

Conference Paper

Hybrid Learning Readiness: Techno Pedagogical Skills and Digital Competence Education

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ABSTRACT

This study aims to examine techno-pedagogical skills to realize digital competence in the hybrid learning process. This study used a case study method, collecting data through questionnaires and in-depth interviews (FGD) from informants and a sample of 35 people. The research location is at UPN "Veteran" Jawa Timur. The results showed that there were differences in techno-pedagogical skills between teachers based on age. Teachers aged <35 years have the speed to adapt to the use of information technology, electronic presentation skills, web-based course development tools (web-based course development tools), and knowledge of computer security that supports learning so that they have more skills in the use of information and communication technology for online lectures. The findings of this study are the basis for creating a knowledge-sharing development model to improve techno-pedagogical skills to achieve digital competence in hybrid learning.

Keywords: Digital competence, hybrid learning, readiness, techno-pedagogical skills

Introduction

Environmental and technological changes affect almost every sector of life, including the learning process in universities. Changes outside the organization such as a pandemic have changed and forced the world of education to adapt to technology immediately. Swasti (2020) explained that this revolutionary change was forced to adapt immediately, because of the pandemic factor, all elements within the organization had to change. The use of learning media with platforms that have been available so far but have not been used optimally must be studied and implemented immediately. Adaptation takes place relatively quickly so that the need for learning is met. The implications of using technology in learning demand a strategic role for lecturers (Arezlvarez, 2006). Creating innovative learning environments for students to explore technology and designing creative approaches to integrate technology into "hybrid learning" classrooms is becoming a must. Technological approaches are used to teach students and are integrated into achieving learning objectives. Hartman (2001) explains that through metacognitive teaching, the special needs of students can be met by planning to teach for student learning objectives. Metacognitive teaching includes the teacher's awareness of the sources and characteristics of students' misconceptions and monitoring and evaluating the extent to which important misconceptions have changed productively. Creating innovative classrooms and online learning environments is a challenge amidst advances in technology. Through this approach, students realize that meaningful teaching with technology does not require lecturers to be technology or computer experts.

Techno-pedagogy approach

An important aspect of achieving learning goals in the world of education to improve student digital literacy can be done with a techno-pedagogical learning approach. Sholihatin et al. (2021) emphasized that by using digital literacy strategies, students can better direct students to think critically,

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gain digital experience and manage online identities. Lecturer and student digital literacy through techno-pedagogical training is expected to improve digital literacy skills in the learning process to achieve educational goals. The growth of information and communication technology according to Beaudin and Hadden (2004) has encouraged various transformations in life and fostered dynamism in various circles, including education. Lecturers use technology through techno-pedagogical skills to help students further develop, achievement of learning outcomes, and design class-based resources. At this time the techno-pedagogical method is an important component in learning achievement. The need for individuals to equip themselves with various technological skills has been widely emphasized because mastering these skills enables them to use, manipulate, and disseminate information in a sophisticated world. The educational process involves technology, content, and pedagogic knowledge itself. These three elements as a system, should not be seen separately, but reflect the complex interaction of all important knowledge for teaching with technology as part of achieving learning objectives.

Handayani et al. (2022) explained that training teachers to use technology can add new insights and knowledge in overcoming their limitations. Teacher competency development can help organizational goals to always develop. The desire and willingness to make changes in the organization is a must for the development of the organization itself. Swasti et al. (2016) explained that when an organization makes changes it will certainly have an impact on juridical, technical, and social aspects. Adaptation to new policies is not easy because it is also related to habits (organizational culture). The world of education needs to make changes on an ongoing basis, as explained by Koehler and Mishra (2005) that technology that continues to develop will lead to better teaching. The introduction and use of technology in learning lead to new conceptual representations, creating a dynamic relationship between technology, pedagogy, content, and knowledge. Lifelong educational needs shape their learning paths through collaboration and new technologies (Attwell, 2007); (Archambault & Crippen, 2009). Information, communication, knowledge, and technology will continue to change and develop which will be used in education. Lecturers who have techno-pedagogical knowledge indirectly increase the effectiveness of the teaching and learning process for professional development with technology integration. The challenge of increasing students' digital literacy is important in providing solutions to limited pedagogical insights in the era of information and communication technology development.

