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Investigating teachers' pedagogical competence: A case study of professional digital competence application in Indonesia

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Abstract

In the current Indonesian educational landscape, technological aids hold important roles in promoting effective teaching and learning. This research addresses the critical need to understand teachers' proficiency levels in Professional Digital Competence (PDC) to navigate this digital shift. Teachers' capacity to implement innovative and relevant teaching strategies is essential in a time when information and communication technology (ICT) is becoming an increasingly essential component of education. The purpose of this study is to find out which competency level teachers are in PDC. It also aims to understand the implications of teachers' PDC level for learning. Framed under a case study research design, this study administered questionnaires and interviews to five high school English teachers. The data collected were analyzed using thematic analysis. The findings showed that the level of teachers' PDC varies among the participants, which leads the teachers to improve their effectiveness and efficiency in teaching by personalizing the learning processes and promoting more student-centered learning.

Keywords: *ELT; Indonesia; professional digital competence; teacher competency; technology integration.*

INTRODUCTION

Professional digital competence (PDC) is the combination of knowledge, abilities, and attitudes that allow one to use digital technologies ethically and efficiently to carry out tasks and solve problems in increasingly digitalized work environments; to create meaningful professional connections through digital collaboration; to encourage innovation in the workplace; to support ongoing professional development throughout one's lifetime; and to improve one's employability (Nagel, 2021, as cited in Nagel et al., 2023). Yet, studies showed that teacher education has been criticized for not sufficiently preparing the future teachers for the challenges in using digital technology in education (Nagel et al., 2023), including in Indonesia (Rasdiana et al., 2024).

Many studies have proven that technology integration benefits students for some reasons. For example, it can promote students' technological literacy

(Kizil & Kizil, 2024; Peng et al., 2023; Thapa & Hatakka, 2017) and their engagement during the learning process (Moll et al., 2022; Samantray et al., 2024). In addition, technology integration supports students' self-directed learning (Baek et al., 2024; Labonté & Smith, 2022; Sri Redjeki et al., 2022) and sound assessment (Rahmawanti & Umam, 2019; Ranzato et al., 2025; Saif et al., 2022).

A study by Pozas et al. (2022) explored the factors that shape teachers' readiness to adopt and integrate technology in educational settings. According to their findings, elements such as technological competence, positive attitudes toward technology, and a sense of control over digital tools are pivotal in determining teachers' preparedness for technology integration. The study offers comprehensive insights into the multifaceted nature of teacher readiness, emphasizing that it encompasses more than just technical skills. The research highlighted that teachers' acceptance of technology and their emotional experiences, alongside supportive professional development and organizational environments, play significant roles in fostering readiness to implement innovative and effective teaching practices. In addition, adaptive use of Information and communication technology (ICT) in learning is a key aspect of pedagogical competence, as outlined in the book "Operational Guidance on Teacher Competency Models" by Asga et al. (2023). In the international context, this competency is often referred to as Professional Digital Competence (PDC), which consists of the use of digital tools, pedagogical and didactic use, promotion of pupils' digital skills, and awareness and enactment of responsibility (Nagel, 2021).

In an era where technology has an increasingly dominant role in the learning process, teachers must have the ability to integrate digital tools and resources in effective and innovative ways. PDC includes not only a basic understanding of technology, but also the ability to adapt the use of technology to various learning needs and student characteristics. Therefore, teachers must be equipped with adequate skills and knowledge in PDC to face the challenges of learning in the digital era more effectively and responsively. This is realized by the Indonesian government, and they enacted a policy on teachers' competencies through Article 8 of Law No. 14/2005 on Teachers and Lecturers.

The policy mandated that every teacher must possess four competencies such as pedagogical, personality, social, and professional. This emphasizes the importance of having a variety of skills and knowledge for a teacher to carry out their duties effectively, in which professional digital competence (PDC) is included under pedagogical competence. There are some levels of professional digital competence in the Indonesian context (Asga et al. 2023). In level 1, teachers must comprehend the potential of adaptive ICT in enhancing learning. In level 2, teachers employ ICT in a learning process in an adaptive manner. In level 3, teachers assess and devise plans for a more adaptive use of ICT in learning. In level 4, teachers work together and exchange effective techniques and best practices of adaptive ICT in learning with colleagues. In level 5, teachers guide their peers in the adaptive and efficient use of ICT in learning.

