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THE RELATIONSHIP BETWEEN GEOGRAPHY TEACHER PERFORMANCE AND STUDENT LEARNING OUTCOMES THROUGH THE USE OF THE DEEP LEARNING MODEL AT SMAN 45 AND SMAN 72, KELAPA GADING DISTRICT – NORTH JAKARTA

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Abstract

This study aims to analyze the relationship between Geography teacher performance and student learning outcomes through the Deep Learning model approach at SMAN 45 and SMAN 72, Kelapa Gading District, North Jakarta. The teacher performance assessed includes aspects of learning planning, implementation, assessment, professionalism, communication, and utilization of technology and the development of 21st-century skills. The research method used is quantitative with a descriptive approach and correlational analysis. The population in this study were Geography Teachers and Students at SMAN 45 and SMAN 72 with a sample of 2 Geography teachers and 63 students in grade XI. Data were obtained through teacher performance questionnaires and documentation of student learning outcomes from three forms of assessment: UH 1, UTS, and UAS. The results of the analysis show that the performance of Geography teachers at SMAN 45 and SMAN 72, Kelapa Gading District, is generally in the good category, based on indicators that include learning planning, learning implementation, learning evaluation, and personality and social competencies, especially in encouraging deep learning through reflective, collaborative, and problem-solving-based methods.
Keywords:Deep Learning, Geography, Learning Outcomes, Teacher Performance, High School

Abstrak

Penelitian ini bertujuan untuk menganalisis hubungan kinerja guru Geografi terhadap hasil belajar siswa melalui pendekatan model Deep Learning di SMAN 45 dan SMAN 72 Kecamatan Kelapa Gading, Jakarta Utara. Kinerja guru yang dinilai mencakup aspek perencanaan pembelajaran, pelaksanaan, penilaian, profesionalisme, komunikasi, hingga pemanfaatan teknologi serta pengembangan keterampilan abad 21. Metode penelitian yang digunakan adalah kuantitatif dengan pendekatan deskriptif dan analisis korelasional. Populasi dalam penelitian ini adalah Guru Geografi dan Siswa yang ada di SMA Negeri 45 dan SMA Negeri 72 dengan sampel 2 guru Geografi dan 63 siswa yang berada di kelas XI. Data diperoleh melalui angket kinerja guru dan dokumentasi hasil belajar siswa dari tiga bentuk penilaian: UH 1, UTS, dan UAS. Hasil analisis menunjukkan bahwa Kinerja guru Geografi di SMA Negeri 45 dan SMA Negeri 72 Kecamatan Kelapa Gading secara umum berada dalam kategori baik, berdasarkan indikator yang mencakup perencanaan pembelajaran, pelaksanaan pembelajaran, evaluasi pembelajaran, serta kompetensi kepribadian dan sosial, khususnya dalam mendorong pembelajaran yang mendalam (deep learning) melalui metode reflektif, kolaboratif, dan berbasis pemecahan masalah.
Kata Kunci: Deep Learning, Geografi, Hasil Belajar, Kinerja Guru, SMA

INTRODUCTION

Education is the primary foundation for a nation's development. In the educational process, teachers play a central role as facilitators, motivators, and mentors, guiding students toward optimal learning outcomes. In this context, the quality of teacher instruction is crucial because it directly impacts student learning outcomes. Effective interactions between teachers and students not only motivate students but also foster a passion for learning, positively impacting their academic achievement.[1] Students' success in understanding the subject matter is greatly influenced by the quality of learning delivered by the teacher, especially in conceptual and applicable subjects such as Geography.

In recent decades, the world of education has undergone a significant paradigm shift. Previously focused on the one-way transmission of knowledge from teacher to student (teacher-centered learning), education has shifted toward an approach that places greater emphasis on active student involvement in the learning process (student-centered learning). This change aims to improve the quality of learning and encourage deeper and more meaningful mastery of the material.

The old paradigm positioned teachers as the sole source of information, while students acted as passive recipients. In the new paradigm, teachers act as facilitators and guides, encouraging students to think critically, explore, and build understanding through contextual and collaborative learning experiences. The role of facilitator requires teachers to be able to build strong relationships and interactions with students, as well as facilitate learning in ways that are engaging and relevant to the modern world.[2] In addition, contextual and collaborative learning allows students to relate subject matter to real-world situations and encourages them to make connections between the knowledge they possess and its application in everyday life, making learning more meaningful.[3]

Improving the quality of learning in the new paradigm is measured not only by the amount of material presented, but also by the extent to which students are able to understand, apply, and develop that knowledge in real-life situations. Therefore, the learning process is required to be more interactive, creative, and relevant to the needs and potential of students, thereby improving student learning success in both specific subjects and education in general.[4]

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[1] Imam Wahyudi, "Pengaruh Kualitas Pengajaran Guru Terhadap Hasil Belajar Siswa Pada Mata Pelajaran Pendidikan Agama Islam Di SMKN 2 Dumai," *JURNAL TAFIDU* 2, no. 1 (2023): 31–41, https://doi.org/10.57113/jtf.v2i1.268.

