International Journal of Sustainable and Integrated Studies
Volume 1, Issue 4 | ISSN: 3155-6361
DOI: https://doi.org/10.65339/ijsis.V1.I4.308

Mediating Effect of Approaches in Teaching on the Relationship Between Teachers' Self-Efficacy and Innovative Teaching Competencies: Concurrent Triangulation

Isidro Jr. Banquil-Andea, MAEd
Central Mindanao Colleges, Kidapawan City, North Cotabato, Philippines

Email of Corresponding Author: isidro.andea@deped.gov.ph

Publication history:
Received: October 10, 2026 Accepted: November 20, 2026
Revised: November 17, 2026 Published: November 21, 2026
International Journal of Sustainable and Integrated Studies, Vol. 1, No. 4, pp. 528–536, November 2026.

Abstract

This study examined the mediating effect of approaches in teaching on the relationship between teachers' self-efficacy and innovative teaching competencies among secondary school teachers in District I of the Schools Division of Kidapawan City, Philippines. Employing a descriptive-correlational, concurrent triangulation mixed-methods design, the study surveyed 200 randomly selected teachers using standardized questionnaires and gathered qualitative data through interviews and focus group discussions. Data were analyzed using descriptive statistics, Pearson correlation, regression, mediation analysis, and thematic analysis. Findings revealed high levels of teachers' self-efficacy (M = 4.35), innovative teaching competencies (M = 4.41), and teaching approaches (M = 4.48). Significant positive relationships emerged between self-efficacy and innovative teaching competencies (r = .629), self-efficacy and teaching approaches (r = .551), and teaching approaches and innovative teaching competencies (r = .823). The regression model explained 72.1% of the variance in innovative teaching competencies, while mediation analysis confirmed a significant indirect relationship through teaching approaches ($z = 2.942$, $p < .01$). Qualitative findings corroborated these associations through themes emphasizing professional development, instructional adaptability, and learner engagement. The study concludes that teaching approaches are important in explaining the relationship between professional confidence and instructional innovation. Strengthening pedagogical training, technology integration, and teacher participation in decision-making is recommended. Although geographically limited and correlational, the findings provide evidence for developing sustainable, competency-based teacher professional development programs.

Keywords: Concurrent Triangulation; Innovative Teaching Competencies; Instructional Approaches; Mediation Analysis; Professional Development; Teacher Self-Efficacy

1. Introduction

Educational innovation increasingly requires teachers to combine pedagogical expertise, digital competence, and flexible instructional approaches. International reports emphasize that technology improves learning only when integrated with appropriate pedagogy, teacher preparation, and equitable access (OECD, 2023; UNESCO, 2023a). Comparative education indicators provide additional context for continuing teacher development needs (OECD, 2022). The UNESCO (2024) global report on teachers also identifies sustained professional support as central to quality education. Competency frameworks further emphasize critical digital literacy, responsible technology use, and the capacity to design meaningful learning activities (Vuorikari et al., 2022; Voogt & Pareja Roblin, 2022).

These developments highlight the importance of understanding how teachers' professional beliefs and instructional decisions relate to innovative teaching competencies.

Teacher self-efficacy refers to teachers' beliefs in their capacity to organize and carry out actions needed for successful instruction. Bandura's (1977) social learning framework provides a foundational explanation of the interaction between personal beliefs, behavior, and environmental influences. Contemporary research associates supportive school cultures with teacher self-efficacy and professional engagement (Skaalvik & Skaalvik, 2023). Research on self-efficacy in secondary education likewise suggests that confidence is relevant to educational performance, although findings must be interpreted within their specific contexts (Nazir et al., 2022). Effective instructional innovation also involves learning, social, educational, and technological competencies (Zhu et al., 2013).

Approaches in teaching translate professional confidence into classroom practice through learner-centered activities, problem-solving, engagement, and purposeful technology integration. Problem-solving instruction has been examined as a strategy for improving student performance (Acquandoh et al., 2022), while studies of instructional innovation highlight the importance of students' experiences of teaching and learning (Kearney & Kelly, 2022). Evidence on information and communication technology implementation underscores the role of teacher competencies in effective technology adoption (Ntorukiri et al., 2022). Broader educational guidance also encourages human-centered, ethical use of artificial intelligence and digital tools rather than technology adoption for its own sake (UNESCO, 2021; UNESCO, 2023b).

