



The correlation of teaching skills and teachers' professionalism towards students' achievement in Indonesia

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ABSTRACT

Introduction. Teachers play a pivotal role in improving students' academic achievements worldwide, as emphasised by global initiatives from UNESCO and other international bodies. These efforts underscore that teaching skills and professionalism are essential to delivering quality education in any context. Within this global framework, Indonesia presents a relevant case for examining the relationship between teaching skills, teacher professionalism, and student performance, offering insights that may inform educational strategies internationally.

Study participants and methods. The research was conducted with a sample of 100 elementary school teachers from Serang, Banten, Indonesia. A quantitative, correlational research design was employed, utilizing descriptive statistics and inferential statistical techniques, including regression analysis. The data were collected through Likert-scale questionnaires assessing teaching skills, teacher professionalism, and student performance.

Results. The analysis revealed clear and compelling evidence of the link between teaching quality and student outcomes. A moderate yet significant correlation was found between teaching skills and teacher professionalism ($r = 0.548$, $p < 0.05$), suggesting that stronger teaching abilities are closely tied to higher professional standards. Teaching skills were also positively associated with student achievement ($r = 0.557$, $p < 0.05$), while the most pronounced relationship emerged between teacher professionalism and student achievement ($r = 0.794$, $p < 0.05$), highlighting the pivotal role of professionalism in driving learning success. Regression analysis further revealed that improvements in teaching skills significantly enhanced professionalism ($\beta = 0.648$, $p < 0.001$), and that both teaching skills ($\beta = 0.703$, $p < 0.001$) and professionalism ($\beta = 0.849$, $p < 0.001$) were strong predictors of student performance.

Conclusion. This study highlights the critical role of teaching skills and professionalism in improving student academic performance. It suggests that efforts to enhance teachers' pedagogical abilities and professionalism will likely lead to better educational outcomes. Policy recommendations include providing ongoing teacher training and professional development to boost teaching quality and student success.

KEYWORDS

teaching skills, teacher professionalism, student achievement, education, teacher training

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INTRODUCTION

Global education initiatives, particularly UNESCO's Education 2030 Agenda, emphasise that teachers' competence, skills, and professionalism are central to achieving inclusive, equitable, and high-quality education for all [1]. UNESCO emphasises that enhancing teacher capacity is not only a national priority but also a shared international responsibility, as teachers are pivotal in promoting lifelong learning, reducing educational disparities, and equipping students to meet the challenges of a rapidly evolving world. Strengthening teaching quality through professional development, pedagogical innovation, and supportive policy frameworks is therefore essential to advancing global education goals [2].

Teachers undoubtedly have a huge responsibility attached to their profession [3]. They must not only be educators and instructors, but they must also master the subject matter and teaching methodologies, which are essential in the teaching and learning process in the classroom [4]. As Samana said, teachers need to master the subject matter they teach in the learning process [5]. As educators, teachers must also be able to develop appropriate approaches to overcome various challenges that arise in the classroom, given the diversity of students' needs [6; 7]. Therefore, in addition to mastering the subject matter, teachers are also required to have the ability to manage the classroom effectively, assess students fairly, and utilize educational technology effectively to support the learning process [8; 9]. Thus, a teacher must possess comprehensive pedagogical skills that encompass knowledge, social skills, and the ability to adapt quickly to changes in the educational landscape [10].

In addition to teachers' knowledge and professional competence, the ability to adequately assess student achievement cannot be ignored [11]. Assessment conducted by teachers is not only a tool to measure students' understanding of the subject matter, but also an essential instrument for providing constructive feedback to support students' academic development [12]. Practical assessment helps teachers identify students' strengths and weaknesses, enabling them to design more targeted and effective teaching strategies [13]. Therefore, teachers' ability to conduct objective and data-based assessments is crucial to achieving the desired educational goals [14].

This assessment also serves as the basis for informed decision-making in developing more effective curricula and learning strategies. Currently, there are many teachers with diverse educational backgrounds, including varying degrees, resulting in differing levels of quality and professionalism [15]. These differences can impact the quality of teaching provided by teachers, as not all teachers possess the same level of experience and understanding of classroom management, pedagogical approaches, and effective evaluation techniques [16].

This diversity in educational backgrounds also influences how teachers manage their classrooms and interact with students [17]. In addition, it cannot be denied that most teachers in Indonesia still face challenges, including a lack of access to ongoing professional training and insufficient resources to support their skills development [18]. Therefore, continuous teacher capacity building is crucial to ensure a higher quality of education. This also influences, to a certain extent, teachers' experience in handling and overcoming the teaching and learning process [19]. Broader experience will enrich teachers' skills in adapting teaching methods to meet the diverse needs of different students. Teachers' ability to teach is a benchmark for achieving a good learning process [20].

Previous research on teaching has shown that qualified and professional teachers can produce better student achievement [21]. Thus, it is essential for every teacher to continually strive to improve their quality through adequate education and training, as well as to cultivate a reflective mindset about their teaching practices. Not only do teaching skills need to be improved, but teacher professionalism must also be a primary focus in improving the quality of education [22]. Teacher professionalism is not limited to pedagogical knowledge and skills, but also includes a commitment to continuous learning and self-development, collaboration with colleagues, and contribution to school and community development [23].

Darwin states that the hierarchy of professional teachers consists of three levels: 1) Professional, which are teachers who have a bachelor's degree or equivalent; 2) Semi-professional, which are teachers who have a diploma-three degree; 3) Pre-professional, which are teachers who have a diploma-two degree or below [24]. Understanding this hierarchy provides an overview of

the qualifications required to become a professional teacher [25]. Although academic qualifications are one indicator of a teacher's quality, in reality, a teacher's ability to manage a classroom and create a positive learning environment also plays an important role in the success of the learning process. A sincere teacher is an individual who has a vision they want to realize for the benefit of their students; they must be supported by the best possible relationships, within a framework that upholds, develops, and implements a substantive concern for religion, culture, and science [26]. Additionally, professional teachers are considered crucial determinants of quality improvement in the educational process [27]. To become professionals, they must be able to discover and actualize their identity within the context of teaching, which is a dynamic and constantly evolving field [28; 29]. In Indonesia itself, the low priority given to education development over the past few decades has been detrimental to the nation's well-being, making the quality of education, particularly in terms of teaching skills and teacher professionalism, very important to improve in order to enhance the quality of national education [30].