Moreover, Literature work suggests that PDC consists of interconnected layers (Nagel, 2021). They are (1) the use of digital tools, (2)

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pedagogical and didactical use, (3) promotion of pupils' digital skills, (4) awareness and enactment of digital responsibility, (5) understanding of culture, society, and democracy, (6) development and transformation, and (7) awareness and understanding of implications for epistemic practices. In line with this, another expert argues that PDC consists of three knowledge domains (Instefjord & Munthe, 2016). They are technology proficiency, pedagogical compatibility, and social awareness. Technology proficiency is the ability to use a range of technological tools and applications competently. This includes an understanding of the basic functions of hardware and software, as well as the ability to select and use appropriate tools in a learning context. The second domain is pedagogical compatibility, the ability to integrate technology into lesson plans and daily teaching practices. This includes the ability to design learning activities that make effective use of technology, as well as selecting and evaluating digital resources appropriate to student needs. The third domain associated with teachers' PDC is social awareness. Social awareness is the ability to understand the social, ethical, and impact implications of using technology in an educational context. This includes the ability to critically evaluate the use of technology in learning, as well as to promote responsible and ethical technology use practices among students.

Having discussed the construct of professional digital competence, this study focused on the theory of PDC proposed by the Indonesian government, as it has been described by Asga et al. (2023). The study is guided by three research questions as follows: (1). What are the levels of English teachers' PDC?; (2). How are teachers' PDC levels linked to the teachers' pedagogical competency?; (3). What are the teachers' PDC level implications on learning?

METHOD

This research was under the paradigm of a qualitative approach, and a case study was used as the research design. The research was conducted in three public and private high schools with A and B accreditation in Bogor, West Java province. These schools were chosen to provide a variety of data for this research. Five English teachers who applied ICT in their teaching process were invited as research participants in this research. To get the data about the levels of English teachers' PDC and PDC Level in pedagogical competency, , questionnaire was used as the first research instrument. The questionnaire is adapted from Asga et al. (2023) which consists of 5 questions that cover several themes, namely understanding the potential of adaptive ICT in supporting learning, using ICT adaptively in the learning process, evaluate and design strategies for more adaptive use of ICT in learning, collaborate and share techniques and good practices of adaptive use of ICT in learning with colleagues, and mentoring peers in the adaptive and effective use of ICT in learning. The Google Form application was used during the questionnaire. To explore more the teachers' PDC level implication on learning, the second instrument used was an interview. It was used to identify the implementation of teachers' Professional Digital Competence level in learning. During the interviews, Bahasa Indonesia was used in order to get richer or deeper information about the participants' PDC level and its application for learning.

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RESULT & DISCUSSION

Teachers' Professional Digital Competence Level

Before presenting the data on teachers' PDC levels, it is important to first present the findings on their pedagogical competence levels because PDC is related to Indonesian pedagogical competence. Teacher pedagogical competency level by Asga et al. (2023) shows five competency levels including level 1 - understanding competency mastery level or referred to as understanding the potential of adaptive ICT in supporting learning, level 2 - basic competency mastery level as using ICT adaptively in the learning process, level 3 - intermediate competency mastery level as evaluating and designing strategies for more adaptive use of ICT in learning, level 4 - advanced competency mastery level as collaborating and sharing techniques and good practices of adaptive use of ICT in learning with colleagues, and level 5 - expert competency mastery level as mentoring peers in the adaptive and effective use of ICT in learning. The competency levels represent the level of competency mastery that encompasses each teacher's technical competencies. The levels consist of five taxonomic levels.

Level 2 (Using ICT Adaptively in the Learning Process)

Based on the research results from the questionnaire results show that 100% of the teachers use ICT adaptively in their learning process.

> *"For ICT tools, as usual, I use an LCD projector, laptop, and internet connection. For applications, I use Quizizz, YouTube, or Google Forms. I also use PowerPoint and Google Slides for presentations." (**Excerpt 1)***

Teachers use laptop devices when using ICT. The ICT used in learning is *Quizizz* and *YouTube,* which are displayed in the classroom using an LCD projector. Google Forms can be used by teachers for quizzes or student assessments. Teachers also add, *Microsoft PowerPoint* and *Google Slides* are used for presentation activities.

