

The Influence of Gagne's Training Management Model on Pedagogical and Professional Competence of Teachers

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Abstract

This study investigates the influence of Gagne's training management on the pedagogical and professional competencies of Catholic school teachers in Deli Serdang Regency, North Sumatra. Quantitative data were collected from 100 elementary and secondary teachers using questionnaires to measure perceptions of Gagne's training effectiveness, pedagogical competence, and professional skills. The research employed both primary data from respondents and secondary sources such as literature reviews and documentation. Descriptive Statistics and Partial Least Squares (PLS) Structural Equation Modeling (SEM) were used to analyze the data and validate existing theories. The findings, analyzed with SmartPLS 4.0 software, revealed significant t-statistic values: 4.941 for pedagogical competence and 15.012 for professional competence, surpassing critical thresholds (t-table 1.984 and 1.941 respectively). This indicates a substantial impact of Gagne's training management on enhancing teacher competencies in Deli Serdang Regency. Based on these results, it is recommended that teacher training providers in the region enhance management practices to optimize retention and transferability of skills. Teachers across elementary and secondary levels are encouraged to focus on improving both pedagogical and professional competencies, thereby enhancing overall training effectiveness and teacher quality.

Keywords: Gagne's Training Management Model; Pedagogical Competence; Professional Competence; Teachers

Introduction

Management originates from the term "to manage," meaning to organize (Gesi et al., 2019:2). This organization is conducted through structured processes based on management functions, making management a series of processes aimed at achieving specific goals (Husaini et al., 2019:44). According to G.R. Terry (2010:16), management is a distinctive process that includes planning, organizing, directing, and controlling to achieve objectives through the utilization of human and other resources.

According to the Kamus Besar Bahasa Indonesia Daring, the term "pelatihan" (training) is derived from the root word "latih," which means to learn and acclimate oneself to be able to perform something (KBBI Daring, 2021). The word "latihan" gains the prefix "pe-" and the suffix "-an," which in Indonesian indicates a process, method, act of training, activity, or task of training. According to the

English Cambridge Dictionary (2021:332), training is defined as the process of learning the skills needed to perform a particular job or activity. The term "pelatihan" comes from the English word "training." According to Bernardin and Russel, training is defined as any attempt to improve employee performance in a current job or one related to it. This means that training is understood as various efforts to develop employee performance in their current job or something related to their work (Russel, 2003:251). This typically involves changes in behavior, attitudes, skills, and specific or specialized knowledge. Lulu (2016:19) further clarifies that "pelatihan" is the translation of the English word "training." Literally, the root word of "training" is "train," which means: (1) to give teaching and practice, (2) to cause to grow in a required direction, (3) preparation, and (4) practice.

According to Noe, Hollenbeck et al., training is a planned effort to facilitate the learning of jobrelated knowledge, skills, and behavior by employees (Noe, Hollenbeck, et al., 2008:4). This means that training is a planned endeavor to facilitate learning about work-related knowledge, skills, and behaviors among employees. In contrast, Dessler defines training as providing new or existing employees with skills they need to perform their jobs (Dessler, 2020:263). Barbara Ostrowski et al. (2014:13) define training as an activity that focuses on skilled behavior, the process of teaching employees the basic skills they need to perform their jobs. It is at the core of ongoing efforts designed to enhance employee competence and organizational performance. According to Ganesh and Indradevi, training is the acquisition of knowledge about skills, and competencies aimed at enhancing an individual's knowledge, skills, capacity, performance, and productivity (Ganesh and Indradevi, 2015:334). Wajdi Milhem et al. (2014:12) state that training is defined as a planned process aimed at modifying attitudes, knowledge, skills, or behaviors through learning experiences to achieve effective performance in one or more activities. Training is defined as a planned effort to improve performance, change attitudes, knowledge, and skills through effective learning experiences and field practices.

In practice, training management is directly involved in every training activity, where training activities constitute a continuous cycle as described by Usman, which includes training needs analysis, training program planning, training material development, training implementation, and training evaluation (Usman, 2003:2). Therefore, training management is always involved in training activities.

