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# The Ability and Readiness of Prospective Elementary School Teachers in Facing Digital-Based Learning Era

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***ABSTRAK***

*Pandemi Covid 19 di Indonesia telah mengganggu proses pembelajaran di lembaga pendidikan. Dampak dari disrupsi ini adalah percepatan integrasi sistem digital dalam pembelajaran, kemudian menimbulkan beberapa masalah dalam pembelajaran berbasis jaringan seperti masalah koneksi internet, partisipasi mahasiswa, dan kemampuan beradaptasi dosen dan mahasiswa. Pasca pandemi, pembelajaran berbasis jaringan atau digital menjadi tuntutan bagi dosen dan mahasiswa. Penelitian ini bertujuan untuk menganalisis kemampuan dan kesiapan siswa dalam mengikuti pembelajaran berbasis digital pasca pandemi Covid-19. Metode penelitian ini adalah metode penelitian deskriptif dengan teknik pengumpulan data berupa kuesioner dan wawancara tertulis melalui pertemuan online. Sampel penelitian ini adalah mahasiswa Program Studi Pendidikan Guru Sekolah Dasar sebanyak 414 orang. Teknik analisis data penelitian ini adalah reduksi data, penyajian data, dan verifikasi. Hasil penelitian ini menunjukkan bahwa mahasiswa menggunakan perangkat Teknologi Informasi dalam pembelajaran berbasis jaringan berada pada level mampu, dan kesiapan mahasiswa dalam pembelajaran berbasis digital setelah pandemi Covid-19 berada pada level siap. Intensitas siswa dalam mengakses bahan ajar digital sangat tinggi, namun hanya 5,56% siswa yang memiliki dokumen bahan ajar yang sangat lengkap. Kesiapan mahasiswa pada aspek keikutsertaan dalam pertemuan virtual berada pada tingkat siap. Sebanyak 53,86% mahasiswa menilai perkuliahan lebih efektif dilakukan secara tatap muka (luring). Kualitas koneksi internet menjadi kendala siswa dalam mengikuti pembelajaran berbasis digital.*

**ABSTRACT**

The Covid 19 pandemic in Indonesia has disrupted the learning process in educational institutions. The impact of this disruption is acceleration in the integration of digital systems in learning, then it creates some problems in network-based learning such as internet connection problems, student participation, and the adaptability of lecturers and students. After the pandemic, network-based or digital learning has become a demand for lecturers and students. This study aimed to analyzed student's abilities and readiness to participate in digital-based learning after the Covid-19 pandemic. The method of this research is a descriptive research method with data collection techniques in the form of questionnaires and written interviews through online meetings. The sample of this research was 414 students of Elementary School Teacher Education Study Program. The data analysis technique of this research is data reduction, data display and verification. The results of this study indicate that students use Information Technology devices in network-based learning at the capable level, and students' readiness for digital-based learning after the Covid-19 pandemic is at the ready level. The intensity of students accessing digital teaching materials is very high, but only 5.56% of students have very complete teaching material documents. Student readiness in the aspect of participation in virtual meetings is at the ready level. As many as 53.86% of students consider lectures to be more effective face-to-face (offline). Internet connection quality is an obstacle for students in participating digital-based learning.

## 1. INTRODUCTION

The Covid-19 pandemic has provided an illustration in the world of education in the future through technological sophistication. However, technology still cannot replace the role of teachers, lecturers, and learning interactions between students and teacher because education is not just about acquiring knowledge but also about values, cooperation, and competence (Arifin & Sukmawidjaya, 2020; Irsyadiah & Rifa'i, 2021). This pandemic situation is a challenge for individual creativity in using technology to develop the world of education. Due to the Covid 19 pandemic, face-to-face learning has changed to network-based learning. Network-based learning during covid 19 pandemic was not effective, especially the student's factor. These problems are also caused by the lack of ability of educators in mastering information and communication technology used in learning. Nowadays, the evolution of

