

The relationship between the moving class model, pedagogical competence, student learning motivation, and learning discipline in geography learning

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Abstract

The tendency in geography education remains to use teacher-centered approaches, placing emphasis solely on cognitive aspects, and it has yet to fully leverage students' learning motivation. Through the moving class model, it becomes possible to actively and creatively engage students while fostering their discipline in learning. The urgency of this research lies in developing an effective educational system and its significant contribution to addressing present-day educational challenges. This study aims to describe the interaction among innovative learning models, teachers' pedagogical competence, student learning motivation, and learning discipline. A quantitative explanatory approach was adopted, with the population comprising all tenth-grade students at SMAN Ambon (288 students across seven classes). Samples were selected through simple random sampling by class, resulting in two groups: an experimental class with 41 students and a control class with 40 students. Data were collected via Likert-scale questionnaires, observations, and documentation. For data analysis, Structural Equation Modeling (SEM) was employed, consisting of four key steps: designing the inner model and outer model, evaluating goodness of fit, hypothesis testing, and interpretation. The results highlight the importance of the Moving Class Model and teachers' pedagogical competence in influencing students' learning motivation and learning discipline. These findings support the idea that interventions aimed at enhancing learning quality through dynamic learning model implementation and improving teachers' pedagogical skills can positively impact students' motivation, which in turn affects their learning discipline. The implications underscore the importance of these factors in supporting optimal achievement in the learning context and the need to strengthen them to improve educational quality. Recommendations stemming from this research emphasize the need for closer integration of innovative learning models, enhancement of teachers' pedagogical competence, and the development of a conducive learning environment.

Keywords: Moving class model; Pedagogical competence; Learning motivation; Learning discipline

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INTRODUCTION

Education serves as the main foundation in preparing superior and independent human resources. this pursuit is undertaken intensively by all stakeholders and is a key factor in improving the quality of education (Hasnadi & Nurmawati, 2022). Efforts to enhance educational

quality should encompass a range of values intellectual, religious, social, and ethical that are vital elements of a quality-based education, developed holistically to guide and facilitate students in achieving learning objectives (Prianca Trisna & Lisa Virdinarti, 2022). Education can shape the quality and character of individuals by instilling ethical and aesthetic values. The role of education is not only focused on the transfer of knowledge but also on the transfer of values, allowing the quality of education to continually undergo significant development (Rahman et al., 2019). Various changes and developments stemming from advances in science and technology have impacted education in terms of management, human resources, and curriculum implementation. Educational systems must prepare students to face the competition of the Industry 4.0 era and Society 5.0. Therefore, educational institutions are expected to have teachers with solid competencies and adequate soft skills to equip learners with the diverse skills required in the 21st century (Daga et al., 2023). Developing the knowledge base of teachers to improve teaching and student learning has become a primary focus in teacher education worldwide (Meier, 2021).

Learning is a process that involves teachers and students interacting to impart knowledge and values (Satriami et al., 2021). Moreover, this instructional process is the core of the educational system, with the role of the teacher being paramount (Huda, 2018). Through this knowledge transfer process, teachers play a crucial role in developing the desired instructional processes (Putrielis, 2018). Instructional development is geared toward developing cognition, skills, attitudes, and beliefs, as well as behaviors and practices, to enhance student engagement in learning (Ho et al., 2023). The use of appropriate learning models can stimulate student activity in learning. Implemented by competent teachers, these models are expected to increase student motivation and instill discipline in learning (Lasaiba & Lasaiba, 2022; Marina et al., 2019). By employing learning models that foster activeness, creativity, and scientific attitudes and skills while providing greater freedom students can be helped to become more independent learners. One such model is the moving class model.

The moving class model in the context of teaching and learning is characterized by students moving to different classrooms according to the subject being taught. To facilitate this approach, subjects or related subjects need to be scheduled in a way that makes implementation easier and allows teachers to manage teaching activities effectively, including in team teaching arrangements (Ibrahim et al., 2022). The moving class model aims to restore students' learning motivation and foster cooperation among students, thereby creating student interaction and reducing conflicts that could lead to indiscipline in classrooms and schools (Marina et al., 2019; Oemar, 2003). In the moving class model, each teacher has a dedicated classroom and students rotate through different rooms designated for each subject (Hanun, 2019). This model provides a stimulus for students to be more active and creative, and it is based on a system where students visit the teacher's classroom (Putrielis, 2018; Sagala, 2013). Implementing the moving class model requires establishing management strategies that include managing student movement, managing learning spaces, and managing the learning process (Marina et al., 2019).

Building on observations from SMA 13 Ambon, it appears that the implementation of innovative educational models, such as the Moving Class Model, is often motivated by prevalent issues in the teaching-learning process. A significant challenge identified is the limitations associated with conventional teaching methods, which are typically characterized by their monotony and lack of interactivity. Such traditional approaches can lead to student boredom and disengagement from the material, compromising both their understanding and overall interest in the learning experience. This disengagement can have a detrimental effect on student learning outcomes, inhibiting their academic progress. Moreover, the restriction of learning to a static classroom environment poses further challenges by limiting the diversity of teaching methods that educators can employ. A static learning space can diminish opportunities for engaging and enriched learning experiences, particularly in a subject like Geography. In this field, it is essential to relate theoretical concepts to real-life applications, which often necessitates

direct experiences that extend beyond the confines of the classroom environment. Establishing meaningful connections between theoretical ideas in Geography and their practical applications in everyday life emerges as another significant hurdle within the teaching-learning process. Addressing these challenges is crucial for fostering a more effective and engaging educational experience for students.

