



Instructional Competence As A Predictor Of Student Learning Engagement

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Abstract

This study investigates the relationship between teacher professional competence and student learning activity among Grade XI students at SMA Negeri 1 Bonepantai, Indonesia. While policy frameworks emphasize competence-based instruction, challenges remain in translating this into active student engagement, particularly in under-resourced contexts. Employing a quantitative descriptive–correlational design, the study gathered data from 64 respondents using validated and reliable Likert-scale instruments. Instrument testing confirmed high validity ($r > 0.412$) and reliability ($\alpha = 0.923$ for competence and 0.922 for activity). Descriptive findings revealed high average scores for both teacher competence (4.34) and student learning activity (4.45). Regression analysis produced the model $\hat{Y} = 24.291 + 0.730X$, with a significant positive effect ($t = 6.267 > t\text{-table} = 1.669$; $p < 0.05$) and $R^2 = 0.388$, indicating that competence explains 38.8% of the variation in student activity. Strongest indicators included creative material development and student group discussions, while the lowest were contextualization and opinion expression. These findings confirm theoretical assumptions that professional competence enhances learner participation and underscore the need for CPD focused on culturally responsive and dialogic teaching. The study contributes to empirical knowledge on instructional quality in Indonesian secondary education and invites further research using multivariate approaches to examine the remaining variance in student engagement.

Keywords: Teacher Competence, Student Activity, Indonesian Secondary Education, Instructional Quality, CPD

Introduction

Education plays a foundational role in advancing human development, fostering not only cognitive skills but also socio-emotional growth necessary for societal progress. In this process, the teacher becomes a central figure—both as a facilitator of knowledge and as a designer of learning environments that cultivate meaningful engagement. The global discourse on educational quality has consistently underscored teacher competence as a vital determinant of student achievement, participation, and lifelong learning (Hattie, 2009; Darling-Hammond, 2012). Within this context, educational systems are increasingly concerned with evaluating and enhancing teacher professionalism to optimize student outcomes. In Indonesia, teacher certification and the Uji Kompetensi Guru (UKG, or Teacher Competency Test) have emerged as institutional mechanisms for assessing professional readiness and promoting accountability.

Despite these efforts, disparities in teacher competence persist across regions and institutions. In under-resourced or peripheral areas, limitations in access to continuous professional development (CPD), instructional materials, and institutional support often hinder the realization of quality teaching. This phenomenon is evident in SMA Negeri 1 Bonepantai, an Indonesian public secondary school where only four teachers possess official certification—a stark indicator of uneven professional capacity. The implications of such disparities manifest in student behaviors, notably in learning activity characterized by passivity, low participation, and diminished attentiveness. Recognizing that student learning activity is a behavioral and cognitive response to instructional quality (Sardiman, 2006; Slameto, 2010), the current study seeks to investigate whether teacher professional competence serves as a substantive driver of learning engagement at the secondary level.

The central problem addressed in this study is the persistently low level of classroom learning activity among Grade XI students at SMA Negeri 1 Bonepantai. While national education policy mandates competence-based instruction, implementation at the school level reveals multiple obstacles: insufficient monitoring of teacher performance, lack of access to contemporary teaching media and methods, minimal motivational incentives, and restricted CPD pathways. These constraints converge to produce classrooms where students are often disengaged, minimally responsive, and less inclined to participate in collaborative or higher-order learning tasks. Such observations call into question whether teacher competencies—if strengthened and properly applied—can meaningfully shift the landscape of student activity and instructional effectiveness.

In light of these issues, scholars have proposed various strategies to address gaps in teaching quality. At a general level, reforms have emphasized the need for robust teacher preparation, dynamic instructional design, and contextually sensitive pedagogical approaches (Darling-Hammond et al., 2017). Further, the integration of

continuous feedback loops, formative assessment, and teacher mentorship have been found to reinforce teacher efficacy and student outcomes (Guskey, 2002; Avalos, 2011). These general solutions underscore that teaching is not merely the delivery of content but the orchestration of interactive, engaging, and inclusive learning environments.

More specifically, professional competence has been operationalized into measurable domains such as content knowledge, pedagogical expertise, instructional innovation, classroom management, and learner evaluation (Kunandar, 2020). Studies by Astuti and Raharjo (2021) and Popoi et al. (2021) further delineate that teacher competence—especially in areas of content mastery, cultural contextualization, and ICT utilization—correlates with increased student engagement, particularly in questioning behavior, group discussions, and task completion. Fadilah (2021) affirms that professional competence has a statistically significant and positive effect on student participation in secondary schools. These findings lend empirical credence to the proposition that strengthening specific dimensions of competence may directly enhance observable student behaviors in the classroom.

