Teachers' Experiences of Implementing D-Learning

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Abstract. The objective of this research was to discover the implementation of D-learning from the teachers' perspective. The data can be helpful for schools in evaluating and controlling studies conducted at home during an online learning activity. Additionally, it can be used to determine the overall online learning quality. Using a survey approach, the researcher conducted this research. The information was gathered through a questionnaire distributed through an online form. This investigation made use of a public opinion survey that classified respondents according to their intended use. The researcher adopted four essential parts of D-learning from Keane's theory. The research showed that in part 1 digital teaching materials, the teachers had great confidence in using technology in teaching methods, supported by 87.32% of teachers choosing good to an excellent capability. Similarly to Part 1, the ability to manage and control student learning was still dominated by good to excellent answers (78.88%). Even when the learning was conducted digitally, these teachers still had confidence in managing the learning process (part 2). Meanwhile, in part 3, the capability to prepare content for online and distance learning showed decisive reaction proven by 79.05% of teachers chose good to excellent answers. It also showed that the learning could be delivered through the internet. The last part was the ability to conduct online and conventional teaching after the pandemic still showed consistent responses, with 80.98% of teachers showing their ability to answer good to excellent. To sum up, the implementation of digital learning did not hinder North Kalimantan teachers from implementing distance learning.

Keywords: Teachers' Experience, d-learning, Online Learning

1 Introduction

D-learning is not a new concept, but now it can be one of education institutions' favorite platforms; one is D-learning. D-learning aims to enable students to learn for personal achievement without physically attending a traditional university or academic setting. Various authors agreed on a different definition of D-learning. The acquisition of digital teaching material for digital learning online or offline can be made via wired or wireless networks [1] as seen by Anttila et al. According to a recent paper by Yoon et al., Jay Cross first suggested digital learning (e-learning) in 1999. Technology tools have recently given rise to various new words and explanations, such as online learning or internet-based training [2]. Learning and knowledge

transfer are facilitated through computers and advanced technology, which guides students through the progression of basic to advanced concepts, particularly in the field, since it enables learners to learn in different processes. In addition, there are a variety of ways to learn, such as online, a computer, a virtual classroom, or through digital collaboration. E-learning technologies support learning through a variety of media, tools, and environments.

Borneo Tarakan University (UBT) has a Learning Management System (LMS) called Borneo e-Learning (BeL). This platform was established in 2015, but it was not optimal in the learning process. Now, BeL constantly upgrades a new version that includes various features. Lecturers can be embedded in many media types, such as collaborative networking technologies, developed for game-based learning to increase learners' effectiveness and experience. As lectures use the learning media, the main focus of BeL is to deliver the materials to students and provide an environment that supports students to learn and develop their intellectual and emotional aspects. Learning media must be planned well in advance in order to be useful. To be effectively and transferred to students, the teacher must have a thorough mastery of the media [3]. Media is an integral part of the learning system, and communication will not work optimally without the media. The learning media have to provide opportunities to transform students from unfamiliar, from unintelligible to comprehensible, from easier to difficult, from simple to complex. Meanwhile, BeL and other platforms can also be used as teaching media that teachers apply, such as google classroom, Edmodo, or e-learning from school. On the other side, 80.1% of students in North Kalimantan felt uncomfortable doing communication online[4].

The Indonesian government's policy to apply social distancing to all levels of society and PSBB (Large-Scale Social Restriction) has also been implemented in several major cities in Indonesia to break the spread chain of this virus. As a result, this policy affects Indonesian students' education, especially concerning learning in school. The application of social distance at the primary and secondary school level continues until conditions have been conducive. However, as the pandemic began, schools had to be closed, but the learning process could not be halted. Online learning is a learning method conducted using the internet, so teachers and students do not interact in person [5].

