Professional development and teaching quality: Evidence from Indonesian teachers

Resumen: Los profesores desempeñan un papel crucial a la hora de impartir una enseñanza de alta calidad. Por consiguiente, deben mantenerse al día de la evolución de los conocimientos pedagógicos mediante un desarrollo profesional continuo. Sin embargo, los estudiosos han afirmado que la eficacia del desarrollo profesional varía en función del campo y el ámbito específicos. Este estudio pretende investigar el impacto del desarrollo profesional docente en la calidad de la enseñanza entre los profesores de economía de los institutos de secundaria de Indonesia. Con ello, pretende enriquecer la comprensión del desarrollo profesional docente en diversos campos y ámbitos. En esta investigación participó una muestra seleccionada al azar de 376 profesores de economía de institutos de cinco de las principales islas indonesias. Para ello se utilizó un cuestionario en línea. Se utilizó el modelo de ecuaciones estructurales (SEM) mediante el software SmartPLS 3.0 para analizar el modelo de investigación. Los resultados revelaron una correlación positiva entre el desarrollo profesional docente y tres dimensiones de la calidad de la enseñanza: la activación cognitiva, el apoyo a los alumnos y la gestión del aula. Este estudio contribuye a mejorar la comprensión del papel que desempeña el desarrollo profesional docente en la mejora de la calidad de la enseñanza en el contexto de los profesores de economía indonesios, en particular en las escuelas secundarias superiores. Se discuten las implicaciones prácticas.

Palabras clave: Desarrollo profesional docente (TPD), Calidad de la enseñanza, Indonesia.


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INTRODUCTION

Indonesia is on a journey to transform from a developing to a developed country. According to the literature, human capital is a prominent factor in the sustainable economic development of a country (Buevich et al., 2020; Payab et al., 2023; Sarwar et al., 2021; Zhang et al., 2023). Therefore, a high-quality educational system is needed to speed up the human capital enhancement of a country.

To achieve a high-quality education, well-trained and effective teachers become important in schools. Well-trained and effective teachers are closely related to teaching quality. As revealed by scholars, teaching quality is crucial to the educational outcome (Bellens et al., 2019; Nilsen & Gustafsson, 2016). Teaching quality is considered a collaborative and context-dependent procedure shaped by the dynamic interactions among teachers, students, and the subject matter (Blömeke et al., 2022; Fauth et al., 2019; Praetorius et al., 2018; Thommen et al., 2021). Meanwhile, researchers agree that teachers are the key factor in providing high-quality instruction (König et al., 2021; Schleicher, 2016). Teachers are responsible for setting up and also as an important source in instructional activities (Baumert & Kunter, 2013a; Fauth et al., 2019; Hattie, 2009; Rafsanjani et al., 2022). Thus, teachers play a crucial role in providing high-quality classroom activities.

Due to the crucial role of the teacher in providing high-quality instruction, many studies were conducted to enhance teachers’ teaching quality, specifically in the antecedents variable (Baier et al., 2019). Teacher professional development (TPD) is one of the important predictors of teaching quality. According to previous studies, TPD is related to teaching quality in terms of creativity enhancement of the teacher (Stemhagen, 2011; Wadaani, 2023), facilitating teachers to learn new skills and enhance professional practices (Kalinowski et al., 2020; Meyer et al., 2023; Sims et al., 2021), such as mastering new teaching approaches (Meyer et al., 2023; Sims et al., 2021), and a challenging task (Kalinowski et al., 2020).

While TPD can improve teaching quality, it may not always be effective in every domain and situation (Jacob & McGovern, 2015; Kalinowski et al., 2020). TPD success can vary depending on the field’s specific domains (Kalinowski et al., 2020; Kalinowski et al., 2019). According to this argument, we need to examine the effect of TPD on teaching quality in Indonesian economics teachers, specifically in senior high schools, to give us a broadening understanding of TPD.

Furthermore, the study of TPD has been highlighted in various countries. The meta-analysis research by Sims et al. (2021), covering published papers between 2002 and 2020, revealed that TPD research is mostly conducted in the USA (70%), UK (24%), and a small number in other countries (6%) from, Australia,
Netherlands, and Canada. However, to date, there is limited research on the impact of TPD on teaching quality in the Indonesian context. Some of the TPD research in Indonesia focuses on issues and challenges of the TPD implementation (Kusanagi, 2022; Sutomo & Siregar, 2022), TPD in remote areas (Sutomo & Siregar, 2022), and comparison of TPD implementation in Indonesia and global practices (Tias & Tongjean, 2022). Against these findings, we need to fill the gap by examining the effect of TPD on teaching quality in the context of Indonesian teachers, specifically in economics teachers of senior high schools.