[2] Naibaho, "Peranan Guru Sebagai Fasilitator Dalam Perkembangan Peserta Didik," *Jurnal Christian Humaniora* 2, no. 1 (2018).

[3] Andri Afriani, "Pembelajaran Kontekstual (Cotextual Teaching And Learning) dan Pemahaman Konsep Siswa," *Jurnal Muta'aliyah* 1, no. 1 (2018): 225006.

[4] Mahsup et al., "Peningkatan Hasil Belajar Mahasiswa Melalui Model Pembelajaran Tutor Sebaya," *Jurnal Hasil Penelitian Dan Kajian Kepustakaan Di Bidang Pendidikan, Pengajaran Dan Pembelajaran* 6, no. 3 (2020): 609.

On the other hand, students' mastery of the material is greatly influenced by the methods and strategies used by the teacher. Active learning methods, project-based learning, problem-based learning,[5] and the use of technology and interactive media have proven effective in increasing student engagement and overall conceptual understanding. Problem-based learning is a learning process that uses real-world problems as a context for students to learn critical thinking and problem-solving skills and to acquire essential knowledge and concepts from the learning material.[6]

With this paradigm shift, the evaluation of educational success also changes from merely mastering memorization to higher-order thinking skills,[7] communication, collaboration, and digital literacy skills. Therefore, the current education system must be able to provide teachers with adequate training, mentoring, and support to adapt to the demands of the times and provide quality learning experiences for students.

Assessing teacher performance is an important part of efforts to improve the quality of education, because teachers are the spearhead in the learning process.[8] A good performance appraisal should provide an accurate picture of a teacher's competence, dedication, and effectiveness in managing learning. However, in practice, objectively assessing teacher performance faces various complex challenges.

One of the main challenges islack of comprehensive and standardized assessment instruments where Schools still use an assessment approach that is administrative in nature and does not fully reflect the quality of the teaching process in the classroom, for example, assessments focus more on attendance, completeness of learning administration, and student learning outcomes alone, without paying attention to process aspects such as teacher-student interaction, the ability to build a conducive learning atmosphere, or creativity in delivering material.[9]

Besides that,teacher performance assessments are often influenced by the subjectivity of the assessor, especially when conducted by direct superiors such as principals. Personal relationships, perceptions, or preferences can influence assessment results, leading to unfairness and a lack of trust in the evaluation system among teachers.

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[5] Yusuf Al-Amin and Budi Murtiyasa, "Analisis Kesulitan Belajar Matematika Pada Proses Pembelajaran Daring Menggunakan Metode Pembelajaran Berbasis Masalah," *Kontinu: Jurnal Penelitian Didaktik Matematika* 5, no. 1 (2021): 49–65.

[6] D. A. M. Lidinillah, "Pembelajaran Berbasis Masalah (Problem Based Learning)," *Jurnal Pendidikan Inovatif* 5, no. 1 (2013): 1–7.

[7] Afsaneh Ghanizadeh et al., *Higher Order Thinking Skills in the Language Classroom: A Concise Guide*, 1st ed. (Springer Nature Switzerland AG, 2020), https://doi.org/10.1007/978-3-030-56711-8.

[8] Mohamad Muspawi, "Strategi Peningkatan Kinerja Guru," *JURNAL ILMIAH UNIVERSITAS BATANGHARI JAMBI (JIUBJ)*, ahead of print, 2020, http://dx.doi.org/10.33087/jiubj.v21i1.1265.

[9] Rosnaeni, "Karakteristik Dan Asesmen Pembelajaran Abad 21," *JURNAL BASICEDU* 5, no. 5 (2021): 4334–39, https://doi.org/10.31004/basicedu.v5i5.1548.

Another challenge arises fromminimal student participation in assessing the quality of learningthey receive. Students are the ones who directly experience the impact of teachers' teaching processes. However, their involvement in the assessment system remains very limited, both due to concerns about disagreements and the lack of mechanisms that allow for objective and constructive student assessment.

On the other hand,differences in social and cultural context between schoolscan also influence teacher performance assessments. For example, teachers who teach in areas with limited facilities or students from low-income backgrounds often face greater challenges in optimizing learning outcomes. If assessments do not take these conditions into account, the evaluation results can be unfair and misleading. Finally, lack of training and understanding of professional performance evaluationThis is also a challenge. Many assessors lack the competency to use evaluation tools correctly and consistently, resulting in results that do not reflect the true situation.

