Lembaran Ilmu Kependidikan 50(1) (2021): 31-36

Lembaran Ilmu Kependidikan

http://journal.unnes.ac.id/nju/index.php/LIK

Digital Literacy of Accounting Teachers in The Era of Industry 4.0

Cipto Wardoyo[1]✉, Yogi Dwi Satrio[2], Dewi Rahayu[3]

[1,2,3]Fakultas Ekonomi, Universitas Negeri Malang

Article Info

Article History:
Receive 1 January 2020
Accepted 1 April 2020
Published 30 April 2021

Keywords:
accounting teacher;
digital literacy;
industry 4.0 era

Abstrak

Penelitian ini bertujuan untuk membahas kompetensi literasi digital guru akuntansi sebagai subjek dalam penelitian ini. Pendekatan yang digunakan adalah kualitatif dengan jenis penelitian studi kasus. Pengumpulan data dilakukan melalui wawancara dan dokumentasi dengan menggunakan triangulasi sumber dan triangulasi teknik untuk menguji keabsahan data. Hasil penelitian menunjukkan bahwa kompetensi literasi digital guru akuntansi di sekolah negeri cukup baik dibandingkan dengan guru akuntansi di sekolah swasta. Hal ini didukung dengan fasilitas IT yang memadai dan pelatihan yang rutin. Faktor penghambat yang dialami oleh guru akuntansi di sekolah negeri dapat diminimalisir dibandingkan dengan guru akuntansi di sekolah swasta.

Abstract

This study aims to address the digital literacy competence of accounting teachers as the subjects in this study. The approach used is qualitative with the type of case study research. Data were collected from interviews and documentation using sources triangulation and techniques triangulation to test the validity of the data. The results showed that the digital literacy competence of accounting teachers in public schools was quite good compared to accounting teachers in private schools. This is supported by adequate IT facilities and regular training. Inhibiting factors experienced by accounting teachers in public schools can be minimized compared to accounting teachers in private schools.

✉ Corresponding author
Address: Jl. Semarang 5, Sumbersari, Kec. Lowokwaru, Sumbersari, Kec. Lowokwaru, Kota Malang, Jawa Timur 65145
Email : cipto.wardoyo.fe@um.ac.id

p-ISSN 0216-0847 | e-ISSN 2460-7320

UNNES JOURNALS

INTRODUCTION

Entering Industry 4.0, especially in education, schools, teachers and students live in a highly advanced digital world. The advancement of information technology and the internet has resulted in vast digital information resources. The emergence of the internet resulted in the connection of information from all corners of any hemisphere running incredibly fast which made it easier for humans to obtain and disseminate information. The current development of digital media and information technology presents challenges for users in utilizing information and the ability to trace information, requiring accuracy and quality of information obtained by users. This ability is currently known as literacy which is more than just the ability to read and write. Boldizsár (2018) stated that the importance of digital literacy is undoubtedly "an essential requirement for life in the digital age". The term digital literacy is often associated with computer or ICT literacy, digital competence or information, media, and technology skills (Boldizsár, 2018). Therefore, digital literacy can be interpreted as the ability to use technology and information through digital devices effectively and efficiently in various contexts, such as academics and everyday life (Kurnianingsih et al, 2017).

In the context of education, Undang-Undang Republik Indonesia Number 14 of 2005 regarding the professionalism of teachers and lecturers has stated that teachers are educators who have the main tasks, among others, to educate, guide, teach and evaluate students from early education to education for 4 years or more. Increasing teacher professionalism must be carried out in line with the increasing needs in education sector (Wardoyo, Herdiani, & Sulikah, 2017). Profession as teachers is further strengthened by certification allowance for teachers who have passed the teacher competency exam. One of the competencies that professional teachers must have is the ability to use information and communication technology, but in reality these competencies are not fully mastered by teachers in Indonesia.

Currently the biggest challenge in implementing digital literacy in schools comes from schools internal, including the inadequate ability of teachers in the field of digital literacy so that students lack the ability to search, browse, process, and evaluate information effectively and efficiently. The use of digital media among teachers is only limited as a means of finding sources of information related to the provision of teaching and learning materials. Furthermore, the use of the internet among teachers is to communicate with students both personally and in group discussions. This condition shows the low use of digital media among professional teachers in Indonesia.

