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DIGITAL COMPETENCES LEVEL OF INDONESIAN TEACHERS IN PROFESSIONAL LEARNING COMMUNITY

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ABSTRACT

The education practices also changed for the past 20 years because the introduction of technology. Digital competences become an important goal to teachers' development. Professional Learning Community that become a central development of teachers' knowledge and practice must also implement the digital competences. This study aims to determine the digital competences level of Indonesian teachers based on the DigCompEdu framework, and teachers' experience effect on their digital competence level. The data gathered by using translated version of Check-in tool. This research used descriptive statistics analysis. The research conducted in one of the professional teacher associations in Indonesia. The result shows that most teachers are still in the Exploration and Integration phase, 43% majority of Integrator levels and 17.2% of Exploration levels, also 26.9% Expert level, and 6,5% each of The Leader and Pioneer levels. Indonesian teachers need more opportunities to develop their digital competence, hence the more experienced teacher has consistent of high-level teachers. PLC on this note could become a central of teachers' digital competence development by collaborating with teachers in the different digital competence level.
Keywords: *Digital Competences, Indonesian Teachers, Professional Learning Community*

ABSTRAK

Praktik pendidikan juga berubah selama 20 tahun terakhir karena pengenalan teknologi. Kompetensi digital menjadi tujuan penting untuk pengembangan guru. Professional Learning Community yang menjadi pusat pengembangan ilmu dan praktik guru juga harus mengimplementasikan kompetensi digital. Penelitian ini bertujuan untuk mengetahui tingkat kompetensi digital guru Indonesia berdasarkan kerangka kerja DigCompEdu, dan pengaruh pengalaman guru terhadap tingkat kompetensi digital mereka. Data dikumpulkan dengan menggunakan alat Check-in versi terjemahan. Penelitian ini menggunakan analisis statistik deskriptif. Penelitian dilakukan di salah satu asosiasi profesi guru di Indonesia. Hasil penelitian menunjukkan bahwa sebagian besar guru masih berada pada tahap Eksplorasi dan Integrasi, mayoritas 43% pada level Integrator dan 17,2% pada level Eksplorasi, serta 26,9% pada level Expert, dan masing-masing 6,5% pada level Leader dan Pioneer. Guru Indonesia membutuhkan lebih banyak kesempatan untuk mengembangkan kompetensi digitalnya, sehingga guru yang lebih berpengalaman memiliki guru yang konsisten dengan level tinggi. PLC dalam hal ini dapat menjadi pusat pengembangan kompetensi digital guru dengan berkolaborasi dengan guru pada tingkat kompetensi digital yang berbeda.
Kata Kunci: *Kompetensi Digital, Guru Bahasa Indonesia, Professional Learning Community*

INTRODUCTION

Education nowadays is not the same as education 20 years ago. In that matter, one that never change is the importance of Interaction between teachers and students which is the central practices of education (Kumar & Parveen, 2013). The major interaction between teachers and students is the learning practices, where the teachers transfer the knowledge and developing students' competences, because ideally the teacher should be able to provide appropriate teaching according to the needs of students (Putri & Arif Kurniawan, 2023). The introduction of technology in education has widen the practices of learning and teaching in the class. Teachers has to adapt to the technology for the sake of their students with the practices of digital learning. Digital learning is a systemic or spontaneous processes that aims to acquire certain knowledges or competencies using technological devices (Aditya, 2021). In order to use technology in the learning processes, teacher must adapt and also competent to use technology, not only for their daily basis, but also for the learning practices. Whether it is used as a tool, or a resource in the teaching and learning practices. Therefore, the term of *Digital Competences* should be noticed as a development goal to all teachers. Digital competence is teacher's ability to use information and communication technology (ICT) and applied in the learning strategy which still has the pedagogical understanding so it can give impact to the students learning processes and their education (Ottestad et al., 2014). Those competences also describe how teachers can utilize information and communication technology in the learning process creatively and innovatively with the purpose of develop learner's potentials in literacy and numeracy skills as a lifelong learner (Herliani & Wahyudin, 2019) .