The interests, talents, skills, and potential of students will not develop optimally without the help of teachers [31]. Arikunto argues that to achieve good learning quality, good teacher quality is also required [32]. Therefore, the success of education greatly depends on the quality of teaching provided by teachers. It can be concluded that if student achievement is not optimal and developing, it means that the learning process in that school is not yet optimal. In line with this, teachers' teaching abilities, when implemented optimally in the classroom, will result in high student achievement [33]. This also reflects the professionalism of teachers, who not only master the material but also convey knowledge effectively and efficiently to students. Improving the quality of teachers in a balanced manner between teaching skills and professionalism will have a significant impact on the overall success of education [34]. This is particularly relevant to the challenges faced by the Indonesian education system, where the uneven quality of teachers across various regions remains a significant obstacle to achieving educational equality [35].

In line with this, the primary objective of this study is to investigate the level of correlation between teaching skills and teacher professionalism in enhancing student achievement. This study aims to provide deeper insights into the relationship between these factors and their contributions to advancing the quality of education. This study aims to provide a clearer understanding of how teaching quality and teacher professionalism interact to enhance student academic achievement. The research hypotheses proposed are: 1) there is a difference between teaching skills between male and female teachers, 2) there is a difference between the professionalism of male and female teachers, 3) there is a difference between the learning achievement of male and female students, 4) there is a relationship between teacher professionalism and student learning achievement, 5) there is a relationship between teachers' teaching skills and students' learning achievement, 6) there is a relationship between teachers' professionalism and teachers' teaching skills with students' learning achievement.

THEORETICAL BACKGROUND

1. Teaching Skills

Skills or abilities refer to an individual's capacity to perform various tasks in a job [36]. Lamri and Lubart also define skills as something that a person knows how to do [37]. Skills are acquired through practice and can have many components. Glasser, as quoted by Winget and Persky, says that there are four things that teachers must have: 1) Mastery of the subject matter, 2) Ability to diagnose student behaviour, 3) Ability to carry out the learning process, and 4) Ability to measure student learning outcomes [38]. Another opinion on teacher qualifications is expressed by Delandshere and Petrosky [39]. They listed several recurring themes in policy statements: (1) a general definition applicable to all teachers, (2) the acquisition of essential knowledge and skills, (3) the application of the same performance standards for all teachers, and the elimination of differences between teacher education program objectives, and (4) an emphasis on performance and practical skills rather than theoretical knowledge.

Gerosa et al., also state that overall individual ability consists of two factors, namely: (1) Intellectual ability, which is the skill required to perform various mental activities (thinking, reasoning, and problem solving), and (2) physical ability, which is the ability to perform tasks that require stamina, skill, strength, and similar characteristics [40].

Munna and Kalam state that teaching is the ability of teachers to carry out their duties effectively to improve learning achievement [41]. Teaching is not only a process of conveying scientific information, but also emphasizes human interaction with various complex aspects [42]. According to Nguyen et al., teaching involves organizing an activity or arranging the environment in the most effective way possible [43]. Thus, creating opportunities for children makes the learning process more efficient. In essence, teaching is an effort to create conditions or an environment that supports and enables the learning process [44].

The learning process, according to Subroto, is a process that involves a series of actions based on reciprocal relationships between teachers and students in an educational situation, based on reciprocal relationships, based on reciprocal relationships in an academic situation, based on reciprocal relationships in an educational situation, based on reciprocal relationships in an educational situation. Meanwhile, Jin et al. define teaching as a teacher's activity aimed at helping students learn, regulating and organizing the learning environment around them, to encourage students to learn more actively [45].

Additionally, Suharyono states that the learning process will occur optimally and effectively if it is well-planned and well-managed [46]. The learning process consists of three general activities. These activities include pre-learning activities, implementation of learning activities, and post-learning activities [47].

2. Teacher Professionalism

Arifin states that professionalism originates from a profession, which refers to a field of work that a person wants to pursue or is already pursuing [48]. In professional work, techniques and procedures based on intellectual foundations are required, which necessitates consulting the services of an expert. In the Indonesian context, Law No. 14 of 2005 on Teachers and Lecturers is needed to complement Law No. 20 of 2003 on the National Education System (UU Sisdiknas) [49]. Article 39, paragraph (2) of Law No. 20 of 2003 on the National Education System states that educators, in this case, teachers, are professional personnel [50].

Williams argues that a profession is defined as a position or type of work that requires specific knowledge and skills obtained through intensive academic education [51]. A similar definition of profession can be found in the Merriam-Webster Dictionary, which refers to a type of work that requires education, training, or special skills [52]. A profession is a job that requires special expertise. Surya et al. also state that a professional refers to a person who holds a profession and the title given to that person based on their performance by their profession [53].

Discussing professions also means linking them to the concept of professionalism. Professionalism is defined as "the behavior, purpose, or quality that characterizes or distinguishes a profession or a professional" [54]. Supporting this definition, Lesser argues that professionalism is the behaviour, purpose, or quality that characterizes or distinguishes a job or a person working in a particular job [55]. Even professionals are bound by a set of ethical rules and codes of ethics specific to their profession. In line with this, Welker believes that teacher professionalism can be achieved when they can perform their duties to the best of their ability and continue to develop themselves [56]. They must also comply with the ethical rules and codes of ethics specific to their profession.

