

“Intellectual accidents in a critical perspective: the challenges of stuttering lecturers using digital technology in distance learning”

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Abstract

Purpose – This study investigates lecturers' challenges in guiding students' final scientific work online during the COVID-19 pandemic. It explores the impact of lecturers' digital technology proficiency on the students' ability to compile their thoughts and produce scientific work independently.

Design/methodology/approach – The study involved 45 lecturers and 140 students. Data was collected through online surveys using the Google Forms application and focus group discussions. The data were analysed qualitatively and interpretively based on the surveys and interviews.

Findings – The findings reveal three modes of mentoring: online, mixed, and offline. Many lecturers' reluctance to use digital technology for mentoring stems from their lack of proficiency, resulting in mixed mentoring methods. This digital inadequacy affects students' ability to write scientific work independently, as they are not accustomed to self-directed learning. The pandemic has necessitated more independent work from students, with limited physical guidance from lecturers, leading to a decline in the quality of scientific writing.

Originality/value – This paper contains the latest information related to students' scientific writing activities. Student scientific writing activities are disrupted because supervisors do not have the skills to use technology in the remote student mentoring process. Lecturers are not skilled at using technology in carrying out online tutoring assignments.

Keywords COVID-19 pandemic, Lecturers, Academic writing, Online mentoring, Universities

Paper type Research paper

Introduction

Lecturers' refusal to guide students online during the COVID-19 pandemic has caused significant confusion in students' thinking structures when writing scientific papers. Previous studies showed that students not accustomed to independent learning faced considerable difficulties (Henttonen *et al.*, 2023; Mahmud and German, 2021). They remain dependent on lecturers for guidance in completing their theses, but the pandemic hindered



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crucial face-to-face interactions. Conversely, lecturers were also constrained in providing direction due to face-to-face restrictions. Online meetings proved insufficient because lecturers and students possessed limited digital competencies, significantly impacting student performance. Students unaccustomed to independent study felt disturbed and panicked when writing their theses without direct supervision, adversely affecting the quality of their scientific writing.

Previous studies on online learning predominantly focused on students' perspectives, neglecting the challenges faced by lecturers during the pandemic. These research trends can be categorised into four main types. First, studies addressing the relationship between the pandemic and technology-based learning difficulties experienced by students (Dietrich *et al.*, 2021; Luo *et al.*, 2021; Silletti *et al.*, 2021). Second, research highlights the decline in students' learning interest due to low motivation barriers during online learning (Alkalash *et al.*, 2022; Bergdahl, 2022; Rong, 2022). Third, studies on psychological issues, stress, and depression due to the shift from offline to online learning (Faronbi *et al.*, 2021; Heo *et al.*, 2022; Okabe-Miyamoto *et al.*, 2022). Fourth, investigations into the technical problems faced by teachers during online learning (Caliskan *et al.*, 2020; Fhloinn and Fitzmaurice, 2021; Fitria *et al.*, 2022; Mardiana, 2020; Ramayah and Kumar, 2020). These categories emphasise student issues, with limited focus on the challenges lecturers face in guiding scientific writing online.

This study addresses the gaps in previous research regarding the relationship between the COVID-19 pandemic and technology-based online learning, particularly in mentoring students to write scientific papers. The observed phenomena focus on lecturers' difficulties conducting online thesis guidance using Internet technology. These difficulties resulted in student dissatisfaction with their supervisors' guidance. Lecturers were often reluctant to open thesis submissions via mobile phones or email, leading to challenges for students in organising their research structure and logic without direct supervision. This research seeks to answer three primary questions. First, what forms of online assistance did lecturers provide to students during the pandemic? Second, how challenging was it for lecturers to conduct online mentoring? Third, what are the implications of the constraints experienced by lecturers on the quality of students' scientific work? These questions illustrate that students' failure to organise their thoughts in writing scientific papers is not solely a student issue but also significantly influenced by lecturers' unpreparedness for online guidance, particularly regarding digital competencies.

The study argues that the limited digital competence among lecturers impacts students' ability to produce quality scientific papers with technological assistance. Students not used to independent research rely heavily on face-to-face supervision. The COVID-19 pandemic restricted physical meetings, necessitating online thesis guidance. However, this sudden shift was not accompanied by adequate digital skills among lecturers and students. Lecturers' technological competence influences their willingness and ability to guide students in scientific writing. At the same time, effective technology use requires sufficient digital literacy. The challenges also involve shifting learning traditions from teacher-dependent to autonomous learning. Independent learning necessitates mastery of digital competencies by both lecturers and students. Thus, online scientific writing assistance requires robust technological capabilities to keep pace with educational developments in the industrial era 5.0 (DeCoito and Estaiteyeh, 2022).