The 2030 Agenda for Sustainable Development emphasizes the needed of Digital Competences for teachers. There are 3 versions of ICT Competencey Framework for Teachers (ICT CFT) released by UNESCO, first version in 2008, second version in 2011 and the last version that still being used today was released in 2018. In the later ICT CFT, UNESCO designed updates general ideas about digital competences for teachers, mainly to preserve competencies that are still relevant today, and integrated them within the current technologies and the changing demands of life and work globally (UNESCO, 2018). Other framework that can be used for the development of teachers' digital competency are from European Comission, which released *The European Digital Competence Framework for Educators*. European coutries through European Comission has applied the concept of digital competences for their teachers. European Digital competence framework classify teachers' digital competences into 6 areas as shown in the figure 1 below:

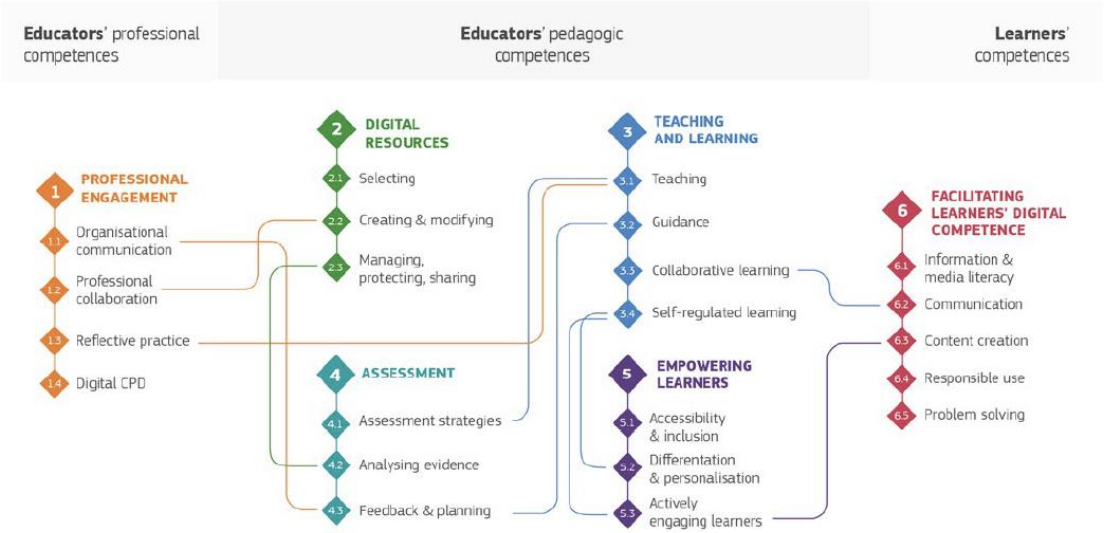


Figure 1 *Digital Competence for Educators Framework (Redecker, 2017)*

Area 1 Professional Engagement is a general competence that teachers should possess as a professional teacher for example the use of digital technologies in professional interactions and collaborations with other teachers, parents, or students, also their own individual professional development. (Redecker, 2017). Area 2 to 5 is in the teachers' pedagogic competences that are specific to their teaching and learning processes. Area 6 lay on the ability of the teachers to facilitate the development of the learners' competences. The difference between UNESCO's ICT CFT and European Comission Digital Competence for Educators Framework is in the stages and levels of digital competences. The DigCompEdu has more comprehensive framework and shares the characteristics from other frameworks used internationally and allowed modification to be applied to the relevant educational settings (Cabero-Almenara et al., 2020; Muammar et al., 2022).

The implementation of digital competences also practized by collaboration between teachers. Teachers' Professional Learning Community become the major applicator to improve teachers' readiness in using digital technologies to their teaching practices. PLC is a learning organization or community for teachers to develop collaborative work (Vescio et al., 2008), also focus on mutual supportive relationship with the purpose of developing professionals and professionalism for teachers to acquire knowledge, and skills that is necessary to their professional practices(Stoll et al., 2006), in this case is Teaching Practices. Research conducted by Sjoer and Meirink (2016) found that although there are many benefits of PLC to promote collaborative approach on developing new ideas and skills, especially in learnig technologies for their teaching practices, some factors may hinder those purposes, such as a failure to provide a rationale of their practices, the difference between teachers' need on the training, and also difference of the experiences in teaching between school levels. Years of experience in teaching also can become a factor of digital competence acquisition and teaching practices using technology. Study by Guillén-Gámez et al (Guillén-Gámez et al., 2022) mentioned years of experience may become a significant factor of differences to teachers' level of

digital competences when using different ICT resources. Furthermore, the practice of digital competence may also have variations between PLC members. The least experienced teacher could get benefit of knowledge and practice experience from more experienced teacher, while supporting teachers to challenge their current thinking and practice and develop new conceptual ideas (Brodie, 2013). Therefore, for the research context, author used DigCompEdu Framework alongside the Check-in Tool provided with the framework to assess the level of teachers' digital competences.