Research results regarding the use of digital media for teachers with the results of entering the beginner group are strengthened by research from Zulham (2014) which revealed that 64 out of 100 informants were not able to operate the Information and Communication Technology properly. Education in Industry 4.0, teachers are required to be experts and equipped with the ability to understand technology, because in Industry 4.0, teachers must be experts in applying media learning, learning methods and techniques properly, as well as equipped with expertise in their respective fields . The results of the research conducted by Wahyuni (2018) concluded that teachers are required to have qualified competencies in facing technological developments. In this case, the school has a role to continue to develop competencies, starting from the process of recruitment to coaching a profession development program.

Research result from Wahyuni (2018) is in line with the results of research conducted by Kumari & D'Souza (2016) in which they concluded that teachers play an important role in school education. Schools are responsible for meeting teacher needs. Teachers are also required to use and integrate Information and Communication Technology into learning activities to create skills related to creativity and innovation, communication and collaboration, critical thinking, problem solving, and decision making. From the explanation above, it can be concluded that with digital literacy skills, it will be possible to help teachers in carrying out professional development. Thus, digital literacy becomes an effort to create qualified teachers. Therefore, researchers seeks to analyze digital literacy of accounting teachers.

METHOD

This research used a qualitative approach with a case study type research. According to Now & Bougie (2016), a case study is focused on in-depth understanding of a particular object, event or activity. There are 2 data sources used in this study, namely: primary data obtained from accounting teachers through in-depth interviews on digital literacy and secondary data obtained from documentation. Data collection techniques were carried out by means of interviews and documentation. The steps in data analysis were carried out by reducing data, displaying data, and

drawing conclusions/verification. Checking the validity of the data was done by using the source triangulation technique, which is comparing and checking back the sources obtained from different sources and techniques triangulation, namely by checking the data to the same source with different techniques, such as interview techniques and then followed by documentation techniques.

RESULTS AND DISCUSSION

Information Technology Facilities that Assist Teacher Performance

Information technology facilities are a necessity to support learning activities and teacher performance. This information technology facility can increase teacher competence in mastering technological developments. This is in accordance with the study conducted by Havivah (2015) which states that the completeness of information technology facilities greatly supports the teaching activities in schools. In terms of information technology facilities, public schools have an advantage over private schools. This advantage can be seen from the information technology facilities available in public schools in the form of a computer laboratory for the accounting department. There is a proper internet throughout the school, there are computers and printers in the accounting department room, each classroom is equipped with LCD projectors and speakers and each teacher is given a cable to connect to the the LCD projector and speakers. The internet network (wifi) can be accessed by teachers and students. In addition, students in accounting and the other majors will be given computer tablets.

On the other hand, information technology facilities at private schools only consist of one computer laboratory, internet network and a LCD projector. Information technology facilities in private schools can be said to be inadequate for several reasons. First, the existing internet network in private schools have low access ability and is not widely accessible throughout the school resulting in both teachers and students facing difficulty in accessing the internet in learning activities. Furthermore, the LCD projectors in several classes were damaged so teachers have to borrow a portable LCD from the department. Acccording to a study conducted by Wan (2011)the Australian Government has invested heavily ($2.4 b, digital literacy is supported by technology including hardware and software used for educational, social, and entertainment purposes at school or at home.

Utilization of Information Technology by Teachers

The effective use of information technology will contribute to teachers' performance in teaching. Teachers utilize information technology for various activities, especially in class learning activities including presentations, assignments for students, searching for teaching materials and other activities at school. Neal & Miller (2013) states that the use of technology in the learning process will provide better results than the conventional learning process. Based on data description and research findings, it can be concluded that accounting teachers in public schools have better digital literacy competencies in terms of utilizing and applying IT compared to accounting teachers in private schools.

The e-learning system is used by accounting teachers in public schools to ease teachers in providing assignments and learning materials for students. The e-learning system used by accounting teachers in public schools consists of google classroom and the gnomio model. Most of the accounting teachers in public schools have maximized the use of e-learning in class activities. Apart from using e-learning, accounting teachers also use social media such as WhatsApp and e-mail to send materials and class-related information. This corresponds to Pratolo & Solikhati (2020), it is stated that the advancement of smartphones is widely used for learning activities because of their mobility and accessibility. Smartphone mobility creates unlimited space and time while smartphone accessibility provides applications in line with educational goals such as blog, Skype, and WhatsApp.