Literature review

Education during the COVID-19 pandemic

The learning process, where students interact with educational resources to produce specific information, faced numerous challenges during the COVID-19 pandemic (Sun and Yang, 2023; Wang *et al.*, 2023). The transition to online learning, driven by the pandemic,

introduced several obstacles despite the technological advantages that were supposed to facilitate this shift (Barvinok and Pudlo, 2023). Educators had to quickly develop effective instructional designs for online learning, yet many were inadequately prepared (Pereira *et al.*, 2023; Vasset *et al.*, 2023).

Technology's role in education is critical in the digital era and the Industrial Revolution 5.0. Technological advancements have made teaching more accessible and efficient (Haleem *et al.*, 2022; Nottingham *et al.*, 2022), and the COVID-19 pandemic accelerated the integration of technology in education (Kalmar *et al.*, 2022; Mourtzis *et al.*, 2021). The need for social distancing highlighted the importance of digital networks and information systems in maintaining educational continuity (Chen *et al.*, 2022; Hao *et al.*, 2022). Social media and other communication platforms became vital tools for teacher-student interaction during this period (Aldekhyyel *et al.*, 2022; Tortorella *et al.*, 2021). The pandemic prompted a global shift from face-to-face to technology-enabled learning, affecting billions of students and highlighting the impact of technological fluency and ethical intelligence on learning (Aamir and Winkel, 2021; Azubuike *et al.*, 2021; Hošnjak and Pavlovic, 2021; Maqableh and Alia, 2021; Moss and Metcalf, 2020).

Use of various learning platforms during the COVID-19 pandemic

The pandemic saw a proliferation of learning media, such as mobile devices, smart boards, MOOCs, tablets, laptops, simulations, dynamic visualisations, and virtual laboratories, used across educational levels (Degner *et al.*, 2022; Haleem *et al.*, 2022; Kulp, 2022). Mobile devices evolved from mere communication tools to platforms facilitating education (Lewis, 2022; Moldavan *et al.*, 2022; Rohles *et al.*, 2022; Steeds *et al.*, 2021). These devices significantly impacted learning (Andersen and Rustad, 2022) and became creative educational media (Lee *et al.*, 2022; Tay *et al.*, 2022). Traditional science practicums and experiments transitioned to virtual laboratories, enabling continued education without physical spaces (Ares *et al.*, 2021; Lianpo, 2022). Technology-based learning media, including various platforms (Hao *et al.*, 2022; Jnr and Noel, 2021; Loo *et al.*, 2018), ensured educational continuity during the pandemic. The goal was democratising education and promoting a just and sustainable life (Cahyadi *et al.*, 2021; Lo and Nguyen, 2018).

Technology facilities in scientific writing

Scientific writing demands strong critical thinking and systematic language skills (Kippin *et al.*, 2021; Klimova, 2013; Mendoza *et al.*, 2022). Many novice researchers, including undergraduate students, find academic writing challenging (Lin and Morrison, 2021; Iermolenko *et al.*, 2021). Critical and systematic thinking is influenced by extensive scientific literature (Yu and Liu, 2021; Zhang *et al.*, 2022) and the ability to search, read, and synthesise content from scientific journals (Ante, 2022; Barroga and Mitoma, 2019; He *et al.*, 2022). Technological advancements have facilitated the search for scientific literature (Dugartsyrenova and Sardegna, 2022; Li and Mak, 2022; Lin and Zhang, 2020; Miao *et al.*, 2022). Technology-driven websites host thousands of literature titles, aiding academic writing (Mariani and Nambisan, 2021; Schöpfel and Azeroual, 2021). Good academic writing requires critical and systematic thought supported by up-to-date references (Lee *et al.*, 2018; McCambridge, 2019; Nguyen and Buckingham, 2019). References are available in offline and online libraries (Carden, 2021; Doolan, 2021; Roumpani *et al.*, 2021). However, offline libraries were underutilised during the pandemic due to university closures (Hofer *et al.*, 2021; Kalmar *et al.*, 2022). Online libraries based on digital technology became essential, offering unlimited access to references (Lauricella and Jacobson, 2022; Naughtin, 2021). Researchers needed digital literacy to access these resources effectively (Frederick, 2016). Digital libraries provided hope for the intellectual development of researchers and writers during the pandemic (Yu and Liu, 2021).

