DAVAO RESEARCH JOURNAL
https://davaoresearchjournal.ph

ORIGINAL RESEARCH ARTICLE

Professional Experience and Personal Circumstances as Determinants of Science Teacher Preparedness in Lupon District, Davao Oriental

Mae A. Repaso[1,2,*], Gemma M. Valdez[1], Phoebe Nemenzo-Calica[1]

[1]Master of Science Teaching major in General Science, Faculty of Advanced and International Studies, Davao Oriental State University, Mati City, Davao Oriental, 8200 Philippines, ORCID No. Mae A. Repaso: https://orcid.org/0009-0000-0788-5014, Gemma M. Valdez: https://orcid.org/0000-0002-3793-2034, Phoebe Nemenzo-Calica: https://orcid.org/0009-0004-7987-3951
[2]Calapagan National High School, Calapagan, Lupon, Davao Oriental, 8207 Philippines, ORCID No. Mae A. Repaso: https://orcid.org/0009-0000-0788-5014

*Corresponding author: *maerepaso81@gmail.com*

ABSTRACT

Science teachers play a critical role in ensuring effective classroom instruction, particularly in rural and resource-limited settings where instructional challenges persist. This study aimed to assess the level of preparedness of public secondary science teachers in the Lupon East and Lupon West Districts, Division of Davao Oriental, and to determine whether significant differences in preparedness exist across groups defined by selected demographic variables. Guided by the Theory of Planned Behavior, the study examined teacher preparedness in terms of attitude toward preparation, subjective norms, and perceived behavioral control using a quantitative descriptive research design. A total of 52 science teachers were included through total enumeration, and data were collected using a validated survey questionnaire and analyzed through descriptive statistics and Analysis of Variance. The results revealed a very high level of preparedness among science teachers across all three dimensions, with attitude toward preparation obtaining the highest mean, followed by subjective norms and perceived behavioral control. No significant differences in preparedness were found across age, sex, and educational attainment groups. Significant differences were observed based on civil status and length of service, with single teachers and those with six to ten years of teaching experience demonstrating higher levels of preparedness. These findings suggest that science teacher preparedness is shaped more by professional experience and personal circumstances than by demographic or academic characteristics. The study concludes that contextualized professional development programs tailored to teachers' career stages and rural teaching conditions are essential to sustaining and enhancing science instruction in Lupon District, Davao Oriental.

Keywords: *Rural schools, science education, theory of planned behavior, teacher preparedness, quantitative descriptive research*

Submitted: 20 Jan 2026
Revised: 17 Feb 2026
Accepted: 31 Mar 2026
Published: 05 Jun 2026

OPEN ACCESS

How to cite: Repaso, M. A., Valdez, G. M., and Nemenzo-Calica, P. (2026). Professional Experience and Personal Circumstances as Determinants of Science Teacher Preparedness in Lupon District, Davao Oriental. *Davao Research Journal,* 17(2) 15-23. https://doi.org/10.59120/drj.v17i2.525

INTRODUCTION

Science education is widely recognized as a cornerstone of national development, as it cultivates learners' critical thinking, problem-solving, and scientific literacy competencies essential in a knowledge-driven society. Contemporary pedagogical approaches such as problem-based learning and STEM education enhance student engagement and understanding (Smith et al., 2022). However, their effectiveness depends largely on teacher preparedness, as teachers serve as the primary agents of curriculum implementation and instructional innovation.

Despite ongoing efforts to improve science education, persistent challenges continue to affect instructional quality, particularly in public secondary schools. While teacher training improves instructional competence, it does not fully address systemic constraints such as inadequate teaching materials, limited laboratory facilities, large class sizes, rigid curricula, and work-related stress (Celebi et al., 2022; Jabri et al., 2025). These challenges are more pronounced in rural and resource -limited settings, where teachers face additional barriers in delivering effective, learner-centered instruction.

In the Philippine context, science education reforms emphasize inquiry-based learning and higher-order thinking aligned with global standards. However, successful implementation requires strong teacher readiness, institutional support, and access to resources (Buabeng and Amo-Darko, 2025). While prior studies have examined teacher competence at broader levels, there remains limited localized evidence on the preparedness of science teachers in rural districts such as Lupon East and Lupon West in the Division of Davao Oriental. Moreover, many studies lack a strong theoretical foundation. This study addresses this gap by applying the Theory of Planned Behavior, which explains how attitudes, subjective norms, and perceived behavioral control influence professional behavior (Wang and Tsai, 2022).

This study aimed to assess the preparedness of public secondary science teachers in Lupon East and Lupon West Districts and examine differences based on selected demographic variables. Specifically, it sought to (1) describe teachers' demographic profiles, (2) determine their level of preparedness in terms of attitude toward preparation, subjective norms, and perceived behavioral control, and (3) identify significant differences in preparedness across demographic characteristics. It is hypothesized that teacher preparedness varies significantly across selected demographic variables.

