# THE USE OF DIGITAL COMMUNICATION TECHNOLOGIES IN HIGHER EDUCATION LEARNING: PROSPECTS AND CHALLENGES

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***Abstract:***
*The use of digital communication technology in learning in higher education is a mandate of the education law regarding e-learning. The purpose of this study is to analyze the characteristics of digital communication technology, types of learning applications, prospects and challenges of digital learning in higher education. The research method uses a qualitative approach, media document analysis, and literature studies. The results of the study indicate that digital learning is carried out synchronously or asynchronously using hardware, software, internet, and database devices. Learning communication technology is digital, interactive, hypertextual, global, virtual, and simulation. Digital learning uses websites, learning management systems, classrooms, videoconferencing, social media, and messaging applications such as WA. The prospects for digital learning are more flexible learning places, dynamic time, reduced transportation costs, materials available at any time, developing knowledge and skills. Meanwhile, the challenges faced are: dependence on internet quality, quota purchase costs, communication device needs, participant responsibility, lecturer creativity, data privacy and ethics. Therefore, digital-based learning needs to maximize all available facilities and be able to overcome the obstacles faced. Various media and applications available need to be used in an integrated manner, including synchronous and asynchronous learning (blended learning). By understanding the character of technology and using various media synergistically, digital learning runs effectively to achieve goals in higher education.*

***Keywords:*** *Digital communication technology, digital learning, higher education*

## INTRODUCTION

Digital communication technology has been used as a new media in learning in higher education. If the previous learning model was carried out face-to-face in the classroom, then digital technology-based learning is carried out via computers, the internet, and learning management systems (LMS). This new learning model utilizes advances in communication technology such as smartphones, information system applications such as Lentera UIN Alauddin,

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social media such as Youtube which provides learning videos, the availability of global networks such as the internet for 24 hours which connects users for 24 hours without being limited by space and time. The use of digital communication technology in higher education has prospects and challenges that need to be overcome by managers (campuses) and users (lecturers and students).

The use of digital technology in learning is increasing along with the growth of internet users worldwide. According to Statista.com data (2025a) in February 2025, internet users were 5.56 billion or around 67.9 percent of the global population[1]. Meanwhile, social media users reached 5.24 billion or 63.9 percent of the world's population. Furthermore, the largest social media user data is currently Facebook, which is 3.070 billion, Youtube as many as 2.530 billion, Instagram as many as 2.000 billion, WA also 2.000 billion and Tiktok as many as 1.590 billion users (statista, 2025b).[2] Based on the number of internet users in various countries, data was obtained that in February 2025, China was the largest user with 1.100 billion, then India with 806 million, the United States with 332 million, Indonesia with 212 million, and Brazil with 183 million users (statista, 2025c).[3] Indonesia is in fourth place as the country with the most internet users in the world. Data from the Indonesian Internet Service Providers Association (APJII) states that the number of internet users in Indonesia in 2024 will reach 221,563,479 people from a total population of 278,696,200 people in Indonesia in 2023. Based on gender, internet penetration from men is 50.7% and women 49.1%. Meanwhile, from the age of the majority of generation Z (born 1997-2012) is 34.40%, millennial generation (1981-1996) 30.62, generation X (1965-1980) 18.98%, Post Gen Z (born less than 2023) 9.17%, baby boomers (1946-1964)

[1] Statista.com, https://www.statista.com/statistics/617136/digital-population-worldwide/, 2025a, diakses 18 Mei 2025.

[2] Statista.com, https://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/, 2025b, diakses 18 Mei 2025.

[3] Statista.com, https://www.statista.com/statistics/262966/number-of-internet-users-in-selected-countries/, 2025c, diakses 18 Mei 2025.

6.58% and pre boomers (born 1945) as much as 0.24% (APJII, 2025).[4] If we categorize the age of students and lecturers into generation Z, millennials and generation X, then internet users among the academic community are around 84% or dominant in Indonesian society.