Therefore, a more transparent, multidimensional, and data-driven assessment system is needed. One that relies not on a single source of information but rather combines classroom observations, feedback from students and peers, and holistic learning outcomes. Such an approach will result in fairer, more objective teacher performance assessments that can serve as a basis for ongoing professional development.

In today's digital era, conventional approaches to assessing teacher performance and student learning outcomes are no longer adequate to address the complexities of the modern world of education.[10] The influence of teacher performance on student learning outcomes involves various interrelated factors, such as teaching style, classroom interactions, student background, use of learning media, and the school environment. Therefore, a more sophisticated and comprehensive analytical approach is needed. One potential solution is the application of Deep Learning technology in education.

Deep learning, as a subset of artificial intelligence (AI), has the ability to recognize complex patterns in big data and generate accurate predictions or classifications based on historical data. Deep learning has revolutionized the fields of computer vision, natural language understanding, speech recognition, information retrieval, and more.[11] However, with the progressive advancement of deep learning models, the number of parameters, latency, and resources required for training, among other things, have all increased significantly. Consequently, it has become crucial to pay attention to these models' footprint metrics, not just their quality. In the educational context, this technology can be used to analyze the relationships between various

[10] Rosnaeni, "Karakteristik Dan Asesmen Pembelajaran Abad 21."

[11] Gaurav Menghani, "Efficient Deep Learning: A Survey on Making Deep Learning Models Smaller, Faster, and Better," *ACM Journals* 55, no. 12 (2023).

learning variables, including teacher performance and student learning outcomes, in a more in-depth and systematic manner.

Through deep learning, data from various sources, such as student exam results, classroom recordings, teacher assessments, student feedback, and attendance and participation data, can be integrated and analyzed to uncover hidden patterns. This technology can identify, for example, whether certain teaching styles are more effective for specific student groups, or whether there is a correlation between teacher engagement and long-term academic improvement. Furthermore, this approach can be used to predict student learning outcomes based on teacher performance indicators, allowing schools to intervene early if there is a risk of declining performance. Deep learning models are also adaptive; they can learn and improve their accuracy as new data is added, making them highly dynamic and real-time evaluation tools.

However, implementing this technology also requires infrastructure and policy readiness. The data used must be managed ethically, maintaining privacy, and obtaining approval from all relevant parties. Furthermore, educators and school administrators need to be provided with digital literacy and training to understand and wisely utilize the analytical results of this AI-based system. The application of Deep Learning in teacher performance evaluation is not only about technological efficiency but also a strategic effort to build a data-driven and quality-oriented education system. This approach can bridge the path to more accurate and equitable decision-making, improving the quality of learning and student learning outcomes across the board.

In education, the relationship between teacher performance and student learning outcomes is not linear or simple. Numerous variables influence each other, including student background, teaching methods, learning motivation, classroom conditions, and the social environment. These relationships are often dynamic, complex, and difficult to analyze using conventional statistical methods.[12]

Geography subjects emphasize not only cognitive knowledge but also environmental understanding, spatial thinking skills, and analytical skills regarding geospheric phenomena. Therefore, the success of geography instruction depends heavily on the teacher's ability to deliver the material using appropriate methods, a contextual approach, and the use of appropriate learning media.

Amidst the ever-evolving demands of education, teacher performance evaluations can no longer be limited to conventional methods such as observation or qualitative assessment. Technological advances, particularly in the field of artificial intelligence, open up opportunities for

[12] Mohamad Sodik et al., "Pengaruh Kinerja Guru Dalam Pelaksanaan Pembelajaran Terhadap Prestasi Belajar Siswa Pada Mata Pelajaran Alquran Hadis," *JURNAL PENDIDIKAN ISLAM* 7, no. 1 (2019), https://doi.org/10.36667/jppi.v7i1.359.

more in-depth and objective data analysis. One rapidly developing approach is the use of deep learning models for complex data classification and prediction, including in the educational context.

The Kelapa Gading District, North Jakarta, as one of the areas experiencing rapid educational growth, boasts a diverse range of schools with diverse student and teaching staff characteristics. However, to date, there has been little research specifically analyzing the relationship between geography teacher performance and student learning outcomes using advanced technology-based approaches such as Deep Learning. This approach has the potential to uncover hidden patterns in the relationship between teacher performance and student academic achievement.

This study aims to address these needs by developing and implementing a Deep Learning model to analyze the relationship between Geography teacher performance and student learning outcomes at SMAN 45 and SMAN 72, Kelapa Gading District, North Jakarta. It is hoped that the results of this study will not only provide theoretical contributions in the fields of education and technology, but also provide practical recommendations for schools and education policymakers in improving the quality of Geography teaching.