2 Digital learning in context

E-learning is one of the educational outcomes that has emerged due to the Information and communication technologies (ICT) are being used (ICT). The basic concept of learning is simply using any electronic device, including computers, smartphones, tablets, or without the internet. Many authors have a positive view of e-learning. One such example is Agarwal and Pandey; e-learning focuses on technology in learning and education[6]. The focus of e-learning, which includes information and communication technology in learning processes, is electronic media. According to Oblinger and Hawkins, e-learning has evolved from a partially online course in which students use technology to deliver selected sections of a course to a fully online course in which students use technology to deliver the entire course from any location. Students can be domestic, on the road, or anywhere around the world [7]. From those definitions, it can be concluded that e-learning involves accessing educational curriculum outside of a traditional classroom using electronic technologies. E-learning is a method for achieving learning objectives. E-learning is a great way to make learning easier by sharing resources, working on

assignments, and taking quizzes. Many institutions have also implemented e-learning (e.g., schools and universities), where teachers and students can communicate easily. Teachers can also provide feedback through the online course platform on the task.

2.1 Parts of digital learning

Digital learning is every part of digital learning accompanied by technology or education that uses technology effectively. Digital learning could be described as having four basic parts[8], there are:

1. Digital teaching materials concentrate on how learners can extract some of their content. Educational materials such as e-books, digitalized data, or materials presented with other digital methods are digital teaching materials.

2. Laptops, tablets, and smartphones are just a few of the digital tools available to teachers and students to assist them in their educational endeavors.

3. It emphasizes using digital delivery methods such as internal networks, the web, and satellite communications to deliver learners' learning activities.

4. In autonomous learning, the learners themselves focus on finding the education materials independently, whether online or offline. Personal autonomy and participation with autonomous learning are the priorities of this educational strategy.

From the parts of digital learning above, the researcher had been taken as the variable in the questionnaire. It had been collected teachers' experiences which part they have been implemented.

2.2 Digital learning platforms

Digital learning platforms provide learning opportunities for students to participate in learning content actively. As part of their education, educators use digital learning platforms to make learning more attractive and interactive for students and individualize them (see **Figure 1**).
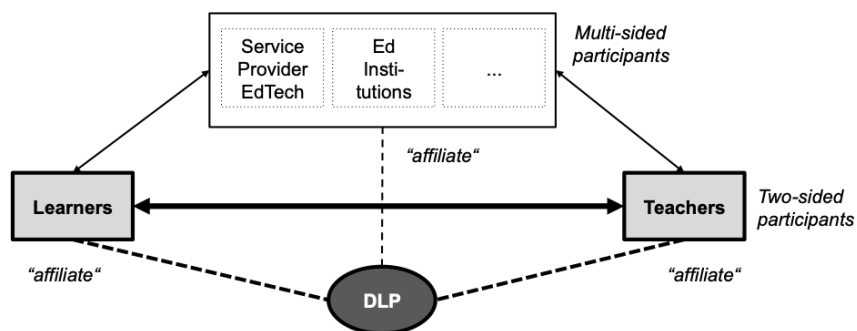

Fig. 1. Different sides of a digital learning platform (DLP) according to Hagiu and Wright [9]

Each DLP concept could incorporate the four most important aspects of e-learning while also taking advantage of MSPs' resources. DLPs begin as a learning environment that relates teachers and students (in a two-way relationship), allowing them to engage in conversation. DLPs frequently include more than two individuals. They could, for instance, be educational

institutions or a particular instructional innovation service provider (multi-sided). A DLP's purpose is to provide specific learning and teaching material as well as more utilization of digital learning and teaching substance. All these have been combined with technological devices to support entire or parts of the learning process as specific learning and teaching concept.

2.3 Success in e-learning: key factors

In the era of digitalization, there was affected in the whole area, especially in education. According to Nihuka, who focused on the best way to integrate e-learning methods into existing institutional structures, institutional factors, instructor and student factors, and support factors are the three major success factors[10].