On that note, the objective of this research is:

1. Determine how is the digital competence level of Indonesian teachers within the samples from one of the teachers' professional organizations in Indonesia
2. Find out how the digital competence level distribution among the teachers in elementary school, middle school, high school and vocational school and also distribution of digital competence level and its connection to the years of experience in teaching.

METHOD

The research is designed to generate explanation and determining ideas using interpretation of quantitative data collected from the digital competence using survey method to self-assessing teachers' level for each individual proficiency. The author used descriptive analysis to create the interpretation of quantitative data collected from the self-assessment instrument questionnaire. To accurately assess teacher digital competences, author used The Check-in self-assessment tool developed by experts all across Europe for DigCompEdu (Caena & Redecker, 2019; Ghomi & Redecker, 2019) as a base of the instruments. The check-in tool used in this research are the translated version from English to Indonesian, and modified to match the needs of the research. The level of digital competences can be determined with the calculation and categorized into 6 levels which is A1 (Newcomer), A2 (Explorer), B1 (Integrator), B2 (Experts), C1 (Leader), and C2 (Pioneer). The progression of proficiency levels is cumulative in the sense that each higher level's descriptor comprises all lower level's descriptors, with the execption of the first level (Redecker, 2017). The level of digital competence is reffered to a progression model to help educators assess and develop their digital competence (Redecker, 2017) as shown in the figure 2 below:

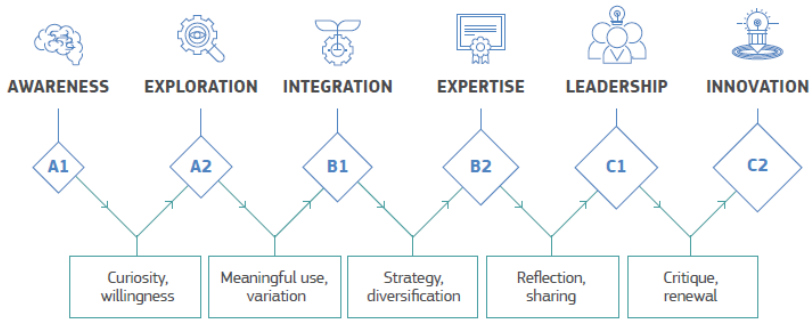


Figure 2 Proficiency Progression Level of DigCompEdu (Redecker, 2017)

The progression model described into six different stages of development to help educators understand their personal strength and weaknesses and linked to six proficiency levels used in the Common European Framework of Reference for Languages (CEFR) (Redecker, 2017). The progression level determines how teachers should approach in their development of digital competences by referring on the progression levels, and the descriptors of each level. Previous study used *DigCompEdu Framework* to determine level of digital competence of English pre-service teacher in Indonesia found out about how the pre-service teachers acquire the digital competence. The majority of the study indicates that pre-service English teachers are in the B2 category indicating that they apply a variety of digital technologies fluently, creatively, and critically (Wardani & Santosa, 2022). However, there are no clear ideas on levels of digital competences from in-service teacher.

The check-in tool was designed to wrok on point system ranging from 0 to 88 points total, from the multiple choice that scored between 0 to 4 points on each question (Dias-Trindade & Ferreira, n.d.). However, for the needs of this research and the Indonesian context, author also modified the instrument. The changes made into the instruments are [1] changing the multiple choice into 7 possible answer with points between 1 to 6, and 7th answer is 0 to identify that the respondent did not acquire or have the knowledge of the competences at all. The author feels it was needed because the explanation and implementation of digital competences in Indonesia is still very minimum [2]. Therefore, the changes require more modification on calculating the points. Unlike the calculation from check-in tool that ranges from 0 to 88, the author made the calculation range from 0 to 192 points total and explained in the table 1 below:

Table 1. Points and Competence Level

Range	Competence Levels
0 to 32	Newcomer (A1)
33 to 64	Exploration (A2)
65 to 96	Integrator (B1)
97 to 128	Expert (B2)
129 to 160	Leader (C1)
161 to 192	Pioneer (C2)

The self-assessment tool distributed by using a web-based system develop by the author himself into the samples in one of the teachers' professional associations in Bandung City, Indonesia. The author using disproportioned stratified random sampling for sampling technique. There are 93 respondents joined, which can be detailed and stratified based on the teaching level which are from elementary school, middle school, high school and vocational school. The composition of the respondent is represented in the table 2 below.