Apart from the issues above, teacher factors are a determinant in improving the quality of learning (Daga et al., 2023). Educators play a crucial role in shaping students' learning experiences and determining their understanding in acquiring necessary skills. Teaching expertise is recognized as a phenomenon built on experience (Koc & Celik, 2015; Pekkarinen et al., 2023). Competence is the integration of knowledge, skills, and attitude. Knowledge comprises concepts, facts, data, ideas, and established theories that support understanding of a particular field or subject; skills are defined as the ability to carry out processes and use existing knowledge to achieve outcomes; and attitude refers to dispositions and mindsets in acting or reacting to ideas, people, or situations (Moreira et al., 2023). The ability to develop instructional plans, engage with and manage the learning process, and perform comprehensive evaluations falls under "pedagogical competence" (Hakiki, 2020). The capability to fully understand students, including their psychological development is also part of pedagogical competence (Ho et al., 2023). Furthermore, pedagogical competence (which includes teaching and learning strategies, planning, and classroom management) encompasses the skills, abilities, and aptitudes developed exclusively in educational settings (Moreira et al., 2023). Pedagogical competence includes understanding learners, planning and executing instruction, evaluating learning outcomes, and developing student potential by integrating technology and information into learning activities (Sri Wulan Dari & Yulhendri, 2019).

Teacher competence at SMA 13 Ambon is another major challenge that can affect the student learning process. One issue is a gap in subject mastery or a lack of deep understanding of the material being taught. At the senior high school level, increasingly complex subject matter requires teachers to have a deep understanding in order to explain it comprehensively to students. If a teacher is unable to present material clearly and effectively, it can hinder student understanding, reduce their confidence in the subject, and diminish their motivation to learn. When teachers lack a strong grasp of the content, students may struggle to follow lessons, absorb information, and develop a deep understanding of the topics. A teacher's ability to design and deliver instruction that meets student needs is a critical aspect of an effective learning process. Insufficient ability to adapt innovative teaching methods, select appropriate instructional strategies, or apply different approaches to suit various learning styles can impede student interest and hinder improvements in their comprehension of the material.

Meanwhile, motivation is directly related to the development of students' attitudes and their diligent efforts to achieve goals in learning activities. Motivation is the willingness or drive to do something, serving as the force that generates persistence and enthusiasm in carrying out an activity (Kompri, 2016; Putrielis, 2018; Suparji, 2012). Motivation pushes an individual to achieve desired goals (Lomu & Widodo, 2018). It can lead to changes in one's thoughts, feelings, and emotions, guiding them toward achieving their aims (Nurhamida, 2018). Within motivation lies a drive that directs and guides each student's thoughts and actions (Rahman et al., 2019). The successful application of Keller's motivation framework encompassing Attention, Relevance, Confidence, and Satisfaction in various instructional settings highlights the positive impact of student motivation on learning (Keller et al., 2017; Lin et al., 2021; Ucar & Kumtepe, 2020). Research in recent decades has demonstrated that motivation is highly effective in increasing students' willingness to learn (Chai et al., 2020; Jong, 2020; Pintrich, 2003). Indicators of a learner's motivation include: (1) a strong desire (2) needs and drives (3) future aspirations and dreams (4) appreciation for learning (5) interest in learning (6) a supportive learning environment.

Student learning motivation at SMA 13 Ambon is influenced by several factors that shape the quality of their learning experience. One primary factor is the disconnect between the material taught in school and its relevance or application to students' daily lives. When students

struggle to see how theoretical knowledge applies to real-world situations, especially in subjects like Geography, their interest in the subject tends to wane. This is particularly evident when students find it difficult to relate the theories they learn in class to practical situations in their everyday lives. A second contributing factor to low motivation is a learning environment that lacks support or positive interaction between students and teachers. If students do not feel supported or comfortable in the learning environment, they are likely to lose enthusiasm for active participation in the learning process. A lack of encouragement from teachers or insufficient support within the school environment whether academically or emotionally can diminish students' overall motivation. An uninspiring or unsupportive learning environment can dampen students' spirit to learn and may become a limiting factor in their academic development.

Discipline in education is primarily concerned with managing self-control and behavior, ensuring compliance with established rules and regulations. It is driven by internal motivations and standards, as highlighted by [Chotimah and Oktarina \(2019\)](#). A fundamental aspect of effective discipline involves teachers building a strong understanding of their students, which in turn fosters increased student confidence. This relationship suggests that when teachers adopt a collaborative and positive disciplinary approach, it can lead to significant benefits in students' lives, as noted by [Erşen and Kan \(2019\)](#). In cases of students exhibiting behavioral challenges, it is essential to provide appropriate guidance that avoids excessively punitive disciplinary actions. This approach is vital in guiding students toward improved behavior, as supported by the work of [Huang and Anyon \(2020\)](#) and [Yaakob et al. \(2023\)](#). The development of disciplined character traits is fundamental for students, as it plays a crucial role in personal growth and development. [Afidah and Tirtoni \(2023\)](#) emphasize that discipline aims to nurture qualities such as obedience, independence, consistency, self-confidence, and concern for others, enhancing overall student development ([Satriami et al., 2021](#)). Learning discipline includes adherence to school rules, focused attention during lessons, effective management of study time, timely completion of assignments, and the appropriate use of educational resources. These components of discipline are outlined in several studies by ([Prianca Trisna & Lisa Virdinarti, 2022](#); [Tu'u, 2004](#)), reinforcing the multifaceted nature of discipline in the educational environment. Overall, fostering discipline in students is essential not only for their academic success but also for their holistic development into responsible and self-aware individuals.