2.3.1 Institutional factors

The management of collaboration and members' participation in the institution must identify and set priorities for the integration of e-learning. When considering the implementation of e-learning in education, Moonen contends that the effects and costs must be considered. [11]. When deciding whether or not to use e-learning in the classroom, educators should consider how much it will cost and the potential impact on student learning. Fisser assumes that for e-learning to be implemented successfully in higher education institutions, the institutions must ensure that adequate technology is available for all instructors and students and that sufficient facilities and access to these facilities are available[12].

2.3.2 Instructors' and students' factors

Several factors influence how and whether or not instructors and students will adopt or use e-learning, such as how easy it is to use specific e-learning facilities. Introducing new technology requires integrating it with the users' existing knowledge and skills to use it effectively. Siritongthaworm et al. discovered that e-learning technologies were more difficult for respondents with low computer skills than those with relatively high computer skills. They stated that intensive training programs to use the necessary technological facilities and online education methods would facilitate ICTs[13].

2.3.3 Support factors

E-learning courses must have the requisite pedagogical and technical support for instructors to be successful. E-learning instructors must know how to design their e-learning environment to accommodate different characteristics and issues compared to being educated in the traditional classroom. For example, students who enroll in a distance education university often work more than their studies and show dedication to their learning. It is up to the instructor to set up a learning environment that mimics traditional distance education teaching-learning environments to make it easier for distance learners to study and work.

3 Methodology

Based on the research objectives and needs, the researcher employed a quantitative research method. The quantitative approach uses objective theories as tests by studying how various variables connect [14]. Survey research compiles data from a sample of people who have responded to a series of questions [15]. A survey is a technique for gathering information about people's characteristics (education, finances, etc.), their thinking (motivations, beliefs, etc.), and their actions (behavior)[16]. Students were surveyed about their opinions and perceptions as part of this study's objective. The information was gathered through a questionnaire distributed through an online form. A public opinion survey was used in this study to classify purpose-based classification. Depending on the size of the population, it may be appropriate to include everyone in the study. However, it is necessary to include a large population that cannot all be examined to conduct large-scale research. In statistics, a sample of the population is referred to as a "representative sample." [17]. As a result, a sample is a collection of elements culled from a large population by following a specific procedure in this study. Stratified random sampling was used to select study subjects. This technique was chosen to ensure that the variables in the research were fairly represented. The error of tolerance in this research was 95% (5% = 0,05%). It was impossible to achieve a 100% perfect result in every study, and the sample sizes were smaller when the error rate was higher. 3.869 teachers make up the population; therefore, the population sampled for this study as a whole was 363 teachers from Junior and Senior High Schools in Kalimantan Utara.

This type of research instrument made use of a questionnaire. The questionnaire was divided into two sections. They were as follows: Section 1 contained data on respondents' gender, teaching experience, school type, school area, and online class tools, and Section II contained statements about teachers' experiences. From "No capability" to "Excellent," the instrument's 4-point scale was based on the Likert scale. The researcher gave the questionnaire to 20 teachers as a pre-test (pilot) to ensure its validity. They gave their thoughts on biases, options, and other issues. There would be no room for ambiguity.

4 Result and analysis

In this study, the researcher made several discoveries. There were 363 junior and senior high school teachers in North Kalimantan who completed the online questionnaire. The findings showed the parts of digital learning which adapted from Keane's theory. It can be seen as follows:

4.7 The result of teachers' characteristic

The characteristics of teachers were discussed in this section consisting of gender, teaching experience, types of school, and school area.

Table 1. Variable label and descriptive statistics.