Table 2. Teaching Level of Respondent

No	Teaching Level	Sample Number

1	Elementary School	52
2	Middle School	18
3	High School	9
4	Vocational School	14
	TOTAL SAMPLE	93

Data analysis devided into two sections: section A is a general analysis to find out the levels of digital competences of the teachers, and section B is a distribution analysis of digital competence level relative to their school level (elementary, middle school, high school, and vocational school), and also the years of teaching experience.

RESULTS AND DISCUSSION

The Digital Competences Level of Indonesian Teachers

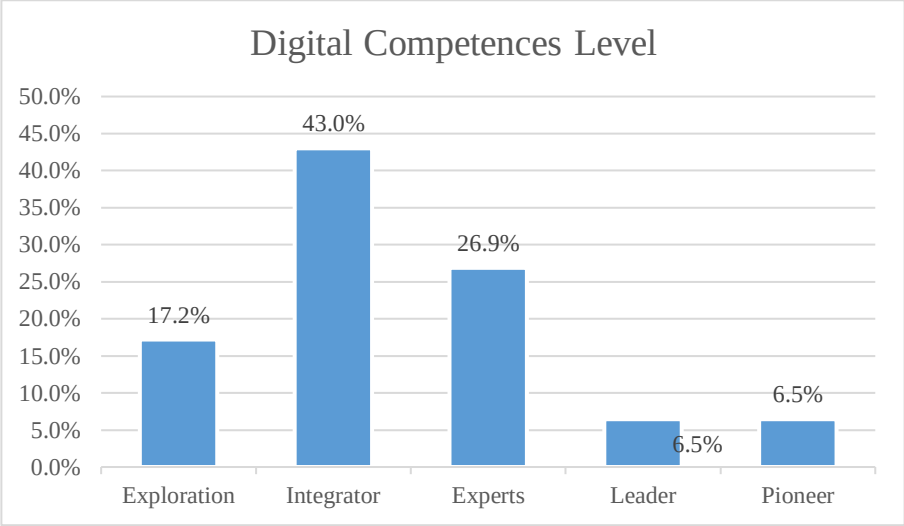


Figure 3 *Digital COmpetence Level of Tecahers in PLC*

The figure 3 shows almost all level of proficiency categories, which is exploration, integrator, experts, leader, and pioneer. But none of the teachers are in the newcomer level. It can be concluded that all of the respondents already had the awareness of digital technologies to enhance their pedagogical and professional practice. About 17.2% teachers are in the exploration level. The different between newcomer and exploration level is that the teacher in exploration level has the courage to try, or use any digital technology but not on the comprehensive or consistent approach, especially for their teaching practices. teacher still exploring and building encouragement, or inspiration to use or integrate the digital technologies into their professional practices. the integrator level which teacher has already implement teaching and learning practices using digital technologies is the most of all samples with 43.0%, it shows that teachers has started to applied, integrate, and implement the digital technologies in their teaching practices,

however the practices still lack on strategies, teacher also lack in confidence, creativity, and critical thinking about the digital technologies in their practices that the expert level had. That is why teacher on the expert level only has 26.9% of samples.

The leader and pioneer levels are 6.5% respectively. This means that teachers who has the ability to share, and exchange their best practices on using digital technologies are the least. With only 6.5% population, leaders and experts, teachers are limited to develop, and get their inspiration from the experts and pioneer to use or innovate on using digital technologies. Another level to consider is a proficiency level among teachers, which is shown in the figure 4 below.