Digital literacy for the Digital natives generation

Digital literacy cannot be separated from the need for education to keep abreast of information developments so that the educational process can fulfill its learning outcomes. This cannot be separated from the willingness and ability of individuals to utilize technology to find, evaluate, and compile clear information through writing and other media on various digital platforms. Through digital literacy in the world of education, educators can inform messages in the form of text, images, and audio that are designed using technology with grammar, and composition according to the skills and abilities of individual educators. Ku and Soulier (2009) and Ghaith (2009) explain that manipulative and enrichment messages in various forms of media are increasingly influencing educators. Educators began to promote literacy education as a medium for teaching. Each individual can assess and access the media messages they receive. The ability to critique digital content and media allows individuals to identify biases and evaluate messages independently. Rapid technological developments encourage rapid changes in education, encouraging educators to continue to develop their abilities. Sholihatin, et al. (2021) explain that lecturers need online skills, technological (IT) skills, understanding and implementing audio-visual media (video/audio) in designing the learning process, and motivating students to use media for digital literacy. Educators need to develop blended learning models, understand teaching content, and study student learning habits/patterns in face-to-face meetings or using the media. Shifts and developments in technology affect learning tools from print media to digital media and give birth to a new culture in the education community. Digital culture with internet infrastructure as an information dissemination platform. Starting from this phenomenon, digital culture is developing (digital

natives), especially with the rapid progress of smartphones. The digital native generation is characterized by individuals who enjoy activities in an all-online environment and hypertext-based information. Patterns of behavior such as making friends more often through social media, wanting to get information quickly and immediately, collaborating in networks, and looking for random information. How to get all-around information and get it instantly.

Learning model techno-pedagogy approach to improve student digital literacy

Teaching that is developed with a techno-pedagogical approach to developing digital literacy effectively requires a technology integration plan that guides good decisions about integrating technology into the learning process. Roblyer and Doering (2013) explain that the goal of producing successful learning goes through three distinct phases for technology integration into teaching, namely (a) Needs analysis, (b) Planning for integration, and (c) Post-instruction analysis and revision.

Material and Methods

This study uses a case study method, where the research subjects are lecturers/educators at UPN “Veteran” Jawa Timur. This case method was chosen because of the phenomenon that will be explored in depth regarding digital competence and techno-pedagogic skills. Data was collected by distributing questionnaires through a form to all lecturers were collected.

Based on the data, 35 answers were collected from the questionnaire which was distributed randomly to the teacher. The identity of the respondent is described as follows:

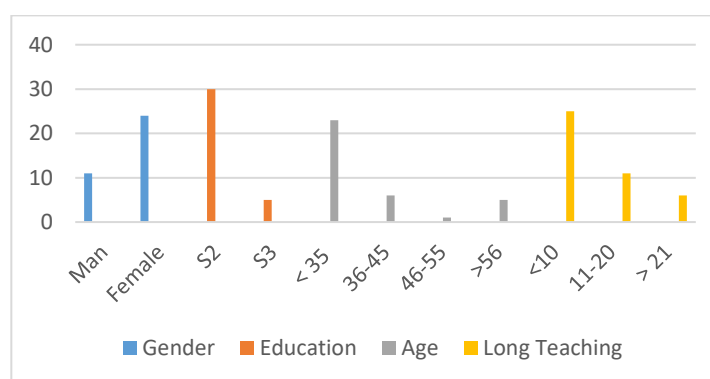


Figure 1. Respondent data and identity

From the picture, it can be explained that there are variations of respondents in terms of gender, education, age, and teaching experience (time).

Question items that describe the variable techno-pedagogical skills:

- a. Skills in using online media: item number 1,2,3
- b. Electronic presentation skills: item number 4, 5, 6

Question items for digital capability variables:

- a. Spreadsheet skills (data processing application using Excel): item number 7,8,9,10
- b. Web navigation skills: 11, 12, 13, 17, 18
- c. Word and Excel processing skills: 14, 15,16
- d. Email management skills: 19, 20
- e. WebCT (WEB-based Course Development Tools) Skills: 21, 22, 23
- f. Education copyright knowledge: 24, 25,26
- g. Knowledge of computer network: 27
- h. Computer security knowledge 28,29,30

After the data was processed simply by using data tabulation and data grouping, then interviews were conducted to dig deeper into the data related to the readiness of hybrid learning for lecturers. In-depth interviews were conducted through meetings in the form of Focus Group Discussions. For completeness in the data triangulation process, it is done by digging up existing document/archive data regarding the research focus.