Variable Label		Frequency	Percentage	Total of Respondents
Gender	Male	150	41.32	363
	Female	213	58.68	
Teaching Experiences	< 1 year	64	17.63	363
	1 – 5 years	112	30.85	
	6 – 10 years	68	18.73	
	> 10 years	119	32.79	
Types of School	Junior High School	172	47.39	363
	Senior High School	191	52.61	
School Area	Tarakan City	73	20.12	363
	Tana Tidung	72	19.82	
	Bulungan/Tanjung Selor	73	20.12	
	Malinau	72	19.82	
	Nunukan	73	20.12	

The survey results above show that female teachers in North Kalimantan were dominated by 17.36% compared to male teachers. Nearly 60% of the respondents in this study were female teachers. In terms of teaching experience, there were more teachers with over ten years of experience than teachers with less than ten years of teaching experience, a difference of 1.94% up to 15.16%. Surprisingly, 5-10 year experienced teachers were not teachers in second place in terms of experience. Nevertheless, teachers with a teaching experience of 1 to 5 years outperform the number in second place with a slight difference of only 1.94%. 5-10 years of experience teachers were precisely in third place with a difference of only 1.1% more than the number of teaching students who had less than a year of classroom experience

The school type was clearly stated that the number of teachers at the senior high school level was superior, with 52.61% of the junior high school level teachers. This amount was considered relatively proportional since the percentage figure was not drastically different, only 5.22%. Meanwhile, the number of teachers involved as respondents in this study was quite balanced and fitted to the proportionate stratified random sampling method considering the number of subjects that were quite heterogeneous and unevenly distributed in North Kalimantan.

4.8 The result of application/platform/tool used for an online class

This section shows that the teachers were asked about the application/platform/tool used for an online class. The teachers could select a number of different options.

Table 2. Application/platform/tool used for an online class

Response Option	Frequency	Percentage
Google Classroom	133	18.14
Zoom Cloud Meeting	175	23.87
WhatsApp	308	42.02
Email	1	0.14
Telegram	58	7.91
Blogspot	2	0.27
Students' Worksheet Manual	1	0.14
Google Meet	48	6.55

Response Option	Frequency	Percentage
WebEx	1	0.14
Google Form	2	0.27
Kahoot	2	0.27
Quizizz	2	0.27
Total	733	100

Based on the data above, it was undoubtedly admitted that WhatsApp was the most broadly used option. Nearly half (42.02%) of the respondents determine WhatsApp as an application to support d-learning activities. The next place was overtaken by Zoom Cloud Meeting with a relatively high percentage of 23.87%, making it the second most-used learning platform. Furthermore, with a difference of only 5.73% adrift from Zoom Cloud Meeting, Google Classroom became the third application used with a reasonably high percentage of 18.14%.

The telegram application was the fourth most used with a percentage of 7.91%. Both WhatsApp and Telegram are message-based applications, yet Telegram was less desirable to some teachers. Google Meet was in the fifth position with a percentage of 6.55%. It only had ten different teachers voted compared to Telegram. Although it offers a video-conferencing platform concept like Zoom Cloud Meeting, Google meet was proven to be less pleasing to some teachers, judging by the number of teachers who use Google Meet, not even half of the Zoom Cloud Meeting's percentage. Blogspot, Google Form, Kahoot, and Quizizz were in the second last position with the same percentage of only 0.27%. The last position was taken by Email, Students' Worksheet Manual, and WebEx, with only one teacher with a percentage of 0.14%. It is also in line with [9] that the objective of a digital learning platform is to provide students with specific learning and teaching resources and digital learning and teaching content in general. It serves as a specific educational goal and tools designed to assist the entirety or at least parts of the teaching or learning process.

4.9 The result of technology support in teaching method

The teachers were asked about the capability to use technology that can be supported teachers' teaching methods. **Figure 2**. depicts the teachers' responses.
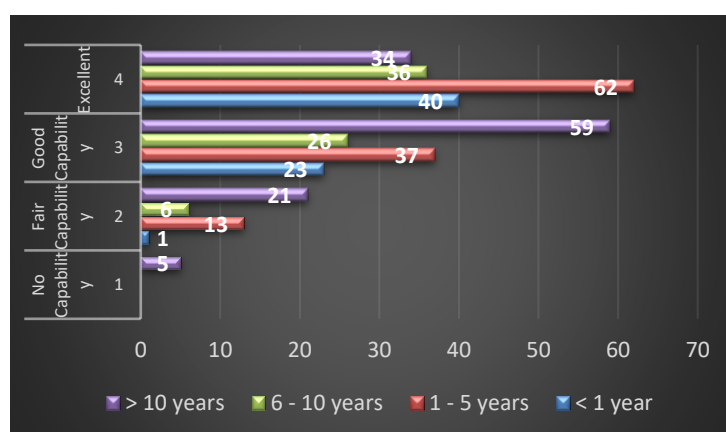

Fig. 2. The capability to use technology in teaching method.