Lecturer and digital competence

Lecturer digital competency was crucial for distance learning continuity during university closures (Cattaneo *et al.*, 2022; Hao *et al.*, 2022). Using digital technology in distance learning demonstrated teachers' commitment to creating a conducive learning environment (Antonietti *et al.*, 2022; Yoon, 2022). Academic writing tutoring requires digital competence (Downs, 2021; Feindler *et al.*, 2021; García-Martín and García-Sánchez, 2018). Lecturers' digital competence in guiding students is as important as their general distance learning challenges (AlAjmi, 2022; García-Martín and García-Sánchez, 2018; Hargraves *et al.*, 2019; Martin *et al.*, 2022). Good digital competence includes using various Microsoft Word tools to correct academic writing (Alharbi and Alqefari, 2021; Mohammed and Al-Jaberi, 2021). Lecturers with poor digital skills face challenges using these tools, which can hinder practical guidance (Klimova, 2013). Digital competence allows lecturers to facilitate peer-review processes quickly and efficiently using Microsoft Word features (Zhang *et al.*, 2022). These features help lecturers revise diction and sentence structure, track revisions, and monitor content similarity, thus aiding remote academic writing guidance (Hewett and Thonus, 2019).

However, lecturers often lack the necessary skills to use technology effectively in distance learning, which can impede students' academic writing progress. Lecturer digital competence is essential for providing timely and effective feedback, which is crucial during the pandemic when physical meetings were impossible. In conclusion, the COVID-19 pandemic highlighted the critical role of technology in education and the challenges of online learning. While technological advancements offered new opportunities, they also exposed gaps in digital competencies among educators and students. Addressing these gaps is essential for improving education quality and ensuring students and lecturers can navigate the digital learning landscape effectively. Enhanced digital literacy, better technological infrastructure, and comprehensive training programs are necessary to support the future of education in a post-pandemic world.

This research draws upon several significant theories and models in digital learning and educational technology. The Technology Acceptance Model (TAM) (Davis, 1989) is a framework for understanding how teachers adopt digital tools and use them in their teaching practices. This model demonstrates that perceived ease of use and usefulness are critical determinants of technology adoption. Additionally, Vygotsky *et al.* (1978) emphasises the fundamental role of social interactions in cognitive development, which is crucial in understanding how a lack of face-to-face tutoring impacts students' ability to construct knowledge independently. This theory is straightforward: learning is a socially mediated process. The sudden shift to an online learning environment disrupts these social interactions, leading to student learning and thesis writing challenges.

Moreover, the Digital Competency Framework for Educators (DigCompEdu) (Redecker, 2017) unambiguously identifies educators' essential competencies to effectively integrate digital technologies into their teaching. This framework underpins discussions about educators' digital readiness and literacy. It makes it clear that inadequate digital skills significantly hinder effective online mentoring. This study integrates theoretical perspectives to reveal the practical challenges faced by lecturers. It places these challenges in a broader theoretical context, providing a more comprehensive understanding of the impact of digital competencies on online learning and mentoring during the pandemic.

Method*Research design alignment*

The research design used in this study is qualitative and interpretive, which is very suitable for capturing the in-depth experiences and challenges lecturers and students face during the

online mentoring process. This approach provides a broad understanding of the complexities involved, which may not be fully revealed by quantitative methods alone.

Research object

Online assistance is an essential strategy during the pandemic and was chosen as the research object. This research explains the relationship between lecturers' failure to provide online assistance and students' inability to organise their thoughts in their thesis. There are three basic ideas underlying the selection of this research object. The first reason is that online scientific writing assistance for students is often carried out during the COVID-19 pandemic. As a result, various complaints emerged among lecturers and students in the field. Second, little research has focused on the relationship between online mentoring and students' failure to organise their thoughts in writing scientific papers during the COVID-19 pandemic. Third, the obstacles to lecturers' digital competence, which impact reducing the quality of students' theses, should be analysed.

Types of research and types of data

The relationship between the COVID-19 pandemic and the failure of students to organise their thoughts in writing scientific papers is explained through qualitative research based on primary and secondary data. Primary data consists of the process of assisting lecturers using internet technology, the types of difficulties lecturers have in guiding, gender, variations in mentoring techniques, variations in facilities/media used by lecturers, and variations in the level of readiness of lecturers, and the solutions chosen by lecturers for each difficulty. Secondary data consists of the lecturer's scientific background, student complaints undergoing online tutoring, and data on the quality of student scientific work. Primary and secondary data are used to analyse the relationship between technology-based online assistance and the failure of students to organise their thoughts in writing scientific papers.

Participant

Participants were selected based on their active involvement in the online mentoring process during the COVID-19 pandemic. Forty-five lecturers supervising final-year students and one hundred and forty students completing their theses under online guidance were deliberately sampled. This selection ensured the relevance and applicability of the findings to populations experiencing these challenges. Ethical considerations were strictly adhered to, ensuring the protection of participants' rights and confidentiality. Ensuring anonymity, securing data, and voluntary participation are implemented to enforce ethical standards. This research received ethical approval from the Institutional Review Board (IRB), which confirmed that the research complied with ethical guidelines and protected the rights and well-being of participants. Consent was obtained from all participants, who were fully informed about the study's aims, procedures, risks, and benefits. Participants can ask questions and are guaranteed the right to withdraw at any time.