To examine the influence of training management on teacher professionalism, aligned with research conducted by Widya (2006:44) titled "The Influence of Training Management on Elementary School Teachers' Professionalism in Tulungagung," findings indicate that management significantly and positively contributes to achieving training objectives for enhancing the professionalism of elementary school teachers in Tulungagung Regency. These results suggest that teacher professionalism in Tulungagung can be enhanced when teachers participate effectively in well-planned, controlled, and supervised training activities. Similarly, Zyu Heng (2016; 137-148) conducted research in China on the impact of training management and teaching experience on teacher quality. His findings demonstrate that effective training management leads participants (teachers) to be more structured in their activities during training, thereby facilitating optimal absorption of training materials and achieving training objectives effectively.

Training management influences the quality of the material received by teachers. Based on the research of Dafghar and Loiz (2018:3), a case study conducted in Sweden indicates that the results of descriptive analysis percentage for the training material variable fall into the "good" category. This is because teachers as training participants are satisfied with the presented materials and find the program very well organized. This implies that the training attended by teachers is effective and incorporates elements of management, which in turn affects the quality of the materials obtained by teachers during the training process. Thus, training management is an integral part of achieving the quality objectives of the training itself. The findings from the research above indicate that training objectives are effective when well organized.

Ganesh and Indradevi (2015:337) in their study titled "Importance and Effectiveness of Management Training and Development" found that the importance of training management effectiveness lies in several key aspects: 1) Enhancing the effectiveness of training activities, 2) Training management has the greatest impact when aligned with organizational goals, and 3) The impact of training management creates a mutually beneficial situation for employees and the organization. This means employees become more productive after acquiring new knowledge, benefiting the organization through improved employee performance.

However, facts presented by the Global Education Monitoring (GEM) indicate that out of 14 surveyed developing countries, education in Indonesia ranks 10th (UNESCO, 2018). Furthermore, the quality of its teachers ranks last, at 14th place. These findings are reinforced by the PISA results (2018), where Indonesia is classified at level 1 (lowest), as cited from the page https://data.oecd.org/pisa/reading-performance-pisa.htm, placing Indonesia at 74th out of 80 countries in the PISA rankings (Puspendik, 2020).

These findings reflect the inevitable outcome of the current inadequacies in teachers' competencies. The practical benefits of teacher training are in stark contrast to the theoretical propositions put forth by the aforementioned experts. The implementation of teacher training, which ideally should demonstrate consistent improvement in quality and stability, does not seem to achieve this goal effectively. Shaleh contends that the education and training offered to teachers have not consistently enhanced their overall quality; rather, any improvements tend to be transient, often confined to the training period or short-term durations (Shaleh, 2014:243-244).

The role of training for teachers in improving their performance appears limited to the duration of the training itself, as evidenced by the quality outcomes of teachers after undergoing training falling short of expectations. Widodo Heri (2015:301) in his research conducted in Sleman Regency, observed that teachers show enthusiasm for only 2-3 weeks after training. Beyond that period, they tend to revert to their previous habits. Furthermore, Heri Widodo's subsequent study two years later revealed that the quality of teachers in developing lesson plans (RPP) was quite low, with only 25% meeting acceptable standards. Overall, teachers in Sleman Regency tend to use outdated RPPs from previous years in their teaching practices, whereas these plans should ideally be enhanced in terms of content and quality (Widodo Heri, 2017:66-68). These facts indicate that post-training, teachers are not sufficiently motivated to develop their competencies.

Asikin (2015) outlines the benefits of training for educators in schools as follows: (1) assisting educators in making better decisions; (2) enhancing educators' ability to solve various problems they encounter; (3) internalizing and operationalizing motivational factors; (4) instilling a drive in educators to continuously improve their work abilities; (5) improving educators' ability to manage stress, frustration, and conflicts, thereby increasing self-confidence; (6) providing information about various programs that educators can utilize for their technical and intellectual growth; (7) increasing job satisfaction; (8) enhancing recognition of individual abilities; (9) fostering greater self-reliance among educators; and (10) reducing fear when facing new tasks in the future (Asikin M, 2015:156).

According to the Indonesian Law No. 20 of 2003 concerning the National Education System, teachers are recognized as professional educators. They are required to have a minimum academic qualification of a Bachelor's degree (S1) in a relevant field and possess competencies as learning agents, including pedagogical, personality, social, and professional competencies. This requirement is also stipulated in the Republic of Indonesia Law No. 14 of 2005 concerning Teachers and Lecturers, Article 8, which mandates that teachers must have academic qualifications, competencies, teaching certificates, physical and spiritual health, and the ability to achieve national educational goals. Pedagogical competencies include having a stable and solid personality, mature personality, wise personality, authoritative personality, noble character, and being exemplary. Meanwhile, professional competencies

encompass mastery of subject matter, structure, concepts, and scientific thinking patterns that support the subjects taught, mastery of competency standards and basic competencies of subjects/development fields taught, creative development of teaching materials, continuous professional development through reflective actions, and utilizing ICT for communication and self-development.