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technology has updated information and the ways of learning (Fernandes et al., 2021; Li et al., 2022; Starkey, 2011). The Covid 19 pandemic forced the education process to be network-based using various available software, whether the free one or the paid one. The pandemic forced all aspects to switch into digital devices to answer these challenges, some individuals responded were positive, however there are also some disadvantages (Mali & Lim, 2021; Winter et al., 2021). There are many free software for learning that can be used by teachers. However, educators need to have sufficient proficiency in the use of information and communication technology so that learning can be carried out through the network-based during the Covid 19 pandemic. However, currently in Indonesia learning through the network-based has not been maximized due to the various factors described above. Currently, only about 10 to 15% of teachers in Indonesia use digital-based learning media. Even though one of the many learning demands in the 4.0 era is technological literacy (Rahim et al., 2019; Turiman et al., 2012). Technological literacy is the ability to use technology and information applications effectively and efficiently in various contexts, such as the world of academia and education, learning and teaching, learning assessment, career, and daily life. During the COVID-19 pandemic, the main concern of educational institutions is not the quality of education, but how they can adopt online learning (Howard et al., 2016; Khosiyono, 2022). Due to the covid 19 pandemic, a person should be able to rely on his ability to adapt whether in thought, behavior, and emotion to deal with the situations that are change rapidly.

In dealing with the development of information technology students need to have the ability and interest also motivation to following online learning. Digital competence is a key competence to promote lifelong learning. Information and communication technologies (ICT) play, therefore, a key role in the educational sector, producing new demands and changes that significantly affect teachers, mainly, generating a constant need for training and updating (Amhag et al., 2019; Martínez-Rico et al., 2022). There are various advantages and disadvantages of online learning. Many new platform options are available today to help lecturers and students carry out online learning, based on video calls or text messages, such as zoom meetings, google meet, skype, video call WhatsApp, google classroom, LMS Moodle, and so on. Such platform could make the lecturers and students to communicate easier in the learning process even though they are not meet face-to-face (Bansa & Asrini, 2020; Sari, 2022). Video call is an internet application that allows users to interact and communicate using audio and video from different locations through software using computer screens, tablet, or smartphone. One of the weaknesses of online learning is the lack of interaction between lecturers and students, so that the output of learning is less qualified. The use of internet provides convenience and also disadvantages in teaching such as it does not involve a touch of feeling, a touch of empathy and a touch of humanity, and sometimes the message conveyed cannot be accepted properly (Cassum et al., 2020; Lee, 2014).

Virtual meeting-based learning has many advantages such as saving on transportation costs, not being limited by classrooms, and it can be done at home. However, based on the results of preliminary studies, one of the problems of online learning is student participation in virtual meetings. Based on the researcher's experience, in virtual meeting usually only 60% to 70% of students turn on the camera during learning and others turn the camera off during the learning. Learning at FKIP UNP currently uses e-learning applications, but student participation is still not optimal. The results of the preliminary study show that 61.83% of students access e-learning "very often", 33.81% of students "often" access e-learning, and 2.41% of students "sometimes" access e-learning. This activity shows that some students are not ready to take part in online learning. Thus, the gap in this study is that student participation in virtual meeting-based learning and other digital-based learning has not been maximized. Whereas, learning based on virtual meetings should be of more interest to students because they do not need to come to campus to attend lectures. When students asked about the reason why they turn the camera off when learning, students conveyed various reasons for not turning on the camera during class. Another problem in digital learning is student proficiency in mastering computer hardware or software. Some students lack knowledge of online file management such as Google form, google drive, how to upload and download the file and other activities. Both problems cause the lecturing process to not run well. Technology illiterate causes some students to be unable to follow learning properly. Student's skills in using technology devices will support the learning process during a pandemic. Student's skills in using technology devices will support the learning process during a pandemic (Christopoulos & Sprangers, 2021; Liu & Wang, 2020).

This means that technology has an important role in improving learning outcomes. After the covid 19 pandemic, online learning is no longer a compulsion but it has become a necessity. In some tertiary institutions, learning is even carried out 100% online through online applications. Students do not need virtual face-to-face meetings but simply follow the program that has been arranged in a system. After the Covid-19 pandemic, some tertiary institutions have conducted learning in 2022 using a blended learning model. Blended learning for example, is the learning is done 50% offline and 50% online, including assignments and practicum. In order to the online learning run well, effectively and efficiently, students

need to be prepared to follow it properly. The readiness of students to take part in digital-based learning needs to be studied so that they can find digital-based learning patterns and also they can follow it properly. According to previous research, that online communication in learning during the pandemic has not been able to run well completely, because there are different influences or effects on direct communication with online communication that is carried out using media that has distance, such as the presence of non-verbal communication messages that do convey its meaning (Sari, 2022).