The level of discipline at SMA 13 Ambon is reflected in the significant number of students who frequently skip school or are found outside the school during class hours. This tendency indicates a serious problem in managing students' learning discipline. Factors contributing to this low level of discipline include peer pressure that may encourage rule-breaking, external environmental influences that provide opportunities for misbehavior, and a lack of support or understanding from the family environment about the importance of education and discipline. Additionally, a lack of consistent rules or enforcement of discipline at school plays an important role in the decline of student discipline. When school regulations are not enforced consistently or when clear sanctions for violations are absent, students' respect for those rules diminishes and their motivation to comply decreases. This condition can create a less orderly environment and hinder the development of disciplined behavior among students. The combination of these factors poses a considerable challenge in efforts to foster more disciplined behavior at SMA 13 Ambon. It underscores the need for the consistent implementation of rules and comprehensive support from both school and family environments in cultivating student discipline.

With regard to geography instruction, there is a tendency for teaching practices that do not meet expectations many teachers still rely on conventional, teacher-centered strategies ([Stephan, 2020](#)). Such an approach has not fully guided students to engage in comprehensive spatial thinking that involves active learning skills, and it remains focused on cognitive aspects ([Oktavianto, 2022](#)). The abstraction of geographic features continues to pose challenges in bridging theory and practice ([Amin et al., 2020](#); [Huynh et al., 2015](#)). Furthermore, these practices have not optimally cultivated active learning skills; students tend to passively receive

information (Zamora-Polo et al., 2019). Therefore, educators are expected to integrate aspects of geographical reasoning into their teaching by choosing instructional models that suit their students' needs and context. The use of learning models should be connected with real-world situations so that students can be trained to become more skillful in applying what they learn (Amin et al., 2020; Jo & Bednarz, 2014)). From the above discussion, it is evident that an effective instructional approach in geography is needed one that actively engages students to strengthen their cognitive skills and enhances teachers' pedagogical competence to improve student learning. Accordingly, this study examines the relationships between the moving class learning model and teachers' pedagogical competence with students' learning motivation and learning discipline.

METHODS

This study utilized a quantitative research approach with an explanatory design, aiming to explain and understand the relationships among the variables in the model. The population of the study comprised all tenth-grade students at SMA Negeri 13 Ambon, totaling 288 students across seven classes. The sample was determined using simple random sampling by class, resulting in two classes: an experimental class (X1) with 41 students and a control class (X5) with 40 students.

The research variables include two exogenous variables (the moving class learning model and teachers' pedagogical competence), one intervening endogenous variable (learning motivation), and one dependent endogenous variable (learning discipline). Each variable is measured by a set of indicators as outlined in Table 1.

Table 1. Research Variables

	Variable	Indicator	Code
Exogenous Variable	<i>Moving class model</i>	1. Management of student movement	MC 1
		2. Management of learning space	MC 2
		3. Management of learning process	MC 3
	Pedagogical Competence	1. Understanding the learners	KGP 1
		2. Planning and implementing instruction	KGP 2
		3. Applying ICT in learning	KGP 3
		4. Evaluating learning outcomes	KGP 4
Endogenous Variable	Learning Motivation (Intervening)	1. Strong desire	MB 1
		2. Future aspirations and dreams	MB 2
		3. Appreciation for learning	MB 3
		4. Supportive learning environment	MB 4
	Learning Discipline (Dependent)	1. Adherence to study schedule	DB 1
		2. Completing assigned tasks	DB 2
		3. Use of learning facilities	DB 3

Data were collected using several techniques: a structured questionnaire (using a Likert scale) to capture students' responses and perceptions of the concepts, classroom observations to obtain direct data on the implementation of the moving class model and teacher-student interactions, and documentation analysis (examination of grade reports, attendance records, and other relevant documents) to supplement the data. Secondary data from credible sources, including previous studies, literature, and relevant statistical data, were also used to provide context and additional support for the research framework.

The research instrument was a questionnaire designed with structured questions on a Likert scale, allowing respondents to express their views or reactions regarding each variable being measured. This approach enabled detailed measurement of subjective data and helped capture students' perceptions for each indicator of the variables.

To ensure the quality of the research instrument, validity and reliability assessments were conducted. Content and construct validity were emphasized to ensure that the questions accurately represented the intended variables. Factor analysis (Confirmatory Factor Analysis)

was used to examine construct validity and to verify consistency and cohesion among the questionnaire items. Internal reliability was evaluated using Cronbach's alpha to assess the consistency of responses across items for each scale. Test-retest reliability was also considered by administering the instrument at different times to ensure the stability of respondents' answers. By following these steps, the researchers confirmed that the instrument had strong validity and high reliability, making the collected data dependable and representative of the variables measured.