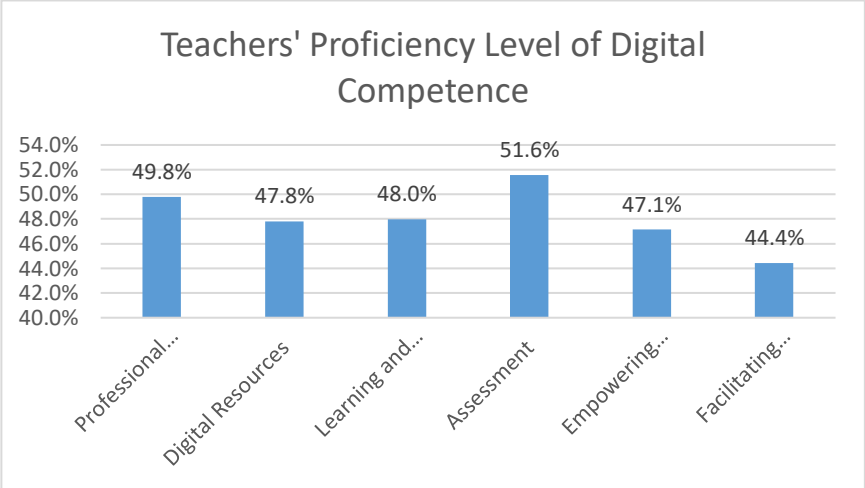
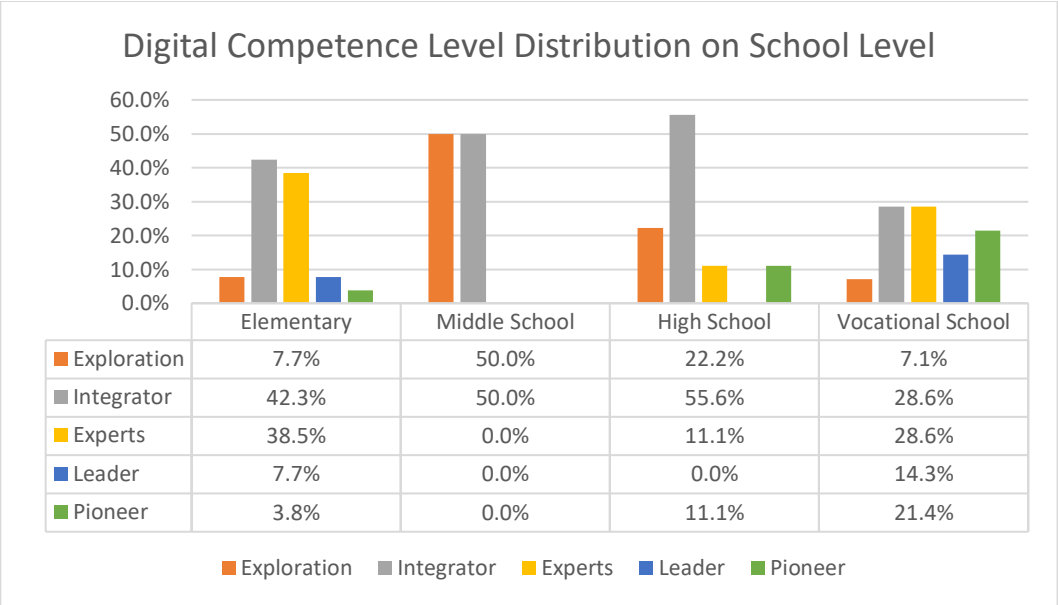


Figure 4 *Teachers' Proeficiency Level of Digital Competence*

The achievement of *Professional Engagement* proficiency is 49.8%, *Digital Resources* proficiency is 47.8%, *Teaching and Learning* proficiency is 48%, *Assessment* proficiency is 51.6%, *Empowering Learners* proficiency is 47.1%, and *Facilitating Learners Digital Competences* proficiency is 44.4%.

Distribution on School level



	Elementary	Middle School	High School	Vocational School
Exploration	7.7%	50.0%	22.2%	7.1%
Integrator	42.3%	50.0%	55.6%	28.6%
Experts	38.5%	0.0%	11.1%	28.6%
Leader	7.7%	0.0%	0.0%	14.3%
Pioneer	3.8%	0.0%	11.1%	21.4%

Figure 5 *Digital Competence Level Distirbution on School Level*

From the figure 5 above, the digital competetence level distribution on school level is uneven. In the elementary school level, there are 7.7% teachers in the exploration level, 42.3% teachers in the Integrator level, 38.5% in expert level, 7.7% in Leader level, and 3.8% in Pioneer level. In the middle school, there are no teachers in the expert, leaders, or pioneer level, only Exploration level and Integrator level that distributed equally for 50% each. For the high school, there are 22.2% of teachers in exploration level, 55.6% in integrator level, 11.1% in expert level, and 11.1% in Pioneer level and no teacher are indicated as Leader level. In the vocational school there are 7.1% of teachers are in the exploration level, 28.6% in the Integrator and Expert level, 14.3% in leader level, and 21.4% in pioneer level. Those school level distributions also may indicate the difference between regular school (elementary, middle, and high school) and vocational school practices of using technology.

Teaching Experiences on Digital Competences Level

The teaching experiences may significantly affect the digital competences level of teachers (Cabero-Almenara et al., 2020). As mentioned by Guillén-Gámez et al (2022) about the high level of teaching experiences may have an impact to their use of ICT resources, it was expected that the young and tech-ready teachers to have more applicable and have higher levels of digital competences than the older teachers. However, this could be different when teaching experience are considered in this topic as the digital competences is relatively changing to strategic use of technologies in the teaching process, and followed by pedagogical practices (Inamorato dos Santos et al., 2023). Teachers

categorized with 5 level of teaching experiences ranged between 1 years to above 20 years, as mentioned in the figure 6 below.