Globally, this study contributes to the discourse on science education by emphasizing teacher preparedness as a key determinant of instructional quality and reform sustainability. Research shows that effective implementation of student-centered approaches depends not only on training but also on self-efficacy, working conditions, and institutional support (Celebi et al., 2022; Demirhan and Öztürk, 2023; Smith et al., 2022; Golegou et al., 2026). By using the Theory of Planned Behavior, this study provides a framework for understanding how attitudes, social expectations, and perceived control shape teachers' readiness (Wang and Tsai, 2022).

At the national level, the study aligns with curriculum reforms that require more complex, inquiry-driven instruction. However, reforms without adequate teacher preparation often result in superficial implementation and increased professional strain (Buabeng and Amo-Darko, 2025; Celebi et al., 2022). Evidence suggests that readiness is influenced more by experience, contextual support, and self-efficacy than by demographic characteristics alone (Admiraal et al., 2023; Odanga et al., 2022; Narayanan et al., 2023). Thus, the findings can inform more targeted and responsive professional development programs.

Locally, the study is relevant to science teachers in Lupon East and Lupon West, who operate in resource-constrained environments characterized by large class sizes, limited laboratory facilities, and multiple workloads. These contextual challenges affect instructional delivery and highlight that preparedness is shaped not only by individual competence but also by environmental conditions. Localized research is essential, as national data often overlook such realities (Gonzales et al., 2025; Nadapdap et al., 2025; Jabri et al., 2025). Strengthening support systems such as professional learning communities can enhance collaboration and instructional improvement (Botha and Nel, 2022; Geletu and Mihiretie, 2023; Hayati et al., 2026).

This study contributes by (1) applying the Theory of Planned Behavior to explain teacher preparedness, (2) providing localized evidence from rural districts, and (3) offering insights into how contextual and experiential factors influence readiness. These contributions support the development of context-sensitive interventions to improve science teaching and learning outcomes.

MATERIALS AND METHODS

Description of the study area

The study was conducted in the Lupon East and Lupon West Districts of the Division of Davao Oriental, Philippines. These districts are predominantly rural and comprise public secondary schools serving geographically dispersed communities with varying levels of access to instructional resources. Lupon is located along the eastern coast of Mindanao and is characterized by mixed lowland and upland barangays, which pose contextual challenges for science instruction. The authors provide a GIS-based map (Figure 1) showing the geographic boundaries of the Lupon East and Lupon West Districts, and the distribution of participating schools, to contextualzse the study area and sampling locations.

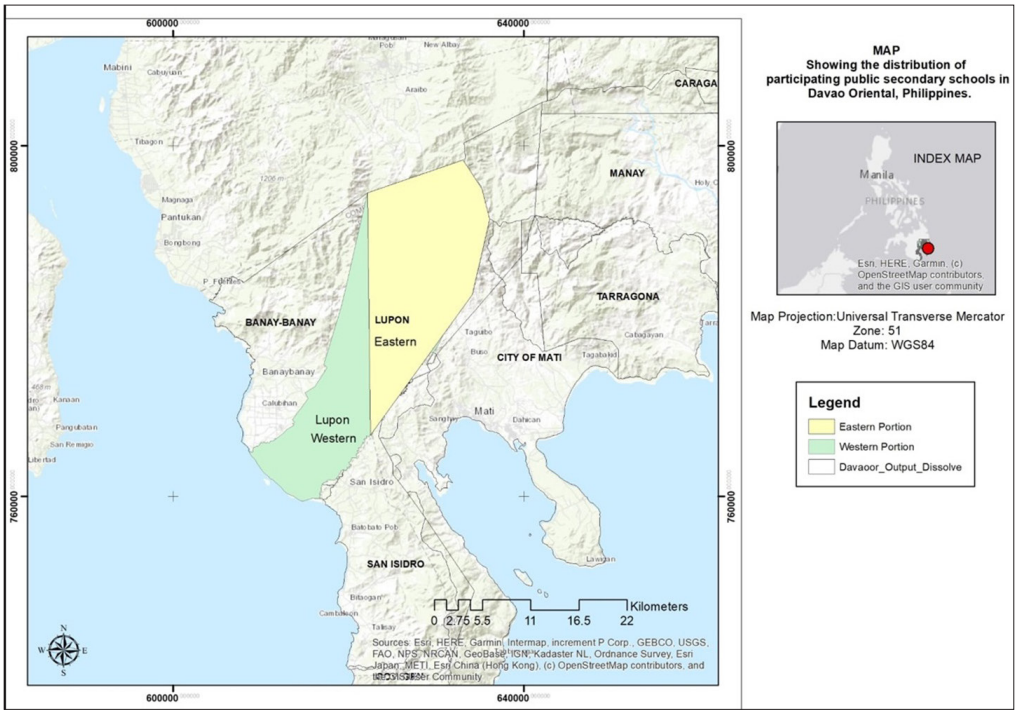

Figure 1. GIS-based location map of Lupon East and Lupon West districts showing the distribution of participating public secondary schools in Davao Oriental, Philippines.