The teacher uses adaptive ICT tools in the learning process. The meaning of the findings shows the teacher's ability to apply practical knowledge in managing learning by using ICT to improve the quality of student-centered learning. Five teachers passed the level 2, basic competency mastery level.

Level 3 (Evaluating and Designing Strategies for More Adaptive Use of ICT in Learning)

Based on the research results from the questionnaire results show that 80% of the teachers can differentiate or evaluate strategies for more adaptive use of ICT in learning.

> *"The use of ICT in learning is not always effective. There are still students who are confused when I use it in class. Because of this, I designed a strategy so that the material delivered using an ICT tool can be received by students well." (**Excerpt 2)***

The form of evaluation is indicated by teachers' evaluations when using ICT tools and designing improvement strategies in managing learning. Teachers

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stated that the use of ICT in learning is not always effective because there are still students who are confused by the technology used. To overcome this, teachers design better strategies so that learning using ICT can be accepted and understood by students.

The meaning of the findings shows the teacher's ability to evaluate and design improvements to knowledge about practice in managing learning, and professional knowledge in improving the quality of student-centered learning. Four teachers passed the level 3, intermediate competency mastery level.

Level 4 (Collaborating and Sharing Techniques and Good Practices of Adaptive Use of ICT in Learning with Colleagues)

Based on the research results from the questionnaire results show that 100% of the teachers collaborate and share techniques and good practices of adaptive use of ICT in learning with colleagues.

> *"... helping fellow teachers, who may be more senior, who, when using digital tools, still need a little help." (**Excerpt 3)***
>
> *"We often share assignments, for example, a colleague has the first material and then shares it with me. Then I have the second material, which we can share. I shared it with Google Drive." **(Excerpt 4)***
>
> *"I collaborate with fellow English teachers by using Google Sheets together to record attendance and student assessments. Google Drive to share learning materials. I also help other teachers who have difficulties when using ICT tools." (**Excerpt 5)***

Teachers described collaboration and sharing of good practices in the use of ICT at school. They help each other, especially with more senior colleagues who still need a little help in using digital tools. In addition, they often share tasks and learning materials. For example, one teacher has the first material and shares it with the other, and the other teacher has the second material and shares it with each other via *Google Drive*. Collaboration also occurs among English teachers by using *Google Sheets* together to record student attendance and assessment, and sharing learning materials through *Google Drive*. In addition, they help fellow teachers who have difficulty using ICT tools.

The meaning of the findings shows the ability of teachers to collaborate and share good practices with other teachers to develop knowledge about the principles of theory and practice in managing learning, professional knowledge, self-management, and relationship management in improving the quality of student-centered learning. Three teachers are at level 4, proficient competency mastery level.

Level 5 (Mentoring Peers in the Adaptive and Effective Use of ICT in Learning)

Based on the research results from the questionnaire results show that 80% of the teachers mentor peers in the adaptive and effective use of ICT in learning. However, the results of the interviews do not show that teachers do not conduct mentoring activities with their colleagues.

> *"The form of guidance that I do is sharing the use of the app with colleagues." **(Excerpt 6)***
> *"... by showing how to use certain applications." (**Excerpt 7)***

> *"I guide teachers who have difficulties in using ICT tools." (**Excerpt 8)***

Providing guidance or assistance in the use of tools is not a form of mentoring. According to Asga et al. (2023), level 5, the expert competency mastery level, is shown by the ability of teachers to guide other teachers in developing and using knowledge about the principles of theory and practice in managing learning, professional knowledge, self-management, and relationship management in improving the quality of student-centered learning. Therefore, all teachers here have not reached level 5 or the expert competency mastery level.

The Link between Teachers' Professional Digital Competence Level and Teacher Pedagogical Competency Level

Teachers' pedagogical competency level by Asga et al. (2023) and Nagel et al. (2023) professional digital competence level are linked to one. Teachers' pedagogical competency level consists of (1) understanding the potential of adaptive ICT in supporting learning, (2) using ICT adaptively in the learning process, (3) evaluate and design strategies for more adaptive use of ICT in learning, (4) collaborate and share techniques and good practices of adaptive use of ICT in learning with colleagues, and (5) mentoring colleagues in the adaptive and effective use of ICT in learning. On the other hand, Nagel's PDC has seven layers: (1) use of digital tools, (2) pedagogical and didactical use, (3) promotion of pupils' digital skills, (4) awareness and enactment of digital responsibility, (5) understanding of culture, society, and democracy, (6) development and transformation, and (7) awareness and understanding of implications for epistemic practices.