Professional work is a role that can only be performed by someone who is specifically prepared for it; someone who lacks the necessary skills cannot secure another job in the same field. Therefore, professional teachers are individuals who have special abilities and skills in teaching and learning. With these qualities, they can carry out their duties and functions as professional teachers well [57]. Similarly, Kesuma et al. argue that skilled teachers are not only adequately educated and trained, but also have rich experience in the field of education [58]. Regarding this, Bala and Singh emphasize that teachers are professionals employed in schools [59].

Therefore, teaching is a profession that requires teachers to have specific knowledge and skills acquired through intensive training and education. Teachers are required to be able to formulate and integrate learning objectives, materials, methods, media, and evaluation appropriately, as well as design and manage the overall learning process.

Additionally, teachers must be able to conduct or ensure the quality of the learning process experienced by students [60]. Indeed, a teacher's role is not merely to transmit knowledge to students to improve their academic performance, but also to develop students' competencies optimally and prepare them to adapt well to society [61]. Article 8 of Law No. 14 of 2005 on Teachers and Lecturers states that teachers are professional personnel who possess academic qualifications, competencies, teaching certificates, and meet the physical and mental health requirements, as well as demonstrate the ability to realize their dignity and role as agents of learning to improve the quality of national education [49]. According to Article 10(1) and Article 28(3) of Law No. 19 of 2005 on National Education Standards, teachers' competencies must encompass pedagogical, personal, professional, and social aspects [49].

3. Student achievement

Student achievement is not only measured by visible results in academic exams or tests, but also includes a broader range of developmental aspects. In education, the term 'achievement' is often considered a measure of student performance in various fields of study. However, it should also be viewed in the context of their character development and life skills. Santrock states that achievement tests are designed to measure the extent to which students have learned a subject or mastered specific skills taught in the learning process [62]. In other words, achievement is the tangible result of student learning outcomes that can be measured in various forms of evaluation conducted by educators. According to Teodorović, learning achievement is the result achieved by students from the entire learning process they undergo, including activities carried out inside and outside the classroom [63]. Thus, learning achievement is not limited to test scores alone, but also includes attitudes, skills, and mastery of material required in various learning situations. This reinforces the understanding that student achievement evaluation must be comprehensive, covering various aspects of learning outcomes that go beyond mere numbers or scores.

Roeser and Peck state that learning is an activity carried out consciously and involves changing oneself [64]. Learning is a series of activities carried out to achieve a specific goal, and one of the primary objectives in education is to enhance the quality of student achievement. A good and well-planned learning process will result in positive changes in students' cognitive, affective, and psychomotor abilities. For example, if a student develops skills in academic, social, or physical areas through an effective learning process, this can be considered a significant improvement in achievement.

Purnomo adds that student learning achievement is the result achieved by students, reflecting their level of mastery of the subject matter studied [65]. In this case, it is important to distinguish between academic achievement (cognitive achievement) and non-academic achievement (e.g., social skills or attitudes). Although academic grades are the primary indicator of achievement, the development of affective and psychomotor aspects is also crucial in a comprehensive learning process. In modern education, students are not only required to master subject matter but also to develop character, social skills, and good attitudes and values. In this regard, Alafnan states that student learning outcomes encompass three main domains: cognitive, affective, and psychomotor [66]. The cognitive domain encompasses the ability to think critically, understand complex concepts, and solve problems effectively. The affective domain includes changes in students' feelings, attitudes, and values related to their learning. Meanwhile, the psychomotor domain focuses on physical or motor skills acquired through practice and learning. These three domains must be evaluated simultaneously to provide a more comprehensive picture of student achievement.

a) Categorization of Learning Outcomes

According to Bloom in Sudjana, learning outcomes can be categorized into three main domains: cognitive, affective, and psychomotor [67]. The cognitive domain encompasses knowledge and thinking skills, including the ability to analyze and apply concepts that have been learned. The affective domain relates to changes in students' attitudes, values, and behaviour, such as motivation, interest in learning, and commitment to educational goals. Meanwhile, the psychomotor domain is related to students' physical skills and motor abilities that develop through practice and direct experience. These three domains must be viewed as integral parts of learning outcomes because

they influence each other in shaping students' holistic achievement. The development of the cognitive domain without being balanced by affective and psychomotor development will reduce the quality of learning and actual achievement. Therefore, a comprehensive evaluation of learning outcomes needs to consider these aspects simultaneously.

b) Factors Affecting Student Achievement

According to Chamidy et al., student learning achievement is influenced by two main factors: internal and external factors [68]. Internal factors include psychological conditions and student motivation, including self-confidence, intelligence, mental readiness, and individual learning abilities. These factors are crucial because they can significantly impact the extent to which students can adapt to learning demands and pursue their learning goals. Intrinsic motivation, for instance, can enhance students' commitment to learning and encourage them to persevere in the face of challenges. Meanwhile, external factors include the learning environment, social support, family conditions, and socioeconomic factors. A positive learning environment, characterized by a conducive classroom atmosphere, healthy peer interactions, and support from family and community, has a significant impact on student achievement. For example, parents who are actively involved in their children's education often contribute to increased motivation and academic achievement among students. Socioeconomic factors can also influence students' access to adequate educational resources, such as books, technological devices, and other learning facilities [69; 70]. On the other hand, the quality of teaching received by students greatly influences their learning outcomes. Well-trained and professional teachers who can create a supportive learning environment can help students overcome various challenges, such as difficulties in understanding subject matter or psychological issues that hinder their learning [71].

c) Comprehensive Measurement of Student Achievement

To understand student achievement comprehensively, evaluation must involve various instruments that can measure learning outcomes in all three domains. Not only written tests that assess students' cognitive abilities, but also observations of students' practical skills through project-based assessments and affective evaluations through interviews or surveys of students' attitudes and motivations [72]. This aligns with educational principles that emphasize evaluation should not be limited to formal tests, but should involve various methods to provide a more comprehensive picture of students' abilities and achievements.