Data analysis in this study was performed using Structural Equation Modeling (SEM) with the SmartPLS software. SEM allowed the modeling and examination of complex relationships among variables and the testing of the proposed hypotheses. Using SmartPLS facilitated the evaluation of the model's consistency with the empirical data and helped in interpreting the path relationships among the constructs.

The SEM analysis followed several key steps:

1. Designing the inner model – establishing and testing the relationships between the latent variables in the conceptual model.
2. Designing the outer model – evaluating the validity and reliability of the measurement model (how well the indicators measure the latent constructs) through convergent validity (loading factors and Average Variance Extracted) and reliability (Composite Reliability and Cronbach's alpha).
3. Evaluating the model's Goodness of Fit – determining how well the formulated model fits the collected data, including assessing metrics like R-square for endogenous variables, and predictive relevance (Q-square) and error indices (RMSE).
4. Hypothesis testing and interpretation – examining the path coefficients and t-statistics (using a significance threshold of 1.96 for a 95% confidence level) and p-values (with $\alpha = 0.05$) to determine which hypotheses are supported, followed by interpreting the results in the context of the underlying theory.

By following these steps, the study aimed to gain deeper insights into the structural relationships among the moving class model, pedagogical competence, learning motivation, and learning discipline, supported by statistically tested empirical evidence.

RESULTS AND DISCUSSION

Results

Descriptive Statistics

In this study, fourteen indicators were used to form four latent variables. The latent variables are divided into two endogenous variables: learning motivation (with four indicators: high desire (MB1), future aspirations (MB2), appreciation for learning (MB3), and a conducive learning environment (MB4)); and learning discipline (with three indicators: adherence to study schedule (DB1), compliance in completing assignments (DB2), and compliance in using learning facilities (DB3)). The two exogenous latent variables are the moving class learning model (with three indicators: management of student movement (MC1), management of learning space (MC2), and management of the learning process (MC3)) and teachers' pedagogical competence (with four indicators: understanding the learners (KPG1), instructional planning and implementation (KPG2), applying ICT in learning activities (KPG3), and evaluation of learning outcomes (KPG4)). The descriptive statistics for these indicators are presented in Table 2.

Measurement Model (Outer Model)

The outer model determines how each block of indicators is formed among the latent variables. Its measurement is based on Confirmatory Factor Analysis (CFA) to examine validity and reliability. Validity is assessed using the Standardized Loading Factors (SLF) and AVE, whereas reliability is evaluated using CR and Variance Extracted (VE). Table 2 presents the

validity test results based on the SLF values for all indicators, showing that all SLF values exceed 0.7; therefore, the indicators can be considered valid in measuring their respective constructs. It is identified that, within the endogenous variable Moving Class Model, indicator MC3 has the highest SLF value of 0.961. In the Teachers' Pedagogical Competence variable, indicator KPG3 has the highest SLF score of 0.877. For Learning Motivation, indicator MB3 shows the highest SLF value of 0.924, while in Learning Discipline, indicator DB3 demonstrates the highest SLF value of 0.904.

Table 2. Descriptive Statistics of Indicators

Variable	Indicator	Median	Observed min	Observed max	Standard deviation
Moving Class Learning Model (X1)	MB4	-0,054	-1.968	1.805	0,534
	MC1	-0,094	-0,415	1.257	0,298
	MC2	0,098	-0,951	0,802	0,305
Teachers Pedagogical Competence (X2)	KPG1	-0,166	-1.264	0969	0,487
	KPG2	-0,013	-1.061	1.034	0,540
	KPG3	0,060	-0,927	1047	0,481
Learning Motivation (Y)	MB1	-0,107	-1.337	0,895	0,418
	MB2	0,082	-0,913	1.057	0,453
	MB3	0,080	-0,853	0967	0,383
Learning Discipline (Z)	DB1	0,178	-1.895	0978	0,615
	DB2	0,165	-1.720	1.373	0,655
	DB3	-0,128	-0,800	0,920	0,427
	KPG4	0,103	-1.786	1.405	0,647
	MC3	0,004	-0,995	0,963	0,277

Table 3. Confirmatory Factor Analysis (CFA)

Variable	Indicator	SLF	CR	VE
Moving class model learning model (X1)	MC1	0,954	0,953	0,958
	MC2	0,952		
	MC3	0,961		
Teachers Pedagogical Competence (X2)	KPG1	0,873	0,860	0,868
	KPG2	0,841		
	KPG3	0,877		
	KPG4	0,763		
Learning Motivation (Y)	MB1	0,909	0,915	0,918
	MB2	0891		
	MB3	0,924		
	MB4	0,846		
Learning Discipline (Z)	DB1	0,789	0,753	0,759
	DB2	0,755		
	DB3	0,904		

Source: Data Processing

For the reliability test, the calculation results in Table 3 show that the Moving Class Model variable has a CR value of 0.953, Teachers' Pedagogical Competence has a CR value of 0.860, Learning Motivation has 0.915, and Learning Discipline has 0.753. The CR values of all four variables exceed the cut-off value of 0.7, indicating that the indicators possess good reliability. Meanwhile, the VE values for each variable are as follows: the Moving Class Model is 0.958, Pedagogical Competence is 0.860, Motivation is 0.915, and Learning Discipline is (value stated). All indicators show values greater than 0.5, indicating that they are reliable in measuring their respective constructs. The Discriminant Validity test was conducted by comparing the Average Variance Extracted (AVE). The results of the discriminant validity test are presented in Table 4.

