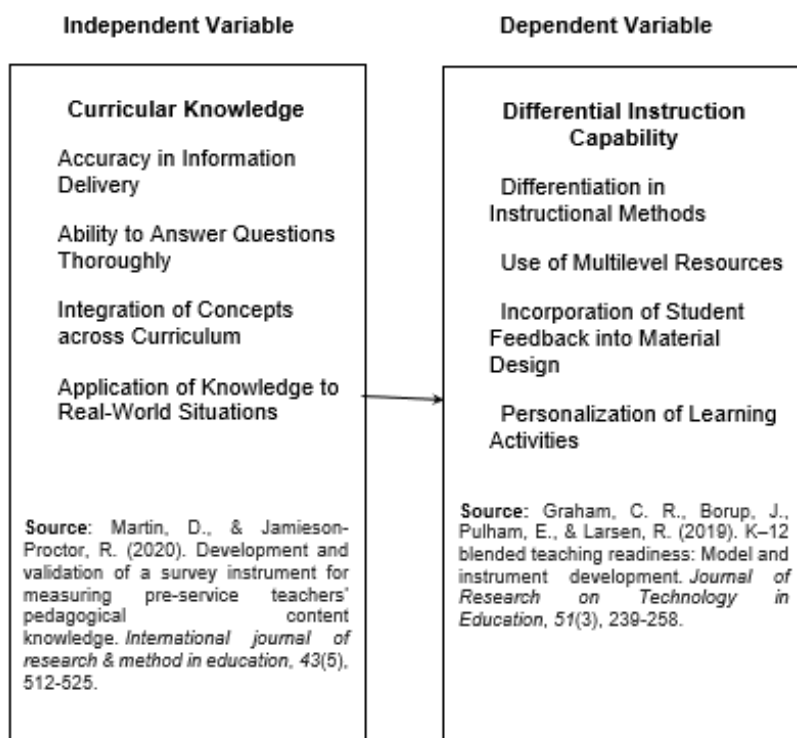


Fig. 1. Theoretical/Conceptual Framework

ing a quantitative research design was suitable for examining the relationship between curricular knowledge and differential instruction capability among teachers in Malita North District. This approach allowed for the collection of measurable data, facilitating objective analysis of teachers' competencies. Additionally, it enabled the identification of trends and patterns that could inform policy and training programs aimed at enhancing instructional strategies. Further, the descriptive research approach aimed to accurately describe characteristics, behaviors, or phenomena within a specific population or context. It focused on providing a detailed and systematic account without manipulating any variables (Rahi, 2017). The descriptive research approach was well-suited for outlining the current state of curricular knowledge and differential instruction capabilities among public elementary school teachers in Malita North District. By providing a comprehensive overview, it helped in identifying existing strengths and areas needing improvement. This foundational understanding was essential for developing targeted interventions and supporting evidence-based decision-making in educational practices. Furthermore, the correlational research approach examined the relationship between two or more variables to determine whether and how they were associated. It did not imply causation but identified the strength and direction of relationships (Lau, 2017). Employing a correlational research approach was effective for exploring the association between teachers' curricular knowledge and their ability to implement differential instruction in Malita North District. This method revealed whether higher levels of curricular understanding were linked to more effective differentiated teaching practices. Understanding these relationships guided professional development initiatives and resource allocation to enhance overall educational quality.

2.2. Ethical Consideration—The researcher strictly followed the established protocols outlined in the standard guidelines for executing the research, paying close attention to the specified criteria for managing both the population and the data. The survey questionnaires, along with other related materials, were submitted for evaluation and approval. After receiving approval from the Graduate School RMC-Ethics Committee, the researcher proceeded to the subsequent phase of the study. This ensured that the research process adhered to ethical standards and maintained the integrity of data collection and analysis. All procedures were carefully monitored to ensure compliance with ethical guidelines.

Social Value

At the macro level, the study on curricular knowledge and differential instruction capability among public elementary school teachers in Malita North District demonstrated significant societal value by contributing to broader educational reform initiatives in the Philippines. Enhancing teachers' ability to implement differentiated instruction led to more inclusive and effective teaching practices, improving overall educational outcomes. This aligned with national goals of achieving equitable education and addressing diverse learning needs across various socioeconomic backgrounds. Additionally, the research findings informed policymakers and educational authorities in designing targeted professional development programs that strengthened teachers' instructional strategies. These benefits extended beyond the district, promoting educational quality at a larger scale. At the community level, the study provided valuable insights into the specific challenges and strengths of teachers within Malita North District, facilitating localized interventions that addressed unique educational needs. By identifying the current state of curricular knowledge and differential instruction capabilities, educational leaders implemented contextually rele-

vant strategies that enhanced teaching effectiveness and student engagement. This localized focus ensured that the benefits of the research were directly felt by the community, promoting a culture of continuous improvement and professional growth among educators. It also fostered collaboration between teachers, administrators, and local educational authorities in achieving shared educational goals. At the micro level, the research empowered individual teachers by identifying gaps in their curricular knowledge and differential instruction skills, enabling personalized professional development. This targeted approach not only enhanced teachers' competencies but also boosted their confidence and job satisfaction, leading to better classroom management and student interactions. By addressing the specific needs of respondents, the study ensured that the interventions were relevant and effective, maximizing the positive outcomes for both teachers and students. Teachers gained a clearer understanding of their strengths and areas for improvement, encouraging them to adopt best practices in their teaching.