Research process: stages and data collection techniques

Primary data originating from lecturer rejection, lecturer obstacles in accessing technology, variations in lecturer mentoring models, and variations in solution models offered by lecturers in the mentoring process were collected through an online survey using the Google Form application. Secondary data from complaints and experiences of students who underwent online mentoring were collected through online surveys based on Google Forms and Focus Group Discussion (FGD). Other secondary data in the form of lecturers' scientific background, data on the quality of students' scientific work, assessment of students'

scientific work by examiners, and complaints from students who underwent the online mentoring process were also collected through online surveys and jointly directed online interviews. Various categories of data sourced from primary and secondary data are the basis for analysing the relationship between online mentoring and the phenomenon of student noise in formulating thoughts in scientific writing during the COVID-19 pandemic.

Data analysis techniques: data processing and analysis

The data analysis process took place through three stages of research and two data analysis techniques. The first analysis stage was done to reduce data to organise data into a more structured and systematic form, especially thematically. The data is displayed in tables, graphs, and images in the second stage. The third stage is data verification, which produces conclusions that follow the trend of the data that has been collected. The three stages of data analysis are descriptive analysis and content analysis. Data descriptions are helpful for data interpretation processes that consider contextual aspects. Content analysis generates data interpretations guided by the suggested methods (Spradley, 1980). Based on the stages of data analysis and data analysis techniques used in this study, conclusions can be drawn regarding the relationship between technology-based online assistance conducted by lecturers and the failure of students to formulate thoughts when writing scientific papers.

Findings

The COVID-19 pandemic has changed many aspects of life, including the method of mentoring students writing their thesis. During the pandemic, lecturers utilised three main modes of mentoring students: online, blended, and offline. This research reveals how each mode has its advantages and challenges and how effectively it supports student learning.

Modes of mentoring

During the COVID-19 pandemic, lecturers implemented three main mentoring modes: online, mixed, and offline. Online assistance is provided by most lecturers who are forced to try to utilise digital platforms. However, their effectiveness is limited due to a lack of digital literacy and understanding of the tools required for efficient online communication and document review. Mixed mentoring is also often carried out by lecturers who use a combination of online and face-to-face interactions. This mixed method emerged due to the reluctance and unpreparedness of lecturers to fully transition to digital technology-based guidance. Although some aspects of the mentoring process are conducted online, important feedback sessions are often postponed until face-to-face meetings occur.

Meanwhile, a few lecturers assist offline, although rarely and in a limited capacity. This mode is the least practised due to the health risks and regulations associated with physical gatherings. Figure 1 below shows the mode of mentoring lecturers during the COVID-19 pandemic.

Based on the data in Figure 1, it can be seen that only 46% of lecturers carry out the online student assistance process. The remaining 45% choose to use the mixed-mode mentoring technique, and even 9% of lecturers decide to provide guidance offline. Based on data in Figure 1, it can be seen that lecturers who are willing to provide online assistance are female lecturers and work in tertiary institutions in a particular field of study, namely education studies (see Table 1 for more detailed data). Meanwhile, most lecturers who oversee non-educational scientific institutions refuse to provide scientific writing assistance online. This data proves that lecturers have not fully utilised the convenience of technology to guide students. Even when the survey was conducted, more than half of the lecturers did not like

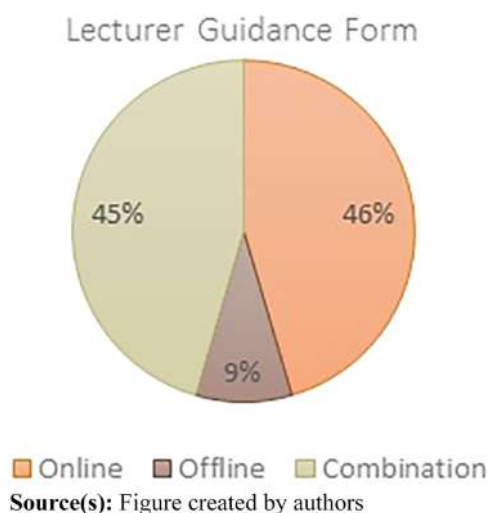


Figure 1.
Mode of mentoring by
lecturer

Lecturer's reason	Meaning	Gender		N = 45
		Female	Male	
Communication proves to be smoother and better when we meet face to face. Students can better express problems in research and thesis writing, and I can provide better explanations and input and see students' reactions, whether they understand or not	Dislike	4	3	15.5%
Exploration of scientific papers does not fully occur because it is limited by writing and signal interference	Dislike	3	4	15.5%
Because there is much to explain, it is more communicative if done offline, and we can immediately determine whether students understand	Dislike	5	3	17.8%
It is not practical to provide an understanding	Dislike	4	3	15.5%
It's hard to see drafts online	Dislike	3	2	11.1%
Sore eyes	Dislike	2	2	8.9%
It is tiring, and students still do not understand	Dislike	2	1	6.7%
Recorded	Like	–	1	2.2%
It could be more detailed	Like	1	–	2.2%
Efficient and flexible	Like	1	–	2.2%
Can perform tasks from anywhere	Like	1	–	2.2%