The data showed that as many as 47.38% of total respondents claimed to have an excellent capability to use technology in teaching methods from the survey above. With a percentage distribution of 17.07% recognized by teachers with teaching qualifications of 1-5 years, 11.01% by less experienced teachers were followed by more experienced teachers with six to ten years of teaching tenure, and more than ten years with a difference of only two votes with a percentage of 9.91% and 9.36%, respectively. Furthermore, as many as 39.94% of teachers stated good capability to use technology in teaching. The percentage was dominated by 16.25% of teachers with more than ten years of experience. There were 10.19% teachers with one to five years, 7.16% by those with six to 10 years of experience, and 6.33%

Further, in the 11.29% voted in fair capability answer, the majority was filled by 5.7% of teachers with more than ten years of experience. Following this group were the 3.58% of teachers with only one to five years of classroom experience, then 1.65% of educators with a combined experience of between six and ten years, and only one teacher teaching less than one year with a percentage of 0.27% who chose this answer.

A total of 5 teachers with more than ten years of experience answered no capability in technology teaching support. This number had a percentage of 1.37% out of a total of 363 respondents. It can be concluded from these results that most teachers had a good to an excellent capability in use 1-5 years of experience in technology. Moreover, teaching experience ranged from no capability to fair capability.

4.10 The result of managing and controlling students learning

Consequently, teachers were questioned about their ability to teach in this section to manage and control students learning. The responses have been drawn in the **Figure 3** below:
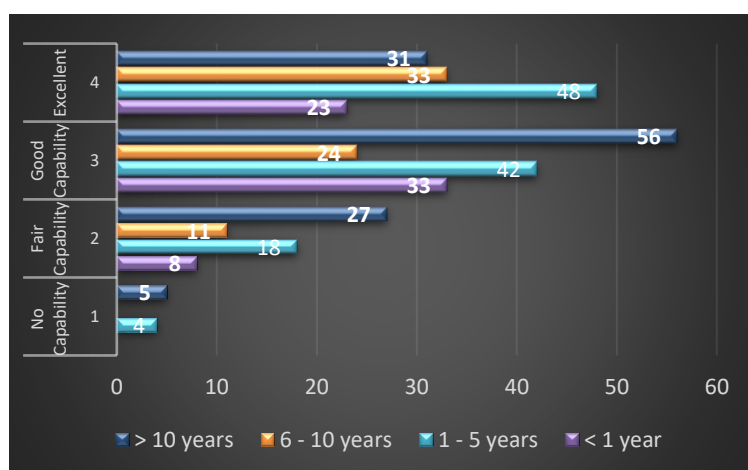

Fig. 3. The capability to manage and control students learning.

In the provided data, it is admitted that the number of respondents who claimed to have good to excellent capability was the majority voted in terms of managing and controlling student learning. In response to the good capability, 37.19% were filled by the division of votes, with 13.22% filled by teachers with 1-5 years of experience, 9.09% filled by teachers with 6-10 years

of experience, 8.53% filled by teachers with more than ten years of experience—ten years, and 6.33% filled by teachers less than one year. Good capability answers accounted for 42.69% of responses in this section. It is preferred by 15.42% of teachers with more than ten years of experience, 11.57% of teachers with one to five years of experience, 9.09% of teachers with less than one year of experience, and 6.61% of teachers with six to ten years of experience.