Table 4. Discriminant Validity Test

Variable	Moving class model (X1)	Pedagogical Competence (X2)	Learning Motivation (Y)	Learning Discipline (Z)
Moving class model Model (X1)	-	-	-	-
Learning Discipline (Z)	0,826	-	-	-
Pedagogical Competence (X2)	0,642	0,667	-	-
Learning Motivation (Y)	0,557	0,602	0,852	-

Source: Data Processing

Table 3 shows that the AVE values are greater than 0.5, indicating that the requirements have been met. In addition, each variable exhibits a higher AVE value than the correlations among variables and differs from one another, as demonstrated by the results obtained. It is shown that the Moving Class Model variable has a more significant correlation with Learning Discipline and Teachers' Pedagogical Competence, with values of 0.826 and 0.357 respectively. Similarly, the Teachers' Pedagogical Competence variable shows a stronger correlation with Learning Motivation, namely $0.667 > 0.357$. Therefore, the correlations occurring among constructs do not represent the phenomena of other constructs.

Structural Model (Inner Model)

The Inner Model determines the relationships among the variables. After conducting tests of validity and reliability, the next step is to evaluate the model based on the coefficient of determination (R^2), as presented in Table 5.

Table 5. R-Square and Adjusted R-Square Values

Latent Variables	R-square	R-square adjusted
Learning Motivation (Y)	0,672	0,653
Learning Discipline (Z)	0,506	0,463

Source: Data Processing

Table 5 shows that the R Square value for the simultaneous influence of the latent variables Moving Class Model (X1) and Pedagogical Competence (X2) on Motivation (Y) is 0.672, with an adjusted R Square of 0.653. Thus, it can be concluded that all exogenous variables (X1 and X2) simultaneously influence Y by 0.653 (65.3%). Meanwhile, for Learning Discipline (Z), the R Square value is 0.506 with an adjusted R Square of 0.463, indicating that all exogenous variables (X1 and X2) simultaneously influence Z by 0.463 (46.3%).

The R^2 values of both latent variables indicate that the model falls within the range of 0.33–0.67, which categorizes it as moderate. Adjusted R Square represents the corrected R Square value adjusted for standard error and provides a stronger estimate in assessing the ability of exogenous variables to explain the endogenous variables. The combined diagram of the path coefficients is presented in Figure 1.

The analysis presented in Figure 1 indicates that the latent variable Moving Class Model accounts for over 90% of the variance in the three indicators MC1, MC2, and MC3. Additionally, the latent variable Teachers' Pedagogical Competence explains more than 75% of the variance in the indicators KPG1, KPG2, KPG3, and KPG4. Similarly, the variances of indicators MB1, MB2, MB3, and MB4 are accounted for by the latent variable Learning Motivation, exceeding 89% in each case. Moreover, the Learning Discipline variable also demonstrates robust explanatory power, accounting for more than 75% of the variance in indicators DB1, DB2, and DB3. Overall, the findings reveal that each latent variable significantly explains more than 75% of the variance in the respective indicators, aligning with the objectives of this study.

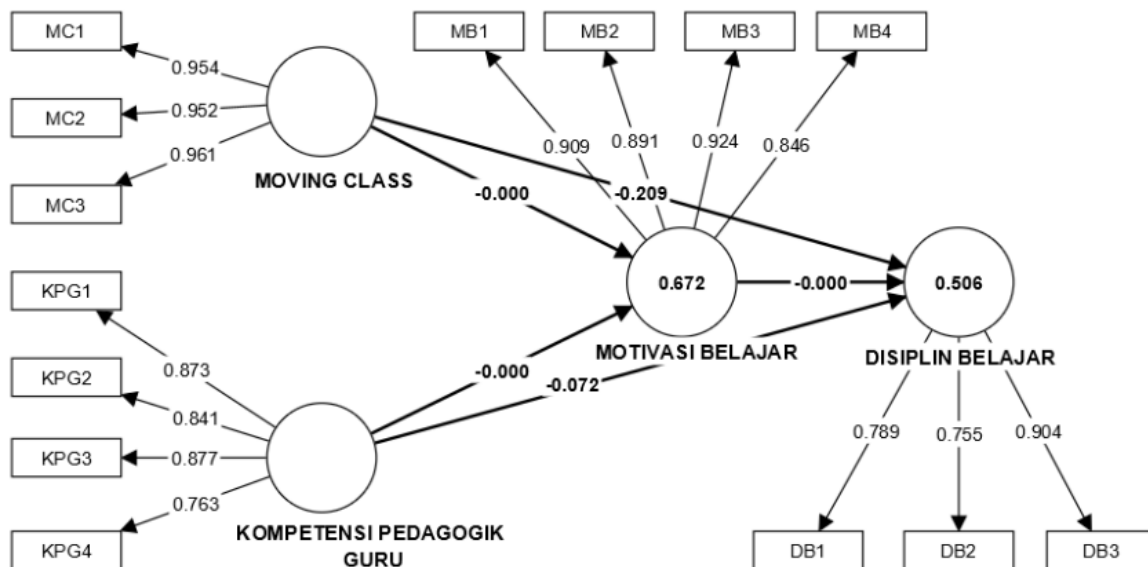


Figure 1. Path Diagram

Goodness of Fit Model

To validate the overall structural model, the Goodness of Fit (GoF) index is employed. The GoF index serves as a single measure to validate the combined performance of the measurement model and the structural model. Additionally, the Root Mean Square Error (RMSE) is calculated to assess the deviation of parameter estimates within the model. The calculation results are presented in Table 6 below.