Informed Consent

The researcher ensured that all respondents were fully informed about the purpose of the study before they agreed to participate. This included a clear explanation of the study's objectives, the nature of their involvement, and how the findings would be utilized to enhance school heads' management capabilities and teachers' educational practices in Malita North District, Davao Occidental. Respondents received detailed information through consent forms, which they were required to read and sign prior to participation, ensuring they understood the study's intent and their role within it. This process upheld transparency and fostered trust between the researcher and the respondents. Respondents were explicitly informed that their participation was entirely voluntary and that they had the right to withdraw from the study at any time without any nega-

tive consequences. This assurance was communicated both verbally and in writing, reinforcing their autonomy and the voluntary nature of their involvement. The researcher emphasized that choosing not to participate or withdrawing would not affect their employment or professional standing in any way. This approach ensured that respondents felt secure and empowered to make independent decisions regarding their participation. Additionally, the researcher clarified any potential liabilities and reassured respondents about the confidentiality and anonymity of their responses. Measures were taken to protect the respondents' identities, such as using pseudonyms and secure data storage methods. By providing comprehensive information and addressing any concerns, the researcher ensured that informed consent was obtained ethically and transparently, fostering trust and cooperation among the respondents. This process promoted an ethical and respectful research environment.

Vulnerability of Research Respondents

The respondents in this study may have experienced vulnerability due to potential power dynamics and professional repercussions associated with disclosing gaps in their instructional capabilities. To mitigate these risks, the researcher ensured confidentiality and anonymity of all responses, making certain that individual teachers could not be identified in any published results or reports. Additionally, informed consent was obtained, clearly outlining the voluntary nature of participation and the right to withdraw at any time without any negative consequences. This approach provided respondents with a sense of security and encouraged honest and open responses. Another aspect of respondent vulnerability pertained to the potential fear of bias or favoritism influencing the study outcomes. To address this, the researcher employed unbiased sampling methods and utilized standardized data collection instruments to ensure fairness and objectivity. Training sessions were

conducted for data collectors to reinforce ethical standards and the importance of maintaining impartiality throughout the research process. Moreover, the study underwent ethical review and approval by relevant institutional review boards to ensure adherence to ethical guidelines and safeguard respondents' rights.

Privacy and Confidentiality

The researcher maintained the privacy and confidentiality of respondents by strictly adhering to the Data Privacy Act of 2012. Personal identifiers such as names, school affiliations, and any other sensitive information were removed or coded to protect the identity of each respondent. This anonymization process ensured that individual responses could not be traced back to any specific teacher, thereby safeguarding their privacy throughout the research process. Respondents were informed of these measures before participating, which enhanced their confidence in the research process. In addition to anonymizing data, the researcher implemented secure data storage practices to protect both digital and physical copies of the data collected. Digital data were stored on password-protected devices and encrypted files, accessible only to the researcher and authorized personnel involved in the study. Physical copies, such as printed surveys or consent forms, were kept in locked cabinets in a secure location, inaccessible to unauthorized individuals. These measures ensured that all data remained confidential and protected against unauthorized access or breaches. Upon the completion of the study, the researcher ensured the proper disposal of all data in accordance with ethical guidelines and legal requirements. Soft copies of data were permanently deleted from all digital storage systems, while hard copies were shredded to prevent any possibility of data retrieval. This final step in data management underscored the researcher's commitment to upholding the highest standards of privacy and confidentiality, ensuring that the information provided by respon-

dents remained protected even after the study concluded.

Risk, Benefits, and Safety The primary risks associated with this study involved potential emotional or psychological discomfort for respondents when reflecting on and disclosing their instructional practices and curricular knowledge. To mitigate these risks, the researcher designed the survey and interview questions to be respectful and considerate, avoiding any language that could be perceived as judgmental or critical. Additionally, respondents were provided with resources and support contacts in case they experienced any distress related to their participation. Data were securely stored to prevent unauthorized access, ensuring that respondents' information remained confidential. These measures minimized any potential harm to the respondents. The benefits of this research were multifaceted, offering both immediate and long-term advantages to respondents and the educational community. Teachers gained insights into their own instructional practices and areas for professional growth, fostering personal and professional development. The findings informed the creation of targeted training programs that enhanced teachers' abilities to implement differentiated instruction, ultimately leading to improved student learning outcomes. Additionally, the study contributed to the academic literature on educational practices in the Philippines, providing a foundation for future research and policy development. These benefits ensured that the study had a positive impact on both teachers and the broader educational community. Ensuring the physical and psychological safety of respondents was a priority throughout the research process. The researcher implemented strict data security measures, including encrypted storage and limited access to sensitive information, to protect respondents' identities and responses. All interactions with respondents were conducted in a respectful and ethical manner, adhering to established protocols for

research involving human subjects. Training for the researcher and data collectors emphasized the importance of maintaining a safe and comfortable environment for respondents. This commitment to safety ensured that respondents participated in the study without fear of harm or misuse of their information.

Justice

The principle of justice was upheld by ensuring an equitable selection of respondents for the study. The researcher included a diverse group of teachers from various schools within the Malita North District, avoiding any form of bias or discrimination. This inclusive approach guaranteed that all eligible teachers had an equal opportunity to contribute to the research, thereby distributing the benefits and burdens of the study fairly. By doing so, the researcher ensured that the findings were representative of the entire teacher population in the district, enhancing the validity and applicability of the study's outcomes. This commitment to justice fostered trust and cooperation among respondents, promoting ethical research practices.