Data collection

This study involved 52 public secondary science teachers from Lupon East and Lupon West Districts. A total enumeration sampling technique was employed, wherein all eligible science teachers in the two districts were included. This approach ensured comprehensive representation and minimized sampling bias within the study area. Participants were required to be (1) actively teaching science subjects at the secondary level during the data collection period and (2) officially assigned to either Lupon East or Lupon West District.

Data were collected using a structured, self-administered questionnaire developed to align with the study objectives, the

Theory of Planned Behavior, and relevant literature. The instrument consisted of two sections. The first section gathered demographic information, including age, sex, civil status, length of service, and highest educational attainment. The second section measured teachers' preparedness across three constructs: attitude toward preparation, subjective norms, and perceived behavioral control. Each construct included 10 items, for a total of 30 indicators, rated on a 4-point Likert scale ranging from 1 (Strongly Disagree) to 4 (Strongly Agree). Using a 4-point scale eliminated neutral responses and encouraged more definitive responses.

Before full implementation, the instrument underwent content validation by three education experts with postgraduate qualifications and research experience. Each item was evaluated for relevance, clarity, and adequacy using a four-point validity scale, ensuring alignment with the intended constructs and adherence to research standards. A pilot test was conducted with 10 secondary science teachers from a public secondary school in Mati City, Davao Oriental, selected for its similarity to the study setting while avoiding overlap with the main respondents. The pilot participants included both early-career and experienced teachers to capture varied perspectives. They were oriented on the study purpose and ethical considerations before completing the questionnaire. Feedback indicated that the instrument was clear, well-structured, and relevant; thus, no revisions were necessary.

The reliability of the instrument was assessed using Cronbach's alpha. Results showed excellent internal consistency across all constructs: attitude toward preparation (α = 0.90), subjective norms (α = 0.93), and perceived behavioral control (α = 0.94). The overall reliability coefficient (α) was 0.95, exceeding the recommended threshold of 0.70, thereby confirming the instrument's suitability for the study.

Before actual data collection, formal written approval was secured from the Department of Education, Division of Davao Oriental, and the respective school heads of the participating schools, in compliance with DepEd Order No. 16, s. 2017. Ethical clearance was obtained from the graduate school research ethics committee. Participants were provided with a clear explanation of the study's purpose, procedures, ethical considerations, and data handling protocols. Informed consent was obtained from all respondents before questionnaire administration. The survey questionnaires were distributed and retrieved within an agreed timeframe to ensure completeness and maximize response rates.

Data analysis

Collected data were encoded and analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics, including frequency counts, percentages, means, and standard deviations, were used to summarize demographic characteristics and determine levels of science teacher preparedness across the three constructs.

To examine differences in preparedness across demographic groups, Analysis of Variance (ANOVA) was employed. ANOVA is appropriate for comparing mean differences across multiple groups and is widely used in educational research to assess subgroup variations (Tan & Rivera, 2022). All statistical analyses were conducted using an accepted level of significance.

RESULTS

Demographic profile of the respondents

The demographic characteristics of the respondents, as shown in Figure 2, indicate that most science teachers in Lupon District belong to the 36 years old and above age group, followed by those aged 31–35 years, while teachers aged 21–25 years constitute the smallest proportion. In terms of sex, the majority of respondents are female, with males representing a smaller percentage. Most teachers are married, while others are single or widowed. Regarding length of service, the largest group of respondents falls within the 6–10 years of teaching experience category. In terms of educational attainment, most respondents hold a bachelor's degree, while others have earned graduate units or completed a master's degree.