Table 6. Predictive Relevance (Q-Square)

Variable	Q ² -square	RMSE
Learning Motivation (Y)	0,416	0,834
Learning Discipline (Z)	0,497	0,884

Source: Data Processing

Table 6 shows that the model developed to measure the relationship between Learning Motivation (Y) and Learning Discipline (Z) demonstrates good quality. The obtained Q-square values 0.416 for learning motivation and 0.497 for learning discipline indicate that these variables have a significant capacity to predict the endogenous variables. Both Q-square values exceed 0, signifying strong predictive relevance. Additionally, the deviation parameters measured through the Root Mean Square Error (RMSE) further support this conclusion, with values of 0.834 for learning motivation and 0.884 for learning discipline. The fact that both values fall below 0.05 confirms that the model fits the observed data, indicating the accuracy and precision of the model's predictions. Thus, overall, the analysis indicates that the developed model possesses good quality and is reliable for predicting the relationship between learning motivation and learning discipline.

Following this analysis, which aims to understand the characteristics of the data, the next step is the hypothesis testing phase to evaluate the relationships among the variables. The analytical results provide the necessary foundation to direct the focus toward relationships assessable through hypotheses. With Q-square values demonstrating strong predictive ability for the endogenous variables and RMSE values indicating a good model fit to the empirical data, the hypothesis testing based on the proposed conceptual model stands on a solid foundation for evaluating and validating the accuracy of the relationships among variables. This step is essential

in examining the validity and reliability of the conceptual model in explaining the correlation between learning motivation and learning discipline.

Hypothesis Testing

Hypothesis testing based on the Inner Model includes the evaluation of path coefficients and T-statistics. To determine whether a hypothesis is accepted or rejected, the assessment is conducted using the significance values between constructs, T-statistics, and p-values. The criteria for accepting or rejecting a hypothesis are determined by examining the significance levels between constructs, the T-statistics, and the p-values, as presented in Table 7.

Table 7. T-Statistics and Path Coefficient Testing

Hypothesis	Original Sample (O)	Path	T-Statistics (O/STDEV)	P-Value
H1	0,343	X1→ Y	4.981	0,000
H2	0,302	X2→ Y	4.057	0,000
H3	0,327	X1→ Z	4.827	0,000
H4	0,243	X2→ Z	2.672	0,047
H5	0,257	Y→ Z	2.701	0,007

Source: Data Processing

Table 7 shows that all variables have T-statistics > 1.96 and p-values < 0.05 , while the original sample values are positive. The T-statistics follow the Rules of Thumb, namely T-statistics > 1.96 and a significance level of p-value 0.05 (5%). A more detailed interpretation of Table 6 in hypothesis testing is explained as follows:

1. Hypothesis 1 is accepted, where the T-statistic is $4.981 > 1.98$ and the p-value is $0.000 < 0.005$, meaning that the moving class model has a positive and significant effect on learning motivation.
2. Hypothesis 2 is accepted, where the T-statistic is $4.057 > 1.98$ and the p-value is $0.000 < 0.000$, indicating that teachers' pedagogical competence has a positive and significant effect on learning motivation.
3. Hypothesis 3 is accepted, where the T-statistic is $4.827 > 1.98$ and the p-value is $0.000 < 0.005$, meaning that the moving class model has a significant effect on learning discipline.
4. Hypothesis 4 is accepted, where the T-statistic is $2.672 > 1.98$ and the p-value is $0.047 < 0.000$, indicating that teachers' pedagogical competence has a positive and significant effect on learning discipline.
5. Hypothesis 5 is accepted, where the T-statistic is $2.701 > 1.98$ and the p-value is $0.007 < 0.005$, meaning that learning motivation has a significant effect on learning discipline.

Discussion

This study offers novelty in examining the multifactorial relationships among latent variables that are interconnected in the learning context. One of the unique aspects of this study lies in its integrative approach to important factors such as the Moving Class Model, Teachers' Pedagogical Competence, Learning Motivation, and Learning Discipline, which are not only examined separately but also considered in their holistic interrelationships. In this context, this study provides a more comprehensive understanding of how these variables influence one another in the teaching and learning process. As a form of novelty, this study offers a deeper explanation regarding the impact of interactions among essential learning factors on students' learning motivation and learning discipline. Through a holistic analysis, this study contributes to illustrating the complex interrelationships between innovative learning models, the role of teachers, students' learning motivation, and learning discipline in creating a learning environment that facilitates academic growth and overall student development. Thus, this study

provides new insights rich in practical implications for educators and stakeholders in developing more effective learning strategies that support optimal student progress.