Referring to the explanation above, the research questions in this study are (1) how are the student's ability in using technological devices for digital-based learning?; (2) how are the readiness of the students in digital-based learning after the Covid-19 pandemic?. The purpose of this study was to determine the ability and readiness of the students of Elementary School Teacher Education study program in digital-based learning after the Covid-19 pandemic. Technology readiness has a significant positive effect on perceived benefits. Technological readiness will have a positive impact on the achievement of the knowledge transfer process (Ali, 2021; Gestiardi et al., 2021). According to previous study the indicators of student readiness can be measured by aspects of equipment capability, technology skills, self-directed learning and motivation (Widodo et al., 2020). The results of this study are expected to be able to find common ground between lecturers and students regarding learning patterns and problems that may arise in digital-based lectures so that they can be minimized as small as possible. The aim of this study is to analysed student's abilities and readiness to participate in digital-based learning after the Covid-19 pandemic.

## 2. METHOD

This research uses Qualitative design. The method used in this research is descriptive research. The purpose of this descriptive research is to determine the value of the independent variable, either one variable or more (independent) without making comparisons, or connecting with other variables (Sugiyono, 2018). The population of this study is students of Elementary School Teacher Education Study Program, Faculty of Education, Padang State University semesters 1, 3 and 5 which total 1100 students. According to Isaac and Michael's sampling model with a margin of error 1%, so the sample of this study was 414 students. The data collection technique used is a questionnaire. Researchers took data by giving a questionnaire to the sample. The data obtained will be compiled and processed so it can be determined to find a conclusion. The validity of this research data uses triangulation, transferability, dependability and conformability techniques. The research instrument grids are tabulated in Table 1.

**Table 1.** Grid of Instrument Data Collection

| Acpect | Indicator | Answer Choice | Score |
|---|---|---|---|
| Ability | Operate PC/ Laptop | Very Capable | 4 |
| | Using Microsoft Office | Capable | 3 |
| | Ability for Browsing | Less capable | 2 |
| | | Not capable | 1 |
| Readiness | Internet Network Quality | Very ready | 4 |
| | Students Accessing Intensity | Ready | 3 |
| | Stundent Readiness for All Digital Learning | Less Ready | 2 |
| | Digital Document Readiness | Not Ready | 1 |
| | Intensity of Turning on Camera on Virtual Meeting | | |

The data analysis technique of this study used data reduction, which is the data obtained then reduced or looked for similarities and differences. Second, the presentation of data which is the results of analysis and observation then presented in the form of strengthening the theory from the source of analysis. Third, verification which is proving the truth of the problem so that the conclusions and benefits of a particular study are revealed. The reference for interpreting student ability questionnaires is by using interpretation table as show in Table 2.

**Table 2.** Reference Interpretation of Student Ability

| Percentages | Interpretation | Questionnaire Score |
|---|---|---|
| 75.00><100.00 | Very Capable | 4 |
| 50.00><74.99 | Capable | 3 |
| 25.00><49.99 | Less capable | 2 |
| 0 >< 24.99 | Not capable | 1 |

While the interpretation of the student readiness questionnaire uses the following interpretation as show in Table 3.

**Table 3.** References for Interpretation of Student Readiness

| Percentages | Interpretation | Questionnaire Score |
|---|---|---|
| 75.00><100.00 | Very ready | 4 |
| 50.00><74.99 | Ready | 3 |
| 25.00><49.99 | Less Ready | 2 |
| 0 >< 24.99 | Not ready | 1 |

## 3. RESULT AND DISCUSSION

### Result

***Student Ability to Use Digital-Based Learning Devices***

In order to learning process run well, students and lecturers must master how to use digital-based learning devices. The first thing that must be mastered by students is how to use computer devices such as PCs or laptops for the learning process. The results of research regarding the ability of students to operate computers or laptops are tabulated in Table 4.