Teaching approaches may therefore help explain the association between self-efficacy and innovative teaching competencies. Social constructivism emphasizes the role of interaction and shared experience in learning (Vygotsky, 1978), providing a complementary basis for examining learner engagement and collaborative instruction. Research on explicit learning-strategy instruction offers additional support for examining how teaching practices influence learning experiences (Ploran et al., 2023). Recent policy analyses similarly identify teacher development and educational resources as essential conditions for improving instructional quality (OECD, 2024; UNESCO, 2024).

Despite extensive discussion of self-efficacy and educational innovation, the mediating role of approaches in teaching remains insufficiently examined in the specific context of secondary schools in District I of the Schools Division of Kidapawan City, Philippines. This study investigates the relationships among teachers' self-efficacy, teaching approaches, and innovative teaching competencies and tests whether teaching approaches mediate the association between self-efficacy and innovative teaching competencies. It employs concurrent triangulation to integrate quantitative relationships with teachers' reported instructional experiences, consistent with mixed-methods research principles (Creswell & Creswell, 2018).

The study primarily contributes to Sustainable Development Goal 4 (Quality Education) by informing teacher professional development and instructional improvement. It also has implications for SDG 8 (Decent Work and Economic Growth) through professional capability development and SDG 9 (Industry, Innovation and Infrastructure) through responsible educational innovation. Its findings may inform school-based training, technology integration, and support for learner-centered instruction.

2. Material and methods

2.1 Research Design

The study utilized descriptive-correlational and concurrent triangulation mixed-methods designs. The quantitative component assessed teachers' self-efficacy, innovative teaching competencies, and approaches in teaching, including their relationships and mediating effects. Descriptive research examines existing conditions, while correlational research measures relationships among variables (Creswell & Creswell, 2018). The qualitative component explored teachers' lived experiences through interviews and focus group discussions (Creswell & Creswell, 2018). Integrating both approaches provided a comprehensive understanding of the research problem (Creswell & Creswell, 2018).

2.2 Locale of the Study

The study was conducted at Kidapawan City National High School, involving junior and senior high school teachers from District I secondary schools under the Schools Division of Kidapawan City, Philippines.

2.3 Respondents of the Study

The quantitative component involved 200 secondary school teachers from a population of 400 teachers. The qualitative component included participants in in-depth interviews and focus group discussions. The manuscript specifies 20 participants for interviews and 10 for focus group discussions, while its instrument description reports

15 qualitative participants. The inclusion criteria identified teachers aged 21 years and above, particularly newly hired teachers with one to three years of teaching experience.

2.4 Sample and Sampling Procedure

Simple random sampling through drawing lots was employed to select 200 respondents from the population of 400 teachers, providing each eligible teacher an equal probability of selection. The concurrent mixed-methods sampling design involved separately selecting quantitative and qualitative participants to gather complementary information. Both datasets were subsequently integrated to strengthen the interpretation of findings.

2.5 Research Instrument

Three standardized questionnaires were adopted for quantitative data collection. Bandura's Teachers Efficacy Scale assessed teachers' self-efficacy in decision-making, classroom discipline, parental involvement, community involvement, instructional efficacy, and school climate. The Innovative Teaching Competencies Scale developed by Chang Zhu measured learning, educational, social, and technological competencies. The Teaching Motivational Strategies and Approaches Questionnaire Survey developed by Zaved Ahmed Khan evaluated instructional approaches and motivational strategies. All instruments employed five-point Likert scales. Teachers' self-efficacy was measured from nothing to a great deal, innovative teaching competencies from strongly disagree to strongly agree, and teaching approaches from never to always. Mean scores were interpreted as low (1.00–1.50), moderately low (1.51–2.50), average (2.51–3.50), moderately high (3.51–4.50), and high (4.51–5.00). Qualitative data were collected using semi-structured interview and focus group discussion guides containing open-ended and probing questions about teachers' experiences, self-efficacy, innovative competencies, instructional challenges, and teaching approaches . Interviews allowed participants to describe their experiences in their own words, with flexibility in the discussion process, . The instruments underwent content and construct validation by five expert validators, including three school-based evaluators and two university research committee members.