The testing between the use of the moving class model and students' learning motivation, which shows an influence as seen from learning outcomes (p-value 0.00). The findings of this study are consistent with previous results using comparative analysis to show substantial differences between the moving class model and learning motivation, such as [Marina et al. \(2019\)](#), which showed the effect of the moving class model on students' learning motivation partially. [Putrielis \(2018\)](#) used path analysis; however, the research findings showed no significant correlation between classroom transition and learning motivation. [Hanun \(2020\)](#) used regression analysis in the moving class learning model and showed an increase in motivation and learning outcomes. Using descriptive qualitative analysis, [Ibrahim et al. \(2022\)](#) examined the implementation strategy of the Moving Class Model, which was categorized as good with a percentage of 61.18% in the range of 61%–80%. The use of appropriate learning models can motivate students to achieve objectives at a certain level ([Lomu & Widodo, 2018](#)). This learning model can encourage students to be active and creative and foster learning motivation that can bring about changes in one's thoughts, feelings, and emotions so that the desired goals can be achieved ([Nurhamida, 2018](#)). The moving class learning model aims to develop students' learning motivation that can drive, channel, and guide each student's thoughts and actions ([Rahman et al., 2019](#)). The achievement of optimal results in implementing the moving class model in relation to motivation is directly related to the development of students' attitudes in participating in learning activities ([Kompri, 2016](#); [Putrielis, 2018](#); [Suparji, 2012](#)). The successful application of Keller's (1987) motivation concept includes attention, relevance, confidence, and satisfaction in various learning settings by highlighting the positive influence of student motivation on the use of appropriate learning models ([Li & Keller, 2018](#); [Lin et al., 2021](#); [Ucar & Kumtepe, 2020](#)). Research in recent decades has proven that the role of learning models has encouraged students' motivation to increase their willingness to learn ([Chai et al., 2020](#); [Jong, 2020](#); [Pintrich, 2003](#)).

With a p-value of 0.00, the results of this study show a correlation between teachers' pedagogical competence and students' learning motivation. The conclusion of this study is consistent with other researchers, namely that there is a substantial relationship between students' motivation and teachers' pedagogical abilities whose influence is significant ([Hakiki, 2020](#); [Huda, 2018](#)), its relationship with the discipline variable and its partial influence ([Antariani et al., 2021](#); [Lumbantobing, 2020](#); [Marina et al., 2019](#)), with pedagogical innovation in the use of Information and Communication Technology (ICT) ([Komar et al., 2022](#)), with digital literacy development in the development of pedagogical competence ([De Souza et al., 2021](#)), the use of pedagogical tools combined with teaching styles ([Chiknaverova & Obdalova, 2022](#)), the improvement of digital pedagogical abilities in online-based teaching ([Díaz-Noguera et al., 2022](#); [Ho et al., 2023](#)), the use of pedagogical content with significant influence both simultaneously and partially ([Rahman et al., 2019](#)), multilevel structural equation modeling both cognitively and affectively for students to increase students' learning motivation ([Keller et al., 2017](#)). developing training programs that affect teachers' pedagogical competence ([Pekkarinen et al., 2023](#)), creating classroom climate and managing the classroom effectively, supported by teachers' knowledge in developing good teaching programs ([Ghonji et al., 2015](#); [Moreira et al., 2023](#)). All these researchers examined teachers' pedagogical competence and its influence on improving students' learning motivation. Teachers' pedagogical ability is a dominant factor influencing the quality of learning in increasing students' learning motivation ([Daga et al., 2023](#)). With pedagogical competence, teachers can actualize various student potentials in learning motivation ([Sri Wulan Dari & Yulhendri, 2019](#)).

Based on the findings, the moving class model has a significant effect on students' learning discipline with a p-value of 0.00. The findings of the study by [Marina et al. \(2019\)](#) partially show the effect of the moving class model on students' learning discipline. [Chotimah and Oktarina \(2019\)](#) show that the use of the moving class model has a positive and significant effect

on learning discipline. [Lomu and Widodo \(2018\)](#) explained that discipline develops mainly because of internal standards and the belief that what is done is appropriate and beneficial for oneself and the environment. Having discipline is very important for learning tasks. Helping learning activities by fostering a relaxed and conducive learning environment. One of the elements that influence the success of each lesson is discipline. Using the moving class model forms cooperation among students so that interactions among students will be created, reducing conflicts that can cause indiscipline in the classroom. This condition will encourage motivated students to learn, including disciplining themselves in learning so that they are more focused on building their character in achieving a goal ([Maisyaroh Agsya et al., 2019](#)).

Based on the pedagogical skill test, teachers' pedagogical competence has a significant effect on learning discipline, with a p-value of 0.047. The findings of this study are consistent with several studies, including assessing teachers' pedagogical abilities which partially affect students' learning discipline and its relationship with the motivation variable ([Antariani et al., 2021](#); [Marina et al., 2019](#)), with emphasis on developing teachers' competence as an essential factor in learning that impacts student behavior ([Satriami et al., 2021](#)), with learning management and approaches to students' psychological development in addressing it ([Nurhamida, 2018](#); [Simba et al., 2018](#)), focusing on efforts to manage students' self-control and behavior in complying with school regulations ([Chotimah & Oktarina, 2019](#)), building cooperation between teachers and students to demonstrate positive student discipline in classroom learning activities ([Erşen & Kan, 2019](#)), proper guidance by avoiding harsh disciplinary actions can direct students toward better behavior ([Huang & Anyon, 2020](#); [Yaakob et al., 2023](#)). Several of the studies above show the influence of teachers' pedagogical competence on students' learning discipline using various methods. The issue of discipline with teachers' pedagogical competence has resulted in tendencies of indiscipline among students. In some countries, it has become a major issue. In Brazil, teachers face problems occurring among students related to student discipline and it continues growing until ongoing conflict develops ([Rizzotto & França, 2022](#)). Meanwhile, Kenya legalized homeschooling as a form of alternative education in cases of student indiscipline ([Mwanyumba Tweni et al., 2022](#)).