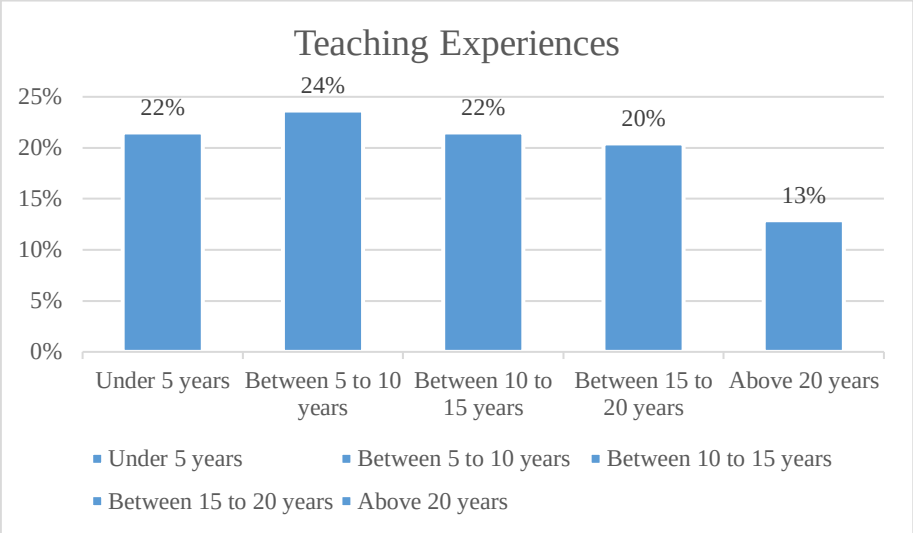


Figure 6 *Teaching Experience of Sample*

Of 93 respondents, there are 24% of teachers have 5 to 10 years of experience followed by 22% of teachers that have between 10 to 15 years and under 5 years, also 20% of teachers between 15 to 20 years of experience, and the other 13% has more than 20 years of teaching experience. This concludes that the respondents in this research are evenly distributed across the teaching experience levels. However, in this figure 7 below we can see how the teaching experience has a relatively good impact on the digital competences of the teachers.