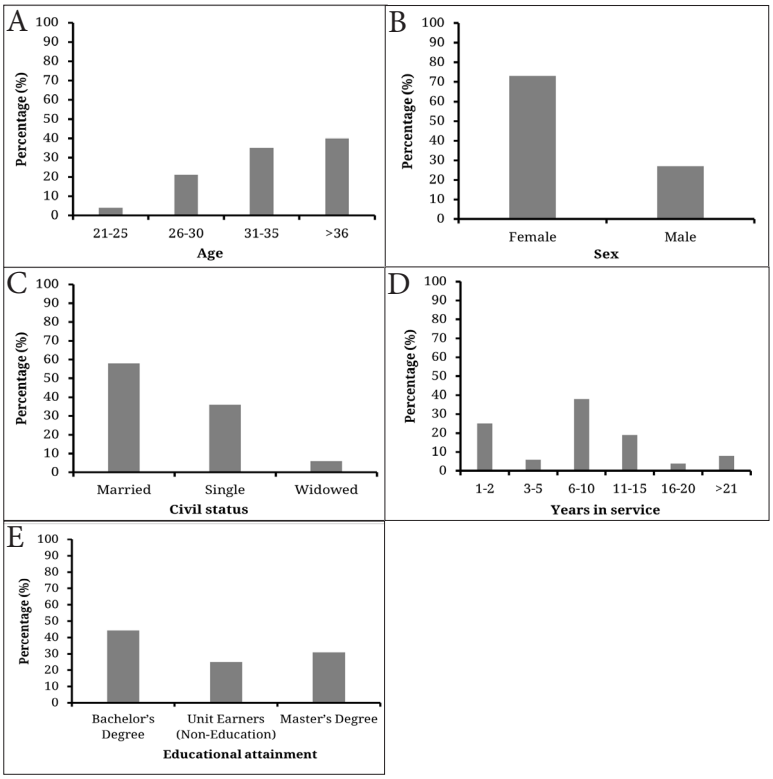

Figure 2. Sociodemographic profile of respondents in Lupon, Davao Oriental: age (A), sex (B), civil status (C), years of service (D), and educational attainment (E).

Level of science teachers' preparedness in terms of attitude toward preparation

Table 1 shows that science teachers obtained an overall mean of 3.51, interpreted as Very High, indicating a strong positive attitude toward lesson preparation. The highest mean score was recorded for the item related to the belief that preparation enhances student engagement and learning. In contrast, comparatively lower mean scores were observed for preparing backup plans and differentiated activities.

These high ratings suggest that teachers are not only aware of the importance of preparation but also consistently translate this into practice through structured lesson planning, resource organization, and reflective teaching. This implies a classroom environment where instruction is intentional, student-centered, and aligned with learning goals.

Table 1. Level of science teachers' preparedness in terms of attitude on preparation.

Statements	Mean	SD	Descriptive interpretation
I make an effort to join trainings or workshops that can help me become more prepared and effective in teaching science."	3.56	0.57	Strongly Agree
I set aside enough time to carefully plan and organize my science lessons before I teach them to my students.	3.42	0.54	Strongly Agree
I make sure all the materials and resources I need are ready before I start teaching my science lessons.	3.52	0.542	Strongly Agree
I adapt my instructional strategies based on the needs and learning styles of my students to improve lesson effectiveness.	3.58	0.54	Strongly Agree
I believe that being well-prepared helps my students stay engaged and learn better during our science classes.	3.71	0.46	Strongly Agree
I regularly try to learn new science topics and teaching methods to improve the way I teach.	3.56	0.50	Strongly Agree
I prepare backup plans just in case my original lesson plan doesn't go as expected.	3.37	0.56	Strongly Agree
I take time to think about how my lessons went so I can make better plans for next time.	3.56	0.57	Strongly Agree
I create extra activities to support students who learn at different speeds.	3.38	0.49	Strongly Agree
I make sure to include laboratory activities or hands-on experiments when planning my science lessons to enhance student understanding.	3.44	0.61	Strongly Agree
Overall category	3.51	0.42	Strongly Agree (Very High)

Level of science teachers' preparedness in terms of subjective norms

Table 2 reveals an overall mean of 3.50, also interpreted as Very High, suggesting that professional expectations, institutional policies, and collaborative practices strongly influence science teachers' preparedness. Participation in Learning Action Cells recorded the highest mean score, while consideration of school leaders' expectations recorded the lowest.

In practice, this indicates that teachers actively align their lesson preparation with institutional expectations and benefit from collaborative professional cultures, particularly through shared planning and peer support mechanisms.

Table 2. Level of science teachers' preparedness in terms of subjective norms.

Statements	Mean	SD	Descriptive interpretation
I keep in mind what my school leaders expect when I plan my science lessons.	3.29	0.54	Strongly Agree
Seeing how my fellow teachers prepare their lessons inspires me to improve my own planning.	3.52	0.61	Strongly Agree
I make sure all the materials and resources I need are ready before I start teaching my science lessons.	3.65	0.56	Strongly Agree
I consider parents' feedback and expectations when planning my science lessons to better support their children's learning.	3.46	0.61	Strongly Agree
The professional environment in my school encourages me to keep improving how I prepare for my science classes	3.42	0.61	Strongly Agree
I work together with my fellow teachers to plan lessons and share ideas for better teaching.	3.42	0.67	Strongly Agree
I join Learning Action Cells or similar group activities that help me improve how I plan my lessons.	3.69	0.51	Strongly Agree
I use the advice from instructional leaders to improve and shape my lesson plans.	3.60	0.53	Strongly Agree
I stick to our school's guidelines when preparing and delivering my lessons to ensure consistency and quality.	3.56	0.54	Strongly Agree
My school leaders and peers encourage me to integrate laboratory activities as part of my science teaching.	3.40	0.60	Strongly Agree
Overall category	3.50	0.51	Strongly Agree (Very High)

Level of science teachers' preparedness in terms of perceived behavioral control

Table 3 indicates an overall mean of 3.43, interpreted as Very High, reflecting teachers' strong confidence in their ability to prepare and deliver science lessons despite challenges related to t ime, workload, stress, and limited resources. The highest mean score was associated with managing professional responsibilities, while access to tools and preparation time obtained relatively lower mean scores.

