

# Exploring undergraduate students' experiences with technology in online learning environment

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**Abstract:** As an aftermath of the COVID-19 pandemic, university learning has been significantly impacted despite the need to adapt to technology to support online learning. Nonetheless, it is essential to recognize that online learning can pose various challenges, including learning loss, which can affect the decline of students' knowledge and skills. The present study was aimed at identifying (1) the types of platforms used in online learning and (2) the symptoms of learning loss experienced by students during online learning. The study was quantitative-qualitative research with a mix-method approach. Data collection was carried out using observations, online surveys (*Google form*), and interviews conducted in 2021. Data were collected from 70 students of Indonesian Language and Literature Education class of 2020 Yogyakarta State University. Data analysis used quantitative-qualitative analysis. The results showed that the types of platforms students use include *WhatsApp*, *Zoom*, *UNY Be Smart*, *Google Meet*, *Google Classroom*, *Powtoon*, *Geneally*, *Padlet*, *Quiziz*, and *Jamboard*. The *WhatsApp* was the most widely used platform. However, online learning that provides many benefits also caused symptoms of learning loss in online lectures. The symptoms of learning loss experienced by students were lecturing while doing other activities, no one responding to the lecturer's questions, turning off the camera during lectures, and passive discussion presentations. The findings suggest that lecturers should increase their supervision and engagement, create a more engaging learning environment, and encourage active participation from students.

**Keywords:** *students' experiences, technology platform, learning loss symptoms, online learning*



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## INTRODUCTION

As an aftermath of the Covid-19 pandemic, education systems at universities around the world are facing significant changes (Donnelly & Patrinos: 2021). According to UNESCO (2020), educational institution closures affected around 1.6 billion students in more than 190 nations or 94% of all students worldwide. University education has changed the teaching approaches from traditional to online (Cahaya *et al.*, 2022; Darwish *et al.*, 2021; García-Morales, 2021; Klimova, 2021; Salta *et al.*, 2022). By changing to an all-online teaching approach, university education worldwide, particularly in Indonesia, must integrate technology into the online teaching and learning processes. This practice not only supports teaching and learning activities and improves teaching quality (Akram *et al.*, 2021; Thaheem *et al.*,

2021) but it also allows students to develop skills, increase motivation, and increase knowledge and information efficiently (Chen *et al.*, 2018). Technology has an unquestionable impact on education (Rajulain, 2020). With the integration of technology in education, teaching and learning activities have undergone significant changes. Various technology platforms such as Zoom, Google Meet, Google Classroom, and others have provided flexibility to learning opportunities (Akram *et al.*, 2021). These platforms allow students to access course materials, interact with lecturers, and complete assignments online. They facilitate distance learning and expand learning opportunities for participants in various geographical locations. Despite the benefits of technology in education, online teaching and learning is also considered a new challenge for university education, especially for students (Nasser, 2021).

The challenges in online learning experienced by students are related to a symptom known as learning loss. Assiddiqi & Soeryanto (2021) explained that online learning significantly impacts learning loss. Learning loss can be defined as a phenomenon in which students experience a decrease in their learning ability and achievement. Students tend to experience decreased understanding, knowledge, and skills that they should have acquired during the learning process. Learning loss is the loss of information and skills throughout the learning process (Budi *et al.*, 2021). It suggests that an ineffective online learning process can result in a loss of understanding and competencies that students should master. Meanwhile, learning loss is a condition brought on by challenges with the learning process (Dziuban *et al.*, 2018). It highlights the difficulties students encounter when participating in online learning, including technical difficulties, a lack of social connections, or difficulty in understanding the subject matter without receiving direct instruction from the teacher. These are significant challenges that can trigger various symptoms of learning loss.

Additional symptoms of learning loss include a lack of interest in learning, a decline in intelligence and skills, a lack of concentration, trouble in comprehending concepts, poor academic performance, disrupted growth and development, and feeling under pressure from others (Cerelia *et al.*, 2021). In addition, the main problem of learning loss is decreased motivation to learn due to low motivation and guidance from teachers and parents and the emergence of a significant gap or difference between students who have a good background and facilities and from parents and students who do not have suitable facilities (Pratiwi, 2021). While implementing online learning approaches, Andriani *et al.* (2021) identified the occurrence of learning loss within higher education institutions. Factors that caused this learning loss included lack of interaction between lecturers and students, lack of interaction among students, decreased students' study time, disrupted concentration, limited duration of learning time, difficulty in explaining the material taught, and low levels of understanding of the material by stu-

dents. The occurrence of this phenomenon frequently emerges as a result of the swift shift from in-person instruction to virtual education.

Learning loss may occur to all students, but the symptoms may vary from one student to another, from one university to another, and even from one country to another. These differences can be influenced by various factors such as the students' background, the type of online learning they receive, and the conditions in their respective universities and countries. Students who have experienced online learning since the beginning of their studies can experience a significant impact on their learning motivation in following the online learning process. Not maximizing the learning process will result in a decline in their knowledge and skills. If this condition persists for an extended period of time, it will have a negative impact on the competence and quality of human resources that will develop during the COVID-19 pandemic (Andriani *et al.*, 2021; Assiddiq & Soeryanto, 2021; Engzell *et al.*, 2021). As a result, students' quality can undergo a significant decline. This decrease in quality is due to the decreased or nonexistent off-campus learning experiences. Sociability and social interaction cannot be done freely, so students experience stress, pressure, and decreased enthusiasm for learning. It contradicts the purpose of online learning, which should encourage more active interaction and increase student motivation to learn (Wicaksono, 2022). However, in reality, the implementation of online learning often faces significant challenges that can hinder the achievement of this goal.