Contrary to the public schools, private schools' accounting teachers do not have the adequate competence in terms of utilizing and applying information technology. This is proven by the fact that accounting teachers in private schools have not utilized and applied the e-learning learning system in their learning activities. Accounting teachers in private schools more often use conventional learning in the classroom. Inadequate information technology facilities are the main reason for private schools to not supporting teachers to carry out an e-learning system. According to Wong & Sixl-daniell (2017), e-learning system deals with learning that makes use of technology. The benefit of the e-learning system is that learning can be done without face to face interactions and it is cost effective.

The first sub-indicator used to measure teacher competence in terms of the use of information technology is the teaching media used by

accounting teachers. Digitally literate accounting teachers must be able to design learning activities appropriately with the help of information technology facilities. The teachers make use of information technology facilities as materials for creating or searching for learning media. The learning process, which uses the 2013 curriculum, requires teachers to use media that attracts students so that learning does not seem boring. Based on the data that has been described in the previous chapter, it shows that accounting teachers in public schools have used information technology as a teaching medium. Accounting teachers have utilized technology-based teaching media in the classroom, such as LCD projectors, laptops, internet and speakers that are used in presentations during learning activities. The use of information technology facilities as a teaching medium has been implemented by accounting teachers in every subject. Meanwhile, based on the data description in the previous chapter, accounting teachers in private schools have not fully used information technology as a teaching medium. This was proven when accounting teachers in private schools explained that accounting teachers rarely used technology-based teaching media in the classroom such as LCD projectors, internet and laptops because the available IT facilities were not yet fully adequate. Therefore, accounting teachers prefer to carry out conventional classroom learning activities while speakers are only used in presentations during learning activities.

The next sub-indicator used to measure the use of information technology is the learning resource used by accounting teachers. The use of IT-based teaching media makes learning more interesting and varied. Varied learning can be seen from the media and learning resources used by the teacher. The learning resources used by the teacher are in the form of online learning resources (internet) or offline learning sources (books, newspapers, etc.). The use of learning resources from the internet can help students to find various information related to the lessons. Based on data description and research findings, it shows that accounting teachers in public schools have optimized learning sources from the internet and books. The MGMP also provides teaching materials that can be used by accounting teachers as a learning resource for students. Learning resources provided by teachers to students can be accessed by students through e-learning platforms such as the Gnomio Model and Google Classroom. Meanwhile, based on data description and research findings, it shows that accounting teachers in private schools have also used the internet and books as learning resources. The difference is accounting teachers in private schools do not upload teaching materials into e-learning platforms so that students cannot access learning resources at any time. The use of the internet as a learning resource will help the learning process because by accessing information on the internet, learning will be more effective and efficient since students are not burdened by the necessity to browse resources from the library itself.

The last sub-indicator used to measure the use of information technology by accounting teachers is learning evaluation. The information technology facilities is beneficial not only o as teaching media and learning resources but also as an assistance in learning evaluation. Student evaluations are carried out by teachers throug manual and online learning evaluations. Based on the data that has been described in the previous chapter, it can be concluded that accounting teachers in public schools have used both offline and online learning evaluations. Offline learning evaluation is used to measure the level of students' skills while online learning evaluation is used to measure the level of students' knowledge. Along with the increasingly rapid development of technology, the emergence of Google Classroom and Gnomio Model can facilitate teacher performance in conducting learning evaluation activities in schools. This is different from the results and data description on accounting teachers in private schools. The learning evaluation used by accounting teachers in private schools is still manually done in paper-based test. In this case, the use of information technology is still insufficient for accounting teachers in private schools in evaluating students.

Teacher Efforts in Applying Information Technology

Information technology facilities are supporting factors to achieve goals. Schools have provided information technology facilities to support and facilitate teacher performance. The information technology facilities provided by schools will increasingly develop so that teachers are required to be able to utilize and apply them properly. To be able to master it, teachers must seek information on technological developments and balance it with the readiness to master information technology. According to Havivah (2015), a person's abilities and skills are influenced by physical and mental fitness, training, and education. This is also in line with Kurnianingsih

et al (2017) that states digital literacy training for teachers can make a positive contribution to improve information literacy skills.