Therefore, the objectives of the current research are as follows. First, this research will provide a broadening understanding of TPD effectiveness in a specific domain and situation, namely TPD in a developing country such as Indonesia, specifically among economics teachers in senior high schools. Second, this study will contribute to the existing literature by explaining the effect of TPD on teaching quality in the context of senior high school economics teachers in Indonesia. Third, the current findings will become a scientific basis for encouraging policymakers, such as the government, to improve the quality of teaching among educators in Indonesia.

**Theoretical Framework**

*Teacher professional development (TPD)*

TPD is conceptualized as any planned and structured learning or training opportunity for in-service teachers that involves some level of direct interaction and takes place in a formal setting (Kalinowski et al., 2020). The other scholars defined TPD as a structured and facilitated activity designed for teachers to enhance their teaching skills (Abakah, 2023; Egert et al., 2018; Sims et al., 2021). TPD is also recognized as a lifelong learning process that entails planned and systematic opportunities and experiences to foster the growth and development of teachers (Abakah, 2023; Sharma & Bindal, 2013). Hence, TPD can conclude as an encompassing planned and structured learning experience or training opportunities for in-service teachers to improve their teaching skills.

TPD activities encompass a broad range of options, ranging from formal course engagement to informal learning opportunities both inside and outside the classroom (Abakah, 2023). The literature explained that teaching skills that become a focus of TPD are lesson planning, classroom management, and assessment (Sims et al., 2021). In addition, other studies explained that TPD encompasses various activities, e.g., classroom observation, action research, feedback, and follow-up. TPD
also allows teachers to share their experience, knowledge, and skills. Thus, they can learn the best instruction practices from each other (Beijaard et al., 2000; Dulo, 2022). Furthermore, high-quality TPD is denoted by active learning, collaborative engagement, and emphasis on content knowledge and instructional techniques (Valiandes & Neophytou, 2018). Therefore, according to experts, TPD should incorporate specific principles, including lesson study, action research, reflection groups, curriculum study groups, peer observations, classroom management, assessment, collaborative materials writing, and learning networks.

**Teaching quality**

Teaching quality refers to how teachers behave and interact with students in context-specific processes during engaging in classroom activities (Blömeke et al., 2022; Fauth et al., 2019; Praetorius et al., 2018; Thommen et al., 2021). The literature explained that teaching quality includes three aspects within a particular teaching domain, cognitive activation, student support, and classroom management (Blömeke et al., 2022; Fauth et al., 2020; Praetorius et al., 2018).

Cognitive activation refers to the teacher’s ability to create a challenging instructional design by employing specific teaching methods and assignments. The teacher can stimulate and enhance students’ higher-order thinking abilities and cognitive engagement through challenging instruction (Fauth et al., 2019; Praetorius et al., 2018). Cognitive activation includes how teachers explore concepts, ideas, and students’ previous knowledge. For instance, in the process of finding solutions to particular problems, teachers can utilize classroom discussions to foster student engagement in learning activities instead of relying solely on direct questions that have definitive “right” or “wrong” answers (Baumert & Kunter, 2013b). By implementing these practices, students can enhance their skills in reconstructing, elaborating, and integrating information, ultimately leading to a more profound comprehension. Furthermore, cognitive activation practices can help students improve their understanding of concepts by encouraging them to participate more actively in classroom discussions and communicate their ideas effectively (Praetorius et al., 2018). Cognitive activation aligns with constructivism, which says learners actively build knowledge instead of passively receiving information. However, teachers can provide a stimulating learning environment for students to construct their own knowledge (Schlesinger et al., 2018).

The second dimension of teaching quality is student support. Student support, otherwise known as supportive climate, is a teacher’s ability to provide individual support to help students’ difficulties in learning processes through differentiated
learning opportunities (Blömeke et al., 2022; Schlesinger et al., 2018; Taut & Rakoczy, 2016). Other studies explained student support as a teacher’s ability to provide student-teacher positive and constructive interaction during classroom activities (Fauth et al., 2019; Lazarides & Schiefele, 2021). Furthermore, the teacher and student must respect, support, and appreciate each other in establishing a supportive learning atmosphere (Lazarides & Schiefele, 2021; Praetorius et al., 2018). For example, the teacher has to respond to student mistakes and misunderstandings in a positive manner. Additionally, the teacher encourages students to share their diverse ideas, preferences, needs, and passions.