To enhance the knowledge and skills of educators in the field of education, training is essential. Training is a critical factor that can influence teacher readiness. Through training, educators can improve both their knowledge and skills. Therefore, teacher training is crucial to enhance their competence in adapting to curriculum changes implemented in Indonesia. Thus, preparing ideal teachers necessitates specific teacher training, development, and work experiences that impact their performance (Yudho Ramafrizal, 2022: 227).

One of the training management methods to enhance educators' competence is Gagne's training model (Safrida Hafni Syahrir, 2022: 8). Gagne's Nine Events of Instruction serves as a perfect example of how to apply this concept. This instructional design model consists of nine cyclic (continuous) aspects, not following a specific sequence of events. The design and training model are built on the premise that the design is continuous and requires regular modification. Gagne's training model excels by providing a systematic structure focused on learning objectives. Its steps involve activating prior knowledge, effectively presenting material, and providing constructive guidance and feedback. Through practice and performance assessment, this model reinforces knowledge retention and transfer, ensuring effective and applicable learning. The nine elements forming the foundation of Kemp's instructional design model include identifying learning objectives, understanding the group to recognize specific needs, and ensuring their tasks align with relevant subject matter. Sharing information about instructional goals is a critical component of this model (Kurt, 2021). Below is the diagram of Gagne's Nine Steps of Instruction: Gain attention: Introduce the lesson in a way that captures learners' interest. Inform learners of the objective: Clearly state what learners will be able to do after completing the instruction. Stimulate recall of prior learning: Activate learners' existing knowledge relevant to the new material. Present the stimulus: Deliver the new content in a clear and organized manner. Provide learning guidance: Offer support, examples, and explanations to facilitate understanding. Elicit performance (practice): Provide opportunities for learners to apply the new knowledge or skill. Provide feedback: Offer specific feedback on learners' performance to reinforce learning. Assess performance: Evaluate learners' mastery of the material. Enhance retention and transfer: Encourage learners to apply what they have learned to new situations. These steps outline a structured approach to effective instructional design aimed at optimizing learning outcomes.



Figure 1. The Nine Steps of Gagne's "Events of Instruction (Kurt, 2021)

Training activities for educators are fundamentally an important and integral part of personnel management in schools and are efforts to develop knowledge and skills of teachers so that they can gain competitive advantages and provide the best possible service (Elizabeth Block, et al., 2021:1164). The implementation of training programs for educators according to Sondang Siagian (1997) is beneficial for: (1) improving school productivity as a whole; (2) achieving harmonious relationships between superiors and subordinates; (3) facilitating faster and more accurate decision-making processes; (4) boosting morale

of all employees with higher organizational commitment; (5) promoting management openness through participative managerial styles; (6) facilitating effective communication; and (7) resolving conflicts functionally (Utomo, 2018:336).

Based on the background presented above, this study aims to address the research problem regarding the influence of Gagne's training management on the pedagogical and professional competencies of teachers in Deli Serdang Regency, North Sumatra.

Research Methods

The research is conducted among Catholic elementary and secondary school teachers in Deli Serdang Regency. This study utilizes quantitative research methods where data are numerical, derived from calculations or measurements, such as perceptions towards Gagne's training management, pedagogical competency of teachers, and professional pedagogical competency through questionnaire distribution. The study employs exogenous and endogenous variables, each with latent variables. In the exogenous variables, the latent variable is Gagne's training management (X1). In the endogenous variables, the latent variables consist of pedagogical competency (Y1) and professional competency (Y2). Gagne's training management variables include: Getting attention, Informing participants about objectives, Stimulating recall of prior learning, Presenting content, Providing guidance, Eliciting performance (practice), Providing feedback, Assessing performance, Enhancing retention and transfer. Furthermore, pedagogical competency variables encompass: Stable and steadfast personality, Mature personality, Wise personality, Authoritative personality, Noble character and role model. Additionally, professional competency variables include: Mastery of subject matter, structure, concepts, and scholarly thought patterns that support the taught subject, Proficiency in competency standards and basic competencies of subjects/development areas taught, Creative development of taught learning materials, Continuous professional development through reflective actions, Utilization of ICT for communication and self-development.