This research references and expands on several previous studies related to teacher performance, learning outcomes, and the application of artificial intelligence technology in education. Based on relevant research, Dwi Mitra Dilla and Nofrion[13] this study examined the performance of high school geography teachers in South Solok Regency, focusing on scientific publications, innovative work, and teacher self-development over the past five years, using a quantitative descriptive method with a sample of 21 teachers. Marpaung[14] examined the performance of professional teachers in public high schools throughout Serdang Bedagai Regency, providing an overview of the quality of teacher work across various aspects of professionalism. Meanwhile, Ervina Adiningsih, Zulkarnain, and Dedy Miswar[15] identifying geography teachers' barriers in learning Geographic Information Systems (GIS) material at SMAN 1 Palas through qualitative descriptive analysis, with a focus on grade XII geography teachers. Research by Gema Wahyuni and Rahmanelli[16] this paper describes the learning strategies and obstacles faced by geography teachers in improving the learning outcomes of class XI IPS students at SMA Negeri 1

[13] Dwi Mitra Dilla and Nofrion Nofrion, "Analisis Kinerja Guru Geografi SMA di Kabupaten Solok Selatan," *JURNAL BUANA* 4, no. 4 (2020): 827–38, https://doi.org/10.24036/buana.v4i4.1116.

[14] B. Marpaung, "Kinerja Guru Profesional Di SMA Negeri Se-Kabupaten Serdang Bedagai," *Tunas Geografi* 1, no. 1 (2013).

[15] Ervina Adiningsih et al., "Hambatan Guru dalam Pembelajaran Geografi Materi Sistem Informasi Geografis," no. 3 (Journal:eArticle, Universitas Lampung, 2014), https://www.neliti.com/id/publications/252287/.

[16] Gema Wahyuni and Rahmanelli Rahmanelli, "Strategi Guru Geografi Dalam Meningkatkan Hasil Belajar Siswa Kelas XI IPS SMA Negeri 1 Lembah Melintang Kabupaten Pasaman Barat," *Jurnal Pendidikan Tambusai* 8, no. 2 (2024): 22752–59.

Lembah Melintang, West Pasaman Regency. Furthermore, Nur Maelasari and Lusiana[17] through a Systematic Literature Review (SLR) study, the effectiveness of the deep learning approach in learning was evaluated, especially its impact on improving student learning outcomes.

RESEARCH METHODS

This research method uses a quantitative approach with a descriptive analytical method, which aims to analyze the performance of Geography teachers, assess student learning outcomes, and identify the relationship between the two. The study was conducted in two public schools in Kelapa Gading District, North Jakarta, namely SMA Negeri 45 and SMA Negeri 72, during the period of April to July 2025. The study population included Geography teachers and grade X and XI students, with samples selected purposively based on the criteria of teachers who actively teach Geography and students who participated in the complete learning evaluation.

The independent variables in this study are teacher performance indicators, including pedagogical, professional, social, and personality competencies. The dependent variable is student learning outcomes in Geography, categorized into three levels: high, medium, and low. Teacher performance data was collected through questionnaire-based instruments, observations, and evaluation documentation, while learning outcome data was obtained from report card scores, midterm exams, and Final Exams. To enrich the information, interviews and supporting questionnaires related to the quality of the learning process were also conducted.

Data analysis was conducted in two main stages. First, descriptive statistical analysis was used to describe teacher performance profiles and student learning outcomes. Second, the data was used to build and implement an Artificial Neural Network (ANN)-based Deep Learning model to predict and classify the relationship between teacher performance and student learning outcomes. The results of the ANN model classification analysis were used to assess the level of influence of each teacher performance indicator on student learning outcomes more accurately and measurably.

RESULTS AND DISCUSSION

Teacher Performance Data

This study sampled two public schools in the Kelapa Gading area. Two eleventh-grade geography teachers were used to measure teacher performance. These are the results of the instrumentation.

[17] Nur Maelasari and Lusiana Lusiana, "Efektivitas Deep Learning Dalam Pembelajaran: Sebuah Kajian Systematic Literature Review (SLR)," *Jurnal Education and Development* 13, no. 1 (2025): 298–305, https://doi.org/10.37081/ed.v13i1.7006.