Level 2 of teacher pedagogical competence, which involves the adaptive use of ICT in the learning process, corresponds to layers 1 and 2 of the PDC framework—specifically the use of digital tools and their pedagogical and didactical application. Level 3, which focuses on evaluating and designing strategies for more adaptive ICT integration, also aligns with layer 2, emphasizing pedagogical compatibility. Level 4, which involves collaboration and the sharing of effective practices among colleagues, relates to layer 4 of the PDC, concerning awareness and enactment of digital responsibility, including efforts to promote responsible technology use among students. These interpretations are supported by Instefjord & Munthe (2016), who describe the relevant PDC layers in terms of technology proficiency, pedagogical compatibility, and social awareness.

Implications of Teachers' Professional Digital Competence for Learning

Improving the Effectiveness and Efficiency of Learning

Each level of teachers' PDC has its own implications for learning. At level 2, using ICT adaptively in the learning process, teachers can integrate adaptive ICT appropriately in teaching and learning activities and have an impact on learning that becomes more interesting and interactive for students.

> *"I post the materials, assignments, or any class activity instructions on Google Classroom. For exercises, I like to use other Google*

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> *products, such as Google Forms. Then, for creating materials, I also like to use Google Slides. Then for recapitulating grades, data on all student grades, I use Google Sheets." (**Excerpt 9**)*

The teacher integrates ICT appropriately by adjusting the tools used according to their usefulness in teaching, learning, and scoring. In practice, the teacher utilizes *Google Classroom* to disseminate class materials, assignments, and activity instructions to students. The teacher also tends to use other *Google* products, such as Google Forms, to create exercises that students can complete online. In addition, for material creation, the teacher uses *Google Slides* to create interesting and informative presentations. When it comes to summarizing student grades, the teacher enters the data from all collected grades into *Google Sheets*, which allows her to easily manage and analyze student performance in detail. Furthermore, another teacher adds:

> *"When I use ICT in my classroom, students become curious and interested in what I am teaching." (**Excerpt 10**)*

When the teacher uses ICT in the class, students become curious about what she teaches. The students asked more questions during the classes and engaged more in the learning activities. This means that students are motivated internally by the use of ICT in the classroom. They voluntarily involved themselves more in the learning processes from which the students gained more learning opportunities to develop their English.

Adaptive use of ICT in the learning process, in practice, found that teachers use *Google* applications such as *Google Classroom*, *Google Forms*, and *Google Sheets*. *Google Classroom* allows students to access learning materials from anywhere and submit assignments online, making it easier for teachers to manage learning and deliver information better to students. Teachers can more easily assign assessments or exercises to their students by using *Google Forms*, which are employed in practice as quizzes (Wisman et al., 2021). *Google Forms* is seen by both teachers and students as a useful digital formative evaluation tool in EFL classes, according to research by Saleh Alharbi et al. (2021). *Google Forms* helps teachers create remedial programs, facilitates rapid evaluations, and offers immediate feedback, according to their study conducted in Saudi secondary schools. However, there are still certain issues, like cheating and differing levels of digital proficiency. Similarly, edutech-based formative assessment tools such as *Google Forms* improve teaching competencies and enable more effective, real-time evaluation of student progress, as highlighted by Shin et al. (2025). When taken as a whole, these studies highlight the useful advantages and favorable opinions of utilizing *Google Forms* for formative evaluation in various educational settings.

Personalized and Student-Centered Learning

Learning becomes more personalized and student-centered, and the learning gap between students can be minimized is the implication of level 3 - evaluate and design strategies for more adaptive use of ICT in learning. This statement is in line with several teachers.