Results and Discussion

Advances in science and technology in the last two decades have encouraged the education sector to make drastic changes in the field of educational technology. Currently, educators use personal computers, laptops, cell phones (smartphones), and tablets. In addition, educators also use the World Wide Web (Web), educational software (e-learning), cloud, drives, digital cameras and digital video cameras (zoom meeting), Personal Digital Assistants (PDA), as well as video and audio players in learning. Most educators use a variety of digital tools—including video, e-mail, online programs such as the Web Course Tool (WebCT) (E-learning), and video conferencing (zoom meeting; Google Meet) for teaching and learning. The answers to the questionnaire are: 1 Very poor, 2 less, 3 Average, 4 Good, 5 Very good. Most of the respondents who are willing to participate in this study are aged <35.

Questionnaire data analysis

The data collected after tabulation obtained the following results:

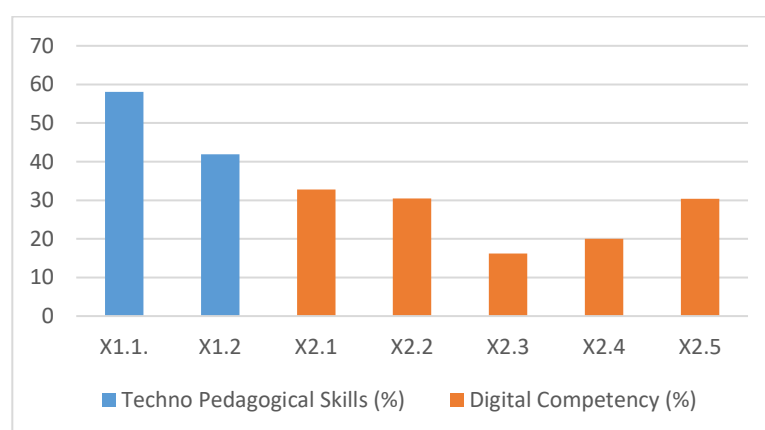


Figure 2. Results of questionnaire data analysis

With the ability to connect the internet from various networks (Wi-Fi, broadband) to personal computers, laptops, mobile phones (smartphones), and tablets 60% answered very well. Ability to prepare and use applications (zoom meeting, google meet) for the online class learning process 65.7% said very good, and the ability to prepare and use the application (google classroom) for the online class learning process (upload material; create a link with YouTube; insert journal material or e-book on google classroom) 48.6% answered very well. From the 3 aspects as a measuring tool, it is known that teachers aged <35 using online media are very good with an average percentage of 58.1%. From the results of in-depth interviews obtained information that lecturers are ready to use e-learning media, zoom meetings, and e-learning UPN “Veteran” Jatim, but still need improvement because many of the features in it have not been widely used.

The results of data analysis through questionnaires explained that the ability to integrate PPT (Microsoft Power Point) with video; images (multimedia) was 45.7% answered very well. Ability to operate campus e-learning adequately and smoothly (upload materials; give assignments; carry out evaluations/assessments) 40% answered very well. Ability to upload my articles on networking sites (WhatsApp; Facebook; Instagram; TikTok; Twitter; blog) 40% answered very well. The average electronic presentation skill is 41.9, it can be concluded that it still needs to be improved. The results

of in-depth interviews with informants concluded that all lecturers had integrated learning materials according to the Semester Learning Plan (RPS) in a variety of media, for example, PPT with video, using YouTube, WhatsApp, and other social media as learning media, although it was still not optimal, especially informants at the age of 35 years and over.