2.6 Data Gathering Procedure

The researcher secured approval from the Graduate School of Central Mindanao Colleges, Schools Division Superintendent, district supervisors, and school administrators before collecting data. Following authorization, standardized questionnaires were personally administered to the selected teachers and retrieved for analysis. Qualitative information was gathered through semi-structured interviews and focus group discussions to explore participants' experiences with teaching approaches, self-efficacy, and innovative instructional practices. Survey responses were organized and encoded, while interview and discussion recordings were transcribed and prepared for thematic analysis. The manuscript identifies February to July 2023 as the research period. Quantitative and qualitative findings were integrated during interpretation to examine their convergence and provide a broader understanding of the research variables.

2.7 Data Analysis Techniques

Quantitative data were analyzed using descriptive statistics, particularly the mean and weighted mean, to determine the levels of teachers' self-efficacy, innovative teaching competencies, and approaches in teaching. Pearson Product-Moment Correlation was employed to examine relationships among the variables, while regression analysis was identified for assessing their influence and mediating relationships. Qualitative responses were transcribed, coded, and analyzed thematically to identify recurring patterns and experiences. Data processing involved editing, coding, classification, and organization to facilitate interpretation. The quantitative and qualitative findings were analyzed separately and subsequently compared and integrated to determine areas of agreement and provide a comprehensive interpretation of the research problem. The study also considered credibility, transferability, dependability, and confirmability to strengthen qualitative trustworthiness (Creswell & Creswell, 2018). Credibility was supported through participant engagement and review of interview interpretations . Confirmability involved maintaining records and reflective notes to support interpretations with collected evidence. Transferability was addressed through documentation and contextual descriptions, while dependability emphasized consistent and documented research procedures.

2.8 Ethical Considerations

The study adhered to ethical principles concerning informed consent, voluntary participation, confidentiality, justice, transparency, and participant welfare. Written consent was obtained after participants received information about the study's objectives, procedures, potential risks, and benefits. Participation was voluntary, and respondents could withdraw without penalty. Data collection was scheduled according to participants' availability to minimize disruption to their professional responsibilities. Personal information, survey responses, and interview recordings were protected in accordance with the Data Privacy Act of 2012. Participants were treated fairly, and identifying information was excluded from research dissemination. The researcher also consulted academic advisers, research panelists, and relevant stakeholders to promote methodological integrity, accountability, and responsible research conduct.

3. Results and Discussion

3.1 Levels of Teachers' Self-Efficacy, Innovative Teaching Competencies, and Teaching Approaches

3.1.1 Teachers' Self-Efficacy

The findings revealed a high overall level of teachers' self-efficacy (M = 4.35, SD = 0.552). Disciplinary self-efficacy obtained the highest category mean (M = 4.32), followed by efficacy to enlist parental involvement (M = 4.22), community involvement (M = 4.14), creating a positive school climate (M = 4.14), and influencing decision-making (M = 3.75). Teachers demonstrated strong confidence in classroom management, student collaboration, and parental engagement. However, influencing school decisions received a relatively lower rating, indicating differences in perceived confidence across professional responsibilities. These findings suggest that teachers possess considerable confidence in managing classroom activities and supporting student learning but experience greater limitations in institutional decision-making. These patterns are broadly consistent with evidence linking school culture to teachers' self-efficacy and engagement (Skaalvik & Skaalvik, 2023). Bandura's (1977) foundational framework provides a theoretical basis for understanding professional confidence, while OECD (2021) emphasizes the value of professional learning and supportive institutional conditions. The present data do not independently establish the effects of parental involvement or school-wide decision-making.