**Table 4**. Student Ability to Operate a PC or Laptop

| Criteria | frequency | Percentage (%) | Total score |
|---|---|---|---|
| Very Capable | 44 | 10.63 | 176 |
| Capable | 306 | 73,91 | 918 |
| Less capable | 60 | 14.49 | 120 |
| Not capable | 4 | 0.97 | 4 |
| Amount | 100 | 100% | 1218 |

Based on Table 4, it can be seen that 10.63% students who operate laptops are very capable. Meanwhile, 73.91% of students were capable. 14.49% students were less capable, and the remaining 0.97% were not capable to operating a PC or Laptop. The total score obtained is 1218 with a maximum score of 1656. This figure shows the percentage of student ability is 73.55%. Through the interpretation table above, the student's ability to operate a PC or laptop is at capable level. Besides students must be able to master how to operate a computer, students must also master the software that is often used in learning, they are Microsoft Office such as Word, Ms. Excel, and Ms. Power point. Microsoft Office is most dominantly used in learning formation papers, journal articles, assignment, Final Semester Examinations, paper presentations and so on. The research results regarding student's ability to use Microsoft Office are presented in the Table 5.

**Table 5**. Student Ability in Using Microsoft Office

| Criteria | frequency | Percentage (%) | Total score |
|---|---|---|---|
| Very Capable | 27 | 6,52 | 108 |
| Capable | 335 | 80,92 | 1005 |
| Less capable | 50 | 12.08 | 100 |
| Not capable | 2 | 0.48 | 2 |
| Amount | 100 | 100% | 1215 |

Based on Table 5, it can be seen that 6,52% students are very capable to use Microsoft Office. Meanwhile, 80.92% of students were capable, and as much as 12.08% were less capable, and others 0.48% were not capable to use Microsoft Office for the learning process. The total score obtained is 1215 with a maximum score of 1656. This table shows the percentage of student ability is 73.36%. Through the interpretation of the table above, the student's ability to use Microsoft Office is at capable level. Digital-based learning requires that lecturers and students can access learning resources from digital sources. Online sources can be in the form of journal articles, research data, e-books, laws and regulations, video tutorials, and foreign language books and so on. Student should be able to access, search, download and save documents for the learning process. The availability of digital documents from online sources, Students no longer need to record handwritten things. With this digital document, students can easily use it anytime and anywhere. Student's ability in browsing teach materials for learning is show in Table 6.

**Table 6**. Student's Ability in Browsing Teach Materials for Learning

| Criteria | frequency | Percentage (%) | Total score |
|---|---|---|---|
| Very Capable | 71 | 17.15 | 284 |
| Capable | 309 | 74.64 | 927 |
| Less capable | 34 | 8.21 | 68 |
| Not capable | 0 | 0.00 | 0 |
| Amount | 100 | 100% | 1279 |

Based on Table 6, it can be seen that 17.15% of students were very able to search teaching materials for learning. Meanwhile, 74.64% of students were capable. The total score obtained is 1279 with a maximum score of 1656. This figure shows the percentage of student ability is 77.23%. Through the interpretation table above, the student's ability to browse learning teaching materials is at the very capable level.

***Readiness of Students in Digital-Based Learning***

One of the important components which is often the reason for students to learn online is the problem of internet networks. Several universities conveyed the same thing regarding the problem of internet network quality. For this reason, student readiness depends on the quality of the internet network they have. The stable internet connection is needed for browsing activities, watching online videos, virtual meetings, social media and other activities. The results of research regarding the quality of the internet network in student residences, the result is show in Table 7.

**Table 7**. Quality of Internet Network in Student Residences

| Criteria | frequency | Percentage (%) | Total score |
|---|---|---|---|
| Very good | 45 | 10.87 | 180 |
| Good | 232 | 56.04 | 696 |
| Less good | 132 | 31.88 | 264 |
| Not good | 5 | 1.21 | 5 |
| Amount | 100 | 100% | 1145 |

Based on Table 7, it can be seen that the quality of the internet network around student residences is only 10.87% of which the quality is very good, as much as 56.04% of the student's internet connection is Good. 31.88% of the students' internet connection is less good, and as much as 1.21% the quality of the internet network is not good for network-based learning activities. The total score obtained is 1145 with a maximum score of 1656. This table shows the percentage of student readiness regarding the quality of the internet network is 69.14%. Through the interpretation of the table, the readiness of students in terms of the quality of the internet network is at the ready level.