Transparency

Transparency was a cornerstone of the research process, ensuring that all aspects of the study were conducted openly and honestly. The researcher clearly communicated the study's objectives, methodology, and potential outcomes to all respondents before their participation. Detailed information sheets and consent forms were provided, outlining the purpose of the research, the procedures involved, and the rights of the respondents. By maintaining open lines of communication, the researcher fostered trust and accountability, ensuring that respondents were fully informed and comfortable with their involvement in the study. Additionally, the researcher was transparent about how the data on curricular knowledge and differential instruction capability of public elementary school teachers would be used, stored, and reported, ensuring that respondents had a clear understand-

ing of the research process and its implications.

Qualification of the Researcher

The researcher possessed the requisite academic qualifications and expertise in educational leadership and research methodologies pertinent to this study. With a strong background in conducting educational research, the researcher was well-versed in quantitative, descriptive, and correlational research approaches, ensuring methodological rigor. Familiarity with the educational landscape of the Malita North District enabled the researcher to design a study that was culturally sensitive and contextually relevant. The researcher's academic preparation included courses in Methods of Research and Advanced Statistics, which provided the necessary skills for designing, conducting, and analyzing the study. This foundation ensured that the study was conducted professionally and accurately. Moreover, the researcher had prior experience working with elementary school teachers and understood the ethical considerations involved in educational research. This experience included proficiency in obtaining informed consent, ensuring confidentiality, and implementing data protection measures. Continuous professional development and engagement with scholarly literature equipped the researcher with up-to-date knowledge and skills necessary for executing the study effectively and ethically. The researcher's qualifications contributed to the credibility and reliability of the research findings. This expertise also ensured that the study adhered to ethical research standards. Conflict of Interest

The researcher acknowledged the importance of transparency in disclosing any potential conflicts of interest. There were no personal or financial interests that could unduly influence the study's design, data collection, analysis, or reporting. The researcher did not hold any administrative position within the schools or the Malita North District's educational institutions that could compromise objectivity. By main-

taining neutrality and adhering strictly to ethical research standards, the researcher ensured that the findings were credible and unbiased. This approach upheld the trust of the respondents and the broader educational community.

Adequacy of Facilities

The research was conducted using facilities that provided the necessary support for both data collection and analysis. This included access to a secure online platform for administering surveys and a quiet, private space for conducting interviews. These facilities ensured that data were collected in a professional and confidential manner, minimizing risks to respondent confidentiality and data integrity. The research institution provided adequate technological and administrative support to handle the logistical aspects of the study, including data storage, which adhered to privacy laws and institutional policies. These facilities ensured that the research process was efficient and secure. Moreover, the facilities where the research took place were equipped with necessary resources such as computers with statistical software for data analysis, secure servers for data storage, and comfortable settings for interactive sessions with respondents. These resources were regularly updated and maintained to ensure functionality and security. The researcher also ensured that all facilities used for the research complied with accessibility standards and provided an accommodating environment for all respondents, regardless of any physical limitations. This commitment to adequacy of facilities contributed to the smooth and ethical conduct of the study.

Community Involvement

Community involvement was integral to the study, and the researcher actively engaged with the educational community in the Malita North District. Before initiating the research, the researcher sought permission and collaborated with school authorities and local education stakeholders to align the study with the community's needs. This collaborative approach

ensured that the research was relevant and that the outcomes would be beneficial to the schools involved. The researcher also maintained open communication with school administrators to provide updates on the study's progress. Additionally, the researcher provided opportunities for respondents to offer feedback and shared the study's findings with the community through presentations or reports. This transparency fostered trust and encouraged the practical application of the research insights. Teachers and school administrators were encouraged to use the study's findings to enhance their instructional practices. By involving the community throughout the research process, the researcher promoted a sense of ownership and facilitated positive changes in educational practices within the Malita North District. This collaborative approach ensured that the study was both ethical and impactful.

2.3. Research Respondents—The sample for this study comprised 274 elementary school teachers from the Malita North District, Davao Occidental. The sample size was determined using the Raosoft calculator from a total population of 950 teachers within the selected schools in Malita North District, Davao Occidental, with a margin of error set at 0.05, resulting in a final sample size of 274 respondents. The researcher used the Raosoft sample size calculator by inputting parameters such as the population size (950), the desired confidence level (0.95), margin of error (0.05), and expected response distribution (50). In this study, the researcher established specific inclusion criteria for selecting teacher respondents to ensure relevance and accuracy. Only currently employed public elementary school teachers within the Malita North District were eligible, ensuring that the respondents were actively engaged in the local educational context. Additionally, respondents were required to possess a valid teaching certification and have a minimum of one year of teaching experience, guaranteeing that they had sufficient

professional background to provide meaningful insights into curricular knowledge and instructional practices. Teachers from various grade levels and subject areas were included to capture a diverse range of instructional strategies and curricular understandings, thereby enhancing the generalizability of the study findings. Moreover, respondents participated voluntarily, maintaining ethical standards and ensuring that the data reflected genuine perspectives without coercion. The researcher used a stratified sampling technique to determine the sample size. Stratified sampling is a sampling technique in which the population is divided into smaller groups, known as strata, that are distinct but share similar characteristics. Each stratum was sampled proportionally to ensure that the sample accurately reflected the composition of the overall population (Kim et al., 2013). To obtain 274 teachers from the total population of 950 public elementary school teachers, the researcher first categorized the population into strata based on the schools where the teachers were employed. This approach ensured that each school was proportionally represented in the sample, maintaining diversity within the teacher population in terms of their school environments and potential experiences.