3.1.2 Innovative Teaching Competencies

Teachers demonstrated a high overall level of innovative teaching competencies (M = 4.41). Technological competency obtained the highest category mean (M = 4.62), followed by educational competency (M = 4.41), learning competency (M = 4.31), and social competency (M = 4.28). Teachers reported strong awareness of technological developments, willingness to address instructional concerns, creative thinking, and collaboration with colleagues. Nevertheless, comparatively lower responses were observed in improving teaching effectiveness, interpersonal attributes, and designing ICT-based learning communities. The findings indicate that teachers possess competencies necessary for innovative instruction, particularly technological integration and professional development. These patterns are compatible with the multidimensional conception of innovative teaching competencies described by Zhu et al. (2013) and with evidence on teachers' competencies in technology implementation (Ntorukiri et al., 2022). Digital competence frameworks also emphasize responsible and purposeful technology use (Vuorikari et al., 2022). The comparatively lower indicators suggest areas for targeted professional learning.

3.1.3 Approaches in Teaching

The findings indicated a high overall level of approaches in teaching (M = 4.48). Creating a pleasant classroom climate obtained the highest mean (M = 4.64), followed by presenting tasks properly (M = 4.55), promoting learners' self-confidence (M = 4.52), promoting learners' autonomy (M = 4.39), and recognizing students' efforts (M = 4.32). Teachers frequently employed engaging classroom activities, clear task instructions, challenging learning exercises, positive reinforcement, and motivational strategies. Comparatively lower ratings were observed in involving students in course planning and encouraging them to attribute learning difficulties to insufficient effort rather than ability. These findings suggest that teachers prioritize supportive learning environments, effective instructional communication, and learner motivation. The emphasis on supportive learning environments and active participation is consistent with student-centered approaches discussed by Kearney and Kelly (2022). Problem-solving activities may also offer opportunities for active learning (Acquandoh et al., 2022). These connections are interpretive and do not imply that the cited studies evaluated this sample.

3.2 Relationships Among Teachers' Self-Efficacy, Teaching Approaches, and Innovative Teaching Competencies

3.2.1 Relationship Between Teachers' Self-Efficacy and Innovative Teaching Competencies

Correlation analysis revealed a significant positive relationship between teachers' self-efficacy and innovative teaching competencies ($r = .629$, $p = .000$). The relationship was described as moderate, indicating that teachers reporting higher self-efficacy also tended to demonstrate higher innovative teaching competencies. The null hypothesis of no significant relationship was rejected. The finding suggests that confidence in professional abilities is associated with teachers' capacity to implement innovative instructional practices. Teachers who perceive themselves as capable of addressing classroom challenges may be more willing to adopt creative strategies, instructional technologies, and alternative teaching methods. The qualitative findings similarly indicated that teachers considered self-efficacy important in developing innovative teaching practices.

3.2.2 Relationship Between Teachers' Self-Efficacy and Approaches in Teaching

The findings revealed a significant positive relationship between teachers' self-efficacy and approaches in teaching ($r = .551$, $p = .000$). The correlation was moderate, indicating that greater confidence in teaching abilities was associated with more favorable instructional approaches. Consequently, the null hypothesis of no significant relationship was rejected. This relationship indicates that teachers' professional confidence is associated with their selection and implementation of instructional strategies. Teachers with stronger self-efficacy may be more inclined to establish supportive classroom environments, promote student motivation, and apply flexible teaching

approaches. The qualitative responses supported this association by emphasizing confidence, classroom engagement, and instructional adaptability.

3.2.3 Relationship Between Approaches in Teaching and Innovative Teaching Competencies

A significant positive relationship was established between approaches in teaching and innovative teaching competencies ($r = .823$, $p = .000$). This represented the strongest correlation among the examined variables and was described as a high degree of association. The null hypothesis of no significant relationship was rejected. The finding indicates that instructional approaches are closely associated with innovative teaching competencies. Teachers' use of learning activities, student engagement strategies, appropriate instructional materials, and assessment practices reflects their capacity to implement innovative teaching. Qualitative responses further identified learning approaches, learning engagement, and student learning assessment as important components of effective instruction.