Table 1. Teacher Performance Results

No.	Rated aspect	Scale Value	Category
1.	Planning learning or guidance	4.7	Very good
2.	Carrying out learning or mentoring activities	4.4	Very good
3.	Assess and evaluate learning processes and outcomes	4.9	Very good
4.	Following up on assessment results with remedial/enrichment/guidance learning	5.0	Very good
5.	Carrying out educational learning activities	5.0	Very good
6.	Using media and learning resources	5.0	Very good
7.	Mastering the subject matter	5.0	Very good
8.	Adapt to developments in science and technology	5.0	Very good
9.	Communicate effectively with students	5.0	Very good
10.	Carrying out class/school administration	5.0	Very good
11.	Carrying out self-development activities	4.5	Very good
12.	Carry out additional duties and other responsibilities relevant to school functions	5.0	Very good
13.	Be professional in carrying out duties	5.0	Very good

Source: Researcher Data, 2025

1. Planning Learning or Guidance (Score: 4.7 – Very Good) The teacher has very strong learning planning competency. This is demonstrated through the ability to develop lesson plans, syllabi, and annual/semester programs that are in line with learning outcomes.In preparing a teaching plan, formulate complete competency standards and compile programs related to the implementation of student guidance activities, also allocate time for each topic and compile competency achievement indicators that are in accordance with the selected learning outcomes completely with approaches, methods and learning models that are appropriate to the teaching materials.
2. Carrying out Learning or Guidance Activities (Score: 4.4 – Very Good) In class practice,When starting the lesson, the teacher prepares the students physically and psychologically by greeting them and then asking questions about the material that has been studied and related to the material that will be studied.and teachers demonstrate mastery of active learning strategies and approaches, namely by mpresenting the discussion of learning material appropriately and systematically (easy to difficult, from concrete to abstract) and the teacher has the ability to adapt the material to the learning

objectives implementing learning in accordance with the competencies to be achieved and implementing learning sequentially in the learning process, the teacher facilitates and presents activities for students to observe and encourages students to ask what, why, and how..

3. Assessing and Evaluating Learning Processes and Outcomes (Score: 4.9 – Very Good) Evaluation is conducted comprehensively, encompassing formative and summative assessments. Teachers not only use written tests, but also assess affective and skill aspects through authentic instruments. Clarity in the use of assessment rubrics, scoring guidelines, and follow-up on learning outcomes demonstrates high proficiency in learning-based assessment.
4. Following up on Assessment Results (Score: 5.0 – Very Good) Teachers carry out appropriate follow-up on evaluation results through remedial and enrichment programs as well ascounseling services and/or providing individual or group assignments according to student learning outcomes and also evaluating the teacher's learning methods after receiving exam results and realizing how learning methods can influence the teacher's own understanding.This process is not just a formality, but is actually implemented by paying attention to the achievements and individual needs of students.
5. Implementing Educational Learning Activities (Score: 5.0 – Very Good) The learning carried out does not only focus on cognition, but also emphasizes the instillation of character values. Teachers serve as role models in fostering a supportive and humanistic learning environment.
6. Using Media and Learning Resources (Score: 5.0 – Very Good) The use of learning media is carried out in a varied manner, both conventional and digital media. Teachers demonstrate the ability to select relevant and contextual media andInvolving students in the use of learning media. Teachers also demonstrate skills in using a variety of learning resources and involving students in the use of learning resources and fostering active student participation through interactions between teachers, students, and learning resources.
7. Mastering the Subject Matter (Score: 5.0 – Very Good) Teachers not only master the material theoretically, but also understand its conceptual and applicative relationships.Mastering the class/mastering the class and implementing learning that fosters active student participation in asking questions, the teacher also facilitates and presents activities for students to collect information and associate the data and information collected and is able to apply geographic concepts in real situations and can read and analyze geographic data (graphs, maps, tables).

8. Adapting to the Development of Science and Technology (Score: 5.0 – Very Good) Teachers are adaptive to the dynamics of technology and science, including in the application of innovative learning approaches such as blended learning and flipped classroom.
9. Communicating Effectively with Students (Score: 5.0 – Very Good)The teacher demonstrates open, empathetic communication and builds positive interpersonal relationships with students.Respond positively to student participation and demonstrate an open attitude towards student responses.
10. Carrying out Class/School Administration (Score: 5.0 – Very Good) Teachers are orderly in carrying out learning administration such as filling out journals, recapitulating grades, attendance, documenting activities, and learning reports.
11. Carrying out Self-Development Activities (Score: 4.5 – Very Good) Teachers are active in participating in ongoing professional development activities such as Subject Teacher Conferences (MGMP) at both school and regional levels, training, seminars, and workshops related to the subjects they teach andThe program planning that is prepared is first consulted with superiors to obtain approval.
12. Carrying out Additional Tasks and Other Responsibilities (Score: 5.0 – Very Good) Teachers not only teach, but also carry out additional tasks such as OSIS advisors, homeroom teachers, or school activity committees with full responsibility and teacherscomply with all written and unwritten regulations and provisions of the service
13. Behave Professionally in Carrying Out Tasks (Score: 5.0 – Very Good) Professionalism is reflected in time discipline,by the teacher trying to come and start teaching on timecompliance with official regulations, commitment to duties, and maintaining professional ethics of teachers.Demonstrate conducive interpersonal relationships and foster students' joy or enthusiasm in learning