RESEARCH METHODS

The method used in this study is a descriptive approach with a quantitative orientation, which emphasizes the analysis of data in the form of numbers obtained from the research object. This descriptive approach is used to describe or depict phenomena that emerge in the research process, whether they are natural (events that occur naturally in social or educational contexts) or artificial, such as efforts and policies implemented by the authorities [73]. This aligns with the understanding of Blessing et al. that descriptive research aims to describe the state, phenomenon, or situation being studied without the intention of making broader conclusions or generalizations about a larger population [74].

The quantitative approach, which forms the basis of this study, is a research method that focuses on collecting data that can be measured numerically and subjected to statistical analysis [75]. This approach is used to describe trends or patterns in data and explain the relationship between the variables being studied. Fotheringham states that the quantitative approach is instrumental in describing trends and relationships between variables that can be measured with numbers [76]. With this approach, researchers can analyze data on a larger scale and test hypotheses based on existing theories, providing a more structured and objective understanding of the phenomena occurring in education. This study focuses on testing the theory regarding the relationship between teaching skills, teacher professionalism, and student achievement. Therefore, this study follows a quantitative paradigm that aims to identify and measure specific variables relevant to the problem at hand. This

study examines the relationship between these variables using numerical data to produce objective data that can be analyzed through statistical procedures. As explained by Yilmaz, the quantitative approach also enables the evaluation of measurable phenomena using statistical tools that can elucidate the relationships or differences between the variables being studied [77].

1. Research Population and Sample

The population in this study consisted of all teachers teaching at elementary schools in Serang, Banten, Indonesia, totalling 657 people. This study selected a sample of 100 teachers from the total population, representing a large proportion of the population. The sample was selected randomly, taking into account the diversity of teachers' characteristics from various educational backgrounds and teaching experiences. The sample size was based on Stephan's theory, which suggests that if the population is vast, the sample should comprise between 20% and 25% of the total population or more to obtain representative results [78]. In this case, a sample of 100 teachers provides a fairly representative picture of the entire population of teachers in the region.

2. Data Collection Instruments

The instrument used to collect data in this study was a questionnaire using a Likert scale model, designed to measure teaching skills, teacher professionalism, and student achievement [79]. The questionnaire consists of three sets of questions, each designed to measure the variables being studied. The Likert scale used ranges from "strongly agree" to "strongly disagree" to measure the level of agreement of respondents to the statements presented. Each questionnaire was designed to ensure that the data obtained from respondents were reliable and valid. The validity of the instrument was assessed through content validity testing. At the same time, reliability was evaluated using Cronbach's alpha coefficient, which indicates the internal consistency of each set of questions used.

3. Data Analysis Techniques

Data analysis in this study involves the use of descriptive and inferential statistics to describe and test the relationship between variables. Descriptive statistics are used to describe the data that has been collected and provide an overview of the frequency distribution, mean, and standard deviation of the existing data [80]. This helps in the process of obtaining a clear picture of the characteristics of the existing data. For example, descriptive statistics can be used to organize and analyze data on teachers' teaching skills, professionalism, and student achievement outcomes. With descriptive statistics, the author can determine how the data is distributed for each variable, which helps in further decision-making and planning.

Additionally, inferential statistics are employed to test hypotheses proposed in research. Inferential statistics themselves help to draw conclusions or generalizations about the population based on the sample data obtained [80]. In this study, the inferential statistical analysis techniques employed are correlation analysis, regression analysis, and the t-test. Correlation analysis is used to test the relationship between two variables measured on an interval scale.

This will help identify the extent to which teaching skills and teacher professionalism are related to student achievement. A significant correlation indicates that there is a relationship between two variables that influence each other. Regression analysis is used to analyze the influence of one or more independent variables on a dependent variable [81]. In this study, regression analysis was employed to examine the impact of teaching skills and teacher professionalism on student achievement.

This helps researchers predict changes in student achievement based on changes in teaching skills and professionalism. The t-test is used to test whether there are significant differences between groups in the variables being studied. This t-test helps determine whether there are differences between male and female teachers in terms of teaching skills, professionalism, and student achievement.

STUDY RESULTS

1. Descriptive study

The student achievement scores obtained from measurements using questionnaires have a theoretical range of 30 to 150 for the student achievement variable, and an empirical score range of 69 to 120. From the results of descriptive statistical calculations, it can be seen that the mean (M) is 92, the standard deviation (SD) is 11, the variance is 122, the median (ME) is 91, and the mode (MO) is 85. The range is 51. Regarding the distribution of the learning achievement variable, it can be described in the form of a frequency distribution, as shown in Table 1.

Table 1 Frequency distribution of student achievement

No	Class			Midpoint	Frequency		
	Interval				Absolut	Relative (%)	Cumulative
1	67	-	73	70	5	5.0	5.00
2	74	-	80	77	8	8.0	13.00
3	81	-	87	84	25	25.0	38.00
4	88	-	94	91	25	25.0	63.00
5	95	-	101	98	16	16.0	79.00
6	102	-	108	105	12	12.0	91.00
7	109	-	115	112	7	7.0	98.00
8	116	-	122	119	2	2.0	100.00
	Total	100	100.0				

Based on Table 1, the students' achievement scores show that 38 respondents (38.0%) are below average, 53 respondents (53.0%) are in the average group, and nine respondents (9.0%) are in the above-average group. Thus, it can be concluded that student achievement is in good condition, which means it must be maintained to improve the quality of education in schools. Therefore, the role of teachers must be maximized. Previous research conducted by Block, Conan and Jenna, Gregersen identified at least 19 roles of teachers; teacher as educator, instructor, guide, trainer, counselor, innovator, model and role model, personal investigator, creativity enabler, perspective provider, ordinary worker, camp mover, storyteller, actor, emancipator, evaluator, preservator, and culminator [82; 84].