The researcher made use of an adapted and modified survey questionnaire to suit the current investigation. The scaling was done by having one-half of the value of 5 as the average cut-off point or the fair level, with a uniform interval of 0.80. Before the administration of the instrument, it was subjected to validation by three experts and was revised according to their expert comments. This ensured that the questionnaire was accurate, clear, and aligned with the study's objectives, enhancing its reliability and validity. The first part of the instrument focused on the curricular knowledge of teachers. The instrument consisted of four domains,

namely: accuracy in information delivery, ability to answer questions thoroughly, integration of concepts across the curriculum, and application of knowledge to real-world situations. The Cronbach's alpha value for this instrument was 0.820, which was described as good and interpreted as reliable and consistent. In completing the questionnaire, respondents used a 5-point Likert scale, allowing them to indicate their level of agreement with each statement. To determine the extent of curricular knowledge of teachers, the researcher utilized the range of means, descriptions, and interpretations provided in the study.

2.4. Research Instrument—The researcher made use of an adapted and modified survey questionnaire to suit the current investigation. The scaling was done by having one-half of the value of 5 as the average cut-off point or the fair level, with a uniform interval of 0.80. Before the administration of the instrument, it was subjected to validation by three experts and was revised according to their expert comments. This ensured that the questionnaire was accurate, clear, and aligned with the study's objectives, enhancing its reliability and validity. The first part of the instrument focused on the curricular knowledge of teachers. The instrument consisted of four domains, namely: accuracy in information delivery, ability to answer questions thoroughly, integration of concepts across the curriculum, and application of knowledge to real-world situations. The Cronbach's alpha value for this instrument was 0.820, which was described as good and interpreted as reliable and consistent. In completing the questionnaire, respondents used a 5-point Likert scale, allowing them to indicate their level of agreement with each statement. To determine the extent of curricular knowledge of teachers, the researcher utilized the range of means, descriptions, and interpretations provided in the study.

Scale Descriptive Ratings and Interpretation on Teachers' Curricular Knowledge

Range of Mean	Description	Interpretation
4.20 – 5.00	Very Extensive	The curricular knowledge of teachers is always demonstrated.
3.40 – 4.19	Extensive	The curricular knowledge of teachers is oftentimes demonstrated.
2.60 – 3.39	Moderately Extensive	The curricular knowledge of teachers is sometimes demonstrated.
1.80 – 2.59	Less Extensive	The curricular knowledge of teachers is rarely demonstrated.
1.00 – 1.79	Not Extensive	The curricular knowledge of teachers is never demonstrated.

The second tool focused on the differential instruction capability of public elementary school teachers. The questionnaire for teachers' ability to customize learning materials for diverse learner needs consisted of statements divided into four indicators: differentiation in instructional methods, use of multilevel resources, incorporation of student feedback into material design, and personalization of learning activities. The Cronbach's alpha value for this in-

strument was also 0.945, described as excellent and interpreted as highly reliable and consistent. To determine the extent of differential instruction capability among public elementary school teachers, the researcher used the range of means, descriptions, and interpretations specified in the study. These measurement techniques ensured accurate and consistent assessment of teachers' instructional capabilities.

2.5. Data Gathering Procedure—Permission to Conduct the Study The initial step in securing permission to conduct the study involved the researcher obtaining an endorsement from the Dean of the Graduate School at The Rizal Memorial Colleges, Inc., Davao City. This endorsement served as a formal recognition and support of the research project, validating its academic merit and alignment with the institution's research objectives. Subsequently, the researcher applied for ethical clearance from the Graduate School RMC-Research Ethics Committee (GSRMC-REC). The ethical clearance was crucial as it ensured that the study adhered to established ethical standards, particularly in terms of confidentiality, consent, and the over-

all welfare of the respondents. These steps guaranteed that the study was ethically sound and aligned with institutional standards. Once the endorsement and ethical clearance were secured, the researcher approached the Schools Division Superintendent in Davao Occidental to request permission to conduct the study within the schools of Malita North District. This request included attaching copies of both the endorsement from the Dean and the ethical clearance certificate to demonstrate compliance with academic and ethical standards. After receiving approval from the superintendent, the researcher proceeded to contact the principals of the individual schools in Malita North District. During this phase, the researcher explained the

Scale Descriptive Ratings and Interpretation on Differential Instruction Capability of Public Elementary School Teachers

Range of Mean	Description	Interpretation
4.20 – 5.00	Very Extensive	The differential instruction capability of public elementary school teachers is always evident.
3.40 – 4.19	Extensive	The differential instruction capability of public elementary school teachers is oftentimes evident.
2.60 – 3.39	Moderately Extensive	The differential instruction capability of public elementary school teachers is sometimes evident.
1.80 – 2.59	Less Extensive	The differential instruction capability of public elementary school teachers is rarely evident.
1.00 – 1.79	Not Extensive	The differential instruction capability of public elementary school teachers is never evident.

study's purpose, its potential benefits for the educational community, and the specific roles and expectations of the schools and their teachers, ensuring transparency and fostering cooperation. This collaborative approach promoted a positive research environment.