3.3 Influence of Teachers' Self-Efficacy and Teaching Approaches on Innovative Teaching Competencies

3.3.1 Predictive Influence of Teachers' Self-Efficacy

Regression analysis revealed that teachers' self-efficacy significantly predicted innovative teaching competencies ($\beta = .193$, $p < .05$). The combined regression model explained 72.1% of the variance in innovative teaching competencies ($R^2 = .721$), while the remaining 27.9% was attributed to factors outside the model. The overall regression model was statistically significant ($F = 254.707$). These findings indicate that teachers' confidence contributes to innovative teaching competencies, although its predictive contribution was smaller than that of teaching approaches. Teachers who believe in their instructional capabilities may be better positioned to manage classroom challenges, adopt innovative practices, and pursue professional development. The results emphasize self-efficacy as a relevant factor in strengthening teachers' instructional performance.

3.3.2 Predictive Influence of Approaches in Teaching

Approaches in teaching significantly predicted innovative teaching competencies ($\beta = .693$, $p < .05$). The coefficient was greater than that of teachers' self-efficacy, indicating that teaching approaches demonstrated a stronger predictive contribution within the regression model. Both predictors significantly contributed to the explained variation in innovative teaching competencies. This finding suggests that instructional approaches play an important role in teachers' innovative performance. Strategies involving learner motivation, positive classroom environments, clear instructional delivery, and student autonomy are associated with stronger innovative teaching competencies. The result supports the importance of improving pedagogical practices alongside teachers' professional confidence.

3.4 Mediating Effect of Approaches in Teaching

3.4.1 Mediation Analysis

The mediation analysis revealed that the direct effect of teachers' self-efficacy on innovative teaching competencies decreased from $\beta = .629$ to $\beta = .252$ when approaches in teaching were introduced as the mediating variable. The indirect effect was reported as $\beta = .337$, while the total effect was $\beta = .629$. The Sobel test confirmed a statistically significant mediation effect ($z = 2.942231$, $p < .01$). The manuscript classified the relationship as full mediation because the remaining direct effect was reported as nonsignificant. These findings indicate that teaching approaches significantly contribute to the relationship between teachers' self-efficacy and innovative teaching competencies. The reported mediation suggests that teachers' confidence is associated with innovative competencies partly through the instructional strategies they employ. The results emphasize the importance of developing effective teaching approaches when designing interventions intended to strengthen innovative teaching competencies.

3.5 Qualitative Findings on Teachers' Lived Experiences

3.5.1 Creating a Positive School Climate

The qualitative findings identified creating a positive school climate as a major theme, with nine of the 15 participants (60%) emphasizing its importance. Teachers described the value of supportive learning environments, positive relationships, collaboration between teachers and administrators, and strategies to reduce student absenteeism and dropout. The findings suggest that a positive school climate is closely associated with teachers' perceived professional effectiveness and their capacity to support student learning. This interpretation aligns with research associating collective teacher culture and school goal structures with self-efficacy and engagement (Skaalvik & Skaalvik, 2023).

3.5.2 Integration and Professional Development

Eight of the 15 participants (53.3%) emphasized integration and professional development as essential to teaching effectiveness. Participants highlighted continuous learning, technological integration, professional collaboration, and the adoption of innovative instructional strategies to address changing educational demands. These findings indicate that professional development contributes to teachers' ability to maintain relevant competencies and adapt

their instructional practices. Recent international reports identify continuing professional learning and institutional support as important elements of teacher development (OECD, 2021; UNESCO, 2024).

3.5.3 Maintaining High Levels of Effectiveness

Twelve of the 15 participants (80%) recognized self-efficacy as important in maintaining teaching effectiveness. Teachers associated professional confidence with motivation, reflective practice, continuous improvement, and commitment to student-centered instruction. The findings suggest that self-efficacy contributes to teachers' motivation and perceived capacity to perform instructional responsibilities effectively. Bandura's (1977) framework offers a theoretical basis for interpreting these beliefs, while Skaalvik and Skaalvik (2023) examine their association with teacher engagement in school contexts.