The use of digital communication technology in learning has an important role in improving the quality of education. Said's research (2023) shows that the use of technology in learning can increase accessibility, flexibility, effectiveness, and interactivity in learning activities.[5] Ismunandar (2022) stated that the digitalization era requires universities to prepare themselves to accelerate education through internet-based media. Digital transformation is needed for the advancement of education in Indonesia for cost efficiency, productivity, improving quality and realizing a good system. This method has been carried out by developed countries.[6] Putra and Pratama (2023) explain that digital technology provides opportunities to obtain various learning resources such as videos, images, interactive applications, to support understanding of subject matter. With digital technology, the learning process is more adaptive, efficient, and responsive to different learning needs.[7] Ubihatun et al (2024) explain that the use of digital technology on the one hand has challenges such as the quality of human resources, lack of accessibility, facilities, infrastructure, and financial constraints. On the other hand, the prospects for using digital communication technology in

[4] APJII, https://apjii.or.id/berita/d/apjii-jumlah-pengguna-internet-indonesia-tembus-221-juta-orang, 2025, diakses 18 mei 2025.

[5] Sitaman Said, "Peran Teknologi Digital Sebagai Media Pembelajaran di Era Abad 21," *Jurnal PenKoMi: Kajian Pendidikan Dan Ekonomi*, no. 2 (2023): 194-202

[6] Arif Ismunandar, "Paradigma Pengembangan Perguruan Tinggi dalam Menghadapi Era Revolusi Industri 4.0," *An Najah (Jurnal Pendidikan Islam Dan Sosial Keagamaan)*, no. 1 (202): 45-57

[7] Lovandri Dwanda Putra and Suci Zhinta Ananda Pratama, "Pemanfaatan Media dan Teknologi Digital Dalam Mengatasi Masalah Pembelajaran," *Journal Transformation of Mandalika,* e-ISSN: 2745-5882, p-ISSN: 2962-2956, no. 8 (2023): 323-329

learning include improving the quality of education, overcoming geographic barriers, and enabling people to access more education.[8]

This study provides scientific contributions in the application of digital communication technology in learning in higher education by understanding the characteristics of digital technology and using various types of digital technology applications in learning among lecturers and students. This study also explains the prospects and challenges of using digital communication technology in higher education that need to be understood by managers of higher education institutions so that digital technology will provide optimal benefits and at the same time be able to reduce problems arising from technological advances in the digital era.

## RESEARCH METHOD

This study uses a qualitative approach which is a method to explore and understand the meaning derived from the social problems studied (Creswell, 2010).[9] The type of research is media document analysis (Media Archive) to understand the content and meaning of texts published through cyber media by focusing on text, photos, audio, video and other visuals (Nasrullah, 2022).[10] The research technique uses library studies and observations to obtain data in the form of photos, videos, and documents from websites, learning information systems, social media, and messaging applications used by lecturers and students in online lectures, both synchronously and asynchronously.

The data analysis technique used is the interactive model from Miles & Huberman (1992) which consists of four steps, namely: (1) data collection, (2) data reduction, (3) data presentation, and (4) drawing conclusions/verification.[11]

[8] Riza Ubihatun, dkk, "Tantangan dan Prospek Pendidikan Vokasi di Era Digital: Tinjauan Literatur," *Abstrak: Jurnal Kajian Ilmu Seni, Media Dan Desain*, no. 3 (2024): 01-11

[9]John W. Creswell, *Research Design: Pendekatan Kualitatif, Kuantitatif, dan Mixed* (Yogyakarta: Penerbit Pustaka Pelajar, 2010).

[10] Rulli Nasrullah, *Teori dan Riset Media Siber (Cybermedia)* (Jakarta: Penerbit Kencana, Prenadamedia grup, cetakan ketiga, 2022).

[11] Matthew B. Miles and A. Michael Huberman, *Analisis Data Kualitatif: Buku Sumber Tentang Metode-Metode Baru* (Jakarta: Penerbit UI Press, 1992).

The four steps are carried out systematically according to the stages of the research carried out so that the author can understand, analyze, and convey the results of the research in the form of an article. Data collection and writing of this article were carried out from March to May 2025.