Distribution and Retrieval of the Questionnaire Once the endorsement and ethical clearance were secured, the researcher approached the Schools Division Superintendent in Davao Occidental to request permission to conduct the study within the schools of Malita North District. This request included attaching copies of both the endorsement from the Dean and the ethical clearance certificate to demonstrate compliance with academic and ethical standards. After receiving approval from the superintendent, the researcher proceeded to contact the principals of the individual schools in Malita North District. During this phase, the researcher explained the study's purpose, its potential benefits for the educational community, and the specific roles and

expectations of the schools and their teachers, ensuring transparency and fostering cooperation. This collaborative approach promoted a positive research environment. Following the successful pilot test, the main distribution of the research questionnaires took place. The selected respondents were given sufficient time to complete the questionnaire, ensuring they could provide thoughtful and thorough responses. Respondents were offered the flexibility to choose their preferred method of completion, either face-to-face or online, accommodating their convenience and comfort levels. This approach facilitated a higher response rate and accounted for the diverse preferences and schedules of the respondents. It also ensured that the data collected were accurate and comprehensive. The final phase involved the retrieval of the completed questionnaires. The researcher established a clear deadline for submission, which was communicated at the time of distribution. Respondents submitted their completed questionnaires

through the predetermined method, either returning the physical documents in face-to-face settings or submitting them electronically. Once all questionnaires were collected, the researcher proceeded with data analysis using statistical software to quantify the results and examine the relationships between curricular knowledge and differential instruction capability of public elementary school teachers. This systematic process ensured efficient and ethical data management.

Collation and Statistical Treatment of Data
Upon retrieval of the completed survey questionnaires, the initial step involved tallying and organizing the data. Each response was systematically entered into a Microsoft Excel spreadsheet, categorized by various indicators such as curricular knowledge and differential instruction capability of public elementary school teachers. This meticulous organization was crucial for ensuring that subsequent analyses were based on accurate and systematically arranged data. The use of Excel facilitated the sorting and filtering of data, allowing for an efficient preliminary examination and preparation for more complex statistical analysis. Following the organization of the data, the researcher conducted descriptive statistical analysis to derive initial insights. This included calculating the mean for each variable to determine central tendencies. The mean provided a basic understanding of the average responses to various questions, indicating common trends and perceptions of teachers regarding curricular knowledge and differential instruction capability. Descriptive statistics helped the researcher identify general patterns within the data. The final step in data analysis involved conducting inferential statistical tests to explore the predictive relationships specified in the study's objectives. Pearson Product Moment Correlation was used to identify the strength and direction of the relationships between variables, such as the correlation between curricular knowledge and differential instruction ca-

pability of public elementary school teachers. Regression analysis was then applied to determine the extent to which curricular knowledge influenced variations in differential instruction capability. This inferential analysis validated the relationships hypothesized and provided quantifiable evidence that could be used to inform policy and practice within the educational sector, specifically targeting enhancements in teacher support programs in Malita North District, Davao Occidental. After the collation and statistical treatment of the data, the researcher embarked on the interpretation and discussion of the results. This phase involved synthesizing the statistical findings to ascertain the implications of curricular knowledge and differential instruction capability of public elementary school teachers in Malita North District, Davao Occidental. The researcher highlighted significant correlations and the impact of predictive variables on outcome measures. This interpretive process was essential for understanding the practical significance of the data, enabling the researcher to draft informed conclusions and formulate evidence-based recommendations for enhancing teacher support and professional development initiatives. Subsequently, the researcher prepared for the dissemination of the study's findings. This process included drafting a comprehensive report that detailed the study's methodology, findings, conclusions, and recommendations. The report was presented during the final defense before an academic committee, providing an opportunity for scholarly critique and feedback. Following successful defense, the researcher refined the study based on feedback and submitted the revised manuscript for publication in a peer-reviewed international journal. This publication extended the reach of the study's insights, contributing to the broader academic community's understanding of curricular knowledge of public elementary school teachers and influencing future research and policy in the field of education

2.6. Data Analysis—The following statistical tools will be utilized by the researcher in processing the gathered data:

Weighted Mean The mean was the average value of a dataset, calculated by adding all the individual values and dividing by the number of observations. In the context of this study, the mean determined the average level of curricular knowledge and differential instruction capability of public elementary school teachers in Malita North District, Davao Occidental. This measure provided a clear understanding of the general performance and skill levels of the respondents.

Pearson Moment Product Correlation The mean was the average value of a dataset, calculated by adding all the individual values and dividing by the number of observations. In the context of this study, the mean helped determine the average level of stress coping proficiency, moral dilemmas encountered, and professional well-being among teachers among selected private schools in Davao City.

Pearson Product-Moment Correlation Pear-

son product-moment correlation assessed the strength and direction of a linear relationship between two continuous variables. In this study, it was used to examine the relationship between curricular knowledge and differential instruction capability of public elementary school teachers in Malita North District, Davao Occidental. This analysis revealed the degree to which teachers' knowledge of curriculum was associated with their ability to adapt instructional methods for diverse learners.

Regression Analysis Regression analysis involved identifying the equation that best predicted a dependent variable based on one or more independent variables. This technique was utilized in the study to determine how well curricular knowledge could predict changes in the differential instruction capability of public elementary school teachers in Malita North District, Davao Occidental. It allowed the researcher to identify key factors that significantly influenced teaching effectiveness, providing insights for targeted interventions and professional development.

3. Results and Discussion

This chapter presents the results generated from the data gathered. It is sequenced based on the objectives of the study as presented in the first chapter. Thus, it presents the extents of curricular knowledge and differential instruction capability of public elementary school teachers; the significant relationship among these variables; and the influence of curricular knowledge on the differential instruction capability of 274 public elementary school teachers in Malita North District, Davao Occidental.