> *"The learning adapts to students' abilities and needs. For example, there are students whose writing is lacking, so I have to differentiate*

> *the instructions or tasks I give. They are not instructed to create a narrative text, but only asked to make a few sentences."* ***(Excerpt 11)***

In situations where there are differences in students' abilities, teachers need to adapt learning approaches to suit their individual needs. For example, if there are students who have difficulty in writing, teachers will provide simpler and more focused instructions, such as creating a few short sentences rather than completing more complex writing tasks, such as narrative texts. This approach allows students to stay engaged in learning without feeling overly pressured by a task that exceeds their abilities. Another teacher stated that they can minimize the gap between students in learning:

> *"... I can see the condition of student learning. I can pay more attention to which students are already good and which students are still lacking in learning, and I can do an evaluation. So when I go to class, I can take the right action for my students."* (***Excerpt 12)***

Teachers can quickly identify students who have achieved a good understanding of the material and students who need additional help. With the information gained from such evaluations, teachers can plan teaching strategies that are more differentiated and responsive to the individual learning needs of each student. This ensures that classroom teaching is more personalized.

Teachers who are able to evaluate the effectiveness of adaptive ICT, design strategies for its appropriate use, and adapt strategies to student needs can create more personalized and student-centered learning. This allows teachers to provide more accurate feedback and assessment, and minimize learning gaps between students (Zawacki-Richter et al., 2019). Research by Hartman et al. (2019) and Wan (2024) shows that the majority of teachers believe that technology integration not only contributes to student success but is also important in monitoring and customizing learning for students' individual needs.

Improving the Overall Quality of Learning

Collaborating and sharing techniques and good practices of adaptive use of ICT in learning with colleagues, or level 4, indicates there is an overall improvement in the quality of education in schools, a culture of collaboration and mutual learning among teachers is created, and innovation in the use of adaptive ICT in learning is growing.

> *"Our school facilitates adaptive ICT for learning. Tests or assignments, materials, and assessments are integrated, so all teachers can access them and collaborate. This makes it easier for teachers in terms of teaching and administration, so that teachers can focus more on improving student learning."*(***Excerpt 13)***

By using adaptive ICT, teachers feel able to concentrate on enhancing student learning. Another teacher mentioned that collaborating with colleagues in the use of ICT for instruction fosters a culture of mutual learning and collaboration among teachers.

> *"One of the impacts of this collaboration is social impact. For example, when I have difficulties, other colleagues can help me, or when I can't go to class, someone will cover it. I can also get closer to other teachers and discuss with them."*(***Excerpt 14)***

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One of the impacts of this collaboration is the social impact on teachers. For example, when a teacher faces difficulties, other colleagues can provide help or solutions. When a teacher is unable to teach a class, other colleagues are willing to cover for them. In addition, this collaboration allows teachers to build closer relationships with fellow teachers, opening up opportunities for discussion and exchange of ideas that are beneficial in improving teaching practices.

Another teacher also stated that the creativity or innovation in the application of adaptive ICT for education is increasing.

> *"When I use new ICT tools, I share how to use them and my experience in using them. The same goes for other teachers. That way, we can be more creative and innovative to provide learning in the classroom."* (***Excerpt 15)***

Although it has positive implications for learning, collaboration requires more time and training, as mentioned below:

> *"...the problem is time. It takes time to teach colleagues to use certain technologies. Hopefully, there will be some kind of training or workshop for teachers."* ***(Excerpt 16)***

When teachers collaborate with their colleagues, one of the most significant challenges they often encounter is the limitation of time. The process of introducing and teaching new technologies to fellow educators is not only complex but also demands a considerable investment of time and effort. Teachers are frequently required to dedicate hours beyond their regular teaching schedules to provide guidance, demonstrate the use of digital tools, and offer ongoing support to their peers, which can lead to an increased workload and, in some cases, even cause stress or burnout as they strive to balance their primary teaching responsibilities with these additional commitments. Given these challenges, it becomes crucial to implement a systematic and well-organized approach to professional development. Establishing regular, structured training programs or workshops within the school environment can greatly alleviate the pressure on individual teachers by allowing for the efficient sharing of knowledge and skills, ensuring that all teachers have equal opportunities to enhance their technological competencies. By institutionalizing these professional development opportunities, schools not only support the continuous growth of their staff but also foster a culture of collaboration and innovation, ensuring that the adoption of educational technology becomes a collective effort and making the process more efficient and productive for everyone involved. Ultimately, when teachers are given the time and resources to develop their skills together, they are better equipped to create engaging and effective learning experiences for their students.