The last dimension of teaching quality is classroom management. Classroom management is conceptualized as a teacher’s skills in effectively managing classroom time and ensuring a harmonious environment by preventing interpersonal conflicts and disruptions (Fauth et al., 2019; König et al., 2021). There are two principles to maintaining a harmonious classroom environment, recognizing and reinforcing favorable student behaviors while averting unfavorable one’s (Hochweber et al., 2014; Praetorius et al., 2018). In order to identify favorable behaviors, teachers need to communicate well-defined rules and establish consistent routines. Meanwhile, to maintain a focused learning environment and optimize time utilization, teachers must actively observe classroom activities and intervene to prevent disruption promptly and efficiently when necessary (Kounin, 1970; Praetorius et al., 2018). In addition, the teacher’s rules and procedures are in place to facilitate seamless transitions by minimizing any conflicts and disruption during teaching activities (Fauth et al., 2019).

Relationship between TPD and teaching quality

Numerous studies show that TPD positively affects teachers’ teaching quality (Abakah, 2023; Dulo, 2022; Lipowsky & Rzejak, 2015; Valiandes & Neophytou, 2018). According to the literature, TPD plays a significant role in enhancing and maintaining the quality teaching (Dulo, 2022). As the literature explains, TPD encompasses various approaches, including workshops, conferences, seminars, mentoring, coaching, collaborative lesson planning, and action research (Dulo, 2022; Kalinowski et al., 2020; Kalinowski et al., 2019; Lipowsky & Rzejak, 2015; Sims et al., 2021). Teachers can change and improve their knowledge, classroom practices, attitudes, and beliefs through TPD participation (Abakah, 2023). These activities facilitate the acquisition of new skills, strategies, and insights that positively enhance their teaching quality. Moreover, engaging in TPD will provide teachers with up-to-date pedagogical approaches, keep them informed about educational
advancements, and enable the integration of evidence-based methodologies. TPD also allows teachers to contemplate their instructional methods, share insights with fellow educators, and seek advice from experienced colleagues. Therefore, continuous professional development opens opportunities for teachers to enhance their teaching skills, which leads to teaching quality improvement.

**Current study**

As the introduction explains, the studies show that TPD may not always be effective in every domain and situation. Furthermore, to date, the research on TPD in Indonesia is limited. The previous ones discussed issues and challenges of TPD implementation in Indonesia. The others discussed TPD in remote areas and compared TPD in Indonesia and global practices. Against these findings, we need to fill the gap by examining the effect of TPD on three dimensions of teaching quality in the context of Indonesian economics teachers, especially in senior high schools. Therefore, according to the theoretical framework, we proposed the following hypotheses:

H1. TPD positively affects the cognitive activation skills of teachers.
H2. TPD positively affects the student support skills of teachers.
H3. TPD positively affects the classroom management skills of teachers.

**Figure 1. Conceptual model**

![Conceptual model diagram]
**Method**

*Procedure and participants*

This research was conducted from March to June 2023 among economics teachers from senior high schools in Indonesia. The research participants represented five big islands in Indonesia: Sumatera, Java, Kalimantan, Sulawesi, and Papua. We collect the teachers’ data from the Indonesian Economics Teacher Forum and the Professional Teacher Association of Indonesia. We used a purposive random sampling method to choose research participants. To be eligible to become research participants, teachers must attend or participate in TPD activities in the last 18 months. We sent an online invitation containing an explanation of research purposes and an online questionnaire link to the 750 selected teachers. The teachers who responded to the invitation and participated in this research were 411 (the response rate was 54.8%). However, after cleaning the data, we dropped 35 participants because they did not meet the criteria (TPD attending and/or missing data set). A total of 376 were considered as a sample of this research. The sample was dominated by females (68.26%). On average, teachers were 37.4 years old, and teaching experience was 12.8 years. All the research participants are voluntary.

*Instruments*

This study adopts the instruments from the previous studies. All the instruments are available in English. To avoid misinterpretation from our respondents, we translated all the instruments into Indonesian (Bahasa) using a sworn translator. Then, the translation results were consulted and reviewed by the group experts in Bahasa and Education.