3.1. Curricular Knowledge of Teachers — Table 1 shows that curricular knowledge among public elementary school teachers in Malita North District, Davao Occidental reveals an overall mean score of 3.46, which falls under the extensive descriptive level. This suggests that teachers oftentimes demonstrate curricular competencies such as delivering accurate content, answering questions thoroughly, integrating concepts, and facilitating real-world ap-

plication of knowledge. The findings reflect a generally strong level of instructional effectiveness, indicating that the majority of teachers are capable of translating curriculum standards into meaningful teaching practices. As Martin and Jamieson-Proctor (2020) emphasized, curricular knowledge is a core component of pedagogical content knowledge, and its effective execution ensures learners gain accurate, relevant, and applicable understanding. Among the four indi-

cators, the highest-rated is Integration of Concepts Across Curriculum that obtained a mean score of 3.56 described as extensive, implying that teachers are particularly skilled in connecting ideas across subjects, fostering deeper and interdisciplinary learning. Meanwhile, the lowest-rated is Application of Knowledge to Real-World Situations with a mean score of 3.35 and described as moderately extensive, which indicates that while teachers sometimes help

students relate academic content to practical experiences, this area still requires improvement. This gap highlights the need to enhance experiential and contextualized learning opportunities. Hume et al. (2019) emphasized that knowledge becomes more meaningful and retained when applied to authentic life situations, thus supporting the need to reinforce practical integration in the curriculum delivery process.

Table 1. Summary on Curricular Knowledge among Public Elementary School Teachers in Malita North District, Davao Occidental

Indicators	Mean	Descriptive Equivalent
Accuracy in Information Delivery	3.51	Extensive
Ability to Answer Questions Thoroughly	3.43	Extensive
Integration of Concepts Across Curriculum	3.56	Extensive
Application of Knowledge to Real-World Situations	3.35	Moderately Extensive
Overall	3.46	Extensive

Legend: Very Extensive = Always Demonstrated; Extensive = Oftentimes Demonstrated; Moderately Extensive = Sometimes Demonstrated; Less Extensive = Seldom Demonstrated; Not Extensive = Never Demonstrated

3.2. Differential Instruction Capability— the summary on differential instruction capability among public elementary school teachers in Malita North District, Davao Occidental yielded an overall mean score of 3.42, which falls under the extensive descriptive level. This implies that differentiated instructional practices are oftentimes evident in classroom implementation, reflecting a commendable effort by teachers to

address diverse learning needs. The findings suggest that most teachers integrate a range of strategies such as varying methods, using multi-level resources, and adapting instruction based on learner responses. As Graham et al. (2019) emphasized, differentiation is central to inclusive education, as it ensures that all learners are provided with equitable opportunities to succeed through instructional flexibility and responsiveness.

Among all four indicators, the highest-rated was Incorporation of Student Feedback into Material Design with a mean score of 3.51 described as extensive, suggesting that teachers effectively use learners' input to enhance in-

structional content and relevance. In contrast, the lowest-rated was Personalization of Learning Activities, which received a mean of 3.27 or moderately extensive and interpreted as sometimes evident, indicating that personalized in-

Table 2. Summary on Differential Instruction Capability among Public Elementary School Teachers in Malita North District, Davao Occidental

Indicators	Mean	Descriptive Equivalent
Differentiation in Instructional Methods	3.46	Extensive
Use of Multilevel Resources	3.43	Extensive
Incorporation of Student Feedback into Material Design	3.51	Extensive
Personalization of Learning Activities	3.27	Moderately Extensive
Overall	3.42	Extensive

Legend: Very Extensive = Always Evident; Extensive = Oftentimes Evident; Moderately Extensive = Sometimes Evident; Less Extensive = Seldom Evident; Not Extensive = Never Evident

struction is only sometimes evident. This points to the need for more consistent integration of learner profiles, interests, and readiness levels in instructional planning. According to Barcomb and Cardos (2024), learning becomes more effective when it aligns with the learner’s zone of proximal development, and personalization plays a crucial role in achieving that alignment. Therefore, while differentiated instruction is generally well-practiced, reinforcing personalized learning strategies could further enhance student engagement and performance.

3.3. Curricular Knowledge and Differential Instruction Capability among Public Elementary School Teachers—The results of the analysis on the relationship between curricular knowledge and differential instruction capability among public elementary school teachers in Malita North District, Davao Occidental, are presented. Bivariate correlation analysis using Pearson Product-Moment Correlation was utilized to determine the relationship between the two variables. Table 11 shows that curricular knowledge has a significant positive relationship with differential instruction capability among teachers, with an overall r-value of 0.727 and a p-value of 0.000, which is less than the 0.05 level of significance (two-tailed). This finding indicates that as teachers’ curric-

ular knowledge improves, their capability to differentiate instruction also significantly improves. The null hypothesis of no significant relationship between curricular knowledge and differential instruction capability is therefore rejected. The result signifies that teachers who demonstrate stronger curricular knowledge, including accuracy in information delivery, the ability to answer questions thoroughly, the integration of concepts across the curriculum, and the application of knowledge to real-world situations, are more capable of employing differentiated instructional strategies Gerard et al. (2022). Specifically, the analysis reveals that Application of Knowledge to Real-World Situations has the strongest correlation with differential instruction capability ($r = 0.632$, $p < 0.05$), followed by Accuracy in Information Delivery ($r = 0.507$, $p < 0.05$), Ability to Answer Questions Thoroughly ($r = 0.375$, $p < 0.05$), and Integration of Concepts Across Curriculum ($r = 0.241$, $p < 0.05$). These findings are consistent with the view of El-Sabagh (2021), who emphasized that deep curricular understanding is foundational to effective teaching, as it enables educators to present content accurately, connect ideas across subjects, answer student questions thoroughly, and relate academic knowledge to practical contexts.