17.63 % said that they have a fair understanding of their own abilities. There are 7.43 % of teachers in the class who had more than ten years of experience. 3.03% were chosen among teachers with 6-10 years' experience, followed by teachers with 1-5 years experience at 4.95%. 2.20 % of the positions were filled by new teachers. Finally, only 2.47 % with ten years or more of experience and teachers with one to five years of experience chose the answer "no capability." This fourth question session concluded that managing and controlling student learning as many as 79.88% chose good to excellent option. In these two answers, most of them were dominated by teachers 1-5 years of age with a majority vote of 24.79%. In answer of fair to no capability, the total percentage of 20.11% was dominated by teachers with more than ten years of experience of 8.81%.

4.11 The result of preparing the content for online and distance learning

The teachers reported preparing online and distance learning content with various applications appropriate to the syllabus and learning objectives. For example, it can be seen in the **Figure 4** below:
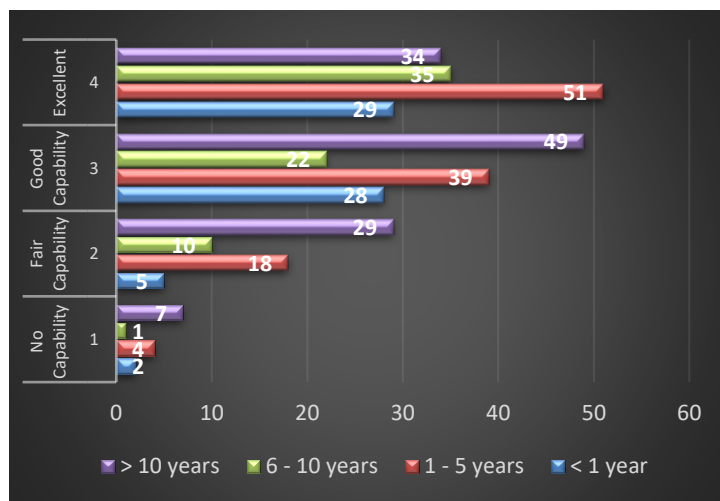

Fig. 4. The capability to prepare the content for online and distance learning.

Based on the following data, it was concluded that almost half of the respondents claimed to have excellent capability to prepare the content for online and distance learning. It is evidenced by the high percentage of excellent capability answers, namely 41.04%, which was dominated by 14.04% of teachers with 1-5 years of experience. 9.64% voted by 6-10 years experience as a teacher, 9.36% by more than ten years of experience, and 7.98% by teachers with less than a year. The second most common choice in this session was the answer to good capability. It was

chosen by 38.01% of teachers, with the majority of voters coming with more than ten years of experience, 13.49 % of teachers. The second-largest voter in this answer came from teachers with 1-5 years of experience with a percentage of 10.74%. There were 28 total votes, with teachers with less than one year of experience casting 7.71% of their votes and teachers with six to ten years of experience trying to cast 6.06% of their votes. The option of a fair ability level received the third-most votes. A total of 17.07% of all respondents admitted to having a fair understanding of preparing learning content. With a percentage of 7.98%, 29 people said teachers with more than ten years of experience were the most likely to vote for them. Following that, 4.95% with 1-5 years of experience, 2.75% teachers with 6-10 years of experience, and 1.37% teachers with less than one year of experience voted. No capability has the lowest percentage (3.85). There were only 1,92% of total votes for teachers with ten or more years of experience, 1,01% for teachers with one to five years of experience, and only 55%, 27%, and 27% for teachers with less than one year of experience, respectively.

From the explanation above, it was proven that more than the respondents claimed to have good to an excellent capability in preparing the online learning content. 79.06% of the total respondents, with the most significant majority, teachers with 1-5 years of experience (24.79%) and teachers with ten years or more of experience (22.86%). However, with a combined total percentage of 20.93%, the choice was sufficient not to be able, mainly chosen by 9.91% of teachers with over ten years of teaching experience.