We adopt the questionnaire developed by Meyer *et al.* (2023) to measure teacher professional development. The questionnaire comprises fifteen items that address the teachers’ perceptions about their participation in the TPD activities. The questionnaire covers four constructs of TPD, including the design and strategies of TPD, clarity and structure of TPD, collaboration of TPD, and impact or change in professional practices. Sample item “The TPD activity helped me to gain new professional insights”. All items were rated on a five-point Likert scale from 1 to 5 (strongly disagree to strongly agree).

We adopt the questionnaire developed by Schlesinger *et al.* (2018) to measure the three dimensions of teachers’ teaching quality. The instruments comprise eighteen items consisting of five items for cognitive activation, seven items for student support, and six items for classroom dimensions. Sample items “I present
challenging questions and tasks”. All items were rated on a five-point Likert scale from 1 to 5 (strongly disagree to strongly agree).

Data analysis

We clean data before examining the research hypotheses to avoid bias analysis. Of the 411 participants who responded to this survey, we dropped 16 because they did not fit the criteria (not participating in TPD activities or more than 18 months since their last TPD) and 19 due to missing values in the data set. Therefore, we use the remaining 376 as research participants.

After cleaning the data, we performed the structural equation modeling (SEM) in SmartPLS 3.0 software package to examine the research hypotheses. In addition, we also utilized partial least squares as an estimation technique with three steps proposed by Hair et al. (2014). First, we determine the model specification according to the theoretical framework. Second, we performed the outer model evaluation, consisting of the validity and reliability of the measurement. Third, we performed the inner model evaluation, consisting of the coefficient of determination ($R^2$), cross-validated redundancy ($Q^2$), effect size ($f^2$), and path coefficients.

Outer model evaluation

In the outer model evaluation, we examine the reliability and validity of each construct in the research model through composite reliability, convergent validity, and discriminant validity. According to Hair (2014), composite reliability examines the internal consistency reliability of the construct measures. Convergent validity represents a positive correlation between the measures and constructs, while discriminant validity represents that certain constructs are distinct from other constructs.

The result of the outer model evaluation shows that the composite reliability (Table 1) of each construct was established ($CR > 0.7$). Furthermore, Table 1 shows that the loading factor and AVE were higher than 0.7 and 0.5, respectively. It remarks that the convergent validity of each construct is confirmed. Meanwhile, Table 2 shows that the discriminant validity from Fornell and Larcker (1981) criterion of each construct was established.
### Table 1. Loading factor, AVE, and composite reliability

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Item</th>
<th>Loading Factor</th>
<th>AVE</th>
<th>Composite Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher professional development</td>
<td>TPD1</td>
<td>0.921</td>
<td>0.826</td>
<td>0.986</td>
</tr>
<tr>
<td></td>
<td>TPD2</td>
<td>0.877</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TPD3</td>
<td>0.902</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TPD4</td>
<td>0.927</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TPD5</td>
<td>0.926</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TPD6</td>
<td>0.885</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TPD7</td>
<td>0.904</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TPD8</td>
<td>0.916</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TPD9</td>
<td>0.893</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TPD10</td>
<td>0.929</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TPD11</td>
<td>0.927</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>TPD12</td>
<td>0.931</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TPD13</td>
<td>0.854</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TPD14</td>
<td>0.893</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TPD15</td>
<td>0.936</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive activation</td>
<td>CA1</td>
<td>0.844</td>
<td>0.665</td>
<td>0.908</td>
</tr>
<tr>
<td></td>
<td>CA2</td>
<td>0.800</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CA3</td>
<td>0.907</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CA4</td>
<td>0.767</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CA5</td>
<td>0.832</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student support</td>
<td>SS1</td>
<td>0.864</td>
<td>0.704</td>
<td>0.943</td>
</tr>
<tr>
<td></td>
<td>SS2</td>
<td>0.867</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SS3</td>
<td>0.883</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SS4</td>
<td>0.582</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SS5</td>
<td>0.865</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>SS6</td>
<td>0.920</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SS7</td>
<td>0.848</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classroom management</td>
<td>CM1</td>
<td>0.838</td>
<td>0.917</td>
<td>0.939</td>
</tr>
<tr>
<td></td>
<td>CM2</td>
<td>0.885</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CM3</td>
<td>0.825</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CM4</td>
<td>0.803</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CM5</td>
<td>0.868</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CM6</td>
<td>0.867</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2. Discriminant validity (Fornell and Larcker)