Parallel strands of literature also examine the role of context in mediating teacher effectiveness. For instance, Yamin (2007) and Hamalik (2009) argue that effective learning is student-constructed, requiring deliberate teacher strategies that evoke curiosity, interaction, and motivation. This is especially critical in settings where extrinsic supports are limited. In such environments, the teacher's ability to scaffold content, integrate cultural relevance, and apply technology may be pivotal in activating student engagement. Nevertheless, while these studies affirm the relevance of professional competence, many stop short of quantifying its direct influence on specific learner behaviors such as participation, attentiveness, or collaboration—thus leaving a gap in actionable evidence.

In the Indonesian context, there remains limited empirical data that links teacher professional competence with student learning activity, especially at the secondary school level and in underdeveloped regions. While the theoretical framework strongly supports such a connection, the specific mechanisms and effect sizes remain underexplored. This gap is significant because it impedes data-driven policymaking at the school and district levels. Moreover, without localized insights, CPD programs may fail to target the most impactful aspects of competence that elevate student participation and learning engagement.

Addressing this gap, the current study investigates the relationship between teacher professional competence and student learning activity among Grade XI students at SMA Negeri 1 Bonepantai. The objective is twofold: (1) to determine whether a statistically significant relationship exists between the two constructs, and (2) to estimate the magnitude of teacher competence's influence on learning activity using a descriptive–correlational design. By employing validated instruments and conducting a regression-based analysis, the study offers novel

contributions to both theory and practice. The novelty lies in its context-specific examination of competence–activity dynamics, particularly within an underrepresented educational setting. Furthermore, the study hypothesizes that greater teacher professional competence is positively associated with higher levels of student learning activity—a claim grounded in extant theory but yet to be empirically tested in this locale. The findings are anticipated to inform school leadership, educational policymakers, and CPD providers on strategic focus areas for enhancing instructional quality and student engagement in secondary education.

Methodology

This study employed a quantitative descriptive–correlational design to investigate the relationship between teacher professional competence and student learning activity among Grade XI students at SMA Negeri 1 Bonepantai. The methodology ensured internal validity and empirical reliability through validated instruments, systematic sampling, and statistical analyses. The following subsections describe the research site and period, variables, sampling, data collection, instrument testing, and data analysis.

The study was conducted at SMA Negeri 1 Bonepantai, Desa Bilungala Utara, Kecamatan Bonepantai, Kabupaten Bone Bolango, Indonesia. This site was selected based on access, feasibility, and the relevance of the observed issue: low learning activity among Grade XI students. Data collection took place from February to July 2025.

Adopting Sugiyono’s (2018) approach, the study used a single-predictor model with simple linear regression to test the effect of the independent variable (Teacher Professional Competence, X) on the dependent variable (Student Learning Activity, Y). This design enabled objective measurement of whether variations in competence predicted changes in activity levels.

Variables were defined per educational-psychometric standards. Teacher Professional Competence (X) included: (1) elaboration of subject matter, (2) explanation of competencies, (3) creative material development, (4) contextual instruction, (5) ICT for self-development, and (6) responsiveness to student characteristics (Kunandar, 2020). Student Learning Activity (Y) included: reading, questioning, opinion expression, listening, respecting peers, note-taking, discussion, assignment completion, and peer support (Sardiman, 2006; Slameto, 2010).

The study population included all 180 Grade XI students, spread across five classes (A–E). Using Slovin’s formula (error tolerance 0.1), a 20% proportional sample of 64 students was drawn.

Data were collected using four techniques:

1. **Observation:** Assessed classroom management and student engagement.
2. **Questionnaires:** Likert-scaled (SS = 5 to STS = 1), assessing both variables via closed-ended items.

3. **Interviews:** Provided deeper insights into teacher competence and engagement dynamics.
4. **Documentation:** Validated institutional data (e.g., rosters, attendance, certifications) (Sakban et al., 2019).

Instrument validity followed Sugiyono (2017), using Product–Moment correlation with $r\text{-table} = 0.412$ ($\alpha = 0.05$) from a 15-student pilot. Items above the threshold were retained. Reliability was tested with Cronbach’s Alpha (threshold $\alpha > 0.60$ per Nunnally, 1978), resulting in 0.923 (X) and 0.922 (Y), confirming strong consistency.

Analysis began with the Kolmogorov–Smirnov normality test. A $p\text{-value} > 0.05$ indicated residual normality, validating regression. Descriptive statistics categorized means: 1.00–1.99 (Low), 2.00–2.99 (Medium), 3.00–3.99 (Quite High), 4.00–4.99 (High).