This suggests that teachers can manage instructional challenges by adapting strategies, improvising with resources, and maintaining lesson quality despite time and material constraints.

Table 3. Level of science teachers' preparedness in terms of perceived behavioral control.

Statements	Mean	SD	Descriptive interpretation
Even when I'm short on time, I feel confident that I can still prepare science lessons that are interesting and effective for my students.	3.29	0.64	Strongly Agree
When unexpected situations come up in class, I can quickly adjust my lesson plans to keep things on track.	3.42	0.64	Strongly Agree
I have the tools and support I need to get ready for my science classes properly.	3.37	0.53	Strongly Agree
I believe I can handle my responsibilities well enough to prepare my lessons properly.	3.54	0.54	Strongly Agree
I'm able to use new teaching methods and technology to make my science lesson planning more effective.	3.52	0.54	Strongly Agree
Even with a large class, I do my best to manage well and keep the quality of my teaching high.	3.52	0.50	Strongly Agree
I prepare backup plans in case some materials or equipment aren't available for my lessons.	3.40	0.60	Strongly Agree
Even with many teaching duties, I make sure I'm still well-prepared to teach my science lessons	3.44	0.61	Strongly Agree
Even when I'm dealing with stress at work or in my personal life, I still do my best to stay well-prepared for teaching.	3.40	0.57	Strongly Agree
Even when laboratory tools or resources are limited, I find ways to facilitate hands-on science activities for my students.	3.37	0.63	Strongly Agree
Overall category	3.43	0.59	Strongly Agree (Very High)

Summary of the level of science teachers' preparedness

Table 4 summarizes the preparedness of science teachers across the three dimensions of the theory of planned behavior. All dimensions obtained Very High mean scores, with attitude toward preparation ranking highest, followed by subjective norms and perceived behavioral control. The overall level of preparedness was likewise interpreted as Very High. Collectively, these results indicate that teachers possess not only strong preparedness across key dimensions but also the capacity to sustain effective instructional practices, even in resource-constrained environments.

Table 4. Summary on the level of science teachers' preparedness.

Indicators	Mean	SD	Descriptive interpretation
Attitude on preparation	3.51	0.42	Very High
Subjective norms	3.50	0.51	Very High
Perceived behavioral control	3.43	0.59	Very High
Overall category	3.48	0.40	Very High

Significant differences in the level of science teachers' preparedness

Analysis of variance results (Table 5) show no significant differences in preparedness across age, sex, and educational attainment groups. However, civil status and length of service revealed statistically significant differences, with single teachers and those with 6–10 years of teaching experience exhibiting higher preparedness levels. These differences suggest that preparedness may be influenced by career stage and personal circumstances, with mid-career teachers and single individuals having greater flexibility, time, or motivation to invest in lesson preparation.

Table 5. Analysis on the level of science teachers' preparedness across their demographic profiles.

Demographic profile	Mean	F-value	*p*-value	Decision
Age				
21-25 years old	3.67	0.98	0.48	There is no significant difference
26-30 years old	3.27			
31-35 years old	3.49			
36 years old and above	3.56			
Sex				
Female	3.52	1.57	0.22	There is no significant difference
Male	3.36			
Civil status				
Married	3.00	3.75	**0.04**	There is a significant difference
Single	3.67			
Widowed	3.35			
Length of service				
1-2 years	3.29	10.32	**<0.001**	There is a significant difference
3-5 years	3.61			
6-10 years	3.97			
11-15 years	3.68			
16-20 years	3.60			
21 years and above	3.44			
Educational attainment				
Bachelor's Degree	3.37	1.99	0.15	There is no significant difference
Unit Earner (Non-Education)	3.61			
Master's Degree	3.52			

DISCUSSION

Demographic profile and workforce characteristics

The demographic profile of science teachers in Lupon District provides important context for understanding their level of preparedness. The predominance of teachers aged 36 years and above, along with those in the 31–35 age group, indicates a relatively mature and experienced workforce. This suggests stability in the teaching population, which is often associated with sustained instructional quality, particularly in rural and resource-constrained contexts (Nadapdap et al., 2025). The concentration of teachers with 6–10 years of service further reflects a mid-career cohort likely transitioning from foundational teaching skills to more refined and adaptive instructional practices.

The majority-female composition aligns with broader trends in the teaching profession and may reflect gendered patterns in career choice and retention. However, this study found no significant differences in preparedness by sex. Similarly, the high proportion of married teachers suggests that personal responsibilities influence professional engagement; however, the observed higher preparedness among single teachers indicates greater flexibility in time allocation for lesson preparation. Educational attainment, with most teachers holding bachelor's degrees and some pursuing graduate studies, reflects ongoing professional development, although it did not significantly differentiate preparedness levels. Overall, these demographic patterns suggest that teacher preparedness in Lupon District is shaped more by experience and contextual factors than by static personal characteristics.