In digital-based learning, of course, you have to use digital-based teaching resources, both in the form of digital documents or sources in the form of websites or e-libraries that can be accessed by students. With all-digital documents, it will be more easily accessed by students anytime and anywhere. The advantages of documents in digital form are it do not need a physical space, it is easy to find and to identify, easy to archive and manage and so on. However, this advantage can become a problem if students do not master how to manage digital documents. Based on that issue, it is necessary to examine the intensity of student access to the documents for learning purposes. The results of research regarding the intensity of students in accessing the digital documents for learning are presented in Table 8.

**Table 8**. Intensity of Students Accessing and Using Digital Documents

| Criteria | frequency | Percentage (%) | Total score |
|---|---|---|---|
| Always | 178 | 43.00 | 712 |
| Often | 199 | 48.07 | 597 |
| Sometimes | 37 | 8.94 | 74 |
| Never | 0 | 0.00 | 0 |
| Amount | 100 | 100% | 1383 |

Based on Table 8, it can be seen that the intensity of students in accessing digital teaching materials for learning is as much as 43% the intensity is always, as much as 48.07% often, as much as 8.94% sometimes accessing and using digital teaching material. The score obtained is 1383 with a maximum score of 1656. This figure shows the percentage of student readiness related to the intensity of

accessing and using digital-based teaching is 83.51%. Through the table above, student readiness in terms of the intensity of accessing and using digital-based teaching resources is at the very ready level. There are various limitations from aspects of the internet network for digital-based learning, but the demands of learning today are increasingly paperless or completely digital. Platforms exist for supporting learning, there are the free one and paid one. Free platforms are very easy to access, download and use with a gadget. To get very complex tutorials, you can watch the video on YouTube for how to use it, and use other platforms. Nowadays, the learning resources are not limited. Students can access books published by well-known universities abroad for free and it is easy to access. In this digital era, lecturers and students have easy access to all kinds of teaching resources. However, the results of research regarding student readiness for all-digital learning are presented in Table 9.

**Table 9.** Student Readiness for All-Digital Learning

| Criteria | frequency | Percentage (%) | Total score |
|---|---|---|---|
| Very ready | 35 | 8.45 | 140 |
| Ready | 250 | 60,39 | 750 |
| Less Ready | 113 | 27,29 | 226 |
| Not ready | 16 | 3.86 | 16 |
| Amount | 100 | 100% | 1132 |

Based on Table 9, it can be seen that student readiness for all-digital learning is 8.45% in very ready level, 60.39% in ready level, 27.29% in less ready level and 3.86% students in not ready level for all-digital learning. The total score obtained is 1132 with a maximum score of 1656. This table shows that the percentage of student readiness for all-digital learning is 68.35%. Through the interpretation of the table, readiness for all-digital learning is at the ready level. The factor of student's readiness for digital-based learning is the availability of teaching materials and learning resources owned by students. An indicator of students having a high interest in learning is having complete source documents and teaching materials in the form of word files, pdf, slide and articles and so on. Students who have high readiness for digital-based learning have complete teaching materials. The results of the research regarding to the completeness of digital teaching materials owned by students for learning are presented in Table 10.