Inferential statistics followed a regression model: $\hat{Y} = a + bX$. If $t_{\text{calculated}} > t_{\text{table}}$ (1.669, $df = 62$), H_0 was rejected, confirming significance at $\alpha = 0.05$. The coefficient of determination (R^2) quantified explained variance in learning activity.

The analysis proceeded systematically: coding, scoring, tabulation, normality testing, regression, and hypothesis testing. Qualitative insights from interviews and observations supported the quantitative results. For example, creative teaching or ICT integration observed matched questionnaire results, as did student participation trends.

In conclusion, the methodology ensured robust reliability and validity through rigorous sampling, validated instruments, and mixed-method triangulation. Positioned within the conventions of Sugiyono (2017), Kunandar (2020), Sardiman (2006), and Hamalik (2009), this framework offers a replicable model for analyzing competence-driven learning engagement in secondary schools.

Results

This section presents the empirical findings of the study based on data collected from 64 Grade XI students at SMA Negeri 1 Bonepantai. Results are organized into descriptive statistics, variable-specific respondent profiles, instrument validation and reliability, normality assumption testing, regression analysis, and model fit. These findings collectively respond to the research hypothesis that teacher professional competence significantly influences student learning activity.

The interpretation of mean scores was based on a standardized scale: 1.00–1.99 (Low), 2.00–2.99 (Medium), 3.00–3.99 (Quite High), and 4.00–4.99 (High), corresponding to percentage intervals from 20.00% to 100.00%. The overall mean score for teacher professional competence was 4.34, translating to 86.8%, which falls into the High category. Similarly, the overall mean score for student learning activity was 4.45 or 89.0%, also categorized as High. The difference from the ideal score of 5.00 indicates a 13.2% and 11.0% gap, respectively. These scores suggest

that while both constructs are relatively strong, there remains scope for improvement, particularly in underdeveloped aspects of teacher competence.

The analysis of the independent variable, teacher professional competence, revealed nuanced insights across six indicators. The highest mean score was observed for the indicator related to the creative development of instructional materials (mean = 4.50), affirming Kunandar's (2020) assertion that innovative teaching practices contribute significantly to instructional effectiveness. On the other hand, the lowest mean was found in the contextualization of lessons with students' cultural and everyday realities (mean = 4.22). This suggests a gap in applying content relevance, a factor emphasized by Yamin (2007) as essential for fostering learner engagement. Other indicators such as elaboration of subject matter (mean = 4.41), explanation of basic competencies (mean = 4.33), use of ICT for self-development (mean = 4.27), and modeling moral responsibility (mean = 4.33) also demonstrated high scores, underscoring a generally strong professional capacity among the teachers at the site.

Regarding the dependent variable, student learning activity, the highest indicator mean was recorded in group discussion participation (mean = 4.55), aligning with previous findings by Astuti and Raharjo (2021) that collaboration is a key marker of learner engagement. This was followed closely by task completion (mean = 4.54) and question-asking behavior (mean = 4.53). These patterns suggest that students are responsive to interactive pedagogies and task-based instruction. Conversely, the lowest mean was found in the expression of opinions during class discussions (mean = 4.25), pointing to a potential deficiency in dialogic teaching strategies or classroom psychological safety. This finding is echoed in Djamarah (2018), who argued that emotionally supportive environments are critical for encouraging open communication.

The validity test results affirmed the psychometric strength of the instruments used in this study. All questionnaire items exceeded the critical threshold of $r\text{-table} = 0.412$, based on a pilot test with 15 participants. This demonstrates that each item reliably measured its intended construct, in line with standards outlined by Sugiyono (2017). Moreover, reliability testing using Cronbach's Alpha yielded scores of 0.923 for teacher competence and 0.922 for student learning activity. Both coefficients far exceed the minimum benchmark of 0.60, confirming the internal consistency of the instruments and validating their use in this educational context.

Prior to inferential analysis, a normality test was conducted using the Kolmogorov–Smirnov (K–S) method. The test yielded a Z value of 0.748 with a p-value of 0.631, which is greater than the standard significance level of 0.05. This indicates that the residuals of the regression model are normally distributed, satisfying one of the core assumptions for linear regression analysis. Additionally, the normal probability–probability (P–P) plot displayed a distribution of residuals aligning closely along the diagonal line, visually supporting the statistical test

result. These findings justify the application of regression analysis as an appropriate inferential technique for this study, as suggested by Sugiyono (2018).

