

**Science teachers' competence and readiness for the revised K–12 curriculum:
Basis for training design development**

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ABSTRACT

This quantitative descriptive-correlational research design aimed to determine the level of competence and readiness of Grade 8 science teachers in the implementation of the Revised K-12 Curriculum in terms of their profile variables (age, gender, length of teaching experience, educational attainment, position, and relevant trainings attended) and describe the relationship that exists between variables and how these can serve as a basis for developing a relevant training design. Moreover, this study aimed to develop a relevant training design that could enhance the competence and readiness of science teachers. Text Box 2, TextboxThis study was conducted in the first quarter of Academic Year 2025-2026. The participants of the study were the Grade 8 science teachers in the integrated and public secondary schools in the first district of Capiz. The purposive sampling technique was employed in determining the respondents included in the study. To determine the levels and variability of teachers' competence and readiness in

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implementing the revised K–12 Science Curriculum, descriptive statistics such as mean and standard deviation were used. However, for inferential analyses, t-test and ANOVA were used to identify significant differences across respondent profiles, while Pearson's r was employed to assess the relationship between competence and readiness at a 0.05 alpha level. The study revealed that Grade 8 science teachers in the division demonstrate high competence and very high readiness in implementing the revised K-12 curriculum. However, there was no significant difference in the competence and readiness when teachers were grouped according to their profile variables. Furthermore, there was a very strong positive correlation between competence in teaching science and readiness of Grade 8 teachers to implement the K-12 revised curriculum. Thus, highlighting the importance of continuous, targeted professional development.

Keywords: teacher competence, readiness, revised K–12 Science curriculum

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INTRODUCTION

The Philippines' K–12 Basic Education Curriculum was implemented with the goal of raising educational standards and guaranteeing that graduates were more equipped for postsecondary education, the workforce, and entrepreneurship (DepEd, 2016). As one of the fundamental subjects, science was supposed to be taught with more in-depth material, improved inquiry abilities, and a larger focus on practical application. But with the most recent changes to the K–12 curriculum, educators were once more forced to modify their methods, refresh their understanding of the subject, and adopt fresh approaches that matched the revised requirements.

Science teachers were essential to the success of the curriculum reform, despite research showing that many teachers lacked the training needed to implement the reforms (Orbe, 2020; Balagtas & Corpuz, 2018). Due to their lack of pedagogical training, some teachers reported finding it difficult to make the shift to more learner-centered approaches, while others found it difficult to match their teachings to the competencies outlined in the updated curriculum. These issues were made worse by teachers' varying levels of competency and readiness, which affected their capacity to carry out the intended modifications (De Guzman & Uy, 2019).

In many schools, professional development programs were either insufficient, untimely, or not specifically tailored to the unique challenges of teaching science. Although the Department of Education had offered training sessions, these were often broad and not differentiated based on subject or teacher needs. This resulted in a mismatch between what was delivered in training and what teachers needed in the classroom (David et al., 2019). Additionally, there was limited information on how teacher characteristics such as age, teaching experience, or educational attainment influenced their competence and readiness.

The significance of teacher competency in implementing curriculum changes has been highlighted in international studies (Darling-Hammond, 2017), but there is still a dearth of localized research that focuses exclusively on science teachers in the Philippine context. Numerous previous research either ignored the unique requirements of scientific education under the updated K–12 framework or generalized findings across topic areas. Additionally, the

majority of the research that is currently accessible examined readiness and competence independently, without looking at their relationship or the potential influence of one on the other.

These limitations highlighted the need to investigate how science teachers' individual profiles were related to their competence and readiness, and how both could serve as a foundation for a more responsive training program. The goal of this study was to identify these elements in order to offer evidence-based insights that could direct the creation of more contextually relevant and effective training designs for science educators working with the updated K–12 curriculum.

Statement of the problem

This study aimed to determine the level of competence and readiness of Grade 8 science teachers in implementing the Revised K-12 Curriculum, describe the relationship between these variables and teacher profiles, and use this analysis as a basis for developing a relevant training design. Specifically, this study seeks to answer the following questions:

1. What is the profile of the Grade 8 science teachers in terms of age, gender, length of teaching experience, educational attainment, position, and trainings attended related to the K–12 curriculum?
2. What is the level of competence in teaching science and readiness of Grade 8 science teachers to implement the revised K–12 curriculum?
3. Is there a significant difference in the level of competence and readiness of Grade 8 science teachers when grouped according to age, gender, length of teaching experience, educational attainment, position, and trainings attended related to the K–12 curriculum?
4. Is there a significant relationship between the teachers' level of competence and their readiness to implement the revised K–12 curriculum?
5. Based on the findings, what training design can be proposed to enhance teachers' competence and readiness in implementing the revised K–12 curriculum?