Teachers who collaborate with peers to develop and use adaptive ICT, share techniques and good practices, and learn from peer experiences can improve the overall quality of learning in schools. Professional development programs to improve teachers' ICT competencies are essential (Abel et al., 2022; Joya et al., 2025), which in turn encourage collaboration and innovation in teaching practices. In addition, collaboration among teachers in the use of adaptive ICT can promote learning quality improvement and innovation (Hartman et al., 2019). Furthermore, collaboration among teachers fosters

positive relationships among them, which eventually helps students (Mora-Ruano et al., 2019; Pozas & Letzel-Alt, 2023; Schleifer et al., 2017).

The results also show that there is a challenge in collaboration. They have problems managing time to guide their colleagues in the use of ICT. Schools' support and policy enactment can address the problem. For example, schools can facilitate the teachers by providing a 'community of learning' focusing on ICT integration within and among schools. In addition, the community can also conduct 'lesson study' to implement what they have studied in the community in their own classrooms, from which effective professional development can be achieved.

Training teachers in the use of ICT in learning is essential to improve the quality of education. ICT training for teachers enhances their digital competences, enabling effective integration of technological tools in teaching, which improves student engagement and achievement (Grammens et al., 2022). Teachers who receive ICT training are better at integrating technology in their learning, enabling more adaptive and personalized learning for students (Ghavifekr & Rosdy, 2015; Mapisa & Makena, 2024; Xu et al., 2025).

CONCLUSION

The level of pedagogical competence demonstrated by teachers is closely aligned with their level of professional digital competence (PDC). Specifically, teachers who possess level 2 pedagogical competence typically correspond to layer 1 and layer 2 of PDC, indicating that their foundational teaching skills are matched by their basic to intermediate abilities in utilizing digital tools and resources in their professional practice. As teachers advance to level 3 pedagogical competence, there is a clear connection to PDC layer 2, reflecting a deeper integration of digital technologies into their teaching methods and a greater capacity to support student learning through digital means. Finally, teachers who reach level 4 of pedagogical competence exhibit the highest alignment with layer 4 of PDC, demonstrating not only advanced teaching skills but also the ability to innovate and lead in the use of digital technology within educational settings.

The research on teachers' PDC level showed several positive implications for learning, including improving the effectiveness and efficiency of learning, personalized and student-centered learning, and improving the overall quality of learning. The higher the level, the higher the benefits for learning. However, the research found the challenge that must be addressed to maximize learning. The issue is that the teachers need time to guide colleagues in the use of ICT when collaborating. ICT training for teachers is a way to address this challenge. Teachers with ICT training will be more capable of using technology to enhance the learning process, which will raise student achievement and engagement in the classroom. Teachers with ICT training are more adept at using technology in their lessons, giving students personalized and adaptable learning experiences.

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AUTHOR STATEMENTS

Bahtiar developed the research concept from planning through to completion. **Maulidia** guided the implementation of data gathering and initial analysis of the results. Furthermore, **Umam** supervised the data collection and analysis.

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REFERENCES

Abel, V. R., Tondeur, J., & Sang, G. (2022). Teacher Perceptions about ICT Integration into Classroom Instruction. In *Education Sciences* (Vol. 12, Issue 9). MDPI. https://doi.org/10.3390/educsci12090609

Asga, A. R., Intania, A., Nurviana, A., Saputra, A. F., Muhammad, B. S., Wahyuni, D., Hayuningtyas, D. R. I., & Siregar, E. A. (2023). Panduan Operasional Model Kompetensi Guru. In *Direktorat Jenderal Guru dan Tenaga Kependidikan, Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi Republik Indonesia*. Direktorat Jenderal Guru dan Tenaga Kependidikan Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi.