## RESEARCH RESULTS AND DISCUSSION

### Characteristics of Digital Communication Technology

The use of digital communication technology in learning in higher education refers to regulations related to e-learning, namely the Higher Education Law 12/2012, Part Seven Distance Education Article 31 paragraph 1 which explains that: "Distance education is a teaching and learning process carried out remotely through the use of various communication media".[12] Permendikbud No. 109 of 2013 concerning the Implementation of Distance Education in Higher Education explains: "Electronic learning (elearning) is learning that utilizes information packages based on information and communication technology for learning purposes that can be accessed by students anytime and anywhere".[13]

The use of digital communication technology in learning can be divided into two, namely: (1) Synchronous e-learning which is carried out by lecturers and students in virtual classes at the same time even though the participants' locations are in different rooms, for example using the Zoom or Gmeet application; and (2) Asynchronous e-learning implemented by lecturers and students even though at different times and places, for example assignments via e-mail (Hendrastomo, 2008).[14] Synchronous and asynchronous learning have advantages and disadvantages that complement each other.

Digital communication technology in learning in higher education is a two-way reciprocal message exchange process via electronic media and the

[12] Undang-Undang Republik Indonesia nomor 12 tahun 2012 tentang *Pendidikan Tinggi.*

[13] Peraturan Menteri Pendidikan Dan Kebudayaan Republik Indonesia Nomor 109 Tahun 2013 Tentang *Penyelenggaraan Pendidikan Jarak Jauh Pada Pendidikan Tinggi*

[14] Grendi Hendrastomo, "Dilema dan Tantangan Pembelajaran E-Learning," *Majalah Ilmiah Pembelajaran*, no.1 (2008): 32-35

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internet (global computer network); or a symbolic interaction process between users via an electronic network so that they do not need to meet face to face, but can communicate using websites, blogs, social media, or messaging applications such as WA, to carry out the teaching and learning process between lecturers and students such as searching for literature, making reviews, photo or video documentation, questions and answers, discussions, submitting assignments, and uploading mid-term or final exams. Online communication between academics, especially lecturers and students, is the exchange of digital messages via a computer medium consisting of hardware, software, and the internet which is used at any time to complement or replace face to face or direct contact between users (offline).

Digital communication technology has changed the nature of old media such as television, radio and print media. Digital communication technology has characteristics or distinctive features in the form of: multimedia (text, audio, video, graphic and image formats simultaneously); actuality (according to developments); fast (directly accessed by the audience); update (continuously updated); large capacity (web pages present long information); broad (reaching audiences worldwide); and interactive (two-way communication with comment facilities or chat rooms for readers); documented (stored in a database can be found via a search engine); and hyperlinked or connected and related to other sources (Romli, 2018).[15]

Characteristics of digital communication technology according to several experts, namely Lister et al (2009),[16] Rogers (1986),[17] Gane and Beer in Nasrullah (2022),[18] can be concluded:

[15] Asep Syamsul M. Romli, *Jurnalistik Online: Panduan Mengelola Media Online* (Bandung: Nuansa Cendekia, 2018).

[16] Martin Lister et al., *New Media: a Critical Introduction* (New York, USA: Routledge, 2009)

[17] Everett M. Rogers, *Communication Technology: The New Media in Society* (New York, USA: The Free Press, 1986)

[18] Rulli Nasrullah, *Teori dan Riset Media Siber (Cybermedia)* (Jakarta: Penerbit Kencana, Prenadamedia grup, cetakan ketiga, 2022).

a. Digital in nature, namely data processed and stored in a computer in the form of bits 0 - 1. Digital information is very small in size so that it does not require large storage space like conventional libraries full of cabinets and books. Digital data that is very small in size is also easy to share with anyone at high speed so that it can be accessed by users all over the world.

b. Interactive or two-way communication. Unlike old technologies that are one-way such as radio and television, digital communication technology provides two-way communication facilities so that the source of the message (communicator) and the audience (communicant) can communicate both synchronously (directly) and asynchronously (delayed). Interactivity can be done to fulfill individual or demassified learning.

c. Has hypertextual, namely digital communication technology provides information links that are connected to other information in other media, so that users can search for information from various content and sources as needed.

d. Having a global network (internet) makes it easy for users to access information or share data anytime and anywhere as long as they are connected to the network (online). The information network can be found in The World Wide Web (WWW), blog networks, social media, online forums, and so on.

e. Virtual or virtual, namely an electronic space where users communicate, exchange information, interact or make transactions. Each user can use a real name or a pseudonym. To overcome the use of fake identities, several applications provide facilities for filling in verified real identities to make transactions.

f. Having simulation capabilities, namely digital communication technology creates a fake display to make it easier for users to understand and read information. Such as simulations (demonstrations) of anatomy learning materials using computer animation in medical science or biology. Also used in making games so that players see the screen display as if it were real in three dimensions.