Teacher preparedness within the context of professional experience and personal circumstances

The findings of this study indicate that science teachers in Lupon District demonstrate a consistently high level of preparedness across the dimensions of the theory of planned behavior, attitude toward preparation, subjective norms, and perceived behavioral control. This overall preparedness reflects a strong alignment between teachers' professional beliefs, collaborative environments, and confidence in managing instructional demands. Consistent with prior studies, positive attitudes toward preparation, supportive professional cultures, and strong self-efficacy significantly contribute to instructional readiness (Demirhan and Öztürk, 2023; Toe and Longaretti, 2022). The predominance of mid-career teachers, particularly those with 6–10 years of experience, further underscores a stable, competent workforce capable of sustaining effective teaching practices (Nadapdap et al., 2025).

Teachers' strong attitude toward preparation highlights their commitment to structured lesson planning and its perceived impact on student learning. This supports findings that valuing preparation promotes more intentional, student-centered instruction, particularly in science education (Golegou et al., 2026). However, a relatively lower emphasis on backup planning and differentiated instruction suggests that contextual constraints, such as time limitations, heavy workloads, and limited resources, may restrict the implementation of more adaptive teaching practices, especially in rural settings (Mtsweni, 2022). In the Lupon District, these constraints manifest through limited preparation time due to ancillary duties and restricted access to laboratory materials.

Subjective norms further emphasize the importance of the professional environment in shaping preparedness. Learning Action Cells and collaborative practices play a central role in influencing lesson planning, particularly in contexts where access to formal training is limited. This aligns with studies highlighting the value of professional learning communities in promoting reflective practice, shared accountability, and instructional improvement (Botha and Nel, 2022; Geletu and Mihiretie, 2023). Notably, peer collaboration exerts a stronger influence than supervisory expectations, suggesting that collegial support and collective efficacy serve as more powerful motivators than hierarchical structures (Hayati et al., 2026).

High perceived behavioral control indicates that teachers feel capable of managing instructional challenges despite contextual limitations. This reflects evidence that professional experience enhances teachers' ability to adapt and sustain instructional quality under constrained conditions (Narayanan et al., 2023; Odanga et al., 2022). Teachers' self-awareness also contributes to effective practice and professional compliance (Maynagcot and Valdez, 2017). However, persistent issues such as limited access to instructional tools, insufficient preparation

time, and moderate levels of technology integration continue to be concerns in rural science education (Gonzales et al., 2025; Arellano and Lumogdang, 2023). In response, teachers rely on improvisation and adaptive strategies to maintain lesson effectiveness.

The absence of significant differences in preparedness across age, sex, and educational attainment suggests that instructional readiness is shaped more by contextual and experiential factors than by static demographic characteristics (Admiraal et al., 2023; Kou and Mohd Rasdi, 2025). In contrast, the significant influence of civil status and length of service highlights the role of personal circumstances and career stage. Teachers with 6–10 years of experience appear to be in a consolidation phase, where competence, adaptability, and openness to innovation converge (Iqbal and Ali, 2024). Similarly, higher preparedness among single teachers may reflect greater flexibility in allocating time and effort toward lesson preparation.

Implications for theory, policy, and contextualized Professional development

The findings affirm the applicability of the Theory of Planned Behavior in explaining teacher preparedness, demonstrating that readiness emerges from the interaction of attitudes, social influences, and perceived control (Ajzen, 1991; Hsu, 2012; Wang and Tsai, 2022). Importantly, this study extends the theory by showing that perceived behavioral control in rural contexts is not solely an individual cognitive factor but is closely linked to structural and environmental conditions. While teachers exhibit strong motivation and resilience, systemic constraints, such as workload demands and limited resources, continue to shape how preparedness is enacted in practice (Mtsweni, 2022; Gonzales et al., 2025).

These findings have significant implications for policy and practice, particularly within the Philippine education system. The consistently high levels of preparedness, despite contextual limitations, suggest that teachers possess strong foundational capacities that can be further enhanced through targeted interventions. However, reliance on self-reported data may introduce response bias, potentially inflating perceived preparedness levels. Additionally, the low variability in responses indicates a degree of uniformity that may limit differentiation among participants.

To address these issues, professional development programs should move beyond one-size-fits-all approaches and adopt career-stage–responsive models that cater to early-career, mid-career, and experienced teachers. Strengthening Learning Action Cells as sustained, school-based professional learning communities can further support collaborative lesson planning and reflective practice (Botha and Nel, 2022; Geletu and Mihiretie, 2023). Moreover, workload-sensitive policies, such as protected planning time and improved access to laboratory resources, are essential to enhancing teachers' perceived behavioral control and instructional effectiveness.

The study also underscores the importance of contextualized support systems in rural education settings. Teachers in Lupon District operate in environments characterized by limited resources, large class sizes, and geographically dispersed learners, conditions also observed in other rural contexts (Jabri et al., 2025; Nadapdap et al., 2025; Sillo and Valdez, 2017). As such, the findings are transferable to comparable settings where both environmental and institutional factors shape instructional challenges.