Based on data description and research findings, it can be interpreted that accounting teachers in public schools have made every effort to optimize their abilities in utilizing information technology. Teachers in public schools attended trainings held by schools as well as trainings conducted by MGMP. Another effort made by the teachers is to hold joint discussions related to technological developments in education sector. In addition, teachers also independently access the latest information related to education sector developments. This is different from the research findings and data description on accounting teachers in private schools. Teachers in private schools have not been actively participating in trainings related to the education sector development, especially the development of information technology. This is due to the difficulties in licensing procedures. Although accounting teachers in private schools have not actively participated in trainings, the teachers have other efforts to keep up to date with developments in education technology. Efforts are being made to learn independently by accessing the latest information using the internet. However, the result is not as comprehensive as attending the training. This is in line with a research conducted by Shopova (2014) which stated that the training will provide a great opportunity to improve digital competence.

Teacher Performance in Utilizing Information Technology

The proactive effort of teachers in optimally utilizing information technology facilities can improve the quality of teacher performance. This quality is marked by teachers who are able to earn achievements in the use of information technology. This is set in Permendiknas (2007) which states that the competence of elementary to secondary school teachers must be able to take advantage of information and communication technology for the benefit of learning and be able to take advantage of information and communication technology for self-development. Teachers who have good competence will be selected by the school to become representatives to participate in competitions both at the city/regency level and at the provincial level. Based on data description and research findings, it can be concluded that accounting teachers in public schools already have good competence in terms of utilizing information technology. Accounting teachers in public schools are also active in participating in competitions even though the competition is not related to technology but is related to their competence as a teacher. However, the research findings and data description on accounting teachers in private schools showed that they have poor digital literacy competencies. Inadequate school IT facilities and training are the main causes of the lack of digital literacy competence for accounting teachers in private schools. Accounting teachers in private schools have also not been actively participating in competitions related to the use of information technology or other competitions.

Barriers to Information Technology Utilization

Proper information technology facilities that support the program in schools is supported by the performance of teachers in utilizing this information technology. However, in its implementation there are often disturbances and barriers experienced by teachers in utilizing information technology. Disturbance and barriers can emerge from anywhere. Cote & Milliner (2018) explained that the two main factors affecting the use of information technology are the lack of skills and inadequate facilities.

Based on the data description described in the previous chapter, it can be seen that the barriers to improving the digital literacy skills of accounting teachers in public schools are weak internet networks, age factors that affect older teachers' motivation, lack of time due to teachers' hectic duties and limited knowledge regarding e-learning. In the other hand, the inhibiting factors for accounting teachers in private schools are weak internet networks, inadequate information technology facilities, low teacher motivation, and lack of training.

Based on the explanation above, it can be concluded that there are always barriers that teachers may experience in mastering digital literacy. This is in accordance with the research conducted by Rahayu (2019) in which it is concluded that the inhibiting factors in improving teachers' digital literacy skills are limited knowledge, limited time, budget, personnel and infrastructure. Research conducted by Hasanah (2018) also concluded that there were obstacles felt by teachers in PKB (Continuous Professional Development) related to lack of time and willingness, limited information, unstable health for older teachers and less active contribution to ideas when teacher working in groups.

CONCLUSION

Based on the data description and result findings in the previous chapter, it can be concluded that 1) in terms of information technology facilities, public schools have an advantage over private schools. This advantage can be seen from the information technology facilities available in public schools are good and adequate compared to those in private schools; 2) the ability of accounting teachers in public schools is better than accounting teachers in private schools in terms of the use of information technology in learning media and materials as well as learning evaluation; 3) teachers in public schools made effort in mastering the digital literacy by participating in trainings held by schools and MGMP, holding joint discussions and browsing independently related to technological developments in the education sector, while the efforts made by accounting teachers in private schools are learning independently by accessing the latest information using the internet; 4) accounting teachers in public schools have adequate competence in using information technology and are actively participating in competitions even though the competitions are not related to technological developments, while teachers in private schools have poorer competence in terms of utilizing information technology and have never participated in a competition related to the use of technology or any other competition; and 5) barriers experienced by accounting teachers in public schools are weak internet networks, age and limited knowledge regarding e-learning. In the other hand, barriers faced by the accounting teachers in private schools are weak internet network, inadequate IT facilities, low motivation and lack of training.