The data sources for this research comprise both primary and secondary data. Primary data are obtained directly from respondents at the research location (Sugiyono, 2012:139), whereas secondary data are sourced from other supporting materials not directly collected by the researcher (Sugiyono, 2012:141). Data collection techniques include observation, questionnaires, literature review, and documentation.

The sample determination was conducted using purposive sampling method, which involves intentional selection of samples based on specific considerations. The samples were chosen by the researcher and not randomly selected. The consideration in determining the sample members included respondents who had participated in teacher training sessions. According to Sarwono and Narimawati (2015:214), the minimum sample size for research using Partial Least Squares-SEM analysis is between 30 to 100 samples. To determine the sample size in this study, the Slovin's Formula was used with a 10% margin of error. The research population consisted of 217 individuals, and the sample selected was 100 teachers from elementary to secondary levels in Deli Serdang Regency.

This research utilizes Descriptive Statistics and Partial Least Squares (PLS) Structural Equation Modeling (SEM) analysis, aiming to develop or predict existing theories. The descriptive method is employed to provide a comprehensive and precise overview according to the research objectives, using a 5-point Likert scale. PLS SEM data analysis aids in theory development (Sarwono & Narimawati, 2015:5). The study utilizes PLS structural model analysis with the assistance of SmartPLS 4.0 software. According to Ananda Sabil (2015:18), the steps in structural model analysis include: 1) Formulating the structural model theory, 2) Outer model analysis, 3) Inner model analysis, and 4) Hypothesis testing as illustrated in the following figure.

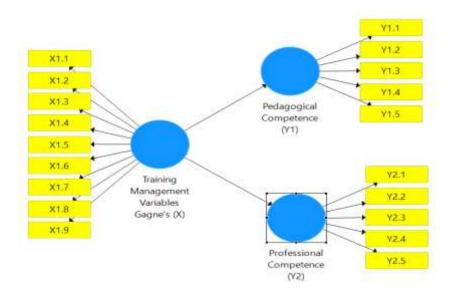


Figure 2. Research Model

Research Results and Discussion

Characteristics of Elementary and Secondary School Teachers in Deli Serdang Regency

Characteristics of Catholic Elementary and Secondary School Teachers in Deli Serdang Regency are described based on the 2021 Statistics from the Regional Office of the Ministry of Religious Affairs of North Sumatra Province, totaling 217 individuals. These characteristics include: a) Gender: Male 45 individuals and Female 172 individuals, b) Employment Status: Civil Servants (PNS) 151 individuals and Non-Civil Servants 66 individuals, c) Educational Qualification: Bachelor's degree (S1) 216 individuals and Master's degree (S2) 1 individual, d) Certification Status: Certified 192 individuals and Uncertified 25 individuals.

Perceptions of Teachers towards Gagne's Training Management and Pedagogical and Professional Competencies of Elementary and High School Teachers in Deli Serdang Regency

Implementation of Gagne's Training Management

Based on the questionnaire distributed to Catholic religion teachers with indicators from Gagne's Training Management variables, the highest score in Gagne's Training Management for teachers is performance assessment with a mean of 3.910, while the lowest is enhancing retention and transfer for teachers with a mean of 3.200. For further details, please refer to the following table.

Training Management Variables Gagne's (X)	Mean	Caption
X1.1 Gain the attention og the learnes	3.460	Agree
X1.2 inform learnes of the objectives	3.700	Strongly agree
X1.3 Stimulate recall of prior learning	3.860	Strongly agree
X1.4 Present the content	3.740	Strongly agree
X1.5 Provide learning guidance	3.740	Strongly agree
X1.6 Elicit performance (Practise)	3.210	Agree
X1.7 Provide Feedback	3.830	Strongly agree
X1.8 Assess Performance	3.910	Strongly agree
X1.9 Enhance retention and transfer to the job	3.200	Agree
Mean	3.628	Strongly agree

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Pedagogical Competence

Based on the questionnaire distributed to Catholic religion teachers, the indicator of the pedagogical competence variable that scored the highest was "wise personality" with a mean of 4.030, while the lowest was "mature personality" with a mean of 3.190. For more details, please refer to the following table:

Pedagogical Competence Variables (Y1)	Mean	Caption
Y1.1 Stable and steadfast personality	3.630	Agree
Y1.2 Mature personality	3.190	Agree
Y1.3 Wise personality	4.030	Strongly agree
Y1.4 Authoritative personality	4.020	Strongly agree
Y1.5 Noble character and role model.	3.670	Agree
Mean	3.708	Strongly agree

Table 2. Pedagogical Competence

Professional Competency

Based on the questionnaire distributed to Catholic religion teachers, the indicator of the professional competence variable that scored the highest was "developing teaching materials creatively" with a mean of 3.950, while the lowest was "mastering the standards of competency and basic competencies of the subjects/development areas taught" with a mean of 3.160. For more details, please refer to the following table:

Mastery of subject matter, structure, concepts, and scholarly thought patterns that support the taught subject, Proficiency in competency standards and basic competencies of subjects/development areas taught, Creative development of taught learning materials, Continuous professional development through reflective actions, Utilization of ICT for communication and self-development.

Professional Competency Variables (Y2)		Caption
Y2.1 Mastery of subject matter, structure, concepts, and scholarly thought patterns that support the taught subject	3.540	Agree
Y2.2 Proficiency in competency standards and basic competencies of subjects/development areas taught	3.160	Agree
Y2.3 Creative development of taught learning materials	3.950	Strongly agree
Y2.4 Continuous professional development through reflective actions	3.830	Strongly agree
Y2.5 Utilization of ICT for communication and self-development.	3.620	Strongly agree
Mean	3.620	Agree

Table 3. Professional Competence

Partial Least Squares Analysis of Gagne's Training Management Quality, Pedagogical Competence, and Professional Competence

Outer Model Testing

In the outer model testing, the aim is to assess the validity and reliability of a model. This analysis examines factor loading, Average Variance Extracted (AVE), Discriminant Validity, and composite reliability.

Loading Factor

Factor loading is the initial step in testing the validity of a model; the requirement is that factor loading must be > 0.6 for the indicators to be considered valid. If not valid, they must be removed from the model (Husein, 2015). The analysis of the outer model for this study can be seen in Figure 2 below.

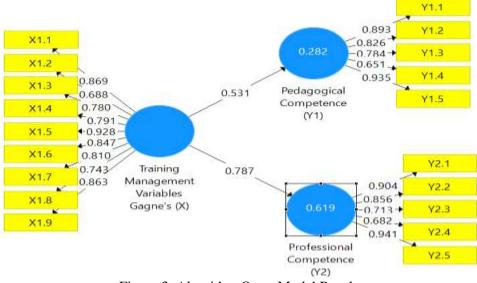


Figure 3. Algorithm Outer Model Results

Based on Figure 3 above, it can be explained that the factor loading is considered valid because it meets the requirement of > 0.6. This indicates that the indicators have a strong relationship with their constructs. It means that the indicators are sufficiently good at representing the measured constructs, demonstrating adequate measurement validity. High factor loadings indicate good internal consistency of the construct.

Average Variance Extracted (AVE)

Average Variance Extracted (AVE) is a value used in testing convergent validity because it is obtained from the output of convergent validity. In this study, the expected AVE value is > 0.5, and when viewed from the latent variable constructs, all constructs have values above 0.5 (or greater than 0.5). For further details, the AVE results can be seen in the table below:

CONSTRUCT	Average Variance Extracted (AVE)
Pedagogical Competence (Y1)	0,678
Professional Competency (Y2)	0,682
Gagne's Training Management (X)	0,666

Table 4. Average Variance Extracted (AVE)

Table 4 above shows that the AVE results of Gagne's Training Management Influence on Pedagogical Competence and Professional Competence indicate that the constructs in the model have good convergent validity. The AVE (Average Variance Extracted) values in Table 4, which are above 0.5, indicate that the indicators effectively represent these constructs.

Discriminant Validity

Discriminant validity can be tested by examining the cross-loading table. These results are used to assess discriminant validity at the indicator level, with the requirement that the correlation between an indicator and its latent variable is greater than the correlation between the indicator and other latent variables. For further details, please refer to Table 5 below.