METHODOLOGY

This study employed a descriptive quantitative approach, specifically utilizing a survey correlational research design to determine the level of competence and readiness of Grade 8 science teachers in implementing the Revised K–12 Curriculum. The design was deemed appropriate for examining the teachers' profile variables and describing the relationship that exists between these variables. It also served as the basis for proposing a relevant training design that could enhance teacher competence and readiness. Following Creswell and Creswell (2017), descriptive quantitative research is valuable in systematically characterizing populations or phenomena through numerical data and statistical analysis. Similarly, Check and Schutt (2012) emphasized that survey research entails collecting information from individuals through responses to structured questions, while Arikunto (2012) defined correlational research as an approach that seeks to determine the degree of association between two or more variables. With these perspectives, the chosen research design was well suited for establishing whether competence and readiness are interrelated and influenced by teacher profile factors.

The study was conducted among integrated and public secondary schools in the first district of the Division of Capiz during the school year 2025–2026. These schools were clustered into six districts, including Maayon, Panay, Panitan, Pilar, Pontevedra, and President Roxas, and served as the research locale. Each of these institutions was actively implementing the Revised K–12 Curriculum as mandated by the Department of Education, providing an ideal environment for investigating how Grade 8 science teachers adapt to and deliver instruction under curriculum reforms.

A total of twenty-six Grade 8 science teachers were purposively selected as respondents. Purposive sampling was used as it allowed the inclusion of participants who were directly involved in implementing the revised curriculum and were most likely to yield reliable and relevant data. As Kelly (2010) noted, purposive sampling enables researchers to select individuals expected to contribute meaningful insights, while Palinkas et al. (2015) further explained that this technique ensures effective use of limited research resources by focusing on information-rich cases. The profile of the respondents was categorized according to age, gender, educational attainment, length of teaching experience, position, and number of trainings attended related to the Revised K–12 Curriculum.

To gather data, a researcher-made instrument was used to measure both the competence and readiness of teachers. The instrument consisted of three parts. The first part sought demographic and professional profile information of the respondents. The second part, the Teachers' Competence in Teaching Based on the Revised K–12 Grade 8 Science Curriculum Questionnaire, included fifteen items designed to assess competence in teaching science under the revised curriculum. The third part, the Teachers' Readiness in Implementing the Revised K–12 Grade 8 Science Curriculum Questionnaire, assessed the degree of preparedness of teachers to apply curriculum reforms. The instrument underwent validation by grammarians and content experts, whose comments and suggestions were incorporated into the final version. A pilot test was conducted with fifteen Grade 8 science teachers from the second district of Capiz, who were not part of the actual study respondents. The pilot test data were processed using the Statistical Package for Social Science (SPSS) software to determine the reliability of the test items. Items meeting the recommended indices of difficulty and discrimination, as explained by Padua and Santos (in Delicano, 2013), were retained, while those outside the acceptable range were revised or discarded.

Data gathering was conducted systematically and ethically to ensure the reliability of the information collected. The final version of the questionnaire was distributed electronically via Google Forms to facilitate efficient administration across the participating schools. Respondents were informed of the purpose of the study and assured of confidentiality. After completion, responses were consolidated and carefully checked by the researchers to ensure accuracy prior to analysis. The teachers' self-assessments of competence and readiness were rated using a five-point Likert scale ranging from strongly disagree to strongly agree. These responses were further interpreted through established rubrics and descriptive categories, which allowed the researchers to classify teachers as highly competent, competent, nearly competent, low competent, or not competent, as well as to rate readiness as very high, high, average, low, or very low.

The collected data were analyzed using SPSS to ensure rigorous and reliable results. Frequency counts and percentages were used to describe the distribution of teacher profiles, while mean scores and standard deviations were computed to determine the general level and

variability of competence and readiness. For inferential analysis, t-tests were used to examine differences between two groups, and ANOVA was employed to compare competence and readiness across multiple profile categories. Pearson's r correlation was applied to assess the relationship between competence and readiness, with the level of significance set at 0.05. Through these procedures, the study ensured that both descriptive and inferential aspects of the research problem were adequately addressed, thereby providing a strong basis for proposing a training design that could enhance teacher competence and readiness in implementing the Revised K–12 Science Curriculum.