4.12 The result of assessing students' progress using technology

The teachers were asked to assess students' progress using technology. The following **Figure 5** shows the result.
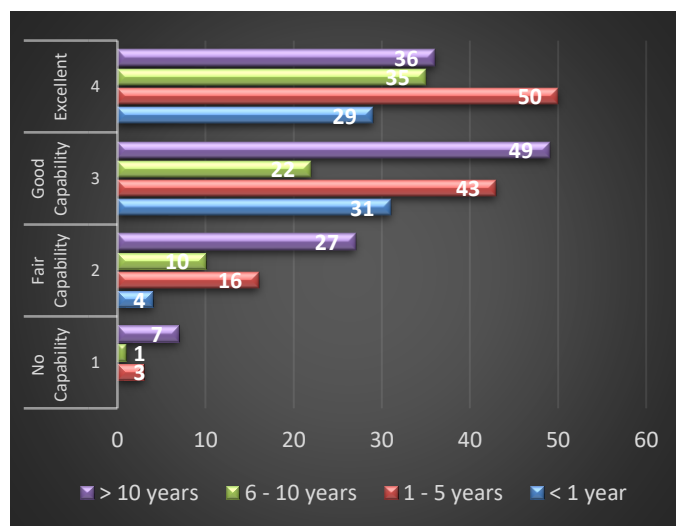

Fig. 5. The capability to assess students' progress using technology.

From the presented data above, it can be seen that almost half of the total respondents claimed to have an excellent capability to assess students' progress using technology. There was a total vote of 150 people of 41.32%, led by teachers with 1-5 years of experience with a percentage

of 13.77%. Then by teachers with more than ten years of experience and 6-10 with a difference of 1 person in voice, these two categories of teachers have a percentage of 9.91% and 9.64%. It ends with the fewest voter categories in this answer, 7.98% of teachers with less than 1-year experience. 39.94% votes on good capability were voted the most by teachers with more than ten years of experience, of 13.49%. Later by teachers with 1-5 years of experience as much as 11.84%. 8.53% by less-than-one-year-experienced teachers and 6.06% by teachers with 6-10 years of experience. As many as 27 votes (7.43%) from teachers with more than ten years of experience dominate this option to answer fair capability. Then, with a percentage of 4.40%, teachers with 1-5 years of experience became the second most votes. Next by 2.75% of teachers with 6-10 years of experience and the last 1.01% by teachers of less than one year of experience. No capability option only has a percentage of 3.03 of the total acquisition of only ten voters. The majority of voters in this option are teachers with more than ten years of experience (1.92%), teachers with 1-5 years of experience (0.82%), and teachers with 6-10 years of experience (0.27%). No teacher with less than one year of experience opted for this option.

It was concluded that the question session, once again, teachers with experience ranging from one to five years were the most voted on the answer to good to an excellent capability to assess students' progress using technology as many as the total votes from this teacher category in both the good and excellent answers achieved a percentage of 25.61%. The second was by senior teachers with more than ten years of experience with 23.41%. However, teachers with a combined total of at least ten years of experience were still the category of teachers who mostly chose the answer to the fair to no capability to assess students' progress using technology.

4.13 The result of conducting online teaching with conventional teaching after covid-19 pandemic over

This question was asked to know the next teaching activity after the Covid-19 pandemic: whether the teachers could conduct online with conventional teaching (blended teaching) (see **Figure 6**).
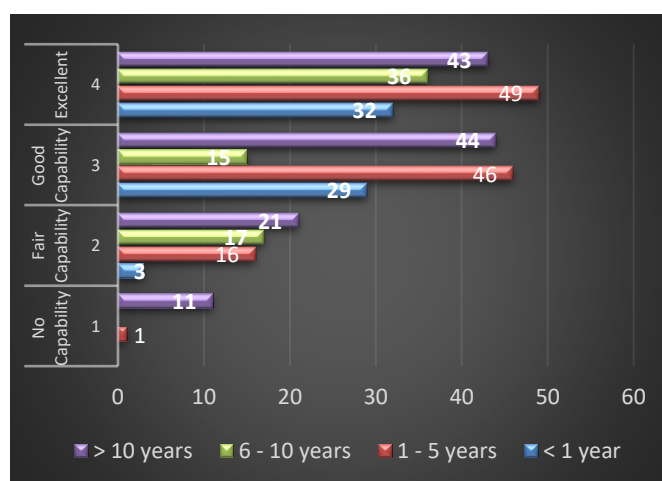