Source(s): Table created by authors

Table 1.
Responses of lecturers
who conduct online
tutoring

providing online assistance for various reasons. [Table 1](#) below fully shows lecturers' responses and assessments when guiding students' scientific work online.

Based on the data description in [Table 1](#), it can be seen that 17.8% of lecturers stated that the online scientific writing assistance process was less communicative because they could not directly know the level of students' understanding of the instructions given by the lecturer. Students only nod as if they understand when they meet in online meetings, but their work results do not make much significant progress. Rejection was also expressed by 15.5%, who answered that communication between lecturers and students would be smoother if done directly and face to face. Another rejection response was also answered by 15.5% of

lecturers, who stated that students could not explore their scientific work due to poor network problems and their reluctance and unpreparedness to work independently. Unsurprisingly, another 15.5% of lecturers answered that online mentoring was not practical in helping students understand how to make scientific work their final assignment in their undergraduate program. As many as 11.1% of lecturers also felt reading their students' writing drafts in front of a computer or laptop was too challenging. As a result, 8.9% of lecturers answered that they often felt tired in front of a computer monitor or notebook, and 6.7% of lecturers responded that they were exhausted and could not make their students understand the instructions. From the data shown in [Table 1](#), only 8.8% of lecturers could adapt to the online mentoring process for writing scientific papers during the COVID-19 pandemic. Overall, it can be stated that 91.1% of respondents objected to the online mentoring process. Only 8.9% of respondents felt that the online mentoring process went well for them.

Student assistance using WhatsApp, Zoom Meeting, Google Meeting, Call by Phone, Video Call, Email, MS Word, and informal meetings at a place mutually agreed upon by lecturers and students at a location mutually agreed upon by the lecturers and students. [Table 2](#) below describes the guidance media that lecturers tend to use in helping students write scientific papers.

The data in [Table 2](#) shows that the What's App media is used by lecturers 54%, zoom meetings 45%, communication via email 18%, using the Google Meet facility 9%, calls by phone 9%, video calls 9%, and offline meetings 27%. The data in [Table 2](#) shows that What's App media is used by lecturers as much as 54% of, zoom meetings by 45%, communication via email by 18%, Google Meet facilities by 9%, calls by phone by 9%, video calls 9%, and offline meetings 27%. The data in [Table 1](#) shows that 91.1% of lecturers do not like to guide students online, 42.2% of lecturers who do not want to guide online are male lecturers, and 57.8% are female lecturers. Meanwhile, 8.9% of respondents stated that they liked to do online student assistance activities, and 7.5% of respondents were female lecturers. This data shows that among the 8.9% of lecturers who can adapt to online-based mentoring activities, 7.5% are female. Female lecturers like online assistance activities because they can do them in an unlimited place, which means they can also do them part-time at home.

Now that we understand the different mentoring methods implemented during the COVID-19 pandemic, we must explore the challenges lecturers face in implementing these approaches. In the next section, we will delve deeper into the factors influencing lecturers' ability to adopt online mentoring methods and their impact on student mentoring.

Challenges and factors behind lecturers' rejection of online mentoring

Lecturers face considerable challenges in implementing online tutoring. Unstable internet signal quality is a significant obstacle, especially for students who live in areas with limited

Table 2.
Guidance media used
by lecturers

Guidance media	Percentage
WhatsApp	54
Zoom meeting	45
Email	18
Google meet	9
Phone call	9
Video call	9
Face to face	27

Source(s): Table created by authors

internet access. A total of 28.8% of lecturers stated that signal problems hinder the exploration of scientific work. Based on the data in Table 3, 7 respondents said, “Online tutoring is difficult due to the lack of a clear signal. In addition, the lack of serious attention from students limits the depth of discussion about the content of their writing”. In addition, many students do not have sufficient preparation for distance learning, making it difficult to understand and follow instructions given online. Six respondents recognised this and stated, “Due to the lack of competence in this area, we cannot rely on student resources for online tutoring methods that require them to research and write independently”. Another obstacle is economic. Many students find it difficult to afford adequate internet data packages. Some lecturers highlighted that students are unable to learn independently. This has led to a decline in the quality of scientific writing and increased anxiety and frustration among students. Students not used to learning independently find it challenging to organise their work without direct face-to-face guidance.