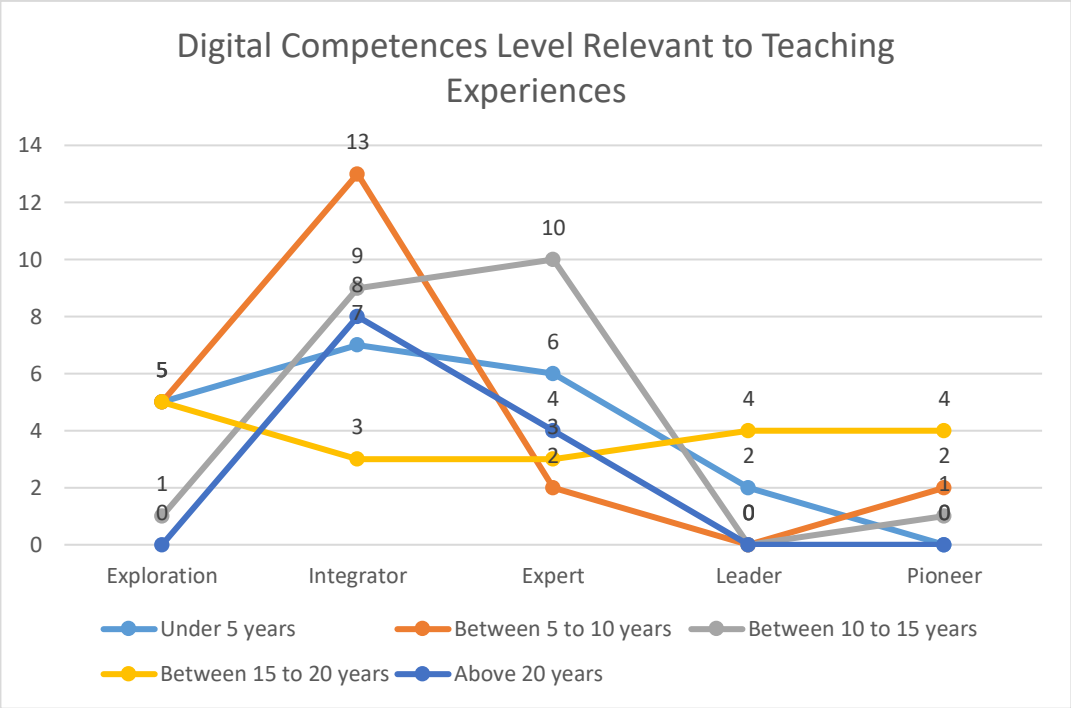


Figure 7 *Digital Competences Level Distribution by Teaching Experience*

Teachers who are in under 5 years of experience are in the exploration to leader category with 5 teachers in Exploration level, 7 teachers in Integrator level, 6 teachers in Expert level, and 2 teachers in Leader level, meanwhile there are no teachers under 5 years of experience is on Pioner level. For teachers in between 5 to 10 years has a significant different number of Integrator with 13 teachers and 2 teachers in the Expert level, another 5 of the teachers are still in the exploration level, and only 1 teacher is in the Pioneer level. Teachers in between 10 to 15 years has 1 person in exploration level, 9 teachers in integrator level, 10 teachers in expert level, 1 teacher in Pioneer level, and no one is in the Leader level. Teacher in between 15 to 20 years of experience has 5 teachers in exploration level, 3 teachers in integrator level, another 3 teachers in expert level, 4 teachers in the leader level, and also 4 teachers in pioneer level. Meanwhile, teachers who has more than 20 years of experience only have 7 teachers in integrator level, and 3 teachers in expert level.

DISCUSSION

The digital competence level of the teachers in PLC are dominated by the Integrator level and followed by Expert level. It is to be expected as teachers in Indonesia are still managing to regain the best practice of teaching, especially using digital technology after the Covid-19 Pandemic for 2 years. The practice of using digital technology before pandemic is still considered as complementary, however the pandemic changed it all. Teachers who are in expert level or leader level may have implemented teaching with digital technology way before the pandemic comes, then teachers that

develop strategic practices of using digital technology in their teaching are in the expert level. In this way, PLC may help teachers to leveled up as exploration and integrator level teachers could collaborate each other, or with the expert level to gain experience, and the best practice of using digital technology. The proficiency level represents teachers' strength and weakneses of digital competency that they are acquired (Redecker, 2017). Most of the teachers has a good understanding in assessment proficiency, indicates that teachers already had various method and tools to assess students' learning achievements. However, the practices of using digital resources and technology in their teaching and learning practices did not have a good result, as well as the empowering learner proficiency. This could give PLC to prioritize what to develop, or train to the teachers in the community, also to maximize what aspects that collaboration need to improve in the future PLC's activity.

From the figure 5, it shown about the distribution of teachers who have competence at the integrator and expert levels is at the elementary, high school, and vocational levels where the composition of the integrator level is still higher than the expert level composition, except for vocational school which is quite balanced. The Integrator and Expert level is an intermediate level that has sufficient exploratory skills and experience in using and implementing digital technology in classroom learning. As for the junior high school or middle school level, does not have an expert, leader, or pioneer level teacher. it can be caused by a lack of opportunity, time, and frequency of using digital technology in classroom learning. It may also be due to curriculum load constraints, and opportunities to try to integrate technology. in all learning. In contrast to the high school level, which already has expert level teachers, the population is still not balanced with integrator level teachers. This can be due to the lack of facilities available in schools which can hinder teachers from integrating more learning, as well as practicing in using and modifying learning content and the use of technology in learning. Different from other school level, the use of technology by teachers are essentials, however it can be improved with communication and collaboration with the industry by providing the professional experiences to the school with digital technology(Antonietti et al., 2022). Thus, explained teachers in vocational school has high number of experts and pioneer level. However, it can be seen that the distribution of digital competence of the teachers are uneven. This uneven distribution may also affect PLC's practices among the teachers. As mentioned by Mahimuang (Sucheera Mahimuang, 2018) that one of the key components of PLC is a shared leadership that involve teachers to share and also supervise their practices, knowledge, teaching techniques, and instructional innovation.

Research conducted by Lucas, Dorotea and Piedade (2021) indicates that the focus on emphasizing technology integration practice must followed with the pedagogical beliefs. It is important because it allow the teachers to achive meaningful use of technology in their teaching practice with the pedagogical intent with available resources. This may achieve if teachers have the self-efficacy to do so. Meanwhile, the middle level teachers of digital competence may not realize the importance, and of course still finding it hard or did not have enough experience to apply strategic use of digital technologies in their teaching practices.