<table>
<thead>
<tr>
<th></th>
<th>TEACHER PROFESSIONAL DEVELOPMENT</th>
<th>COGNITIVE ACTIVATION</th>
<th>STUDENT SUPPORT</th>
<th>CLASSROOM MANAGEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher professional development</td>
<td>0.908</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive activation</td>
<td>0.767</td>
<td>0.816</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student support</td>
<td>0.644</td>
<td>0.698</td>
<td>0.839</td>
<td></td>
</tr>
<tr>
<td>Classroom management</td>
<td>0.725</td>
<td>0.742</td>
<td>0.719</td>
<td>0.848</td>
</tr>
</tbody>
</table>

Inner model evaluation

After the outer model was established, we performed the inner model evaluation from coefficient determination \( R^2 \), cross-validated redundancy \( Q^2 \), effect size \( f^2 \), and path coefficients. According to Hair et al. (2014), coefficient determination \( R^2 \) represents the model’s predictive accuracy measurement. Furthermore, cross-validated redundancy \( Q^2 \) is used to assess the inner model’s predictive relevance, while the effect size \( f^2 \) explains the contributions of exogenous constructs to endogenous constructs.

The result (Table 3) shows that \( R^2 \) is in the range of 0.5 - 0.7. This indicates that the research model has moderate predictive accuracy (Hair et al., 2014). Moreover, the result shows that the research model has a predictive relevance \( (Q^2 > 0) \). Meanwhile, the effect size \( (f^2) \) remarks that the exogenous variable has strong contributions in explaining the endogenous variable \( (f^2 > 0.35) \) (Hair et al., 2017; Hair et al., 2014).

Table 3. Coefficient determination (R2) and cross-validated redundancy (Q2), and effect size (f2)

<table>
<thead>
<tr>
<th>RELATIONSHIP</th>
<th>ADJUSTED R²</th>
<th>Q²</th>
<th>f²</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPD → CA</td>
<td>0.584</td>
<td>0.365</td>
<td>0.724</td>
</tr>
<tr>
<td>TPD → SS</td>
<td>0.503</td>
<td>0.273</td>
<td>0.502</td>
</tr>
<tr>
<td>TPD → CM</td>
<td>0.527</td>
<td>0.359</td>
<td>0.683</td>
</tr>
</tbody>
</table>

After establishing the outer and inner model evaluation, we examined the research hypotheses using bootstrap resampling. The result (Table 4) denotes all the hypotheses were confirmed. Therefore, this study remarks that teacher professional development (TPD) positively predicts the three dimensions of teaching quality (cognitive activation, student support, and classroom management).
### Table 4. Summary of tested hypotheses

<table>
<thead>
<tr>
<th>HYPOTHESES</th>
<th>RELATIONSHIP</th>
<th>$\beta$-value</th>
<th>S.E.</th>
<th>$p$-value</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>TPD $\rightarrow$ CA</td>
<td>0.765</td>
<td>0.027</td>
<td>0.000</td>
<td>Supported</td>
</tr>
<tr>
<td>H2</td>
<td>TPD $\rightarrow$ SS</td>
<td>0.644</td>
<td>0.044</td>
<td>0.000</td>
<td>Supported</td>
</tr>
<tr>
<td>H3</td>
<td>TPD $\rightarrow$ CM</td>
<td>0.725</td>
<td>0.027</td>
<td>0.000</td>
<td>Supported</td>
</tr>
</tbody>
</table>

### Figure 2. Result of structural model analysis with standardized path coefficient

![Diagram showing the result of structural model analysis with standardized path coefficient.]

**RESULTS AND DISCUSSION**

The result shows that teacher professional development (TPD) positively affected three dimensions of teaching quality (cognitive activation, student support, and classroom management). This finding remarks that the higher the TPD activities of a teacher, the higher the teaching quality. Therefore, this study confirmed that
TPD is a relevant predictor of teaching quality. The detailed mechanism of how TPD affects cognitive activation, student support, and classroom management is discussed.