Fig. 6. The capability to conduct online and conventional teaching after covid-19 pandemic over.

Based on the provided data, 44.07% of teachers confidently chose the answer to excellence in conducting conventional teaching after the pandemic. Still led by teachers with 1-5 experience with 13.49%, this time, shockingly, teachers with ten years of experience seemed to be compact in choosing and became the second-largest category of teachers. Teachers with ten years of experience in previous questions never filled in the second most votes in the excellent capability option. Both only have a slight difference, namely the difference between 6 voters and dominance of 11.84%. Furthermore, 9.91% of the votes were from Experienced teachers (6-10) and 8.81% of Less experienced teachers than one year of experience.

Teachers with experience from one to five years with several survey questions never dominated the good capability option are now leading in this option with 12.67% from 36.91% of the accumulated votes. Then, the following most votes with a difference of only two votes were obtained by teachers with more than ten years of experience with 12.12%. Furthermore, the most categories were achieved by teachers with less than a year of experience in the classroom with 7.98% and the least experience (4.13%). From the accumulation of 15.70% on fair capability answers, 5.78% were chosen by teachers with more than ten years of experience. With a difference of only one voter, the following category was obtained by teachers with 6-10 years of experience with 4.68% and teachers with 1-5 years of experience with 4.40%. The last position was taken by teachers who had just graduated from their first year of teaching and 0.82%. Experienced educators with a minimum of ten years always led the no capability option in the previous session. Along with this session, as much as 3.03% of 3.30% accumulation came from teachers with more than ten years of experience. The remaining 0.27% were teachers with 1-5 years of experience.

5 Conclusion

This study investigated the teacher's perception of the implementation of digital learning, with the number of respondents as many as 363 teachers from junior high school and senior high school in North Kalimantan. Of the total four categories of teachers in this study, the number of teachers was dominated by two categories: teachers with more than experience ranging ten years and teachers with 1-5 years of experience. WhatsApp and Zoom Cloud Meeting were the top applications used by teachers. These two applications had two different functions and were functionally related to facilitating digital learning. Teachers used WhatsApp for text-based interaction with the student, while Zoom cloud Meeting was used to meet the student virtually.

The teachers had great confidence in the capability to use technology in teaching methods, supported by 87.32% of teachers choosing good to an excellent capability in the questionnaire's third questionnaire. Same as the third question, the capability to manage and control student learning was still dominated by good to excellent answers (78,88%). Even when the learning was conducted digitally, these teachers still had confidence in managing the learning process. In preparing content for online and distance learning, these teachers still showed a decisive reaction, proven by 79.05% of teachers choosing good to excellent answers. The fourth question regarding the capability to assess students' progress using technology showed a great response, knowing that 81.26% of the answers had a good to excellent capability. Last, the ability to conduct online and conventional teaching after the pandemic still showed consistent responses. 80.98% showed their ability to answer from good to excellent.

Teachers with 1-5 years of professional experience dominated all questions requiring excellent ability. Except for the last question, which was also dominated by teachers with 1-5 years of

experience, good capability answers were dominated by teachers with more than ten years of experience. Teaching professionals with more than ten years of experience but little to no ability to respond to every question generally lead the way. On the five questions related to the capabilities of the teachers, all five received consistently positive responses from the teachers. It means that the implementation of digital learning did not hinder North Kalimantan teachers from implementing distance learning.

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