The results showed that there were differences in techno-pedagogical skills between teachers based on age. Teachers aged <35 years have the speed to adapt to the use of information technology, electronic presentation skills, web-based course development tools (web-based course development tools), and knowledge of computer security that supports learning so that they have more skills in the use of information and communication technology for online lectures. Furthermore, from the findings of this study, a proposed framework of approaches for the development and improvement of techno-pedagogical skills was drawn up to achieve digital competence in hybrid learning. The recommended development is through knowledge sharing, which can be in the form of mentoring fellow lecturers, socialization, workshops, and others.

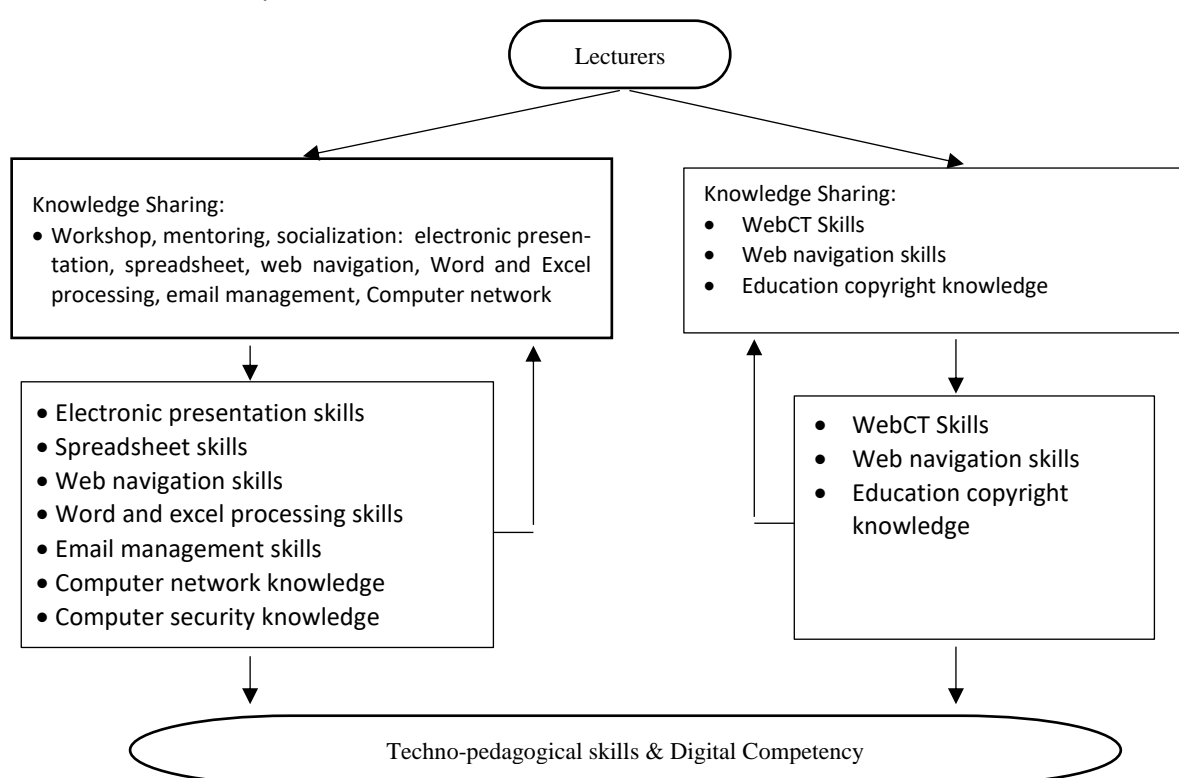


Figure 3. Development of the existing techno-pedagogical skills model

It is recommended by researchers to share knowledge using media so that lecturers or teaching staff can study on their own with a more flexible time. A strong will to make changes in order to increase skills and knowledge about techno pedagogical will have an impact on the readiness to implement hybrid learning and improve lecturer performance.

Conclusion

Educators/lecturers aged <35 years have the speed of adaptation in the use of information technology, electronic presentation skills, web-based course development tools, and knowledge of computer security that supports learning so that they have more skills in the use of information technology and communication for online lectures. Meanwhile, lecturers who are over 35 years old have moderate average adaptability. The findings of this study form the basis for creating a knowledge-sharing development model to improve techno-pedagogical skills to achieve digital competence in hybrid learning.

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