This results in decline in the quality of their scientific work. Many students also experience high stress levels and feel unsupported and unprepared to complete their final project independently. Table 1 shows that 91.1% of respondents refused to conduct online student mentoring activities. The reasons for this rejection are clear. Lecturers face a variety of challenges. The following quotes clearly illustrate these factors.

These findings make it clear that there are significant challenges for lecturers and students in the abrupt shift to online mentoring during the pandemic. We must overcome these challenges by improving digital literacy, providing adequate technological resources, and adapting teaching methods. These steps are essential for ensuring that effective mentoring can continue in the future, regardless of standard conditions or any disruptions that may force a change in mentoring methods.

Challenges faced by lecturers

The shift to digital mentoring poses some significant challenges for lecturers: Digital Competence, Technology Resources, and Adaptation to New Tools. To Digital Competence, many lecturers lack the digital skills to conduct effective online mentoring. The sudden shift to digital platforms leaves them without adequate training and experience with online tools, making the transition difficult and highlighting a critical gap in their professional development. In addition, there has been limited access to technological resources. This further exacerbates these difficulties. Issues such as unreliable internet connectivity, outdated hardware, and inadequate digital tools hinder lecturers’ ability to provide consistent and effective online mentorship. The challenge of having lecturers adapt to new tools and digital platforms requires technical skills and a shift in teaching methodology. Lecturers struggle to change their approach, as many are unfamiliar with the digital tools

Lecturer comments	Respondent
Online mentoring is challenging due to the lack of clear signals. Moreover, students’ lack of serious attention limits the depth of discussion about the contents of their writing	7
Due to the lack of competence in this area, we cannot rely on student resources for online mentoring methods that require them to research and write independently	6
The students are unable to understand the lecturer’s intentions and instructions properly	8
Students cannot communicate their research difficulties to their supervisor	6
It takes a long time to return revised results from students	4
The consultation method must be improved or modified	10

Source(s): Table created by authors

Table 3.
Factors influencing
lecturer rejection

needed for remote tutoring. This lack of experience made the transition particularly challenging.

Impact on students

The challenges experienced by lecturers had a profound impact on their students. The serious difficulties lecturers face in implementing online mentoring impact students. There are three significant impacts experienced by students, namely Independent Learning Difficulties, Quality of Scientific Writing, and Student Anxiety and Frustration. The data in Table 4 below shows an overview of the impact experienced by students who experienced online mentoring.

Based on the data in Table 4, the conditions of students affected by online mentoring have been mapped. Firstly, in the category of students who found it difficult to learn independently, 70% of students experienced this condition. Students reported that they felt unprepared and unsupported in completing their thesis. Reliance on traditional mentoring methods significantly hindered their academic progress during the pandemic. In the second category, 60% of students experienced a decline in the quality of their academic writing. Thesis examiners reported that students had difficulty developing coherent arguments and maintaining a logical flow in their theses, resulting in poorly structured scientific work. In the third category, 75% of students experienced anxiety and frustration during mentorship. Students who experienced high-stress levels felt unsupported and unprepared to meet the required academic standards. This psychological burden further impacted their ability to produce quality scientific work.

The combined challenges faced by lecturers and students led to a marked decline in the quality of academic outcomes. There has been a decline in student performance due to the inability to provide effective online tutoring. This decline is evident from the lower quality of theses submitted during the pandemic compared to the pre-pandemic period. Specifically, the

Condition of students in online mentoring	Impact category	Percentages
Students who have not used tolerating independently found it difficult to organise their work without the face-to-face guidance to which they were accustomed. Students reported feeling unprepared and unsupported in completing their thesis independently. This reliance on traditional tutoring methods has significantly hindered their academic progress during the pandemic	Independent Learning Difficulties	70
Due to their difficulties in using digital tools, the limited guidance provided by lecturers led to a decline in the quality of student's scientific writing. Data analysis showed that the thesis submitted during the pandemic was rated lower in terms of coherence and structure compared to the thesis submitted before the pandemic. Students had difficulty developing coherent arguments and maintaining a logical flow in their thesis without practical guidance, resulting in poorly structured scientific work	Quality of Scientific Writing	60
The lack of adequate guidance causes considerable anxiety and frustration among university students. Survey results show that students who experience high-stress levels feel unsupported and unprepared to meet the required academic standards. This psychological burden further impacts their ability to produce high-quality scientific work	Student Anxiety and Frustration	75

Table 4.
Mapping the condition of students affected by online mentoring

Source(s): Table created by authors

average thesis grade dropped by 77.1% during the pandemic. The following figure proves a decline in the quality of students' theses during the online mentoring period based on the assessment of thesis examination lecturers.