First, TPD and cognitive activation. This study denotes that TPD has a positive effect on the first dimension of teaching quality, the cognitive activation skill of the teacher. TPD activities will keep teachers up to date with the new pedagogical knowledge and strategies that foster cognitive activation skills. These strategies include project-based learning, inquiry-based learning, Socratic questioning, and collaborative activities. Through PD, teachers can learn how to implement these strategies effectively, encouraging students to think critically and apply their knowledge to real-world situations. Actively participating in TPD activities also enhances teachers’ subject matter knowledge and expertise. When teachers deeply understand their teaching content, they are more likely to facilitate discussions encouraging students’ higher-order thinking skills. Teachers can ask thought-provoking questions, provide meaningful examples, and guide students in exploring complex concepts.

Furthermore, TPD activities also give teachers insights and guides in designing assessments requiring higher-order thinking. Teachers can learn to create tasks that demand analysis, synthesis, and application of knowledge, rather than relying solely on recall-based assessments. These findings are in line with the previous studies that teachers’ pedagogical and content knowledge will allow teachers to provide a challenging learning environment and foster students high-order thinking skills (Fauth et al., 2019; Förtsch et al., 2016; Kunter et al., 2013; Rafsanjani et al., 2022). Therefore, this study shows that TPD activities positively affected the teaching quality, as revealed by the previous research (Abakah, 2023; Dulo, 2022; Lipowsky & Rzejak, 2015; Valiandes & Neophytou, 2018), by fostering teachers’ cognitive activation skills through enhancing pedagogical knowledge and strategies, subject matter knowledge and expertise, and questioning techniques.

Second, TPD and student support. This study confirmed that TPD positively affected the second dimension of teaching quality, student support. The current study reveals that TPD activities can foster student support skills of teachers in the following ways. Effective TPD often includes the socio-emotional support skills of the teacher. This skill makes teachers more empathetic, understanding, and responsive to students’ emotional needs. This can lead to improved teacher-student relationships, increased trust, and a safe space for students to express themselves. In addition, through professional development, teachers learn about the importance of creating a supportive classroom environment that encourages risk-taking and intellectual curiosity. When students feel safe to express their thoughts and ideas, they are more likely to engage in cognitive activities without fear of judg-
ment. As revealed by the previous studies, this situation establishes a supportive climate and positive student-teacher relationship (Fauth et al., 2019; Lazarides & Schiefele, 2021), leading to a quality learning environment.

Professional development also enhances teachers’ communication skills, helping them better understand student perspectives and provide clear instructions. Effective communication enables teachers to listen actively, offer constructive feedback, address student difficulties, and provide solutions for struggling students. Furthermore, through TPD activities, teachers can learn how to accommodate students’ diverse learning styles to ensure that each student receives appropriate support. These findings align with previous studies that revealed teachers good with pedagogical knowledge will show better-differentiated learning support for students to ensure each student receives appropriate support according to their learning styles, needs, and difficulties (Baumert et al., 2010; Kunter et al., 2013; Rafsanjani et al., 2022). Hence, this study proves that TPD activities positively affect teaching quality in terms of student support skills of the teacher.

Last, TPD and classroom management. This study shows that TPD positively affects the third dimension of teaching quality, classroom management. Through TPD activities, teachers keep informed and learn about various classroom management strategies and techniques, including designing engaging lessons that reduce the likelihood of disruptions. These skills help teachers establish and maintain a positive classroom environment, minimizing disruptions, creating a conductive space for learning, and addressing challenging behaviours positively and constructively. This finding aligns with the previous studies that show teachers with good pedagogical knowledge are more likely to create a conductive classroom environment by minimizing disruption during classroom learning activities (Fauth et al., 2019; König et al., 2021; Praetorius et al., 2018).

TPD also enhances the teacher’s conflict resolution and crisis management skills in classroom management. These skills are crucial for teachers to address conflicts between students or between students and themselves in a way that promotes understanding and resolution. These skills also help teachers to handle challenging situations with composure and professionalism, ensuring the safety and well-being of all students. Furthermore, engaging in TPD makes teachers keep learning about managing the classroom effectively, such as managing instructional time efficiently, selecting appropriate strategies for pacing lessons, allocating time for different activities, and minimizing downtime to keep students engaged. These findings also strengthen the previous research that teachers who master pedagogical knowledge properly show the ability to prevent and handle conflict and distraction (Evertson & Weinstein, 2013; König et al., 2021) and enable seamless transi-
 tion during classroom learning activities (Fauth et al., 2019). Therefore, this study shows that TPD positively affected teacher skills in classroom management and led to teaching quality enhancement.