Of all aspects assessed, overall teacher performance falls within the 'Very Good' category, with an average score approaching the maximum. This demonstrates that teachers have carried out their duties and responsibilities professionally, effectively, and efficiently. This achievement also indicates teachers' readiness to integrate innovative approaches such as Deep Learning into learning activities and adapt to the dynamics of 21st-century education. Teachers have demonstrated high proficiency in carrying out their roles as educators, mentors, and professional public servants. Future improvements include strengthening reflective practice, encouraging the publication of scientific papers, and expanding innovation in technology-based learning.

Learning Outcome Data

Table 2. Student Learning Outcomes of SMAN 45

No.	Value Range	Types of assessment					
		UH 1		UTS		UAS	
1	Low	3	8.6	5	14.3	3	8.6
2	Currently	6	17.1	18	51.4	8	22.9
3	Tall	26	74.3	12	34.3	24	68.6

Source: Research Data, 2025.

Based on the data in table 4.3, the recapitulation of the learning outcomes of SMA 45 students classified into three categories (Low, Medium, and High) based on the assessment of UH 1, UTS, and UAS, the following picture is obtained:

1. Low Category

   The number of students in the low category shows a consistent decline from UH 1 to UAS:

   a. UH 1: 3 students (8.6%)
   b. UTS: 5 students (14.3%)
   c. UAS: 3 students (8.6%)

   The data above shows that most students who previously scored low on the UTS managed to improve their results on the UAS. This could indicate a learning intervention or improved student understanding of the material leading up to the UAS.

2. Medium Category

   The category is experiencing quite significant fluctuations:

   a. UH 1: 6 students (17.1%)
   b. UTS: 18 students (51.4%) → sharp increase
   c. UAS: 8 students (22.9%)

   The significant jump in the UTS indicates that many students initially in the low category have successfully moved up to the medium category. However, the UAS saw a decrease in the number of students in this category, likely indicating a shift to the high category. This could indicate an overall improvement in learning performance at the end of the evaluation period.

3. High Category

   This category shows consistent dominance and improvement from UTS to UAS:

   a. UH 1: 26 students (74.3%)
   b. UTS: 12 students (34.3%)
   c. UAS: 24 students (68.6%)

The sharp decline in the UTS was followed by a significant rebound in the UAS. This pattern could indicate a more difficult UTS or the presence of external factors influencing student performance during the UTS (e.g., academic fatigue, lack of study time, or lack of student preparedness). However, students' ability to return to high levels on the UAS indicates academic resilience and teachers' success in improving or adapting their teaching approaches after the UTS.

Table 3. Student Learning Outcomes of SMAN 72

No.	Value Range	Types of assessment					
		UH 1		UTS		UAS	
1	Low	15	42.9	9	25.7	20	57.1
2	Currently	9	25.7	9	25.7	15	42.9
3	Tall	11	31.4	17	48.6	.0	0

Source: Research Data, 2025.

Based on the data in table 4.4, the learning outcomes of students at SMAN 72 above, which are included in the classification or categories of Low, Medium, and High for the three types of assessment (UH 1, UTS, and UAS), the following analytical synthesis was obtained:

1. Low Category
   a. UH 1: 15 students (42.9%)
   b. UTS: 9 students (25.7%)
   c. UAS: 20 students (57.1%)

   The number of students classified as low-stakeholders decreased from the first semester to the UTS, but increased significantly at the UAS. This increase may indicate a decline in academic performance towards the end of the academic period. This could be influenced by several factors, such as academic fatigue, decreased motivation, or suboptimal learning effectiveness leading up to the UAS.
2. Medium Category
   a. UH 1: 9 students (25.7%)
   b. UTS: 9 students (25.7%)
   c. UAS: 15 students (42.9%)

   The moderate category showed stability from the first semester exam to the UTS, then increased at the UAS. This indicates a shift in students from the low to moderate category at the UAS. However, this increase was not significant enough to push more students into the high category.

3. High Category
   a. UH 1: 11 students (31.4%)
   b. UTS: 17 students (48.6%)
   c. UAS: 0 students (0%)

There was a drastic drop in the high category from UTSs to UASs, with no students in this category appearing on the UAS. This is a serious indicator that requires further attention. This drop could reflect a mismatch between learning strategies and student needs or an excessively high material load leading up to the UAS. Psychological factors such as test anxiety or a lack of self-confidence could also be contributing factors. Overall, the data shows a pattern of declining academic performance from UH 1 and UTSs to UASs. The number of students in the low category increases, while the high category disappears completely by the UAS. This phenomenon indicates that most students are unable to maintain or improve their academic performance, especially towards the end of the semester.