RESULTS AND DISCUSSION

This chapter presents the results and interpretation of the data gathered on the competence and readiness of Grade 8 science teachers in implementing the Revised K–12 Curriculum. The findings were derived from the responses of twenty-six participants who answered the researcher-made survey questionnaire administered electronically. As described in the methodology, the respondents were purposively sampled from integrated and public secondary schools in the first district of Capiz. The data gathered focused on their demographic profile, competence, readiness, and the relationships among these variables.

With respect to age, the results showed that the majority of respondents were relatively young teachers, with the largest proportion aged 29 to 32 years (38.5%) followed closely by those aged 25 to 28 years (34.6%). A smaller portion was aged 33 to 36 years (15.4%), while only 11.5% were aged 37 years and above. This indicates that most of the Grade 8 science teachers in the study belong to the early-career group, which reflects a youthful teaching force capable of adapting to curriculum reforms with energy and innovation.

In terms of gender distribution, the teaching force was composed predominantly of females, who represented 69.2% of the sample compared to 30.8% males. This pattern reflects the wider trend in the Philippines and globally, where teaching at the basic education level is a female-dominated profession. It underscores the continuing feminization of teaching, often linked to cultural and social expectations about nurturing roles.

The educational attainment of the respondents demonstrated a highly qualified teaching group. An equal percentage of 42.3% held master's units and completed master's degrees, showing that a majority had pursued graduate-level studies. Meanwhile, 11.5% possessed only a bachelor's degree, and 3.8% had doctoral units. This high level of advanced education suggests that the participants are committed to professional growth and are well positioned to handle the demands of the Revised K–12 Curriculum.

The data on teaching experience revealed a balanced distribution across different career stages. Equal proportions of teachers (26.9%) had 1 to 3 years and 7 to 10 years of experience, while 23.1% reported 4 to 6 years. Teachers with 11 to 15 years comprised 15.4%, and only 7.7% had more than 15 years of teaching experience. This mix of relatively new and moderately experienced teachers indicates a combination of innovation and accumulated expertise within the teaching force.

Regarding current position, half of the respondents (50.0%) held the rank of Teacher I, followed by 42.3% at Teacher III, while only 7.7% occupied the Teacher II position. These

figures indicate that a large proportion of teachers remain in entry-level positions, while a substantial number have already advanced through the professional ranks, reflecting both growth opportunities and ongoing career development pathways.

The number of trainings attended related to the Revised K–12 Curriculum also varied. Half of the respondents (50.0%) had attended two to three training sessions, while 34.6% had participated in only one training. A smaller portion (11.5%) reported having no training at all, and only 3.8% had attended more than five sessions. Notably, none of the participants attended between three and four training sessions, reflecting some gaps in professional development engagement. This suggests a need for continuous and more comprehensive training opportunities to sustain teachers' knowledge and skills.

In terms of competence, the results revealed that Grade 8 science teachers were rated as “Highly Competent,” with a mean score of 4.48 and a standard deviation of 0.37. This finding indicates that the teachers possess strong mastery of subject matter, effective pedagogical skills, and the ability to integrate appropriate teaching strategies in line with the Revised K–12 Curriculum. High competence levels suggest that students are likely to benefit from quality instruction aligned with curriculum standards.

For readiness, the respondents were assessed as “Very High,” with a mean score of 4.45 and a standard deviation of 0.40. This demonstrates that teachers are not only knowledgeable and skilled but also prepared to implement the curriculum effectively. Their readiness reflects confidence in lesson planning, classroom management, and the application of instructional strategies suited to the revised curriculum.

The inferential statistics revealed that there were no significant differences in the levels of competence and readiness of Grade 8 science teachers when grouped according to age, gender, educational attainment, teaching experience, current position, and number of trainings attended. Specifically, competence and readiness did not vary significantly across these profile variables, as indicated by non-significant p-values in both t-tests and ANOVA analyses. These findings suggest that demographic and professional characteristics are not strong determinants of competence and readiness, and that teachers, regardless of their profiles, exhibit comparable capabilities in implementing the Revised K–12 Curriculum.