**CONCLUSION AND IMPLICATION**

In conclusion, this study shows that TPD is crucial in enhancing teachers’ pedagogical knowledge and fostering teaching quality in terms of cognitive activation, student support, and classroom management. Through TPD, teachers can enhance and keep updated with the current pedagogical knowledge development. Teachers can apply their pedagogical knowledge to design a challenging learning environment that stimulates and encourages students’ critical thinking (cognitive activation). Teachers with good pedagogical knowledge are also more likely to provide better support for student learning through a positive student-teacher relationship (student support). Last, TPD keeps teachers updated with the new and various classroom management strategies that help minimize and deal with disruptions and conflicts during classroom learning activities (classroom management).

This study provides theoretical and practical implications. Theoretically, this study contributes to the literature by broadening our understanding of the relationship between teacher professional development and teaching quality in specific domains and situations. As proposed by the previous studies, TPD may not always be effective in every domain and situation, depending on the field-specific domain (Jacob & McGovern, 2015; Kalinowski et al., 2020; Kalinowski et al., 2019). However, this study was conducted in the context of Indonesian economics teachers in senior high schools, and the results still remark if TPD contributes to enhancing teachers’ teaching quality. Therefore, in the context of Indonesian economics teachers in senior high schools, this study proves that teachers actively participate in TPD activities, successfully enhancing their teaching quality.

Furthermore, this study provides several practical implications. First, teachers can benefit from the research by participating in professional development activities that effectively improve their teaching practices. This might involve attending workshops and conferences or pursuing advanced degrees or certifications focusing on pedagogy and content knowledge. Second, School administrators can use insights from the research to develop targeted professional development plans that address the identified needs of their teachers. This might involve offering workshops, mentoring programs, collaborative learning opportunities, or access to resources that enhance pedagogical and content knowledge. Third, the current research highlights the importance of collaborative learning communities where
teachers can engage in reflective practice, share best practices, and support one another in their professional growth. Schools can facilitate the development of such communities by providing time and structures for collaboration, such as professional learning communities or mentorship programs. Overall, the practical implications of research on teacher professional development underscore the importance of investing in strategies that enhance teachers’ pedagogical and content knowledge and skills, ultimately leading to improved teaching quality and student outcomes. By leveraging these insights, stakeholders can contribute to a more effective and impactful educational system.

LIMITATION

While this study offers valuable findings into teachers’ professional development and teaching quality topics, several limitations should be acknowledged. First, this research model ignores the social demographics (such as age and gender) and teacher experience, which theoretically attaches to research participants and affects teaching quality. We exclude the demographic aspects in the analysis with the following arguments. (1) Our research objective was to focus on explaining how TPD affects teaching quality. In avoiding result bias and maintaining the research focus and clarity (how TPD affects teaching quality), we exclude the demographic aspects because, theoretically, they influence the outcome variable (teaching quality). (2) Our respondents are highly homogenous regarding demographics (educational background and subject taught). Hence, including such variables might not add much value to the analysis, specifically in explaining the role of TPD in enhancing teaching quality.

Second, data collection relied on self-reported measures, introducing the potential for response bias. Third, the study’s results only apply to Indonesian economics teachers, especially in senior high schools, which may have different characteristics from other subjects, educational levels, and countries.

We applied robust statistical methods for data analysis to address these constraints and implemented measures to safeguard participant confidentiality and anonymity during data collection. Nonetheless, it’s crucial to acknowledge that these limitations, as previously indicated, may impact the accuracy and extent of our findings. Future research endeavours could address these limitations by employing larger and more diverse samples and utilizing mixed-methods approaches. Despite these limitations, this study contributes valuable insights to the ongoing discourse on professional development and teaching quality, offering a foundation for further exploration.


Baumert, J., & Kunter, M. (2013b). The Effect of Content Knowledge and Pedagogical Content Knowledge on Instructional Quality and Student Achievement. In M. Kunter, J. Baumert, W. Blum, U. Klusmann, S. Krauss, & M. Neubrand (Eds.), *Cognitive Activation in the Mathematics Classroom and Professional Competence of Teachers: Results from the COACTIV Project* (pp. 175-205). Springer US. https://doi.org/10.1007/978-1-4614-5149-5_9


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