The characteristics or special properties of digital communication technology will greatly assist the academic community, especially lecturers and students in learning interactions in higher education. Face-to-face meetings in

class (offline) are equipped with electronic learning facilities (online) through digital media so that the learning process is not only limited to the physical classroom but is also carried out in the electronic classroom synchronously or asynchronously for 24 hours.

**Digital Learning Applications**

Digital/electronic learning or e-learning is a teaching and learning process that utilizes computer technology or the internet as a medium for interaction and information exchange. Technology-based learning media can be divided into two, namely: (1) Electronic-based, namely learning that utilizes electronic technology such as films, videos, cassettes, OHPs, slides, LCD projectors, and radio cassettes; then (2) Internet-based, namely learning that uses online internet facilities via a computer network so that academics (lecturers and students) can carry out the teaching and learning process anywhere and anytime via the internet.[19]

Digital learning applications used by universities include:

a. Websites are places to store data or information based on certain topics on the internet. WWW is a collection of web servers from all over the world that function to provide data and information for shared use. Examples of websites of higher education institutions in Indonesia are: https://www.unhas.ac.id/ which is the website of Hasanuddin University Makassar, https://unm.ac.id/ which is the website of Makassar State University, www.uin-alauddin.ac.id which is the website of Alauddin State Islamic University Makassar, https://umi.ac.id/ which is the website of Muslim University of Indonesia, https://handayani.ac.id/ which is the website of Handayani University, and https://stim-lpi.ac.id/ which is the website of STIM LPI Makassar. Through the website, educational institutions can convey various information to the public such as organizational profiles, vision and mission, services, product information, daily activities, and question and answer rooms with visitors. The website also provides accounts for lecturers and students for administrative and academic needs.

[19] ITB, *Modul Tinjauan E-Learning* (Bandung: UPT E-Learning ITB, 2017).

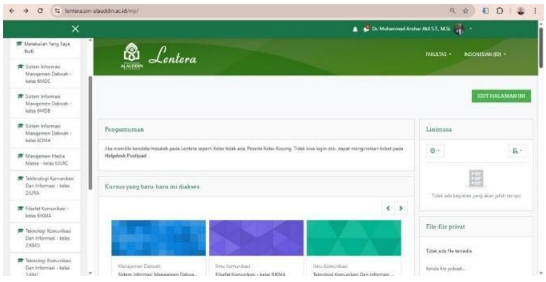
Figure 1. UIN Alauddin Website




Source: https://www.uin-alauddin.ac.id/ (May 19, 2025)

b. Learning Management System (LMS) application used by institutions to carry out the teaching and learning process. Examples of LMS provided by UIN Alauddin Makassar are "Lentera", an OPAC (online public access catalog) library application and GoLib (library collection delivery service). The Lentera application is specifically for the UIN Alauddin Makassar community (https://lentera.uin-alauddin.ac.id) which provides various features such as: database, big blue button, forum, glossary, attendance, quizzes, workshops, chat, assignments, surveys, file deposits, books, folders, and URLs to send multimedia links. These features are for managing lecture schedules, submitting assignments, midterm and final exams, student attendance lists, uploading teaching materials such as ebooks or video links, for communication between lecturers and students (chat), and so on. To open the Lentera application, UIN Alauddin lecturers and students must first log in by entering a user name and password so that the Lentera application features can be used.

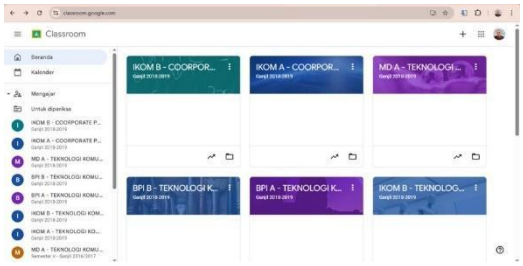
Figure 2. Lentera UIN Alauddin Application




Source: https://lentera.uin-alauddin.ac.id/my/ (May 19, 2025)

c. Google Classroom is a learning mailing list that is widely used by lecturers and students for online lectures. Before the classroom, virtual learning used yahoogroups.com by creating a class account for the course taught by the lecturer. For example, a virtual class for the Communication and Information Technology course. The Google Classroom application provides various learning facilities such as: a list of students taking the course; announcements; discussion rooms for lecturers and students; a place to collect assignments; storing lecture materials such as modules or e-books; to provide mid and final exams; communication facilities (chat); and features for giving grades. How to join the Classroom is that students first enter the course classroom code which will be sent via the student's email account. After being approved by the admin, students will be included as participants in the course being taken. An example of a class room for the "Communication and Information Technology" course taught by the author as a lecturer at the Faculty of Da'wah and Communication, UIN Alauddin Makassar.