**Table 10.** Document Completeness of Digital Teaching Materials

| Criteria | frequency | Percentage (%) | Total score |
|---|---|---|---|
| Very Complete | 23 | 5.56 | 92 |
| Complete | 233 | 56,28 | 699 |
| Less complete | 157 | 37,92 | 314 |
| Incomplete | 1 | 0.24 | 1 |
| Amount | 100 | 100% | 1106 |

Based on Table 10, it can be seen that the readiness of students in the completeness aspect of all-digital learning digital teaching materials is only 5.56% for very complete level, 56.28% in complete level , 37.92% in less complete level and 0.24% is in incomplete level. For the completeness of digital teaching materials, the total score obtained is 1106 with a maximum score of 1656. This figure shows that the percentage of readiness for the completeness of digital documents owned by students is 66.78%. Through the interpretation of the table, readiness in the aspect of completeness of digital teaching material documents is at ready level. One of the learning models during the Covid-19 pandemic and after the Covid-19 pandemic was virtual meeeting. The most frequently used applications are zoom meeting and google meet. It is necessary to study the students' activities in participating virtual meetings. The activity that lecturers often complain about is when students do not turn the camera on. The result of the research on the intensity of students turning on the camera in virtual meetings represented in Table 11.

**Table 11.** Intensity of Turning on the Camera in Virtual Meetings

| Criteria | frequency | Percentage (%) | Total score |
|---|---|---|---|
| Always | 114 | 27,54 | 456 |
| Often | 239 | 57,73 | 717 |
| Sometimes | 61 | 14.73 | 122 |
| Never | 0 | 0.00 | 0 |
| Amount | 100 | 100% | 1295 |

Based on Table 11, it can be seen that the students turning the camera on during virtual meetings is 27.54% in always. As Much as 57.73% in often level and, as much as 14.73% in sometimes level. The intensity of students turning on the camera during virtual meetings with a total score obtained is 1295 with a maximum score of 1656. The percentage of intensity of turning on the camera during a virtual meeting is 78.200%. Through the interpretation of the table, the readiness for this is at the very ready level.

**Discussion**

In the era of the industrial revolution 4.0, educational activities were "forced" to keep up with developments in information and communication technology. As a result, the educational process becomes completely digital. One of the needs that students must have is a PC or laptop device for the education process in college. Computers or laptops are no longer considered as luxury goods, PCs or laptops are widely used in various fields of work, including in the field of education. The students who became the research sample were students that born after the 2000s. This shows that PGSD FIP UNP students are students in the digital native generation. Previous study defines 'digital natives' to refer to the new generation of students who grew up surrounded by technology (Prensky, 2001). This generation is sometimes also called by "net generation", or also called by "Millennials generation", or also called by "i-generation". However, the difference in terms basically emphasizes the importance of new technology in the lives of young people (Gibbons, 2007; Munthe, 2019).

The results of the preliminary study documentation show that the majority of UNP PGSD Study Program students have computer devices in the form of PCs or laptops. More precisely, as many as 84.70% of students already have laptops, as many as 2.2% have PCs and the rest do not have both. This figure shows that the availability of computer equipment for students is very adequate. This is different from the ability of students to use it. The results showed that only 10.63% of students who were "very capable" used PCs or laptops, and the majority of their abilities were at the "capable" level is 71.91%. This means that the availability of PC or laptop devices does not always guarantee students' ability to use them. This is in accordance with the results of research that the availability of computer equipment owned by students has no relationship to the ability of students to use these computer devices (Setiaji & Dinata, 2020). In addition to the ability to operate a PC or laptop, students need to master how to use the dominant software that is used for learning, that is Microsoft Office. Microsoft Office is the designation for an office application package made by Microsoft and designed to run on the Windows operating system. The Microsoft office that students often use is Microsoft Word for word processing, Microsoft Excel for number processing, these two programs are equipped with a simple and interactive Graphic User Interface that makes it easier for users to operate (Noviandri, 2017; Rokhman et al., 2018).