The findings of testing learning motivation have an effect on students' learning discipline, with a p-value of 0.007, and its influence is significant. The findings of this study are consistent with several researchers who examined the issue and showed a relationship between learning discipline and students' learning motivation, there is a positive and directional relationship between motivation and learning discipline ([Atunde & Aliyu, 2019](#)), there is a substantial and positively correlated relationship between learning motivation and learning discipline ([Agustin et al., 2017](#)), with the formation of disciplined character having a positive effect on students' learning motivation ([Afidah & Tirtoni, 2023](#); [Lomu & Widodo, 2018](#)), discipline has a positive and significant effect on motivation, students who are disciplined tend to remain focused on their educational goals and aspirations, manage time well, work harder academically, and show determination to succeed academically ([Erşen & Kan, 2019](#)), the influence of learning motivation on discipline, subsequently contributes to students' academic achievement ([Steve & Charles, 2020](#)). motivation and discipline are not correlated due to the lack of relevant learning materials and teacher workload ([Verner et al., 2022](#)), the point about motivation not being correlated, namely the absence of a relationship between groups or environment and individual characteristics and various disturbances in a given period ([Abdimuradovich, 2022](#)). Students' discipline needs to be handled properly by the teacher, which will encourage obedience, independence, consistency, confidence, and care ([Satriami et al., 2021](#)). Discipline is training the mind and character gradually to become a person with self-control ([McKinney et al., 2023](#)). Discipline can allow students to develop a positive self-concept, which can increase achievement motivation ([Herpratiwi & Tohir, 2022](#)).

This study has significant importance because it provides a substantial contribution to filling the literature gap regarding multifactorial interactions in the learning context. The findings showing significant influences among the Moving Class Model, Teachers' Pedagogical

Competence, Learning Motivation, and Learning Discipline toward one another provide deeper understanding of the complexity of the relationships among these variables in the learning process. By examining these factors holistically and integratively, this study not only provides a more comprehensive understanding of the relationships among variables but also confirms previous findings and opens pathways for thinking and developing more effective learning strategies. The concrete contribution of this study lies in providing a strong knowledge base for educators and stakeholders in designing more adaptive, supportive, and development-oriented learning programs for students. By filling gaps in the literature related to important factors in the teaching–learning process, this study provides a solid foundation for developing more evidence-based educational practices and offers direction for further research in this field.

The limitations of this study are primarily related to the determination and size of the sample, which may affect the generalization of the findings and the interpretation of results. First, in determining the sample, this study may have limited variation and representation of various learning contexts. The use of samples that may be limited to certain geographical areas or specific types of educational institutions may limit the generalization of these findings to broader or more diverse populations. In addition, a limited sample size can affect statistical accuracy and testing and may not fully represent the actual diversity of the factors examined. The implications of these limitations for practice and future research are that the resulting findings may not be directly applicable widely in various educational contexts. Practitioners and stakeholders must consider that the results obtained may not fully reflect the complex realities of all the variables involved in the learning process across different educational environments. Future research can take steps to improve the generalizability of findings by adopting sampling methods that are more representative of various educational contexts, as well as increasing the number of samples to strengthen the reliability and validity of findings. Furthermore, the limitations in determining and sizing the sample highlight the need for further research that is more inclusive and in-depth in analyzing the relationships among the learning factors studied. Future research can involve larger and more representative samples to obtain a more comprehensive understanding of the complexity of interactions among the latent variables. The implication is the need for further research that explores more deeply and involves variations in broader educational contexts so that findings can be more relevant and more widely applicable in everyday educational practice.

CONCLUSION

This study focused on developing and testing a structural model that explores the interrelationships between the Moving Class Model, teachers' Pedagogical Competence, Learning Motivation, and Learning Discipline in educational settings. The analysis unveiled that both the Moving Class Model and teachers' Pedagogical Competence have notable positive impacts on enhancing students' Learning Motivation. Additionally, the study found that the Moving Class Model, Pedagogical Competence, and Learning Motivation each significantly contribute to improving students' Learning Discipline.

The results underscore the importance of the Moving Class Model and the pedagogical competence of teachers in fostering student motivation and discipline. This research supports the notion that improving instructional quality through the implementation of engaging learning models and enhancing teachers' pedagogical skills can positively influence student motivation, which subsequently enhances their learning discipline. These findings suggest that focusing on both innovative teaching practices and teacher competencies is vital for attaining optimal educational outcomes.

Based on the findings, the study offers several recommendations aimed at increasing learning effectiveness along with student motivation and discipline: (1) Implement support and training programs for educators in utilizing innovative models like the Moving Class Model, supplemented by regular professional development to continually advance teachers'

pedagogical skills. (2) Utilize technology adeptly within the learning process to foster a more engaging and interactive educational environment. (3) Emphasize the creation of student learning skills programs that are customized to meet individual student needs, thereby reinforcing their motivation and discipline in the learning experience.

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