Regression analysis was performed to test the primary hypothesis. The estimated regression model is represented as:

$$\hat{Y} = 24.291 + 0.730X$$

This model indicates a positive linear relationship between teacher professional competence (X) and student learning activity (Y). The regression coefficient ($b = 0.730$) suggests that for every one-unit increase in teacher competence, there is a corresponding 0.730-point increase in predicted student activity. This supports the theoretical propositions by Fadilah (2021) and Popoi et al. (2021), who maintained that professional competence—including adaptive teaching and technology use—directly enhances learner behavior and participation.

To test the statistical significance of this relationship, a t-test was conducted. The calculated t-value was 6.267, which far exceeds the critical t-table value of 1.669 at a 95% confidence level and 62 degrees of freedom. The associated p-value was well below 0.05, confirming that the regression coefficient is significantly different from zero. Thus, the null hypothesis (H_0) asserting that teacher competence has no effect on student activity is rejected in favor of the alternative hypothesis (H_1), which posits a significant positive effect. These findings are congruent with the assertions of Slamet et al. (2023) and Sugiyanto (2023), who observed similar dynamics in secondary educational contexts.

The explanatory power of the regression model was evaluated using the coefficient of determination (R^2), which was calculated at 0.388. This means that 38.8% of the variance in student learning activity is explained by teacher professional competence. While this represents a moderate-to-strong effect size in educational research, it also implies that 61.2% of the variance is attributable to other unobserved factors. These could include elements such as school infrastructure, student motivation, parental involvement, socio-economic status, or classroom climate, as suggested by Darling-Hammond (2012). Therefore, while competence plays a critical role, it is part of a broader ecosystem of variables influencing student behavior.

In summary, the results of this study confirm the research hypothesis and align with prior theoretical frameworks and empirical studies. Teacher professional competence not only contributes significantly to student learning activity but also represents a measurable and actionable area for school-based intervention. The findings endorse the view that investment in competence-related professional development—particularly in culturally contextual teaching and dialogic instruction—can yield substantial returns in student engagement. While the model explains a significant portion of the observed variance, future research should consider multivariate models to uncover additional determinants of learning activity and better inform educational policy and classroom practice.

Discussion

This section provides a comprehensive analysis of the research findings concerning the relationship between teacher professional competence and student learning activity. Drawing on quantitative results and existing theoretical frameworks, the discussion elaborates on the significance of observed patterns, contextualizes them within the broader literature, and identifies pedagogical implications, limitations, and future directions.

The findings of the study reveal a statistically significant and positive relationship between teacher professional competence and student learning activity. With a regression equation of $\hat{Y} = 24.291 + 0.730X$, the analysis indicates that an increase in professional competence contributes substantially to elevating student engagement. The descriptive means further support this outcome: the mean score for teacher competence was 4.34 (86.8%), and for student learning activity, it was 4.45 (89.0%). These values fall within the 'High' category based on the adopted interpretive scale, suggesting a generally robust level of professional execution and learner engagement. Hypothesis testing confirmed the significance of this relationship ($t = 6.267 > t\text{-table} = 1.669$, $p < 0.05$), and the coefficient of determination ($R^2 = 0.388$) revealed that teacher competence explains 38.8% of the variation in student activity, leaving 61.2% to other unexplored factors.

These findings align with and reinforce prior scholarship. Kunandar (2020) emphasized that teacher competence—particularly in mastering content, using appropriate instructional strategies, and conducting evaluations—plays a vital role in enhancing classroom participation and learning outcomes. Similarly, Astuti and Raharjo (2021) found that high levels of professional competence among teachers correlate with increased student questioning, active discussion, and effective task completion. This study's observed improvements in group discussion participation, task fulfillment, and questioning behaviors directly support these claims, validating the theoretical linkage between professional preparation and student responsiveness.

Furthermore, Popoi et al. (2021) asserted that continuous professional development and adaptive technological use are central to sustaining teacher efficacy in modern classrooms. This is especially relevant in settings such as SMA Negeri 1 Bonepantai, where structural and resource constraints necessitate a reliance on teacher agency. The high score in the indicator for creative material development (mean = 4.50) demonstrates that teacher initiative in instructional design can successfully compensate for systemic limitations. Concurrently, Fadilah (2021) provided empirical evidence that teacher competence has a significant positive impact on student participation, a conclusion echoed in this study.

Although competence was generally high across indicators, the lowest score emerged in the contextualization of instruction with students' cultural and daily life contexts (mean = 4.22). This pattern signals a critical area for pedagogical

refinement. Yamin (2007) and Djamarah (2018) argued that effective learning environments must be both culturally relevant and psychologically supportive. The lack of robust contextual integration may explain why, despite overall high activity levels, students scored relatively low on the indicator of expressing opinions during discussions (mean = 4.25). These insights suggest a need to scaffold student voice through culturally grounded and emotionally safe dialogue.