Hence, this study contributes to the broader discourse on teacher preparedness by demonstrating that professional experience and personal circumstances play a more critical role than demographic characteristics alone. By highlighting the interplay between individual agency and contextual realities, the findings provide a strong basis for designing context-sensitive interventions that sustain and enhance the effectiveness of science teaching in rural and resource-constrained environments.

CONCLUSION

This study concludes that public secondary science teachers in Lupon East and Lupon West Districts consistently demonstrate a very high level of preparedness in teaching science, as reflected across the three dimensions of the Theory of Planned Behavior: attitude toward preparation, subjective norms, and perceived behavioral control. Teachers show strong commitment to lesson preparation, benefit from supportive professional environments, and exhibit confidence in managing instructional demands despite challenges typical of rural schools, such as large class sizes, limited laboratory resources, and competing administrative responsibilities. The findings indicate that preparedness is not significantly influenced by age, sex, or educational attainment, suggesting that demographic and academic factors alone do not determine instructional readiness. Instead, civil status and length of service play a notable role, with teachers with 6 to 10 years of experience demonstrating the highest preparedness. This highlights the importance of personal circumstances and accumulated professional experience in shaping teaching effectiveness. The study underscores the need for sustained, context-sensitive support mechanisms to enhance science instruction in the Lupon District. Strengthening professional development opportunities, fostering collaborative learning communities, and addressing institutional constraints can help translate teachers' preparedness into improved classroom outcomes. Hence, these findings provide localized empirical evidence to inform policy, training initiatives, and strategic planning for rural science education, while contributing to the literature on teacher preparedness by highlighting the critical role of experience and personal context over demographic characteristics.

RECOMMENDATIONS

- Design career-stage–responsive professional development programs targeting teachers at different experience levels.
- Institutionalize and strengthen Learning Action Cells as platforms for continuous collaborative professional learning.
- Provide workload- and resource-sensitive support, including dedicated preparation time and improved access to laboratory facilities.
- Develop mentoring programs that leverage experienced teachers to support early- and mid-career educators.
- Implement policies that recognize personal circumstances influencing teacher preparedness, such as flexible schedules or support for teachers with family responsibilities.

ACKNOWLEDGMENT

The authors sincerely thank the public secondary science teachers of Lupon East and Lupon West Districts, Division of Davao Oriental, for their participation and insights. Appreciation is also extended to the Schools Division Office, school heads, administrators, and Calapagan National High School for their support and cooperation. The authors likewise acknowledge the Faculty of Advanced and International Studies, Davao Oriental State University, for its guidance and research support.

FUNDING SOURCE

This study was self-funded by the researchers.

AUTHOR CONTRIBUTIONS

M. A. R: Conceptualized the study, conducted data collection, and led the analysis and the initial drafting of the manuscript. G. M. V: Provided methodological guidance, contributed to data interpretation, and critically reviewed and refined the manuscript for intellectual content. P. N. C: Supervised the research process, contributed to the study design and analysis, and reviewed and approved the final version of the manuscript for publication.

DECLARATION

Informed consent statement

This study adhered to established ethical standards for research involving human participants. Participation was entirely voluntary, and respondents were informed of their right to withdraw at any stage without penalty. Confidentiality was ensured through anonymized coding, and no personally identifiable information was included in reports or publications. All data were stored securely on password-protected devices and were used exclusively for academic purposes. The study posed no anticipated physical, emotional, or social risks to participants. Survey items were reviewed to ensure that they were respectful, appropriate, and non-invasive, thereby safeguarding participant well-being throughout the research process.

Conflict of interest

The authors have no conflict of interest in the result of the study.

AI Desclosure

The authors declare that no Artificial Intelligence (AI) or AI-assisted technologies were used in the preparatin of this manuscript.

REFERENCES

Admiraal, W., Kittelsen Røberg, K. I., Wiers-Jenssen, J., and Saab, N. (2023). Mind the gap: Early-career teachers' level of preparedness, professional development, working conditions, and feelings of distress. *Social Psychology of Education*, 26(6), 1759-1787.

Arellano, A. C., and Lumogdang, L. P. (2023). Status of technology utilization in science-based instruction in selected schools in Sarangani, Davao Occidental, Philippines. *Davao Research Journal*, 16(1). https://doi.org/10.59120/drj.v16i1.299

Buabeng, I., and Amo-Darko, B. (2025). Curriculum reforms without foundation: The effects of inadequate preparation in curriculum reforms on Ghanaian teachers and the education system. *Curriculum Perspectives*, 1-15.

Botha, C., and Nel, C. (2022). Purposeful collaboration through professional learning communities: Teacher educators' challenges. *International Journal of Learning, Teaching and Educational Research*, 21(6), 210-225. https://doi.org/10.26803/ijlter.21.6.13.