Returning to the explanation above, that students belong to the digital native generation. This generation should be digitally literate. However, the results of the study shows that only 6.25% of students are very capable of using Microsoft Office in its various versions, and the majority of students are able to use Microsoft Office are as many as 80.92% and as many as 12.08 are less able to operate Microsoft Office. In other literature studies, the results show that digital natives may not be as proficient in using technology as expected (Akçayır et al., 2016). Referring to previous research which stated that even though students belong to the age group that is considered as digital native, they are not competent enough in using technology (Al Shammari, 2021). The results of another study were put forward by other study was concluded that these students had limitations in using technology (Thinyane, 2010). In digital-based learning, the learning resources used must be digital-based so that they can be easily accessed and used practically by lecturers and students. Students need adequate skills in searching, managing, archiving the digital learning documents. The online learning process requires students to study independently. One of the ability that is important in facilitating independent learning and also determines the success of learning is the ability to use ICT. The results of the research above show that only 17.15% are very capable of browsing digital teaching material sources, meanwhile, 74.64% are able to do so. Learning at this time no longer only relies on textbooks or dictate, modules provided by lecturers. However, learning sources shifted to sources in the form of research journals, both national journals in Indonesia and reputable international journals. With this change, students need to have high skills in searching and managing documents that available online. The ability to search for digital documents online is one of the successes of the learning process in the digital era (Dinata, 2021; Fadila et al., 2021). In network-based learning, lecturers and students need to be supported by the availability of adequate internet connection access. Internet connection can be in the form of a connection via a gadget or a wi-fi network. Today's gadgets are almost all of them use the internet network with each provider. Therefore, an adequate internet connection is needed so that the online learning process can run effectively and efficiently. The use of the internet for students is a media that will support the educational process and the quality of learning

(Walidaini & Arifin, 2018; Zahwa & Syafi'i, 2022). The results of the study show that the internet network is not fully adequate for student learning. There are only 10.87% of the student internet network whose quality is very good, as much as 56.04% the quality of the internet is good, as much as 31.88% the quality is not good, and as much as 1.21% the quality of the internet network is not good. This figure indicates that there are likely to be several obstacles for students in the digital-based learning process. This can indeed be considered reasonable because the internet speed in the city of Padang and its surroundings is relatively different depending on each sub-district and depending on the service provider.

The availability of internet network has positive and negative impacts. Among the positive impacts is internet-based learning in being able to add insight, add reading, think critically, and integrate or associate various reading sources (Kuhlemeier & Hemker, 2007; Salmerón et al., 2018). Computers and the internet are needed by students for lectures. A survey conducted throughout 2016 found that 132.7 million out of 256.2 million Indonesians were connected to the internet (Prawastiyo & Hermawan, 2020). This has increased by 51.8%. The increase in usage rates is because the internet is considered to make it easier to get information or data. The increasing need for internet networks needs serious attention, including from universities. Padang State University has been providing free internet services for students with a wifi network for several years. The results of previous study showed that the majority of students had used the campus internet network properly (Walidaini & Arifin, 2018). However, there are some students that instead use internet network for social media purposes, to access YouTube, online games, and other activities. Network-based learning will use digital learning resource materials. Students are required to be independent in finding digital learning resources in the form of document files, audio, learning videos, and others. The results showed that the intensity of students accessing digital teaching materials for learning was 43% categorize as always 48.07%. Frequently is 8.94% categorizing rarely accessing and using digital teaching materials for learning. The intensity of accessing digital teaching material sources is very high. Digital teaching materials have several advantages, including digital teaching materials that can visualize material through pictures, videos, and animation that can be designed at attractively.

The high intensity of students accessing digital teaching materials is not directly proportional to the completeness of digital teaching material documents owned by students. Only 5.56% is very complete document 56.28% as categorize as complete, 37.92% categorize as incomplete and 0.24% categorie as incomplete. The percentage of readiness for completeness of digital documents owned by students is 66.78% or at the ready level. Likewise with the readiness of students for digital learning, only 8.45% categorize as very ready, 60.39% categorize as ready, 27.29% categorize as not ready and 3.86% students categorize as not ready to all-digital learning. The percentage of student readiness for all-digital learning is 68.35%, or at ready level. There are various digital teaching materials that can be used by students. Referring to the results state that the digital teaching materials most needed by students are in the form of digital modules (Pratita et al., 2021). The results of research study program show that 90% of students need teaching materials that can be accessed anytime and anywhere (Nasution et al., 2020). This need can be met if the teaching materials used are in the form of digital teaching materials.