Baek, S.-G., Song, W.-R., & Shin, S.-W. (2024). The Effects of High School Students' Self-directed Learning on Academic Achievement through ICT Utilization Ability. *The SNU Journal of Education Research*, *33*(2), 1–29. https://doi.org/10.54346/sjer.2024.33.2.1

Ghavifekr, S., & Rosdy, W. A. W. (2015). Teaching and learning with technology: Effectiveness of ICT integration in schools. *International Journal of Research in Education and Science (IJRES)*, *1*(2), 175–191. www.ijres.net

Grammens, M., Voet, M., Vanderlinde, R., Declercq, L., & De Wever, B. (2022). A systematic review of teacher roles and competences for teaching synchronously online through videoconferencing technology. In *Educational Research Review* (Vol. 37). Elsevier Ltd. https://doi.org/10.1016/j.edurev.2022.100461

Hartman, R. J., Townsend, M. B., & Jackson, M. (2019). Educators' perceptions of technology integration into the classroom: a descriptive case study. *Journal of Research in Innovative Teaching and Learning*, *12*(3), 236–249. https://doi.org/10.1108/JRIT-03-2019-0044

Instefjord, E., & Munthe, E. (2016). Preparing pre-service teachers to integrate technology: an analysis of the emphasis on digital competence in teacher education curricula. *European Journal of Teacher Education*, *39*(1), 77–93. https://doi.org/10.1080/02619768.2015.1100602

Joya, L. G., Merchán Merchán, M. A., & López Barrera, E. A. (2025). Development and strengthening of teachers' digital competence: Systematic review. In *Contemporary Educational Technology* (Vol. 17, Issue 1). Bastas. https://doi.org/10.30935/cedtech/15744

Kizil, I., & Kizil, F. S. (2024). Internal Barriers to Integrating Technology into Literacy Instruction: Challenges Faced by Teachers. *Journal of Social Perspective Studies*, 20–30. https://doi.org/doi.org/10.5281/zenodo.10928555

Labonté, C., & Smith, V. R. (2022). Learning through technology in middle school classrooms: Students' perceptions of their self-directed and collaborative

learning with and without technology. *Education and Information Technologies*, *27*(5), 6317–6332. https://doi.org/10.1007/s10639-021-10885-6

Mapisa, B. Z., & Makena, B. (2024). The Impact of ICT Adoption in Enhancing Teaching and Learning in Primary Schools of Amathole East District, Eastern Cape. *Research in Social Sciences and Technology*, *9*(1), 213–231. https://doi.org/10.46303/ressat.2024.12

Moll, I., Dlamini, R., Ndlovu, N. S., Drennan, G., Nkambule, F., & Phakathi, N. (2022). A developing realist model of the pedagogical affordances of ICTs. *South African Computer Journal*, *34*(2), 50–75. https://doi.org/10.18489/SACJ.V34I2.1076

Mora-Ruano, J. G., Heine, J. H., & Gebhardt, M. (2019). Does Teacher Collaboration Improve Student Achievement? Analysis of the German PISA 2012 Sample. *Frontiers in Education*, *4*. https://doi.org/10.3389/feduc.2019.00085

Nagel, I. (2021). Digital Competence in Teacher Education Curricula: What Should Teacher Educators Know, Be Aware of and Prepare Students for? *Nordic Journal of Comparative and International Education*, *5*(4), 104–122. https://doi.org/10.7577/njcie.4228

Nagel, I., Guðmundsdóttir, G. B., & Afdal, H. W. (2023). Teacher educators' professional agency in facilitating professional digital competence. *Teaching and Teacher Education*, *132*. https://doi.org/10.1016/j.tate.2023.104238

Peng, R., Razak, R. A., & Halili, S. H. (2023). Investigating the factors affecting ICT integration of in-service teachers in Henan Province, China: structural equation modeling. *Humanities and Social Sciences Communications*, *10*(1). https://doi.org/10.1057/s41599-023-01871-z

Pozas, M., & Letzel-Alt, V. (2023). Teacher collaboration, inclusive education and differentiated instruction: A matter of exchange, co-construction, or synchronization? *Cogent Education*, *10*(2). https://doi.org/10.1080/2331186X.2023.2240941

Pozas, M., Letzel-Alt, V., & Schneider, C. (2022). "The whole is greater than the sum of its parts" – Exploring teachers' technology readiness profiles and its relation to their emotional state during COVID-19 emergency remote teaching. *Frontiers in Education*, *7*. https://doi.org/10.3389/feduc.2022.1045067