The score range for the teacher professionalism variable has a theoretical range of 30 to 150, and an empirical score range of 57 to 115. From the results of descriptive statistical calculations, the mean (M) = 80, standard deviation (SD) = 10, variance = 100, median (ME) = 79, mode (MO) = 75, and range = 58. The distribution of teacher professionalism variable data can be illustrated using a frequency distribution, as shown in Table 2.

Table 2 Frequency distribution of professional teachers

No	Class			Midpoint	Frequency		
	Interval				Absolut	Relative (%)	Cumulative
1	54	-	61	57.5	2	2.0	2.00
2	62	-	69	65.5	12	12.0	14.00
3	70	-	77	73.5	29	29.0	43.00
5	78	-	85	81.5	31	31.0	74.00
5	86	-	93	89.5	18	18.0	92.00
6	94	-	101	97.5	4	4.0	96.00

7	102	-	109	105.5	3	3.0	99.00
8	110	-	117	113.5	1	1.0	100.00
	Total	100	100.0				

Based on Table 2, the professionalism score of teachers was as follows: 43 respondents (43.0%) were below average, 53 respondents (53.0%) were average, and four respondents (4%) were above average. Thus, it can be said that the teachers have exemplary professionalism.

The range of teaching skill scores spans a theoretical range of 30 to 150 and an empirical range of 45 to 94. From the results of descriptive statistical calculations, the mean (M) = 75, standard deviation (SD) = 9, variance = 77, median (ME) = 74, mode (MO) = 72, and range = 49. The distribution of teaching skill variable data can be illustrated using a frequency distribution, as shown in Table 3.

Table 3 Frequency distribution of teaching skills

No	Class			Midpoint	Frequency		
	Interval				Absolut	Relative (%)	Cumulative
1	43	-	49	46	1	1.00	1.00
2	50	-	56	53	1	1.00	2.00
3	57	-	63	60	3	3.00	5.00
5	64	-	70	67	27	27.00	32.00
5	71	-	77	74	32	32.00	64.00
6	78	-	84	81	20	20.00	84.00
7	85	-	91	88	15	15.00	99.00
8	92	-	98	95	1	1.00	100.00
	Total	100	100.00				

Based on Table 3, teaching skills scores were reported by five respondents. This means that (5.0%) respondents were in the below average group, 79 respondents (79.0%) were in the average group, and 16 respondents (16%) were in the above average group. It can be concluded that the teaching skills or abilities of the teachers were in the good category.

In assessing the progress of the learning process, each teacher can evaluate their students' progress using illuminative methods and objective structural methods. Illuminative-observational assessment is carried out through continuous observation of students' progress. Meanwhile, objective structural assessment, which is related to scoring, is typically conducted within the framework of student learning outcome assessment, which usually involves predetermined scores or grades.

2. Research Hypothesis Testing

2.1 There is a difference between male teachers' teaching skills and female teachers' teaching skills

To answer the hypothesis and research questions regarding whether there are differences in teaching skills between male and female teachers, it is necessary to test respondents or samples that are representative of the population being studied. This test is conducted to obtain a more precise and more accurate picture of these differences. The answer to this research question can be found through statistical analysis, specifically a t-test, which is designed to compare two different groups of data, namely the teaching skills of male and female teachers. The results of the t-test show that there is a significant difference between the teaching skills or abilities of male and female teachers, with a significance value of $p < 0.05$, which indicates that the difference is not a coincidence.

The teaching skill values obtained ($t = -1.168$; $p = 0.246$) indicate that there is no significant difference in teaching skills between the two groups. A negative t-value indicates that the average teaching skill of male teachers is lower than that of female teachers. The mean difference is -2.040 with a range of 1.426 to 5.506. Based on these results, it can be concluded that the overall mean teaching skill score of male teachers is 74.00, with a standard deviation of 6.925, indicating less variation in the male teacher group. Conversely, the average teaching skill score for female teachers is 76.04, with a standard deviation of 10.22, indicating that the teaching skills of female teachers are more diverse.

2.2 There is a difference between male and female professional teachers

Answering the hypothesis and research questions regarding whether there are differences in professionalism between male and female teachers is crucial for understanding the dynamics within the education sector. A teacher's professionalism is not only measured by their teaching skills, but also encompasses their attitude, commitment, and ability to fulfil their duties and responsibilities as educators. Therefore, differences in the professionalism of male and female teachers can provide deeper insights into how gender influences the way individuals carry out their profession.

The answer to this question is based on a T-test conducted to examine the differences between the two groups, namely male and female teachers. The results of the T-test indicate a significant difference between the professionalism of male and female teachers, with a significance value greater than 0.05, suggesting that the difference is not due to chance but rather to certain factors that influenced the two groups. The T-test results, which show a value of ($t = 0.010$; $\text{Sig} = 0.992$), indicate that there is a difference in the level of professionalism between male and female teachers. However, it is worth noting that a positive T-value indicates that the average level of professionalism among male teachers is slightly higher than that of female teachers.

The difference in the average professionalism between the two groups is 0.020, with a range of -4.104 to 4.144. This figure illustrates that although there is a difference, the range of the difference is minimal, indicating that the level of professionalism between the two groups is very similar, but with a slightly higher tendency among male teachers. The average professionalism score for male teachers is 79.70, with a standard deviation of 8.612, indicating that the level of professionalism among male teachers is more consistent and less varied. Meanwhile, the average professionalism score for female teachers is 79.68, with a standard deviation of 11.905, indicating that the level of professionalism among female teachers is more varied.

2.3 There is a difference between male and female students' achievement

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The difference in the average professionalism between the two groups is 0.020, with a range of -4.104 to 4.144. This figure illustrates that although there is a difference, the range of the difference is minimal, indicating that the level of professionalism between the two groups is very similar, but with a slightly higher tendency among male teachers. The average professionalism score for male teachers is 79.70, with a standard deviation of 8.612, indicating that the level of professionalism among male teachers is more consistent and less varied. Meanwhile, the average professionalism score for female teachers is 79.68, with a standard deviation of 11.905, indicating that the level of professionalism among female teachers is more varied.