Table 3. Relationship Between Curricular Knowledge and Differential Instruction Capability among Public Elementary School Teachers

Curricular Knowledge	r-value	p-value	Decision
Accuracy in Information Delivery	0.507*	0.000	Reject H_0
Ability to Answer Questions Thoroughly	0.375*	0.000	Reject H_0
Integration of Concepts Across Curriculum	0.241*	0.000	Reject H_0
Application of Knowledge to Real-World Situations	0.632*	0.000	Reject H_0
Overall	0.727*	0.000	Reject H_0

*Significant at $p < 0.05$

Legend: Perfect Correlation = 1.00; Strong Correlation = 0.70–0.99; Moderate Correlation = 0.30–0.69; Weak Correlation = 0.01–0.29; No Correlation = 0.00

3.4. Influence of Curricular Knowledge and Differential Instruction Capability among Public Elementary School Teachers—The influence of curricular knowledge on differential instruction capability among public elementary school teachers in Malita North District, Davao Occidental presents significant insights, as evidenced by regression analysis results shown in the provided table. The analysis reveals that accuracy in information delivery significantly influences differential instruction capability among public elementary school teachers, with a B value of 0.322, a Beta value of 0.379, and a p-value of 0.000. This indicates that for every 1-unit increase in accuracy in information delivery, there is a corresponding 0.322-unit increase in differential instruction capability. Teachers who consistently provide clear, precise, and accurate information are more capable of adjusting their instructional methods to meet diverse student needs. Clear content delivery ensures that students receive reliable foundational knowledge, reducing misunderstandings and promoting deeper learning. According to Heng and Song (2020), mastery of content knowledge is critical to effective teaching, as

it equips teachers to deliver accurate information, which serves as the basis for differentiated instruction. Further, the results also show that ability to answer questions thoroughly has a significant positive influence on differential instruction capability, with a B value of 0.175, a Beta value of 0.252, and a p-value of 0.000. This means that for every 1-unit increase in the ability to answer questions thoroughly, there is a corresponding 0.175-unit increase in differential instruction capability. Teachers who can effectively and comprehensively respond to student questions are better equipped to tailor their instructional strategies based on learner needs. Addressing student inquiries with clarity helps teachers identify knowledge gaps and provide targeted support. This aligns with Gaitas' et al. (2024) idea that responsive teaching is essential to meet diverse learning profiles. Furthermore, application of knowledge to real-world situations shows the strongest positive influence on differential instruction capability, with a B value of 0.335, a Beta value of 0.553, and a p-value of 0.000. This means that for every 1-unit increase in the application of knowledge to real-world situations, there is a correspond-

ing 0.335-unit increase in differential instruction capability. Teachers who can effectively relate academic content to real-world experiences are highly capable of personalizing instruction. Real-world application makes learning meaningful and allows teachers to design varied instructional strategies that align with students' lived experiences. This is consistent with Mohamad Hasim's et al. (2022) idea that connecting lessons to authentic contexts enhances student engagement and understanding. However, the analysis indicates that integration of concepts across curriculum does not significantly influence differential instruction capability, with a B value of -0.041, a Beta value of -0.050, and a p-value of 0.234. This means that for every 1-unit increase in integration of concepts across the curriculum, there is a corresponding 0.041-unit decrease in differential instruction capability, although the relationship is not statistically significant. This suggests that while teachers may be skilled at connecting ideas across subjects, this ability does not directly enhance their capacity to differentiate instruction. Integrating concepts is valuable for fostering critical thinking but may not translate into adaptive teaching strategies. This partially contradicts Zelalem' et al. (2022) findings which views concept integration as an essential aspect of effective teaching. Finally, the overall model explaining the influence of curricular knowledge on differential instruction capability is statistically significant,

with an F-value of 111.485 ($p = 0.000$) and an Adjusted R^2 of 0.618. This means that approximately 61.8% of the variance in differential instruction capability can be explained by the combined influence of the four curricular knowledge indicators. The model's high adjusted R^2 value suggests that teachers' mastery of curricular knowledge is a strong predictor of their ability to differentiate instruction, underscoring the importance of clear content delivery, effective questioning, and practical application in teaching. The findings of this study generally support Shulman's (1985) Pedagogical Content Knowledge (PCK) Theory and Tomlinson's (1999) Differentiated Instruction Theory, but with nuanced insights. The significant influence of accuracy in information delivery, the ability to answer questions thoroughly, and the application of knowledge to real-world situations aligns with Shulman's emphasis on content mastery as essential for effective teaching. Similarly, Tomlinson's focus on contextualized and responsive instruction is supported by the strong influence of real-world application. However, the non-significant impact of integration of concepts across the curriculum partially contradicts Shulman's theory, suggesting that interdisciplinary connections may not directly enhance adaptive teaching skills. This highlights the need for teachers to prioritize clear instruction, responsive questioning, and meaningful application in their practice.

4. Conclusions and Recommendations

This part of the paper presents the conclusion and recommendation of the researcher. The discussion is supported by the literature presented in the first chapters and the conclusion is in accordance with statements of the problem presented in this study.