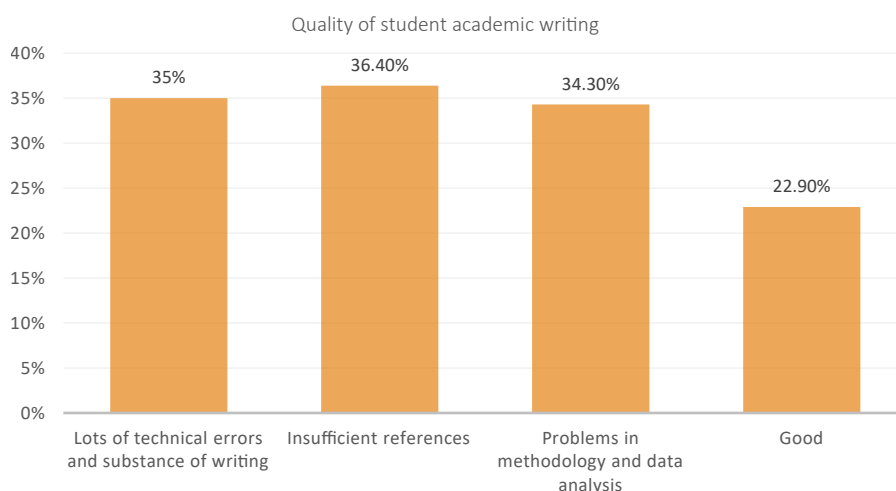
Based on the data in Figure 2, it can be ascertained that only 22.90% of students' scientific writings are considered good. The rest, as much as 35%, is considered technical and substantive errors. The design methodology and data analysis were also problematic and were assessed by 34.30% of lecturers who served as examiners for comprehensive exams. In addition, 36.40% of examiners also thought that references to student scientific work were inadequate and not actual. Based on data in Figure 2, it is confirmed that 77.1% of the quality of student scientific work is considered poor by the lecturers who examine the comprehensive exam.

The lack of lecturer digital competency to conduct technology-based coaching is also influenced by cultural factors. So far, teachers have been trusted as a source of knowledge as long as students study to gain understanding from teachers/lecturers. Lecturer guidance usually occurs face to face, and communication situations occur dialogically to create enthusiasm for learning. On the other hand, learning through technological media eliminates the essence of education. Indonesian society, which tends to have a patriarchal kinship structure, places the teacher as a source of inspiration and strength. However, when teachers cannot generate an aura of enthusiasm for learning due to limited digital competence, technological factors have damaged aspects of the learning culture.

These findings show that the sudden transition to online mentoring during the pandemic posed significant challenges for lecturers and students. Addressing these challenges requires improving digital literacy, providing adequate technological resources, and adapting teaching methods to ensure effective mentoring in future disruptions.

Discussion

During the pandemic, we have assisted in several ways: online, hybrid, and offline. Lecturers lead the way in implementing offline and mixed assistance methods. The data in Figure 1 clearly shows that most lecturers (46 and 45%, respectively) favour online and mixed-



Source(s): Figure created by authors

Figure 2.
Quality of student
scientific writing and
examiner's assessment

method tutoring. Lecturers use various learning media in mentoring models, including meetings with students through the Zoom Meeting application, Google Meet, WhatsApp, mobile phone chats, emails, and reviews. Table 2 shows that lecturers prefer Zoom meetings and WhatsApp because they are more likely to continue using the lecture method in guiding students. It is evident that email facilities are not utilised, and MS Word features are seldom maximised to assist students in the scientific work they are guided through. The data demonstrates that only 9% of lecturers use MS Word features. Numerous studies have shown that using MS Word features is the best way to help correct students' scientific writing (Al-Ansi, 2022; Alharbi and Alqefari, 2021; Mohammed and Al-Jaberi, 2021).

The condition provides evidence that refutes the opinion (Antonietti *et al.*, 2022). It is clear from this statement that the deployment of technology in online learning is evidence of lecturers' commitment during the pandemic. Lecturers lack the digital skills to assist students with scientific writing online. This is a serious problem for students in scientific writing. A similar opinion was expressed (Klimova, 2013). This has been the case long before the pandemic. The failure of students to organise their thoughts in making research designs and writing scientific papers causes serious disruptions. Some lecturers tried to hold discussion meetings offline. Still, the limited time and space during the implementation of the social distancing rules were not enough to minimise students' confusion when they wanted to develop research ideas and scientific papers. The issue lies with the infrequent and erratic schedules of lecturers and students. The result is that many students feel dissatisfied and find online mentoring difficult, as shown in Figure 2.