Analysis of the Relationship between Teacher Performance and Student Learning Outcomes Based on Deep Learning

Table 4. Results of the Teacher Performance Questionnaire using the Deep Learning Method by Students at SMAN 45

No	Indicator	Statement	Scale Value	Category
1	Learning planning	The teacher structured the learning that made me think deeply.	3.95	Good
		The material is structured logically and helps me understand the relationships between concepts.	4.03	Good
2	Implementation of Learning	Teachers often ask questions that make me think critically.	3.81	Good
		Learning helps me see the connection between geography and everyday life.	4.44	Very good
		Teachers use maps, videos, or case studies to support conceptual understanding.	4	Good
		The teacher encouraged me to discuss and express my opinion.	4.19	Good
3	Evaluation	The teacher assesses my understanding, not just memorizing.	4.19	Good
		The exams or assignments given measure analytical and problem-solving skills.	4.03	Good
4	Professionalism	The teacher opens a reflection space after learning.	4.31	Very good
		Teachers continue to improve their teaching methods according to students' needs.	4.09	Good
5	Communication	The teacher explained the material in a way that was easy for me to understand.	4.5	Very good

No	Indicator	Statement	Scale Value	Category
		Teachers are open to questions and criticism from students.	4.59	Very good
6	Motivation	Teachers provide enthusiasm and motivation for learning.	4.72	Very good
7	Creativity	The teacher invited us to do challenging projects, such as making maps or infographics.	4.28	Very good
8	The relationship of values	The teacher emphasized the importance of environmental and social values in geography.	4.47	Very good
9	21st century skills	The teacher trained me to think critically and work together in groups.	4.41	Very good
10	Independence	The teacher gave me assignments that encouraged me to learn independently and seek information myself.	4.34	Very good
11	Technology	Teachers utilize technology or digital media to support learning.	4.53	Very good
12	Method variations	Teachers do not only lecture, but also use discussion methods, simulations, etc.	4.25	Very good
13	Holistic assessment	Teachers assess not only the final grade, but also the process and group work.	4.44	Very good

Source: Research Data, 2025.

Based on table 4.5, the results of the Likert Scale data processing above show that, SMAN 45 Students Assess Teacher Indicators in Planning on average are included in the Good category. This shows that most students think that each teacher prepares plans and structures learning that makes thinking deeply and the material is arranged logically and helps understand the relationship between concepts. Meanwhile, the Learning Implementation indicator obtained the Very Good category, meaning that students consider that Learning can help see the relationship between geography and everyday life and in learning, Teachers encourage students to discuss and express opinions. Although in other aspects there is still room for improvement, especially in the aspect of Teachers often giving questions that make thinking critically and in using maps, videos, or case studies to support conceptual understanding.

In the assessment indicator, students gave a score of 4.35, which is categorized as very good, indicating that students consider the teacher to assess understanding, not just memorization. Furthermore, what can be improved is that the exams or assignments given measure analytical and problem-solving skills. Professionally, students rated the teacher as good, as indicated by a score of 4.10 on the professional indicator, so there is room for further improvement, especially in the aspect of the teacher continuing to improve his teaching methods according to student needs.

Meanwhile, in the indicators of Communication, Motivation, Creativity, Values Linkage, 21st Century Skills, Independence, Technology, Method Variation and Holistic Assessment, students think very well, this can be seen from the score given above 4.25. This means that the respondent teacher is able to communicate very well and provide motivation in learning so that it

brings up the linkage of social values with 21st century skills that are able to spur students with independent characters and master technology in ways provided by teachers through a variety of learning methods and holistic assessment.

With such high-quality teacher performance, student learning outcomes are expected to reflect the effectiveness of these learning strategies. However, if we examine the distribution of student learning outcomes by grade category (Low, Medium, High) across the three assessment types (UH 1, UTS, UAS), the increase in grades on the UAS compared to the UTS can be attributed to the teacher's role in providing effective feedback, remediation, and enrichment, as reflected in the maximum scores on a number of performance indicators. However, the decrease in the number of students in the high-grade UTS category suggests the possibility of external factors, such as learning motivation, environmental conditions, or exam pressure, influencing mid-term performance. While consistent teacher performance does not automatically guarantee optimal results for all students, data shows that the majority of students fall into the medium to high grades, indicating a positive influence of teacher professionalism in the evaluation aspect. Furthermore, teachers' ability to adapt assessment techniques to learning indicators, as well as mastery of affective and psychomotor aspects, has been shown to help improve learning outcomes at the end of the semester.