Celebi, A., Ozrecberoglu, N., Cakir Gunes, G., and Serin Gezercan, Y. (2022). Teacher Training Policies and Determination of Inadequacies. *Asian Journal of Contemporary Education*, 6(2), 136-147. DOI: 10.55493/5052.v6i2.4549.

Demirhan, S., and Öztürk, D. S. (2023). The relationship between readiness for change and professional self-efficacy beliefs in the teaching profession. *Research And Reviews In Educational Sciences*, 315.

Geletu, G. M., and Mihiretie, D. M. (2023). Professional accountability and responsibility of learning communities of practice in professional development versus curriculum practice in classrooms: Possibilities and pathways. *International Journal of Educational Research Open*, 4, 100223. https://doi.org/10.1016/j.ijedro.2022.100223.

Golegou, E., Wallace, M., and Peppas, K. (2026). Student-centered pedagogies for 21st-century STEM: A comparative review and implementation guide. *American Journal of STEM Education*, 18, 83-124. DOI: https://doi.org/10.32674/qnh67005

Gonzales, X. G. I., Cabrera, R. M., and Calzada, M. P. T. (2025). Status of Laboratory Resources and Teaching Competence in Schools Division of Ilocos Norte. *International Journal of Multidisciplinary: Applied Business and Education Research*, 6(4), 1575-1588. http://dx.doi.org/10.11594/ijmaber.06.04.02

Hayati, E., Sururi, S., and Rahyasih, Y. (2026). The effect of collegial supervision and school organizational culture on teacher performance. *JP (Jurnal Pendidikan): Teori dan Praktik*, 11(1), 28-42. DOI: https://doi.org/10.26740/jp.v11n1.p28-42

Iqbal, S., and Ali, A. (2024). Education and professional development: Opportunities and challenges for in-service teachers: a review. *Gomal University Journal of Research*, 40(1), 117-133. https://doi.org/10.51380/gujr-40-01-10

Jabri, A., Alodat, A. M., Al-Hendawi, M., and Ianniello, A. (2025). Challenges facing general education teachers in inclusive classrooms in Qatar. In *Frontiers in Education* (Vol. 10, p. 1623453). Frontiers Media SA. https://doi.org/10.3389/feduc.2025.1623453

Kou, Q., and Mohd Rasdi, R. (2025). Learning from career preparedness: examining the influence of person–environment fit on decent work expectations. *European Journal of Training and Development*. https://doi.org/10.1108/EJTD-09-2024-0140

Maynagcot, M. T., and Valdez, G. M. (2017). Influence of teachers' self-awareness to results-based performance management system (RPMS) compliance. *Davao Research Journal*, 11(3), 60–72. https://doi.org/10.59120/drj.v11i2.400

Mtsweni, L. E. (2022). *The role of student-related community engagement structures in mitigating social injustice in a Rural Based University in South Africa, Limpopo Province.*

Nadapdap, E., Laili, E. F., Natsir, M., and Setyadi, M. S. (2025). Exploring the Influence of Digital Competence, Work-Life Balance, and Transformational Leadership on Teacher Productivity through Job Satisfaction in Rural Educational Contexts. *East African Sch. J. Econ. Bus. Manag*, 8(1), 44-55. https://doi.org/10.36349/easjebm.2025.v08i01.006.

Narayanan, M., Ordynans, J. G., Wang, A., McCluskey, M. S., Elivert, N., Shields, A. L., and Ferrell, A. C. (2023). Putting the self in self-efficacy: Personal factors in the development of early teacher self-efficacy. *Education and Urban Society*, 55(2), 175-200. https://doi.org/10.1177/00131245211062528

Odanga, S. J., Aloka, P. J., and Raburu, P. (2022). Effects of experience on teachers' self-efficacy in secondary schools. *Alberta Journal of Educational Research*, 68(1), 119-132. https://doi.org/10.55016/ojs/ajer.v68i1.70744

Sillo, S. A. A., and Valdez, G. M. (2017). The curricular role identity and classroom management belief of public high school science teacher of Cateel and Boston, Davao Oriental. *Davao Research Journal*, 11(3), 73–88. https://doi.org/10.59120/drj.v11i2.406

Smith, K., Maynard, N., Berry, A., Stephenson, T., Spiteri, T., Corrigan, D., and Smith, T. (2022). Principles of problem-based learning (PBL) in STEM education: Using expert wisdom and research to frame educational practice. *Education Sciences*, 12(10), 728. https://doi.org/10.3390/educsci12100728

Toe, D. M., and Longaretti, L. (2022). Teacher efficacy in high performing teachers: Barriers and enablers for new graduates. *Australian Journal of Teacher Education* (Online), 47(4), 1-20.

Wang, J. J., and Tsai, N. Y. (2022). Factors affecting elementary and junior high school teachers' behavioral intentions to school disaster preparedness based on the theory of planned behavior. *International Journal of Disaster Risk Reduction*, 69, 102757. https://doi.org/10.1016/j.ijdrr.2021.102757

Print-ISSN 2244-4432 Online-ISSN 2984-7125