Despite these non-significant differences, the study found a very strong positive correlation between competence and readiness, with a Pearson correlation coefficient of 0.900 at a significance level of 0.000. This result indicates that as teachers' competence increases, their readiness to implement the curriculum also rises, and vice versa. Such a strong correlation underscores the interdependent nature of competence and readiness in effective teaching.

The results affirm that teacher competence, which includes mastery of subject matter and pedagogical expertise, is directly linked to readiness to teach effectively. This finding aligns with established educational theories which suggest that confident and competent teachers are better prepared to meet diverse learning needs and adapt to curriculum changes. The implications are significant for policy and practice, as professional development programs that focus on enhancing competence can simultaneously boost readiness, ultimately leading to improved learning outcomes among students.

Overall, the findings highlight the importance of sustained professional development for Grade 8 science teachers. While the respondents already demonstrate high competence and very high readiness, continuous training remains essential to maintain and enhance these qualities,

especially in the face of evolving educational demands. The study emphasizes that strengthening teacher competence and readiness not only enhances

CONCLUSION

The findings of this study lead to several important conclusions about the competence and readiness of Grade 8 science teachers in the first district of Capiz in implementing the Revised K–12 Curriculum. The teaching force is composed primarily of young educators aged 25 to 32 years, the majority of whom are female. Most respondents are pursuing graduate studies, either with master's units or completed master's degrees, and their teaching experience is evenly distributed across early-career to mid-career stages. In terms of rank, half of the participants hold Teacher I positions, followed by a significant proportion at Teacher III. Furthermore, most have attended relevant training sessions related to the revised curriculum, highlighting their professional activity and commitment to growth. These characteristics collectively suggest that the teaching force is academically qualified, professionally active, and strategically positioned to deliver quality science instruction in line with the demands of curriculum reform.

The results further show that Grade 8 science teachers demonstrate high competence and very high readiness in implementing the revised curriculum. Their competence is evident in strong subject-matter mastery, effective pedagogical strategies, and alignment with curriculum standards, while their readiness reflects adaptability, confidence, and preparedness for the challenges of classroom instruction. Importantly, no significant differences in competence and readiness were found when respondents were grouped according to age, gender, educational attainment, length of teaching experience, current position, or number of trainings attended. This finding suggests a consistently high level of professional skill and preparedness across demographic and professional categories, indicating that external characteristics do not significantly determine competence and readiness.

A very strong positive correlation was identified between competence and readiness, indicating that an improvement in one directly reinforces the other. This strong interrelationship highlights the importance of continuous and targeted professional development programs. By enhancing teachers' competence, their readiness is simultaneously strengthened, thereby improving overall instructional quality and classroom performance. This dynamic relationship underscores the need for sustained capacity-building initiatives to ensure the successful implementation of the K–12 curriculum.

While the study affirms that Grade 8 science teachers are well-prepared and capable of delivering effective science instruction, it also points to the necessity of institutional support to sustain and enrich these competencies. Schools can maximize the potential of their teachers by providing continuous, content-specific, and practice-oriented professional development that emphasizes advanced teaching strategies, technology integration, and inquiry-based approaches. Contextualized training programs tailored to local needs can further enhance effectiveness.

Mentorship and peer collaboration should also be strengthened, with experienced teachers guiding early-career educators through structured programs and Learning Action Cells that foster knowledge sharing and mutual encouragement. Supporting career progression by

providing assistance for teachers to pursue higher academic qualifications and opportunities for promotion would likewise reinforce professional motivation and growth. Furthermore, improving access to quality training, including specialized seminars, workshops, and online courses, alongside incentives such as CPD units and recognition, would encourage teacher participation and engagement.

Finally, the study emphasizes that the proposed training design developed from this research may serve as a basis for readiness-building programs that incorporate reflective teaching practices and classroom-based research. Such initiatives can further strengthen both competence and readiness to meet the demands of the Revised K–12 Curriculum. Future research may expand on these findings by evaluating the impact of targeted training programs on teaching performance or by replicating the study across other grade levels and subject areas to provide broader comparative insights.

In conclusion, the study establishes that the Grade 8 science teachers of the first district of Capiz are academically qualified, pedagogically competent, and professionally ready to implement the Revised K–12 Curriculum. However, sustaining and enhancing these attributes requires continuous professional development, effective mentoring, accessible training opportunities, and career progression support. Through such measures, schools and policymakers can ensure that the goals of the K–12 reform are fully realized and that learners are provided with high-quality science education that equips them for future success.

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