4.1. Findings—The primary objective of this study was to evaluate the influence the differential instruction capability of public elementary school teachers utilizing non-experimental quantitative design using descriptive-correlation

technique. The researcher selected the 274 public elementary school teachers in Malita North District, Davao Occidental as the respondents through stratified random sampling method. The researcher made use of modified and en-

Table 4. Influence of Curricular Knowledge and Differential Instruction Capability among Public Elementary School Teachers

Curricular Knowledge	B	Beta	S.E.	p-value	Decision
Accuracy in Information Delivery	.322**	.379	.036	.000	Reject H ₀
Ability to Answer Questions Thoroughly	.175**	.252	.027	.000	Reject H ₀
Integration of Concepts Across Curriculum	-.041	-.050	.035	.234	Accept H ₀
Application of Knowledge to Real-World Situations	.335**	.553	.024	.000	Reject H ₀
Adjusted R² = 0.618					
F-value = 111.485**					
p-value = 0.000					

****Significant at p < 0.01**

hanced adapted survey questionnaires which was pilot tested in a nearby school to ensure high reliability and internal consistency of the items in the instrument. The extent of curricular knowledge demonstrated by teachers is rated as extensive, indicating that they frequently exhibit strong skills in content delivery, questioning, and concept integration. Among the indicators, integration of concepts across the curriculum is the most evident, reflecting teachers' ability to connect ideas across subjects. Conversely, the application of knowledge to real-world situations is the least evident, suggesting that teachers may need to strengthen practical learning connections. The extent of differential instruction capability among teachers is rated as extensive, demonstrating frequent use of varied teaching methods, multilevel resources, and student feedback. The most evident indicator is the incorporation of student feedback into material design, reflecting teachers' responsiveness to learner input. In contrast, personalization of learning activities is the least evident, indicating that teachers may further enhance individual-

ized instruction. The results indicate that accuracy in information delivery, ability to answer questions thoroughly, and application of knowledge to real-world situations significantly influence differential instruction capability. Among the indicators, application of knowledge to real-world situations has the strongest influence, emphasizing the importance of contextual learning. Integration of concepts across the curriculum did not significantly impact differential instruction, suggesting that cross-subject connections may not directly enhance teaching adaptability.

4.2. Conclusions—Based on the findings of this study several conclusions were generated: The findings conclude that the extent of curricular knowledge among public elementary school teachers in Malita North District is generally rated as extensive, indicating that teachers frequently demonstrate strong content mastery and concept integration. This implies that teachers possess a solid foundation in delivering subject content, but further emphasis on practical application of knowledge can enhance instructional relevance. Schools are encouraged to provide

professional development programs focused on contextual learning strategies to help teachers better connect classroom concepts to real-world situations. Moreover, the results confirm that the differential instruction capability of teachers in Malita North District is generally extensive, reflecting their consistent use of diverse teaching methods, multilevel resources, and responsiveness to student feedback. This implies that teachers are generally well-prepared to adapt instruction to meet diverse learner needs, but there is room to enhance personalized learning approaches. Schools are recommended to provide targeted training on personalized instruction strategies, enabling teachers to better tailor lessons based on individual student preferences and abilities. Further, the findings confirm a strong positive relationship between curricular knowledge and differential instruction capability among public elementary school teachers, indicating that teachers with strong content mastery are more capable of adapting their instructional methods. This implies that enhancing teachers' curricular understanding can significantly improve their ability to differentiate instruction, making learning more accessible and relevant for all students. Schools are encouraged to conduct workshops that integrate subject mastery with adaptive teaching strategies, fostering a balance between content knowledge and instructional flexibility. Furthermore, the results confirm that accuracy in information delivery, ability to answer questions thoroughly, and application of knowledge to real-world situations significantly influence differential instruction capability among teachers. This supports Shulman's (1985) as cited by Van Driel and Verloop (2022), Pedagogical Content Knowledge (PCK) Theory which emphasizes the importance of strong content mastery for effective teaching and aligns with Tomlinson's (1999) as cited by Almekhlafi and Almekdadi (2023) Differentiated Instruction Theory, which highlights the need for responsive and context-based

learning. However, the non-significant impact of integration of concepts across the curriculum suggests that cross-subject connections may not directly enhance teachers' ability to differentiate instruction. It is recommended that schools prioritize training on clear content delivery, effective questioning techniques, and practical application of knowledge to strengthen adaptive teaching skills.

4.3. Recommendations—Based on the findings and conclusions generated from the study, the researcher recommends the following: To enhance curricular knowledge, particularly in the application of knowledge to real-world situations, teachers should be provided with training on context-based teaching strategies that connect classroom concepts to practical experiences. Schools are encouraged to conduct workshops on experiential learning techniques and contextualized lesson planning to help teachers make content more relatable. Additionally, developing instructional materials that include real-world scenarios can further strengthen teachers' ability to bridge theoretical knowledge with practical application. To improve differential instruction capability, particularly in the personalization of learning activities, teachers should receive training on individualized instructional techniques that cater to diverse learner profiles. Schools may implement mentoring programs where experienced teachers share best practices on personalized teaching strategies. Further, integrating adaptive technology tools can support teachers in customizing lessons based on students' interests and abilities. Given the weak relationship between integration of concepts across curriculum and differential instruction capability, schools should focus on providing teachers with practical training on how to effectively connect interdisciplinary concepts while maintaining adaptive teaching. Professional development sessions can demonstrate how to create lessons that integrate multiple subjects without losing focus on individual-

ized learning. Additionally, schools may establish peer observation sessions where teachers can learn best practices for contextualizing integrated lessons. Since integration of concepts across the curriculum did not significantly influence differential instruction capability, schools should prioritize training that emphasizes contextually relevant teaching rather than purely interdisciplinary connections. Teachers can benefit from targeted workshops on how to design adaptive lessons that focus on student needs while maintaining clarity in content delivery. Encouraging teachers to integrate practical applications rather than unrelated concepts can also enhance instructional adaptability.

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