2.4 The relationship between teaching skills and teachers' professionalism

The hypothesis proposed for testing in this study is: "There is a relationship between teaching skills and teacher professionalism." In other words, this study assumes that higher teaching ability will influence higher levels of professionalism among teachers. Conversely, if a teacher's teaching ability is low, it can be predicted that the teacher's level of professionalism will also be low. This assumption is based on the theory that teaching skills are one of the important aspects in determining the quality of education provided, which in turn influences a teacher's attitude and commitment to their profession. In other words, a teacher with good teaching skills will tend to have a more professional attitude in carrying out their duties.

To test this hypothesis, a simple regression analysis was conducted between two variables, namely teaching skills as the independent variable (X) and teacher professionalism as the dependent variable (Y). The results of the regression analysis show a positive relationship between the two variables, as seen from the regression coefficient value of 0.648. This indicates that a 0.648-unit increase will follow a one-unit increase in teaching skills (X) in teacher professionalism (Y). Thus, the higher a teacher's teaching skills, the higher their level of professionalism.

Additionally, the constant value in the regression equation, which is 31.076, indicates that if teaching skills (X) are equal to zero, then the predicted level of teacher professionalism (Y) is 31.076. This suggests that even if teaching skills are absent, teacher professionalism will still exist to some extent, which may be influenced by other factors not accounted for in this model. Thus, the relationship between teaching skills and teacher professionalism can be described by the simple regression equation $Y = 31.076 + 0.648X$. This indicates a strong and significant relationship between the two variables. In other words, better teaching skills can improve the level of teacher professionalism. The results of this analysis also emphasize the importance of developing teaching skills as part of efforts to improve the quality of education and teacher professionalism.

Table 4 presents the detailed calculation of the regression equation, along with other statistics that support these findings. The results offer more profound insights into how improving teaching skills can be a key factor in enhancing teacher professionalism in schools.

Table 4 Regression equations of teaching skills toward teacher professionalism

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	31.076	7.537		4.123	.000
	Teachers teaching skill	.648	.100	.548	6.493	.000

a. Dependent Variable: Teacher Professionalism

Before being used for prediction purposes, the regression equation must meet the significance test (significance) and linearity test requirements. To determine the significance and linearity of the regression, an F-test was performed using the calculated F-value compared to the F-table value (0.01) as the criterion for measurement.

From the results obtained, it is found that the F-calculated value is 42.158, while the F-table value for $\alpha = 0.05$ is 4.04 and 7.19 for $\alpha = 0.01$. This result indicates that $F\text{-calculated} > F\text{-table}$, thus it can be stated that the regression coefficient of Y on X1 is highly significant at the specified level of significance. Therefore, the equation $Y = 31.076 + 0.648X_1$ can be used to describe the relationship between teaching skills and teacher professionalism as a positive and significant correlation.

The linear regression equation can be determined through the linear regression line. The criteria for evaluation are $F\text{-calculated} < F\text{-table}$. From the calculations, the F-calculated value is 1.521, while the F-table value at $\alpha = 0.05$ is 2.25. At the $\alpha = 0.01$ level, the value is 3.20. This indicates that the F-calculated value is less than the F-table value, or $1.521 < 2.25$. Therefore, the linear regression equation model is valid.

The strength of the relationship between teaching skills and teacher professionalism is indicated by the correlation coefficient $r = 0.548$. The t-calculated value obtained is 6.486, while the distribution of the student's t-table with $\alpha = 0.05$ produces a t-table value of 1.68. Therefore, t-calculated is greater than t-table ($6.486 > 1.68$), indicating that the correlation coefficient between teaching skills and teacher professionalism is highly significant. Thus, the hypothesis proposed is that there is a significant positive relationship between teaching skills and teacher professionalism. Therefore, the higher the teaching skills, the better the teacher professionalism in schools. Next, the coefficient of determination. The coefficient of determination for the relationship between teaching skills and teacher professionalism is 0.301. This means that 30.1% of the variation in teacher professionalism can be attributed to their teaching skills and can be explained by the regression equation $Y = 31.076 + 0.648X$. In other words, teaching skills contribute 30.1% to the improvement of teacher professionalism in schools.

2.5 The Relationship between teaching skills and student achievement.

The hypothesis proposed for testing is: "There is a positive relationship between teaching skills and student achievement." In other words, it is expected that the higher the teaching skills of teachers in schools, the higher the student achievement will be. Conversely, the lower the teaching skills of teachers in schools, the lower the student achievement will be.

Based on the results of a simple regression analysis using data on teaching skills and student achievement, the following results were obtained: $b = 0.703$ and 39.265 for the constant. Thus, the relationship between the two variables (X and Z) can be described by the regression equation $Y = 39.265 + 0.703X$. The regression equation for the variables of teaching skills and student achievement is presented in Table 5.

Table 5 Regression equations of teachers' teaching skills and student achievement

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	39.265	8.010		4.902	.000
	Teachers teaching skill	.703	.106	.557	6.631	.000

a. Dependent Variable: Student Achievement

Before being used for prediction purposes, the regression equation must be standardized using significance tests and linearity tests. To determine the level of significance and linearity of the regression, an F-test was conducted with the criterion that the F-calculated value was greater than the F-table value (0.01). From the calculations, it was found that the F-calculated value was 43.976, while the F-table values at $\alpha = 0.05$ and $\alpha = 0.01$ were 4.04 and 7.19, respectively. These results indicate that the F-calculated value is greater than the F-table value, thus indicating that the regression coefficient in the direction of Z toward X is highly significant at the significance level. Therefore, the equation $Y = 39.265 + 0.703X$ can be used to describe the positive and significant relationship between teaching ability and student learning achievement.