Table 5. Croos Loading			
	Pedagogical Competence (Y1)	Professional Competency (Y2)	Gagne's Training Management (X)
X1.1	0,564	0,770	0,869
X1.2	0,318	0,499	0,688
X1.3	0,399	0,616	0,780
X1.4	0,436	0,621	0,791
X1.5	0,542	0,728	0,928
X1.6	0,351	0,590	0,847
X1.7	0,452	0,645	0,810
X1.8	0,316	0,568	0,743
X1.9	0,440	0,680	0,863
Y1.1	0,893	0,597	0,502
Y1.2	0,826	0,501	0,480
Y1.3	0,784	0,462	0,369
Y1.4	0,651	0,328	0,312
Y1.5	0,935	0,606	0,483
Y2.1	0,656	0,904	0,706
Y2.2	0,590	0,856	0,685
Y2.3	0,301	0,713	0,582
Y2.4	0,309	0,682	0,472
Y2.5	0,616	0,941	0,760

Composite Reability

To ensure that there are no issues related to measurement, the final step in evaluating the outer model is to test the unidimensionality of the model. This test is conducted using composite reliability and Cronbach's alpha. The cutoff value is 0.7.

	Cronbach's Alpha	Composite Reliability
Pedagogical Competence (Y1)	0,879	0,912
Professional Competency (Y2)	0,880	0,913
Gagne's Training Management (X)	0,936	0,947

Table 6. Composite Reliability dan Alpha Cronbach

The table above shows that all constructs have composite reliability and Cronbach's alpha values above 0.7. Therefore, the unidimensionality of the model indicates Gagne's training management influence on pedagogical competence and professional competence.

Inner Model Testing

Testing the inner model with the coefficient of determination R2 (R-Square), where Goodness of Fit in PLS can be determined by the Q2 value. The Q2 value has the same meaning as the coefficient of determination (R-Square) in regression analysis.

	R Square	R Square Adjusted
Pedagogical Competence (Y1)	0,282	0,274
Professional Competency (Y2)	0,619	0,615

R Square explains the variance of the endogenous variable that can be explained by a set of exogenous variables. Hai et al. (2011) explain that if R square > 0.75 (large), 0.50 (medium), 0.25 (small). The table above shows that R Square for Y1 is 0.282 or 28.2%, indicating that 28.2% of the variance in Y1 is explained by X1 with a low R-square. Meanwhile, R Square for Y2 is 0.619 or 61.9%, indicating that 61.9% of the variance in Y2 is explained by X1 with a medium R-square.

Hypothesis Testing

Coefficient of t-statistic

To conduct hypothesis testing in PLS-SEM, it can be done by comparing the t-value (t_0) with t α . The t-table value at 0.05 significance level and degrees of freedom (DF) = number of data (n) - 2, which is 100 - 2 = 98, is 1.984. The table below will display the graphical results of the path hypothesis as follows.

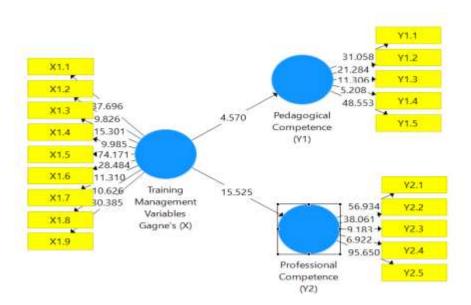


Figure 3. Bootstraping Results

Based on Figure 3 above, the t-statistic value for the influence of Gagne's training management on pedagogical competence is 4.570 > t-table 1.984. This indicates a significant influence of Gagne's training management on the pedagogical competence of Catholic religious teachers in Deli Serdang Regency. The t-statistic value for the influence of Gagne's training management on professional competence is 15.525 > t-table 1.941, indicating a significant influence of Gagne's training management on the professional competence of Catholic religious teachers in Deli Serdang Regency.

Conclusion

Based on the discussion results, it can be concluded that the calculations using Smart PLS 4.0 software show that the t-statistic value for the influence of Gagne's training management is 4.941 > t-table 1.984. This indicates a significant influence of Gagne's training management on the pedagogical competence of Catholic religious teachers in Deli Serdang Regency. The t-statistic value for the influence of Gagne's training management on professional competence is 15.012 > t-table 1.941, indicating a significant influence of Gagne's training management on the professional competence of Catholic religious teachers in Deli Serdang Regency.

Recommendation

Based on the research findings, the researcher recommends to teacher training providers an improvement in management and implementation focusing on the aspect of enhancing retention and transfer to the job. To teachers at both elementary and secondary levels, it is advised to enhance pedagogical competence, specifically by developing mature personality traits, and to improve professional competence, particularly in proficiency in competency standards and fundamental competencies of the subjects/developmental areas taught. Consequently, this enhances the quality of training management and the competencies of high-quality teachers.

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