Figure 3. Google Classroom




Source: https://classroom.google.com/ (May 19, 2025)

d. Video conference applications such as Meeting Zoom or Google Meet. Through this application, lecturers and students can conduct virtual lectures synchronously, namely each user must be present at the same time in the application used. When participants are present in the application, lectures are carried out as in class with online face-to-face. Through this application, lecturers can explain material, discuss, carry out mid-term or final exams, guide theses, comprehensive exams, and so on. The video conference application contains several features such as

share screen to share presentation slides with participants; change the background or video background of participants; recording facilities to save learning archives; facilities to activate or deactivate video and sound (mute); whiteboard facilities to write and explain presentation material. This application can be used by users either for free (limited duration) or for a fee.

Figure 4. Online lectures via the Zoom application



Source: Online lecture S2 KPI UINAM (May 3, 2025)

e. Social media in general means media used for social interaction. Social media is not only for entertainment or making friends, but for various purposes such as marketing media for buying and selling and online learning media both synchronously and asynchronously. Synchronous learning such as live broadcasts on Youtube while asynchronous learning for example studying video recordings of lectures on Youtube that have been saved by lecturers and can be studied or watched by students. For example, "Anshar Akil Channel" which contains 462 videos about lecture materials, lectures, and self-development motivation. In each video there is also an interactive facility in the form of a comment column that can be filled in by students as a response to lectures to lecturers. Learning videos on Youtube can be accessed by students anytime and anywhere as long as they are connected to the internet (online).

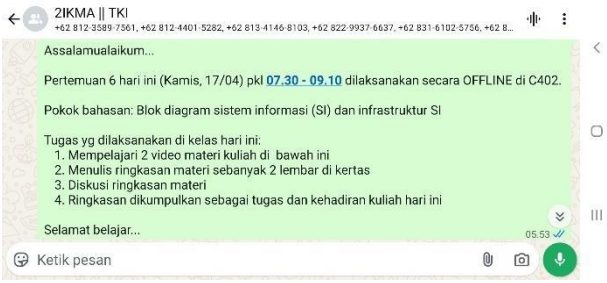
Figure 5. Learning channels on Youtube




Source: https://www.youtube.com/@AnsharAkil/videos (May 19, 2025)

f. Messaging application to exchange information via text, voice, or video. This application is used by lecturers with students in online lectures. The popular messaging application is WhatsApp (WA). This application is used to create course groups with student participants in one class and lecturers. For example: WA group for the Communication and Information Technology course in classes 2IKM-A, 2IKM-B and 2IKM-C. With the WA group, lecturers can send learning instructions to students; send lecture materials such as modules, ebooks; class discussions that discuss lecture materials; to send assignments; for consultation between lecturers and students; thesis guidance; for mid or final exams; and save as a learning archive. An example of information conveyed by lecturers in the WA group for the "Communication and Information Technology" course is shown in Figure 6.

Figure 6. WA course group




Source: WA group MK TKI class 2JURA (2022)

The use of digital learning applications is supported by the availability of

hardware, software, brainware (human resources), network (internet network), and database (information center). All of these infrastructures are used to carry out the online teaching and learning process either synchronously or synchronously to complement or replace the lecture process that cannot be carried out offline such as during the 2019 Covid pandemic. Digital communication technology will increase the effectiveness, efficiency and creativity of participants and teachers in achieving the goals, vision, and mission of higher education. The use of academic information systems (SIAKA), Library information systems, Laboratory information systems, Research and Development information systems, and so on, will greatly assist the learning process inside (offline) and outside the classroom (online) which is more creative and of high quality. By using digital communication technology, university leaders, lecturers, staff, and students will realize an effective and efficient digital-based learning system. For lecturers, UIN Alauddin Makassar has also provided a lecture monitoring and evaluation (Monev) information system that needs to be filled in as a report on lectures that have been carried out by each lecturer. With the many digital applications available today, university leaders or lecturers can choose the right application according to their needs and learning objectives.