To find the linear regression equation, a linear regression line can be plotted. The criteria for evaluation are $F\text{-calculated} < F\text{-table}$. From the calculation results, the F-calculated value is 1.087, while the F-table value at $\alpha = 0.05$ is 2.27. At $\alpha = 0.01$, the F-table value is 3.24. This indicates that the F-calculated value is less than the F-table value, or $1.087 < 2.27$. Therefore, the linear regression equation model can be used.

The strength of the relationship between teaching skills and student learning achievement is indicated by the correlation coefficient, $r_{y1} = 0.557$. The t-calculated value obtained is 6.64, while the t-table distribution for students with $\alpha = 0.05$ yields a t-table index of 1.57. Therefore, the t-calculated value being greater than the t-table value ($6.64 > 1.57$) indicates that the correlation coefficient between teaching skills and student learning achievement is highly significant. Thus, the

hypothesis stating that there is a highly significant positive relationship between teaching skills and student learning achievement is proven. Therefore, the better the teaching skills in schools, the better the students' achievements. In further statistical analysis, the coefficient of determination is calculated. The coefficient of determination for the relationship between teaching skills and student achievement is 0.310. This means that 31.0% of the variation in student achievement can be attributed to teachers' teaching skills at school and can be explained by the regression equation $Y = 39.265 + 0.703X$. In other words, teachers' teaching skills account for 31.0% of the improvement in student achievement at the school level.

2.6 The relationship between teacher professionalism and student achievement

The hypothesis proposed for testing in this section is "There is a positive relationship between teacher professionalism and student achievement." In other words, it is predicted that the higher the teacher professionalism, the higher the student achievement in the school. Conversely, the lower the teacher professionalism, the lower the student achievement in the school. Based on the results of the simple regression analysis of the data on teacher professionalism and student achievement, the regression equation obtained is $b = 0.849$, and the constant is 24.396. Thus, the relationship between the two variables (Y, Z) can be described by the regression equation $Y = 24.396 + 0.849Z$, where Y is student achievement and Z is the level of teacher professionalism.

To provide a clearer picture, Table 6 presents the results of the regression equation that describes the relationship between teacher professionalism and student achievement. This table illustrates the relationship between student achievement (Y) and teacher professionalism (Z). For example, if teacher professionalism (Z) increases, then student achievement (Y) will also increase, by the calculated regression coefficient of 0.849.

In practical terms, these analysis results indicate that efforts to improve teacher professionalism, such as through training, career development, or competency improvement, have the potential to improve student achievement. Conversely, if teacher professionalism is low, it can be predicted that student achievement will also decline. The hypothesis proposed for testing is: "There is a positive relationship between teacher professionalism and student achievement."

In other words, it is predicted that the higher the teacher professionalism, the higher the student achievement in the school. Conversely, the lower the teacher professionalism, the lower the student achievement in the school. Based on the results of the simple regression analysis of the teacher professionalism variable on student achievement, a regression equation with a constant of $b = 0.849$ and 24.396 was obtained. Thus, the relationship between the two variables (Y, Z) can be described by the regression equation $Y = 24.396 + 0.849Z$. The regression equation showing the relationship between teacher professionalism and student achievement is presented in Table 6.

Table 6 Regression equations of professional teachers with student achievement

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	24.396	5.283		4.618	.000
	Teachers' professionalism	.849	.066	.794	12.908	.000

a. Dependent Variable: Student Achievement

Before being used for prediction purposes, the regression equation must first pass the significance test and the linearity test. To determine the level of significance and linearity of the regression, an F-test is performed, with the evaluation criteria being that the calculated F-value is greater than the table F-value (0.01). From the calculation results, it is evident that the F-calculated value is 166.614, whereas the F-table values at $\alpha = 0.05$ and $\alpha = 0.01$ are 4.04 and 7.19, respectively. This result indicates that $F\text{-calculated} > F\text{-table}$. Therefore, it can be stated that the regression coefficient in the direction of Z towards Y is highly significant. At this level of

significance, the equation $Y = 24.396 + 0.849X$ can be used to describe the relationship between teacher professionalism and student achievement.

The value of the linear regression equation can be obtained through the linear regression line. The criterion for evaluation is $F_{\text{calculated}} < F_{\text{table}}$. From the calculation results, it can be concluded that the $F_{\text{calculated}}$ value is 0.857, while the F_{table} value at $\alpha = 0.05$ is 2.19.

Meanwhile, at $\alpha = 0.01$, the value is 3.23, indicating that the $F_{\text{calculated}}$ value is $< F_{\text{table}}$ or $0.857 < 2.19$. Thus, it can be used as a linear regression equation model. The strength of the relationship between teacher professionalism and student learning achievement is indicated by the correlation coefficient $r = 0.794$.

The $t_{\text{calculated}}$ value obtained is 12.93, while the t_{table} distribution with $\alpha = 0.05$ produces a t_{table} value of 1.68. Therefore, $t_{\text{calculated}}$ is greater than t_{table} ($12.93 > 1.68$). This indicates that the correlation coefficient between teacher professionalism and student achievement is very significant. Thus, the hypothesis stating that there is a highly significant positive relationship between teacher professionalism and student achievement is proven and accepted. Therefore, the higher the teacher professionalism, the better the student achievement. The following statistical analysis used is the coefficient of determination. The coefficient of determination between teacher professionalism and student achievement is 0.630. This means that 63.0% of the variation in student achievement can be attributed to teacher professionalism and explained by the regression equation $Y = 24.396 + 0.849X$. In other words, teacher professionalism accounts for 63.0% of the improvement in student achievement at the school level.

DISCUSSION

This study presents robust and statistically significant empirical evidence on the impact of teacher professionalism and teaching skills on student achievement at the elementary school level in Indonesia. The main findings of this study indicate that teacher professionalism accounts for more than 60% of the variation in student achievement. Teacher professionalism in this context encompasses not only pedagogical skills, such as the ability to deliver material clearly and effectively, but also deep knowledge of the subject matter and the ability to adapt teaching methods to the diverse characteristics of students. In addition, teacher professionalism also involves teachers' commitment and dedication to continuous self-development, which includes improving their abilities through training, self-reflection, and updating their knowledge and skills in line with the times.