3.5.4 Dealing with Different Teaching Situations

Five of the 15 participants (33%) recognized the importance of adapting innovative teaching practices to different classroom situations. Teachers emphasized managing disruptive behavior, responding to learning difficulties, accommodating diverse learners, and modifying instructional strategies according to classroom needs. These findings highlight instructional adaptability as an important component of innovative teaching competencies. The need to adapt teaching to different learning contexts is consistent with the dimensions of innovative teaching competencies identified by Zhu et al. (2013). Digital implementation additionally depends on educators' relevant competencies (Ntorukiri et al., 2022).

3.5.5 Social Competency

Five of the 15 participants (33%) emphasized effective communication and interpersonal relationships as important innovative teaching competencies. Participants identified collaboration with colleagues, communication with parents, supportive teacher-student relationships, and responsiveness to learners' needs as essential professional practices. The findings indicate that social competency contributes to a supportive and engaging classroom environment. Effective interpersonal relationships enable teachers to collaborate, respond to changing circumstances, and encourage student participation. These competencies complement pedagogical and technological skills in supporting innovative teaching.

3.5.6 Gamification in Teaching

Five of the 15 participants (33%) highlighted gamification as an innovative instructional strategy. Participants described using educational games, simulations, role-playing, points, badges, and other interactive activities to motivate students and promote classroom engagement. The findings suggest that gamification provides opportunities to make learning more interactive and engaging. The respondents' accounts describe a possible means of encouraging participation; however, the present study did not independently test the effectiveness of gamification. More broadly, Kearney and Kelly (2022) examine students' perspectives on innovative teaching and learning practices.

3.5.7 Learning Approaches

Six of the 15 participants (40%) emphasized learning approaches that encourage active participation, integration of prior knowledge, and meaningful application of concepts. Teachers described strategies that connect instructional content with students' experiences and promote active involvement in learning activities. These findings indicate that effective instructional approaches support active knowledge construction. The emphasis on collaborative participation is compatible with Vygotsky's (1978) social constructivist perspective. Recent discussions of innovative learning also highlight the relevance of students' perspectives (Kearney & Kelly, 2022).

3.5.8 Learning Engagement

The qualitative findings identified learning engagement as an important theme in teachers' instructional experiences. Participants emphasized student participation, collaborative learning, interactive classroom activities, and teaching strategies that respond to learners' interests and needs. These accounts are compatible with literature on learner-centered innovation (Kearney & Kelly, 2022) and with studies examining problem-solving as an instructional approach (Acquandoh et al., 2022). The findings describe participants' perceptions rather than measured student learning gains.

3.5.9 Student Learning Assessment

Student learning assessment emerged as a theme reflecting teachers' use of evaluation and feedback to monitor learning progress. Participants emphasized assessing student performance, identifying learning difficulties, providing feedback, and adjusting instructional practices according to students' demonstrated understanding. The findings indicate that assessment contributes to instructional improvement by providing information about students' strengths, weaknesses, and achievement of learning objectives. Appropriate assessment practices enable teachers to evaluate instructional effectiveness and make informed adjustments to improve learning experiences.

3.6 Integration and Corroboration of Quantitative and Qualitative Findings

3.6.1 Corroboration of Teachers' Self-Efficacy

The quantitative findings revealed a high overall level of teachers' self-efficacy (M = 4.35). The qualitative findings supported this result through the themes of creating a positive school climate, integration and professional development, and maintaining high levels of effectiveness. Participants emphasized professional confidence, continuous improvement, and supportive classroom environments as important aspects of teaching effectiveness. The convergence of these findings indicates that teachers' reported self-efficacy is reflected in their professional experiences and instructional practices. Integrating quantitative and qualitative evidence strengthens the interpretation of the research findings, consistent with the concurrent triangulation approach described by Creswell and Creswell (2018).