REFERENCES

Boldizsár, B. (2018). Students ' Needs for Digital Devices in Fl Classes. *International Journal OfArts &Sciences*, *11*(01), 195–202.

Cote, T., & Milliner, B. (2018). *A Survey of EFL Teacher' Digital Literacy: A Report From A Japanese University*. *18*(4), 71–89.

Hasanah, U. (2018). Pelaksanaan Pengembangan Keprofesian Berkelanjutan (PKB) Guru Sekolah Dasar Negeri Demakijo I Gamping Sleman. *Jurnal Pendidikan Guru Sekolah Dasar*.

Havivah, F. (2015). Optimalisasi Pemanfaatan Teknologi Informasi oleh Guru untuk Kemajuan Sekolah (Studi Kasus di SMA Negeri 1 Gresik).

Indonesia, P. (2005). Undang-Undang Republik Indonesia, Tentang Guru dan Dosen.

Kumari, S., & D'Souza, F. (2016). Secondary school teachers' digital literacy and use of ICT in teaching and leraning. *International Journal of Computational Research and Development*, *1*(1), 141–146. Retrieved from http://ijcrd.dvpublication.com/2016/12/23/secondary-school-teachers-digital-literacy-and-use-of-ict-in-teaching-and-learning/

Kurnianingsih, I., Rosini, dan Ismayati, N. (2017). (literacy)Upaya Peningkatan Kemampuan Literasi Digital bagi Tenaga. *Jurnal Pengabdian Kepada Masyarakat*, *3*(1), 61–76. https://doi.org/10.22146/jpkm.25370

Neal, L., & Miller, D. (2013). The use of technology in education. *Web-Based Learning: Theory, Research, and Practice*, *8*(6), 327–342. https://doi.org/10.4324/9780203759820

Permendiknas. (2007). Peraturan Menteri Pendidikan Nasional Republik Indonesia Nomor 16 Tahun 2007. (235), 245.

Pratolo, B. W., & Solikhati, H. A. (2020). The implementation of digital literacy in indonesian suburban EFL classes. *International Journal of Scientific and Technology Research*, *9*(1), 1508–1512.

Rahayu, L. (2019). *Literasi Digital Dalam Mewujudkan Guru Berkualifikasi Ulul Albab*.

Sekaran, U., & Bougie, R. (2016). *Reserach Methods for Bussiness A Skill-Bulding Approach*. United Kingdom: Sevent Edition.

Shopova, T. (2014). Digital Literacy of Students and Its Improvement At the University. *Journal on Efficiency and Responsibility in Education and Science*, *7*(2), 26–32. https://doi.org/10.7160/eriesj.2014.070201

Wahyuni, D. (2018). Peningkatan Kompetensi Guru Menuju Era Revolusi Industri 4.0. *Info Singkat (Kajian Singkat Terhadap Isu Aktual Dan Strategis) Pusat Penelitian Badan Keahlian DPR RI 2018*, *10*(24), 13–18.

Wan, N. (2011). Why digital literacy is important for science teaching and learning. *Teaching Science: The Journal of the Australian Science Teachers Association*, *57*(4), 26–32. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=ehh&AN=71529960&site=ehost-live

Wardoyo, C., Herdiani, A., & Sulikah, S. (2017). Teacher Professionalism: Analysis of Professionalism Phases. *International Education Studies*, *10*(4), 90. https://doi.org/10.5539/ies.v10n4p90

Wong, A., & Sixl-daniell, K. (2017). The Importance of e-Learning as a Teaching and Learning Approach in Emerging Markets. *10*(1), 45–54.

Zulham, M. (2014). Kesenjangan Digital di Kalangan Guru SMP (Studi Deskriptif mengenai Kesenjangan Aksesibilitas dan Kapabilitas Teknologi Informasi di kalangan Guru SMP Kecamatan Krian). *Universitas Airlangga Journal*, *3*(3), 626–637.