This study shows that lecturers lack digital competence in online mentoring during the COVID-19 pandemic. Lecturers who perceive themselves as digitally incompetent are understandably reluctant to provide online services. This reluctance of lecturers is an obstacle to students taking this digital-based mentoring process seriously. Furthermore, the limited internet access further exacerbates this situation, making it more difficult for lecturers and students to provide online mentoring. This is contrary to what has previously been stated (Cahyadi *et al.*, 2021; Haleem *et al.*, 2022; Lo and Nguyen, 2018). Technology-based learning will equalise access to education in every line and every life fairly and sustainably. Some even believe that using MS Word features can help lecturers correct student writing (Alharbi and Alqefari, 2021; Koutsokostas *et al.*, 2022; Zhang *et al.*, 2022) is not proven in this study. This research can ultimately be the first step in a massive technology literacy movement that needs to be carried out by the government in all lines and levels of education, especially for teachers and lecturers as the driving force for the sustainability of education in a country.

The results of this study definitively prove that the difficulties arising in the online mentoring process are felt and experienced by students and lecturers. Students have shared some bad experiences during the online learning and mentoring process. Conversely, supervisors also experienced significant difficulties when forced to rely heavily on digital technology to assist students in doing their scientific work online. We must accept that the utilisation of technology in education is not yet ready for lecturers and students. Lecturers' digital intelligence in online assistance is not up to scratch. This is linked to the country's failure to provide adequate infrastructure and support for online education during the pandemic. Addressing this issue as a critical factor in developing solutions to lecturers' challenges when learning online is crucial. Despite the new normal, the state has no choice but to continue equipping lecturers with digital skills. The lecturers leading the way in education must have a vast range of teaching resources and digital expertise to make the most of them. These competencies ensure that teaching materials, including scientific writing, are engaging and creative for students.

Our research disproves previous studies claiming technology has facilitated education delivery in the pandemic era (Haleem *et al.*, 2022; Hofer *et al.*, 2021; Nottingham *et al.*, 2022).

It is a fact that digital technology does not provide fair, equitable, and sustainable access to learning (Chen *et al.*, 2022; Hao *et al.*, 2022). The use of technology is a significant risk factor in the emergence of the phenomenon of intellectual injury in students. Clearly, students' scientific writing is of poor quality and is not managed or controlled by supervisors effectively—students' declining scientific work quality results from their lack of learning independence. Furthermore, students cannot enhance their writing with various references from digital libraries. Moreover, the quality of students' scientific papers is also affected by lecturers' inability to control it. This results in students carelessly preparing their scientific papers. Meanwhile, preparing scientific reports requires critical and systematic thinking, especially when finding various reference sources (Ante, 2022; Barroga and Mitoma, 2019; He *et al.*, 2022).

The government must improve the digital competence of lecturers through the Ministry of Education and Culture. The digital competence of lecturers can be increased both online and offline. The COVID-19 pandemic has forced the shift to a digital technology-based learning model. Various digital and intellectual accidents will inevitably occur during the pandemic, given that it is still in transition. However, this pandemic will end one day. We must ensure that digital intelligence for lecturers, students, institutions, and countries continues and is sustainable. The continuity of the process is essential for the world to enter the industrial era 5.0. Therefore, the government must massively and systematically increase digital intelligence and the ability of human resources, especially lecturers and students. This program will support the future education patterns and models we will not return to face-to-face and teacher-centred learning.

Conclusions and implications

This research definitively shows the difficulties faced in student mentoring during the pandemic. These challenges are particularly pronounced in the context of online learning. Despite technological advances supporting distance learning, many lecturers struggle to adapt to digital learning. A case in point is the lack of use of MS Word features to proofread students' scientific papers. This has a direct impact on the quality of mentoring. The results of this research make it clear that lecturers must improve their digital competencies to be more effective in supporting students. The government and educational institutions must provide the necessary support, including appropriate training and development.

The theoretical implications are clear: we must understand and address the challenges of using technology in education, increase our understanding of the factors that influence the effectiveness of online mentoring, and adopt a holistic approach to improving lecturers' digital competencies. In practice, this study provides clear guidance on how to enhance lecturers' digital competence. This includes providing appropriate training, technical support, and adaptive learning strategies. Educational institutions and the government must work together to create a favourable environment for online mentoring challenges. The results show that investing in human resource development, significantly improving lecturers' digital competencies, is crucial for economic growth. While it requires an initial investment, the long-term benefits are clear: improved education quality and greater graduate employability in the digital labour market. Investing in developing lecturers' digital competencies is a long-term investment that will deliver significant economic returns.

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