This study emphasises that teacher quality is the strongest predictor of educational quality, as explained by Arifin et al. [85]. Based on these findings, it is evident that the development of teacher professionalism has a significant impact on improving student academic achievement. In this study, it was found that teacher professionalism contributed more than 60% to the variation in student achievement. These findings underscore the significance of the quality of teaching provided by teachers in shaping student learning outcomes, which in turn supports the attainment of optimal educational goals. Specifically, this study identifies several aspects of teacher professionalism that have a direct influence on student achievement. These aspects include work ethics, commitment to student development, skills in collaborating with colleagues, and involvement in overall school development activities. High teacher professionalism has been proven to have a significant impact on the quality of the teaching and learning process, as well as creating a conducive learning environment for student development. Teachers who demonstrate a high level of dedication to their profession, both in terms of personal growth and in improving the quality of teaching, can create a classroom atmosphere that supports student academic success.

Additionally, the development of teacher professionalism plays a crucial role in fostering more effective interactions between teachers and students. Healthy and productive interactions between teachers and students are highly dependent on the professionalism of teachers, which includes the ability to understand and respond to students' needs in a manner that is appropriate and effective. High teacher professionalism lies not only in mastery of subject matter, but also in interpersonal skills that help create a positive and supportive learning atmosphere. Professional teachers tend to be more sensitive to the emotional and academic needs of students, enabling them to build stronger and more respectful relationships, which in turn can increase student motivation and achievement.

Furthermore, high teacher professionalism also involves the ability to adapt to changes in the education system, whether these changes are in policy, technology, or the ever-evolving needs of students. In the context of an ever-changing education system, teachers must be able to identify and respond to the latest developments in the field of education, adapting their teaching strategies accordingly. Therefore, continuous professional development is essential. Practical ongoing training and professional evaluation are key factors that enable teachers to continue to grow in their profession and remain relevant in providing quality education [79; 80].

Continuous training enables teachers to acquire new skills, update their knowledge, and learn innovative approaches to addressing challenges that arise in the teaching process. For example, training in the latest teaching methods or updates in the use of educational technology can help teachers present material in a more engaging and effective manner. In addition, training also helps teachers explore various approaches to facilitating deeper, more individualised learning, thereby creating a more comprehensive and practical learning experience.

This study also emphasises the importance of continuous professional evaluation in the process of developing teacher professionalism. Structured evaluations based on constructive feedback offer teachers opportunities to identify areas for improvement in their teaching practices. Through systematic evaluations, teachers can more easily reflect on the strengths and weaknesses of their teaching methods, which can then serve as a basis for designing more effective self-development strategies. Practical evaluation also helps teachers to continuously adjust and develop their skills, ensuring that they remain on track to achieve the desired educational goals.

One example of a highly effective implementation of continuing education is a technology-based learning program that enhances the way teachers present material to students. In a world increasingly filled with digital technology, the ability of teachers to integrate technology into the teaching and learning process is becoming increasingly important. Adequate professional development enables teachers to utilise technological tools, such as educational software, online learning platforms, and other interactive tools that can improve the quality of teaching. With technology, teachers can present learning materials that are more engaging and dynamic, while also providing students with broader access to a wider range of diverse and interactive learning resources.

Additionally, the use of technology in teaching enables teachers to be more flexible in adapting teaching methods to meet the diverse needs of students. Each student has a unique learning style, and technology offers teachers the opportunity to create personalised and tailored learning experiences that cater to the individual needs of each student. For example, teachers can utilise learning applications that are adaptable to students' ability levels, or online learning platforms that enable students to learn at their own pace.

This powerfully supports students' holistic development in cognitive, affective, and psychomotor aspects, and provides opportunities for students to be more actively engaged in their learning process. In the long term, with proper professional development, teachers can optimise students' potential in more innovative and relevant ways, which not only improves academic outcomes but also prepares students to face the challenges of an ever-evolving world.

Therefore, it is essential to ensure that every teacher has access to ongoing training and evaluation, which enables educators to continually update their skills and knowledge to support students' maximum development. The continuous development of teacher professionalism is not only a necessity but also a vital investment in a better and more equitable future of education.

CONCLUSION

There are differences in teaching skills between male and female teachers. The average teaching skills of male teachers are lower than those of female teachers. There are differences in professionalism between male and female teachers. The professionalism of male teachers is generally higher than that of female teachers. There are differences in academic achievement between male and female students. Male students' academic achievement tends to be lower than that of female students. There is a positive and significant relationship between teaching skills and teacher professionalism. The relationship between these two variables is based on regression and correlation

analysis. Based on the relationship between the two, if teaching skills improve, this has a positive impact on professionalism among teachers.

There is a positive and significant relationship between teachers' teaching skills and student achievement. The relationship between these two variables is based on regression and correlation analysis. Additionally, this equation indicates that high teacher professionalism is likely to contribute to positive improvements in student achievement in schools. The better the teachers' teaching skills, the better the students' achievement. A positive and statistically significant relationship exists between teacher professionalism and student academic achievement in schools. The relationship between these two variables is confirmed based on regression and correlation analysis. This equation shows that an increase in teacher professionalism will have a positive impact on student achievement in schools. The higher the teacher professionalism, the higher the student achievement in schools. Overall, this finding is consistent with previous research indicating that teacher training and professional development are crucial mechanisms for enhancing teachers' content knowledge and refining their teaching practices, thereby enabling them to teach to high standards, which ultimately leads to improved student achievement. Regarding the importance of the role of teachers, it is aptly stated that teachers have a strong and lasting influence on their students. They directly influence how students learn, what students learn, how much students learn, as well as how they interact with one another and with the world around them.

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