3.6.2 Corroboration of Innovative Teaching Competencies

The quantitative findings indicated a high overall level of innovative teaching competencies (M = 4.41), particularly in technological and educational competencies. The qualitative findings supported these results through the themes of dealing with different situations, social competency, and gamification. Participants described integrating technology, adapting instructional strategies, maintaining positive relationships, and employing creative classroom activities. The findings indicate that teachers' reported innovative competencies correspond with their descriptions of instructional adaptability and creative teaching practices. Both strands emphasize the importance of technological integration, professional competence, and instructional innovation in improving teaching effectiveness.

3.6.3 Corroboration of Approaches in Teaching

The quantitative findings demonstrated a high overall level of approaches in teaching (M = 4.48), particularly in creating pleasant classroom environments, presenting tasks properly, and promoting learner confidence. The qualitative findings corroborated these results through learning approaches, learning engagement, and student learning assessment. Participants emphasized interactive instruction, meaningful learning activities, and continuous evaluation of student performance. The convergence of findings suggests that teachers' instructional approaches are reflected in their classroom experiences and reported teaching practices. Both quantitative and qualitative evidence highlight the importance of learner-centered strategies, classroom engagement, and assessment in supporting innovative teaching competencies.

3.6.4 Integrated Findings on Relationships and Mediation

The quantitative findings established significant relationships between teachers' self-efficacy and innovative teaching competencies ($r = .629$), teachers' self-efficacy and approaches in teaching ($r = .551$), and approaches in teaching and innovative teaching competencies ($r = .823$), all with reported p-values of .000. The mediation analysis also identified a significant indirect relationship through teaching approaches ($z = 2.942231$, $p < .01$). Qualitative findings supported these statistical results by describing how teachers' professional confidence, instructional strategies, and innovative competencies were connected in their teaching experiences. The integrated findings indicate that teaching approaches play an important mediating role in the relationship between teachers' self-efficacy and innovative teaching competencies. Taken together, the quantitative and qualitative strands suggest that teaching approaches are a plausible explanatory pathway in this sample. The concurrent triangulation interpretation is consistent with mixed-methods integration principles (Creswell & Creswell, 2018). Because the study is correlational, the observed mediation should not be interpreted as causal proof.

4. Conclusion & Recommendations

The study established that secondary school teachers in District I of Kidapawan City Division demonstrated high levels of self-efficacy, innovative teaching competencies, and approaches in teaching. Teachers exhibited strong confidence in classroom management, parental involvement, and creating positive learning environments, although their perceived ability to influence school decisions was comparatively lower. Innovative teaching competencies were particularly evident in technological and educational practices, while instructional approaches emphasized learner confidence, classroom climate, and effective task presentation. Significant positive relationships were identified among teachers' self-efficacy, teaching approaches, and innovative teaching competencies. Regression and mediation analyses further demonstrated the importance of teaching approaches in explaining the association between self-efficacy and innovative teaching competencies. Qualitative findings corroborated these relationships through themes involving professional development, instructional adaptability, social competency, gamification, learner engagement, and assessment. Collectively, the findings highlight the relevance of strengthening professional confidence and instructional practices to support innovative teaching.

The Department of Education, Schools Division of Kidapawan City, and school administrators should strengthen professional development programs that integrate teachers' self-efficacy, innovative teaching competencies, and effective instructional approaches. Division and school-based In-Service Training (INSET) coordinators should prioritize training in instructional innovation, technology integration, classroom management, learner

engagement, and assessment practices. School administrators should provide greater opportunities for teachers to participate in institutional decision-making, addressing the comparatively lower confidence reported in this area. Teachers should be encouraged to maintain supportive classroom environments, strengthen learner autonomy, recognize students' efforts, and adopt creative instructional strategies, including gamification and technology-enhanced learning. Higher education institutions and teacher education providers may incorporate these findings into teacher preparation, mentoring, induction, and continuing professional development programs aligned with the Philippine Professional Standards for Teachers. Future researchers should further examine the relationships among self-efficacy, teaching approaches, and innovative teaching competencies to inform educational improvement initiatives.