**Prospects and Challenges of Digital Learning**

The use of digital communication technology in learning in higher education has led to changes in the interaction model between lecturers and students in teaching and learning activities. If conventional learning requires face-to-face meetings in the classroom, then learning mediated by electronic networks replaces physical space with virtual space so that lecturers and students only face computer devices connected to the internet to be able to communicate with each other. Lecturers and students remain in their respective places, do not need to come to campus, to learn simply join the electronic room.

This change in learning model requires hardware, software, and internet networks, as well as electronic lecture materials in accordance with SAP and the curriculum. The online learning model through digital applications has been

carried out full time during the Covid-19 pandemic. Currently, online learning outside the classroom is combined with offline learning in the classroom which is called blended learning or hybrid learning.

Learning based on digital technology and the internet brings up positive and negative sides. Students can gain knowledge more easily and quickly, and freedom to access information. However, in the learning process utilizing digital technology, it is necessary to be followed by parental supervision at home and the campus so that participants can use technology correctly and wisely (Kuntari, 2023).[20] Various technological innovations have been used in learning such as e-learning platforms, augmented reality, virtual reality, and mobile learning applications as an integral part of the educational process. However, there is a need to better understand the impact of technology integration on learning and student academic achievement (Zulfikhar et al., 2024).[21] Digital-based learning has prospects in addition to problems. The prospects or advantages of online lectures (Anshar, 2022)[22] include:

a. The place of study is flexible. Lecturers and students can study anytime and anywhere as long as they have electronic devices and an internet connection. Participants do not need transportation to campus to study. Participants can attend lectures while doing work at home or in their boarding houses, or go home to their villages to meet their parents and students take online lectures from their respective areas.

b. Learning time is more dynamic. For asynchronous online learning, the time is not set rigidly like offline classes. Students can study independently at any time and work on assignments for a longer period of time, for example 1 week which is

[20] Septi Kuntari, "Pemanfaatan Media Digital Dalam Pembelajaran," *Prosiding Seminar Nasional Fakultas Tarbiyah Dan Ilmu Keguruan IAIM Sinjai,* vol. 2 (2023): 90-94

[21] Rosa Zulfikhar et al., "Dampak Integrasi Teknologi dalam Pembelajaran Terhadap Prestasi Akademis Mahasiswa Perguruan Tinggi," *Journal on Education*, no. 4 (2024): 18381-18390.

[22]Muhammad Anshar, *Teknologi Komunikasi Dalam Pembelajaran* (Depok: PT RajaGrafindo Persada, 2022).

uploaded on campus applications such as Lentera UIN Alauddin. In addition, it can save time and energy because lecturers and students do not need to go to campus, avoiding very dense urban traffic jams, especially during rush hours such as on Monday mornings. For synchronous online learning, lecturers and students can arrange lecture schedules according to the desired agreement.

c. Transportation, consumption, paper, and other costs can be reduced. Lecturers and students only need an internet quota and do not need to go to campus using their own vehicles or rent online motorcycle taxis, and save other costs such as food costs if studying on campus. Internet quota can be purchased individually and used for days to access lecture materials from ebooks or learning videos. For synchronous online lectures via video conference applications such as zoom, a large internet quota is still required, so lecturers and students need to prepare it.

d. Lecturers and students can choose the desired learning materials from online sources that are available at any time. Lecture materials provided by lecturers can be studied repeatedly via social media or stored on their own devices or online storage (drive). It is more practical because there is no need to bring printed books, the electronic files can be stored on a smartphone or laptop. Online lectures do not require physical equipment such as whiteboards, markers, paper, but only use a laptop, smartphone and internet. The student learning process is more independent and responsible.

e. Learning through digital technology changes the paradigm of traditional learning by providing opportunities for participants to develop knowledge and skills according to developments in the digital era such as digital literacy, critical thinking, and adapting to technological changes (Sakti, 2023).[23]

In addition to the prospects or advantages explained above, digital communication technology-based learning also has several challenges or problems (Anshar, 2022),[24] including:

[23] Abdul Sakti, "Meningkatkan Pembelajaran Melalui Teknologi Digital," *Jurnal Penelitian Rumpun Ilmu Teknik*, no. 2 (2023): 212-219.