Digital competences of Indonesian teacher represented by the respondents from Teachers' Professional Assosciation can give us ideas about the condition of Indonesian teachers regarding the changes of educational practices. The future educational practices are changing into integration of technology, and also the sustainability of its human that are involved in it, especially teachers. However, this research also shows about the practices of digital technology integration into teaching process so far. Teacher in the integration level is still growing, and may have been leveled up to Expert level if they are able to use variety of strategic use digital technology on their teaching practices and become the experts. In this regard, education stakeholders in Indonesia, especially Professional Learning Communities need to apprehend this issue more seriously by conducting special traning for teachers to use digital technology, collaboration in many ways to share and give examples of strategic use of digital technology in teaching, and also the integration of accessing community practices to give inspiration and influencing other education stakeholders.

Teachers under 5 years teaching experience are mainly on the integrator level and some of them are already in the expert and leader level. This may cause by their experiences in using technology, and also represents by their young age. Teachers between 5 to 10 years has the biggest amount of integrator levels of all, however they lack expert level teachers and so leader teacher or pioneer teachers. This may cause by the variety of technology they used in the teaching process, teachers between 5 to 10 years experienced a drastic change in teaching technology and condition such as Covid-19 pandemic which they have to change the teaching method dramatically. On the contrary, the most expert teacher levels are from 10 to 15 years of experience. The experience on pedagogical teaching practices may affect the ability of teachers to choose and analyze strategy to use digital technologies in their teaching practices and also raises the need to study and apply digital technology more deeply. For teachers in between 15 to 20 years of experience, are most likely distributed equally. The most leader levels in this category also indicates that the teachers could have been mastering and also influencing others to use a variety of digital technology in their teaching practices. However, there are still also teachers who still on the integrator levels from above 20 years of teaching experiences, it may indicate the changes so far in teaching using digital technologies did not follow by all of the teachers. Some teachers may still believe of old ways of teaching, hence their ability to use digital technology are also lacking.

In the findings and discussion of this research so far, author realizes the further possibility of digital competence practice in the PLC. This research also cannot be generalized to the condition of teachers across Indonesian archipelago, factors such as teacher education curriculum, access to the facilities, and many more factors may affect the digital competence level of Indonesian teachers. However, this study provides the overview of how the digital competence implementation can be improved in the context of PLCs' main purpose, collaboration. Thus with collaboration, the strong need of discussion and developing new knowledge, practices, and shared inside the PLC may have an impact of teachers' digital competence level in Indonesia. Further research also may include

different type of PLC, such as School level PLC, subject based PLC, and other teacher community.

CONCLUSION

Based on the findings and data interpretation, it can be concluded that the level of digital competences of Indonesian teachers are still in intermediate level, which is Integrator (B1) which has 43% population, and Experts (B2) which has 26,9% population. This means that most teachers in Indonesia already using various digital technologies in their teaching practices or their professional practices. Meawhile other teacher are still in Exploration level (A2) which has 17,2% from the samples, it can be caused by the limitation of the facility, or sharing practices between teachers to encourage the exploration level teachers to expand their digital technologies approaches. The problem can also be seen from the least population of leaders and pioneer levels which has 6,5%. The distribution of expert and pioneer level teachers is also a problem, which at the middle school level does not have any leader or pioneer level, not even expert level teachers. It may cause an imbalance on digital technology practices of teachers in Indonesia. Sharing Education nowadays is not the same as education 20 years ago. In that matter, one that never change is the importance of Interaction between teachers and students which is the limitation of the facility, or sharing practices between teachers to encourage the exploration level teachers to expand their digital technologies approaches. The problem can also be seen from the least population of leaders and pioneer levels which has 6,5%. The distribution of expert and pioneer level teachers is also a problem, which at the middle school level does not have any leader or pioneer level, not even expert level teachers. It may cause an imbalance on digital technology practices of teachers in Indonesia.

The teaching experience level also affecting teachers' digital competences level. Which give us more ideas on how experiences in using strategic teaching practices helps teacher to improve their digital competence level which can be seen from high count of expert level teachers that come from 10 to 15 years of teaching experience category. Teacher in the leader level also mainly come from teachers who has 15 to 20 years of experience. However, education changes into the integration of technology may not followed by all of the teachers, there are still teachers in integrator level from the 20 years or more teaching experience category. This may cause by their belief in classical ways of teaching, hence their ability to use digital technology is also lacking.

Based on the result and discussion of the research, the future research may conclude more brief explanation about the proficiency levels of each teaching level categories, or may include the need analysis for training programmes to improve digital competence level of Indonesian teachers starting with the PLC or teacher community. Prior to the designing training program, the future research also may consider to dig deeper on teaching experience connection to their teaching practices on using digital technology.

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