Table 5. Results of the Teacher Performance Questionnaire using the Deep Learning Method by Students of SMAN 72

No	Indicator	Statement	Scale Value	Category
1	Learning planning	The teacher structured the learning that made me think deeply.	4.03	Good
		The material is structured logically and helps me understand the relationships between concepts.	4.16	Bai
2	Implementation of Learning	Teachers often ask questions that make me think critically.	4.09	Good
		Learning helps me see the connection between geography and everyday life.	4.31	Very good
		Teachers use maps, videos, or case studies to support conceptual understanding.	4.25	Very good
		The teacher encouraged me to discuss and express my opinion.	4.31	Very good
3	Evaluation	The teacher assesses my understanding, not just memorizing.	4.31	Very good
		The exams or assignments given measure analytical and problem-solving skills.	4.22	Very good
4	Professionalism	The teacher opens a reflection space after learning.	4.00	Good
		Teachers continue to improve their teaching methods according to students' needs.	3.97	Good
5	Communication	The teacher explained the material in a way that was easy for me to understand.	4.25	Very good

No	Indicator	Statement	Scale Value	Category
		Teachers are open to questions and criticism from students.	4.22	Very good
6	Motivation	Teachers provide enthusiasm and motivation for learning.	4.25	Very good
7	Creativity	The teacher invited us to do challenging projects, such as making maps or infographics.	4.22	Very good
8	The relationship of values	The teacher emphasized the importance of environmental and social values in geography.	4.38	Very good
9	21st century skills	The teacher trained me to think critically and work together in groups.	4.38	Very good
17	Independence	The teacher gave me assignments that encouraged me to learn independently and seek information myself.	4.31	Very good
18	technology	Teachers utilize technology or digital media to support learning.	4.41	Very good
19	Method variations	Teachers do not only lecture, but also use discussion methods, simulations, etc.	4.47	Very good
20	Holistic assessment	Teachers assess not only the final grade, but also the process and group work.	4.44	Very good

Source: Research Data, 2025.

Based on table 4.6, it can be seen that, SMAN 72 Students Assess Teacher Indicators in Planning on average are included in the Good category. This shows that most students think that each teacher prepares plans and structures learning that makes thinking deeply and the material is arranged logically and helps understand the relationship between concepts. Meanwhile, the Learning Implementation indicator obtained the Very Good category, meaning that students consider that Learning can help see the relationship between geography and everyday life and in learning, Teachers encourage students to discuss and express opinions. As well as aspects Teachers often give questions that make critical thinking and in using maps, videos, or case studies to support conceptual understanding.

In the assessment indicators, students were given a Very Good category, indicating that students considered the teacher to assess understanding, not just memorization. Furthermore, exams and assignments measured analytical and problem-solving skills. Professionally, students rated the teacher as good, as indicated by a score of 4.10 on the professional indicator, indicating that there is room for further improvement, particularly in the aspect of the teacher continuously improving his teaching methods to meet students' needs.

Meanwhile, in the indicators of Communication, Motivation, Creativity, Relationship of values, 21st century skills, Independence, Technology, Variation of methods and Holistic assessment, students think very well, this can be seen from the score given above 4.25. This means

that the respondent teacher is able to communicate very well and provide motivation in learning so that it brings up the relationship between social values and 21st century skills that are able to spur students with the character of independence and mastery of technology in a way that is given by the teacher through a variety of learning methods and holistic assessment.

Conceptually, teacher performance in learning evaluation/assessment is excellent, as evidenced by consistent scores of 5 on key aspects such as feedback, learning reflection, and instrument suitability. However, student learning outcomes do not fully reflect the quality of teacher evaluations, particularly on UASs. There is a gap between the quality of teacher evaluations and student learning outcomes. Even though teachers have conducted assessments comprehensively and professionally, student learning outcomes remain fluctuating. This indicates that in the context of Deep Learning, teacher assessment must be coupled with approaches that strengthen motivation, manage student time, and align students' independent learning methods outside of class.

CONCLUSION

Based on the results of research that has been conducted with a descriptive quantitative approach and using the Deep Learning model, several things can be concluded as follows:

1. The performance of Geography teachers at SMAN 45 and SMAN 72, Kelapa Gading District, is generally in the good category, based on indicators that include learning planning, learning implementation, learning evaluation, and personality and social competencies.
2. Student learning outcomes, based on daily test, mid-term and UAS scores, show that most students achieved learning outcomes in the medium to high category, although a small number of students were still in the low category.

Use ***Deep Learning***, can help evaluate teacher performance more objectively and in-depth. Deep learning models can be trained to: a) analyze video recordings of learning, b) detect student expressions, and c) predict the influence of teaching style on student academic achievement.

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