[24] Muhammad Anshar, *Teknologi Komunikasi Dalam Pembelajaran* (Depok: PT RajaGrafindo Persada, 2022).

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a. Learning depends on the internet network. Digital-based lectures require a stable internet network so that network availability greatly determines the success of digital learning. In some conditions, internet network disruptions often occur, such as in remote or rural areas. Although in urban areas there are also blank spot locations that do not have quality internet access, sometimes the signal is intermittent or disappears altogether.

b. It costs money to buy an internet quota. Access speed is largely determined by the size of the quota owned. Therefore, it requires access costs to get a quality internet connection. The faster the internet access used and the more quota used, the more expensive the payment that must be made. The price of internet quota is also still relatively expensive for families with middle to low incomes. To do online lectures synchronously every day requires a large internet quota. This can be overcome by using free wifi provided by the government or private sector.

c. Requires communication devices such as laptops or smartphones with better quality, which have larger memory and faster processors. In addition to adequate hardware, appropriate software is also needed to receive, send or store data. Thus, the online learning process can run normally according to the needs of lecturers and students.

d. Online learning does not require physical meetings between lecturers and students, so the lecture process requires student discipline and independence in order to learn better and not fall behind in the lecture process. This process can cause boredom, negligence or laziness if students study independently for a long time without control from the teaching lecturer. In addition, students sometimes do not understand the lecture material because they cannot ask the lecturer directly like when studying offline in class. Therefore, lecturer supervision is still needed during online lectures and the lecture process and online lecture materials are made interesting, creative, innovative, and create interactivity that involves each participant.

e. Other challenges in digital learning are data privacy from participants, limitations in detecting ethics, and the risk of replacing human interaction in learning. In addition, there can also be inequality in access to technology and the

potential for bias in the use of technology such as in artificial intelligence models (Marlin et al., 2023).[25]

Learning in higher education using digital communication technology needs to maximize the various advantages of technology and at the same time try to minimize the problems faced so that digital-based learning can take place efficiently, effectively, creatively in accordance with educational goals. When conducting learning based on digital communication technology, lecturers and students can utilize various application media that are currently available in synergy. Various existing application media, both synchronous and asynchronous, can be used in an integrated manner so that they complement each other's advantages and disadvantages. Thus, digital-based learning can take place optimally if it utilizes offline and online models and various media in synergy so that lecturers and students need to know the characteristics of the media and use them appropriately according to the conditions and learning objectives to be achieved.

## CONCLUSION

The use of digital communication technology in learning in higher education is a mandate of the education law regarding e-learning or electronic-based learning. Electronic or digital learning can be implemented synchronously and asynchronously using hardware, software, internet, and database devices. Digital technology-based learning is digital, interactive, hypertextual, global, virtual, and simulation. Digital learning applications in higher education use websites, learning management systems, classrooms, videoconferencing, social media, and messaging applications such as WA.

The prospects or advantages of using digital technology in learning are: more flexible teaching and learning places, dynamic time, reduced transportation costs, materials available at all times. Meanwhile, the challenges or problems

[25] Khairul Marlin, et al, "Manfaat dan Tantangan Penggunaan Artificial Intelligences (AI) Chat GPT Terhadap Proses Pendidikan Etika dan Kompetensi Mahasiswa Di Perguruan Tinggi," *Innovative: Journal Of Social Science Research*, no. 6 (2023): 5192-5201.

faced in technology-based learning are: dependence on internet quality, costs to buy quotas, need communication devices such as smartphones or laptops, participants need discipline and responsibility to understand the material, and lecturers' creativity is needed to create and present interesting materials.

Learning in higher education that utilizes digital technology needs to maximize the various technological advances available and be able to overcome the obstacles faced. The various media and applications available today need to be used in an integrated manner. Synchronous and asynchronous online learning complement each other to be used synergistically (blended learning). Thus, digital learning can take place effectively if universities utilize offline and online models and various digital media in an integrated manner so that academics need to understand the character of the media and be able to use it appropriately according to conditions to achieve learning goals.

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