Another salient dimension in interpreting these findings lies in the patterns of student behavior. The highest means were observed in group discussion (4.55), assignment completion (4.54), and questioning behavior (4.53). This indicates that when instructional design includes cooperative tasks and encourages inquiry, students are more likely to exhibit active engagement. Sugiyanto (2023) noted that questioning, note-taking, and collaboration are key indicators of teacher success, and these are precisely the behaviors manifested strongly in this study. However, the relatively lower performance in opinion expression points toward missed opportunities for developing critical thinking and dialogic interaction—skills crucial for 21st-century learning.

From a practical standpoint, the findings suggest that continuous professional development (CPD) should prioritize capacity building in culturally contextual pedagogy and dialogic teaching. Techniques such as microteaching, peer review, and targeted workshops on local content integration and argument scaffolding could strengthen teacher capacity in these domains. In line with Slamet et al. (2023), who emphasized that teacher competence does not always translate directly into academic achievement but does foster richer learning conditions, this study affirms the value of investing in competence-oriented development strategies.

The study's regression model explains 38.8% of the variance in student learning activity, which is a considerable proportion in educational research. However, the unexplained 61.2% highlights the influence of other potential variables. Factors such as student motivation, parental support, peer influence, classroom resources, leadership style, and broader school climate likely contribute to learning activity. Darling-Hammond (2012) underscored the importance of systemic support in realizing educational goals, indicating that even highly competent teachers may be constrained by structural deficiencies. Therefore, while teacher competence is a key input, its effect is embedded within a broader educational ecosystem.

This brings attention to one of the study's primary limitations: its single-site, cross-sectional design. Conducting the research solely at SMA Negeri 1 Bonepantai limits the generalizability of results. Future research could address this by implementing longitudinal designs across multiple schools, regions, or education levels. Furthermore, the quantitative approach, while rigorous in establishing correlation, cannot infer causation or uncover complex interdependencies. Qualitative methods such as classroom ethnography, teacher journaling, or student focus groups could provide deeper insights into how specific competence dimensions translate into classroom behaviors.

Future research could also explore differentiated impacts of each competence indicator. For example, does competence in ICT usage exert more influence on learning activity than pedagogical mastery? Are there interactions between competence indicators that amplify their impact on student behavior? Multivariate statistical techniques such as structural equation modeling (SEM) could provide answers to such questions. Additionally, exploring whether professional competence moderates the effect of other teacher characteristics—such as teaching experience, certification status, or subject specialization—would yield important insights for personalized teacher development strategies.

In conclusion, this study affirms that teacher professional competence is a statistically significant and practically meaningful predictor of student learning activity. The positive correlation supports the literature advocating for professional development as a core strategy to enhance classroom engagement. Nonetheless, the study also identifies areas of pedagogical weakness, particularly in cultural contextualization and dialogic instruction. These findings provide a strong empirical foundation for school leaders, policymakers, and teacher educators to prioritize targeted CPD, especially in under-resourced settings. While competence alone cannot explain all variation in student activity, it remains a crucial lever in advancing active, meaningful, and transformative learning experiences in secondary education.

Conclusion

This study provides empirical evidence that teacher professional competence plays a significant and positive role in enhancing student learning activity. The statistical model confirms a direct relationship: increases in teacher competence predict measurable improvements in student participation, with the regression analysis ($\hat{Y} = 24.291 + 0.730X$) demonstrating a strong positive effect. The coefficient of determination ($R^2 = 0.388$) indicates that nearly 39% of the variance in learning activity is explained by teacher competence, highlighting the substantial influence educators have on student engagement. Key behavior indicators such as group discussion, questioning, and assignment completion exhibited the highest student scores, while opinion expression emerged as a relatively weaker area, likely tied to classroom discourse norms and instructional strategies.

In alignment with literature by Kunandar (2020), Astuti and Raharjo (2021), and Fadilah (2021), the study reinforces the view that competence domains such as instructional creativity, contextualization, and ICT use are critical for motivating learners. Yet, the low mean score for cultural contextualization suggests a gap in connecting curriculum content to students' lived experiences—a vital component for meaningful learning, as emphasized by Yamin (2007) and Djamarah (2018).

This study contributes to the growing body of knowledge by quantifying the competence-activity relationship in an underrepresented Indonesian school context.

It underscores the importance of targeted continuous professional development, especially in dialogic and culturally responsive teaching. Future research should explore multivariate and longitudinal approaches across diverse schools to better isolate additional factors impacting student engagement and to inform scalable teacher development strategies.

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