The most dominant network-based learning carried out by lecturers and students is with virtual meeting. The covid-19 pandemic has caused a shift from a universal face-to-face education system based on physical classrooms to a system involving online videos and virtual meeting platforms (Ali, 2021; Lockee, 2021). Virtual classrooms were adopted due to the covid-19 pandemic and the use of virtual meeting platforms that enabled virtual classes brought into focus the advantages of this system especially for those who travel long distances to work or school (Morice et al., 2020; Yi & Moon, 2021). Student activities in virtual learning determine the success of learning. One of them is the activity of turning on the camera in a virtual meeting. The results of this study indicate that 27.54% always turn on the camera during virtual meetings. Students who have learning readiness will always turn on the camera so they can follow the lesson well. The results of this study indicate that students are not fully prepared to take part in learning with virtual meetings. One of the virtual meeting platforms that students and lecturers are most familiar with is Zoom. Zoom meeting is a web meeting software for users who want to communicate with other people remotely quickly and easily (Kelana et al., 2021; Lim et al., 2022). Apart from zoom, there is another device that is often used by lecturers and students, namely Google Meet. Both applications are easy to use because they have features that are friendly to use and have pretty good audio and video quality. The lack of maximum student activity in virtual meetings is influenced by several factors. The results of interviews with students stated that the factors that caused students to turn off the camera during virtual meetings were (1) the network connection was not good, (2) the need to go to the bathroom; (3) already bored and tired; (4) concurrently with other activities. Virtual learning has several advantages from a students' perspective. Among the advantages are (1) saving on accommodation costs to campus; (2) can be done anywhere; (3) no need to pay boarding house uses around campus and various other advantages (Frolova & Rogach, 2021; Jamal, 2020). However, even though it has advantages, the

results of interviews with students show that the majority of students or 53.86% of students think that lectures will be more effective if they are held offline. To anticipate this problem, FIP UNP has implemented a Blended learning model. The results of the interviews showed that there was a positive acceptance from students. The blended learning model that is most accepted by students is with 50% virtual meetings, and 50% face-to-face meetings.

Besides the supporting factors, digital-based learning has various obstacles. Students faced various obstacles that are more dominated by internet signal problems where students live. Another obstacle is that not all material can be understood by students through virtual meetings such as lecture material that requires demonstrations, performances, hands-on practice and other materials (Azhari & Fajri, 2021; Nurlaeli et al., 2020). In this case, virtual meetings are very dependent on the skills of lecturers to organize and manage virtual meetings. In addition, because the learning is done virtually, the lecturer's skills in conveying material greatly affect student learning outcomes. On the one hand, students recognize the various advantages of online lectures, but on the other hand students realize that lectures are more effective when conducted face-to-face in class because they can interact directly (Aprilia et al., 2023; Nieto-Escamez & Roldán-Tapia, 2021). Digital-based learning has a good impact on lecturers and students. One of the positive impacts is increasing student literacy in digital-based teaching resources. Students become more diligent in reading learning resources directly through digital documents or through certain websites. Another positive impact is that it is faster for students to get grades in real time because lecturers and students both use digital devices to conduct learning so that test results or assignments are faster and easier for lecturers to check (Falloon, 2020; Marshall et al., 2017). Besides the positive impact, digital-based learning also has a negative impact on students. Network-based learning that is carried out continuously makes some students bored and reduces student enthusiasm for learning. On the other hand, virtual learning for some students who are less diligent actually decreases their learning interest. The implication of this research is that lecturers need to develop digital-based learning methods and models so that students are not bored with virtual face-to-face meetings. The results of this study prove that there are still students who are less able and less ready to take part in digital learning, so it is important to do a good stimulus in training, changes the campus policy, lecturer's creativity and more varied learning media. This study has several limitations, including research on students' abilities in using ICT devices is based on student claims, not based on the results of practical tests on using ICT. So it could be, the actual ability is slightly different from the results of this study. The second limitation is this research was conducted only on Elementary Teacher Education study program students of Padang States University. The research results cannot be generalized to all of the students at Padang State University.

## 4. CONCLUSION

The students of primary teacher education study program Universitas Negeri Padang capable to use Information and Communication Technology (ICT) devices in for digital-based learning. Student are ready for digital-based learning after the Covid-19 pandemic. The quality of the internet connection is an obstacle for students in participating in digital-based learning. Students want a lecture model with blended learning, with 50% face-to-face meetings and 50% network-based meetings or virtual meetings. Internet signal quality is a dominant problem that occurs when students have virtual learning.

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