Rahmawanti, M. R., & Umam, A. (2019). Integrating Web 2.0 Tools in Writing Class to Promote Assessment for Learning. *JEES (Journal of English Educators Society)*, *4*(2), 53–59. https://doi.org/10.21070/jees.v4i2.2516

Ranzato, E., Holloway, C., & Bandukda, M. (2025). Use of Educational Technology in Inclusive Primary Education: Protocol for a Systematic Review. In *JMIR Research Protocols* (Vol. 14). JMIR Publications Inc. https://doi.org/10.2196/65045

Rasdiana, Wiyono, B. B., Imron, A., Rahma, L., Arifah, N., Azhari, R., Elfira, Sibula, I., & Maharmawan, M. A. (2024). Elevating Teachers' Professional Digital Competence: Synergies of Principals' Instructional E-Supervision, Technology Leadership and Digital Culture for Educational Excellence in Digital-Savvy Era. *Education Sciences*, *14*(3). https://doi.org/10.3390/educsci14030266

Saif, S. M., Ansarullah, S. I., Othman, M. T. Ben, Alshmrany, S., Shafiq, M., & Hamam, H. (2022). Impact of ICT in Modernizing the Global Education Industry to Yield Better Academic Outreach. *Sustainability (Switzerland)*, *14*(11). https://doi.org/10.3390/su14116884

E-ISSN: 2528-4479, P-ISSN: 2477-5304
http://jurnal.unissula.ac.id/index.php/edulite
DOI: http://dx.doi.org/10.30659/e.10.2.501-514

Saleh Alharbi, A., Abdullah Alhebshi, A., & Meccawy, Z. (2021). EFL Students' and Teachers' Perceptions of Google Forms as a Digital Formative Assessment Tool in Saudi Secondary Schools. *Arab World English Journal*, *7*(1), 140–154. https://doi.org/10.24093/awej/call7.10

Samantray, A., Behera, R. R., & Acharya, A. K. (2024). Effectiveness of ICT-integrated pedagogy on pre-service teachers' teaching competence in mathematics. *Frontiers in Education*, *9*. https://doi.org/10.3389/feduc.2024.1401188

Schleifer, D., Rinehart, C., & Yanisch, T. (2017). *Teacher Collaboration in Perspective: A Guide to Research*. http://www.in-perspective.org/pages/teacher-collaboration

Shin, S., Hong, E., Lee, M., & Lee, M. (2025). Edutech-Based Formative Assessment and Teaching Competencies in Nursing Education. *Nurse Educator*. https://doi.org/10.1097/NNE.0000000000001810

Sri Redjeki, I., Muhajir, R., & Khaldun Bogor, I. (2022). Supporting Students' Self-Directed Learning in EFL Speaking Classroom by Using Cake Application. *Journal of English Language Learning (JELL)*, *6*(2), 212–219. https://doi.org/https://doi.org/10.31949/jell.v6i2.3421

Thapa, D., & Hatakka, M. (2017). *Understanding ICT in ICT4D: An Affordance Perspective*. Hawaii International Conference on System Sciences. http://hdl.handle.net/10125/41472

Wang, J. (2024). In-Service Teachers' Perceptions of Technology Integration in English as a Foreign Language Classrooms in China: A Multiple-Case Study. *ECNU Review of Education*, *7*(2), 333–356. https://doi.org/10.1177/20965311231193692

Wisman, Youpika, F., & Qalbi, Z. (2021). TRAINING USING GOOGLE FORM AND GOOGLE CLASSROOM AS A SOLUTION FOR ONLINE LEARNING IN THE MIDDLE OF THE COVID-19 PANDEMIC. *JURNAL PENGABDIAN KEPADA MASYARAKAT*, *2*. https://ejournal.unib.ac.id/index.php/abdipaud/index

Xu, S., Zhao, T., Zheng, Z., & Zhu, S. (2025). Modeling the Effects of Interrelations Among External Support and Internal Factors on Teachers' ICT Integration Ability in Less Developed Areas of China. *SAGE Open*, *15*(1). https://doi.org/10.1177/21582440251318570

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education – where are the educators? In *International Journal of Educational Technology in Higher Education* (Vol. 16, Issue 1). Springer Netherlands. https://doi.org/10.1186/s41239-019-0171-0

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