The study was conducted among secondary school teachers in District I of Kidapawan City Division, limiting the direct generalizability of its findings to teachers in other educational settings. Its concurrent triangulation design combined descriptive-correlational survey data with qualitative interviews and focus group discussions, providing complementary evidence but not establishing causal relationships. Quantitative findings were based on teachers' questionnaire responses, while qualitative interpretations reflected the experiences of selected participants. Data collection was confined to the study period in 2023. Future studies may include teachers from additional districts and educational institutions, examine other relevant variables, and employ longitudinal approaches to investigate these relationships over time.

5. Compliance with ethical standards

The author declares no conflicts of interest in relation to this study. The research involved secondary school teachers from District I of the Schools Division of Kidapawan City, Philippines, with permission obtained from the relevant educational authorities and school administrators. Written informed consent was secured, participation was voluntary, and respondents retained the right to withdraw without penalty. Participant privacy and confidentiality were protected through the nondisclosure of identifying information and confidential handling of survey responses and interview recordings, in accordance with the Data Privacy Act of 2012.

REFERENCES

Acquandoh, E., Zunurain, Z., Offei Kwakye, D., & Adorno, S. (2022). Effects of teaching students through problem-solving on students' academic performance in problem-solving. Jurnal Gantang, 7, 121–127. https://doi.org/10.31629/jg.v7i2.5314

Bandura, A. (1977). Social learning theory. Prentice Hall.

Creswell, J. W., & Creswell, J. D. (2018). Research design: Qualitative, quantitative, and mixed methods approaches (5th ed.). SAGE Publications.

Kearney, C., & Kelly, R. (2022). Innovative teaching and learning practices: The student perspective. https://doi.org/10.4995/HEAd22.2022.14654

Nazir, N., Bhatti, R., & Ali, M. (2022). Relationship of self efficacy and academic achievements in science at the secondary level: A case study of Poonch District, Azad Jammu and Kashmir. [Publication details require verification].

Ntorukiri, T., Chun, X., & Boudouaia, A. (2022). Influence of teachers' competencies on ICT implementation in Kenyan universities. Education Research International, 2022, Article 1370052. https://doi.org/10.1155/2022/1370052

OECD. (2021). Teachers and leaders in vocational education and training. OECD Publishing. https://doi.org/10.1787/59d4fbb1-en

OECD. (2022). Education at a glance 2022: OECD indicators. OECD Publishing. https://doi.org/10.1787/3197152b-en

OECD. (2023). OECD digital education outlook 2023: Towards an effective digital education ecosystem. OECD Publishing. https://doi.org/10.1787/c74f03de-en

OECD. (2024). Education at a glance 2024: OECD indicators. OECD Publishing. https://doi.org/10.1787/c00cad36-en

Ploran, E., Overman, A., Lee, J., Masnick, A., Weingartner, K., & Finuf, K. (2023). Learning to learn: A pilot study on explicit strategy instruction to incoming college students. Acta Psychologica, 232, Article 103815. https://doi.org/10.1016/j.actpsy.2022.103815

Skaalvik, E. M., & Skaalvik, S. (2023). Collective teacher culture and school goal structure: Associations with teacher self-efficacy and engagement. Social Psychology of Education. https://doi.org/10.1007/s11218-023-09778-y

UNESCO. (2021). AI and education: Guidance for policy-makers. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000376709

UNESCO. (2023a). Global education monitoring report 2023: Technology in education—A tool on whose terms? UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000385723

UNESCO. (2023b). Guidance for generative AI in education and research. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000386693
UNESCO. (2024). Global report on teachers: Addressing teacher shortages and transforming the profession. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000388832
Voogt, J., & Pareja Roblin, N. (2022). Curriculum and 21st century skills. https://doi.org/10.1016/B978-0-12-818630-5.03007-4
Vuorikari, R., Kluzer, S., & Punie, Y. (2022). DigComp 2.2: The digital competence framework for citizens—With new examples of knowledge, skills and attitudes. Publications Office of the European Union. https://doi.org/10.2760/115376
Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Harvard University Press.
Zhu, C., Wang, D., Cai, Y., & Engels, N. (2013). What core competencies are related to teachers' innovative teaching? Asia-Pacific Journal of Teacher Education, 41(1), 9–27. https://doi.org/10.1080/1359866X.2012.753984