Although prior research has examined the use of technology in online learning (Astini, 2020; Elpana *et al.*, 2022; Hakim, 2020; Hapsari & Pamungkas, 2019; Maskanah & Sae, 2021; Salsabila *et al.*, 2020; Surani *et al.*, 2020) and learning loss in online lectures (Andriani *et al.*, 2021; Ismuniar & Ardiwinata, 2021; Losmandasari & Farhan, 2022; Susanto, 2022; Zaim *et al.*, 2023), few studies have examined the use of technology that is integrated into synchronous and asynchronous manner and the symptoms of learning loss experienced by students. Therefore, the present study is conducted to (1) identify the types of platforms used in online learning and (2) the symptoms of learning loss experienced by students during online learning.

## **METHOD**

The study is quantitative-qualitative research employing a mix-method approach. Mixed-method research is the class of research designs where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts, or languages into a single study for the purpose of breadth and depth of understanding and corroboration (Creswell & Clark, 2010).

Data are shown by a quantitative manner and explored qualitatively. In this relation, the mixed method is used because the data collected are shown in quantitative results which are then explored in depth using qual-

itative techniques enabling a deeper investigation and contextual comprehension of this occurrence. Creswell (2012) affirms that qualitative research represents a valuable approach for comprehending phenomena. In the same manner, the present study uses a quanti-qualitative approach which is an in-depth qualitative research approach regarding individuals, groups, institutions, and so on within a certain period of time. The data were in the forms of information regarding the platforms used during online learning and the symptoms of learning loss experienced by students during online lectures. The research data of this study were taken from 70 students of the Indonesian Language and Literature Education class of 2020, Yogyakarta State University. This sample was selected using a random sampling method, including active and inactive students during online lectures. Data collection was carried out using observations and online surveys conducted between August 2021 and May 2022. Observations were made by looking at the platforms used during the online learning and the conditions during the online lectures. Moreover, an online survey was also conducted by providing questionnaires to the students. The questionnaire was used to explore information about the use of online learning platforms and symptoms of learning loss experienced by students. Interviews were conducted to deepen data and validate data from observations and online surveys (*Google form*). Data were validated using data sources. Content analysis was used to analyze data to find patterns, themes, and meanings in the information collected.

## RESULTS AND DISCUSSION

### Results

The pandemic caused the learning processes in schools to undergo sudden changes. These changes certainly made many parties, especially lecturers and students, find difficulties in adjusting with the learning process, which was originally carried out by the face-to-face interactions. Based on results of the interviews, there are several impacts felt by students and lecturers. These are shown in Table 1.

Tabel 1. The Impacts of Learning during the Pandemic Felt by Lecturers and Students

The Impacts Felt by Lecturers	The Impacts Felt by Students
Lecturers felt unprepared and less adept at using technology for online learning. There were even some senior lecturers who had not been able to use facilities to support online learning at all.	Students who studied at home were not able to maximize their learning because they could not study as usually with the existing facilities and infrastructure. These are important and needed in smooth teaching and learning processes.

The online learning process carried out by lecturers from home was less supported by adequate facilities and infrastructure.

Some students felt that distance learning made their learning motivation low. This may be because some students had an embedded concept that learning is when in the classroom. Distance learning makes students have no motivation to organize their time management from waking up early, taking a shower, and preparing to leave for campus.

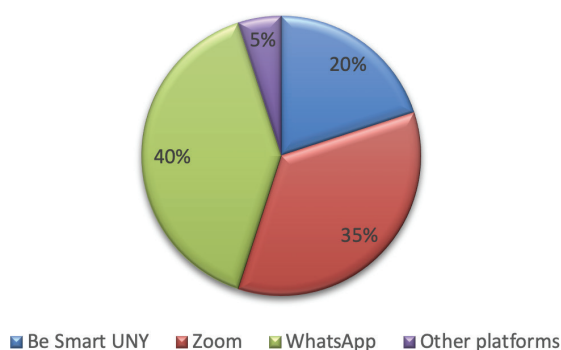
Additional costs were needed for implementing distance learning, such as purchasing Internet quotas, Wifi payments, subscribing to video conference applications, and others.

The interviews revealed that students were happy to go to campus because they could meet friends, lecturers, and use campus facilities such as the libraries, and have comfortable campus environment to increase learning motivation.

Lecturers were not accustomed to distance learning. Online learning in the universities are usually applied for special and project-based learning. However, distance learning has many limitations and lecturers must adapt to this sudden change.

### *The Types of Platforms Used in the Online Learning*

Based on the survey results as presented in Figure 1, the largest number of students used the *WhatsApp* (40%) to communicate with their lecturers and among fellow students. This is mainly because the *WhatsApp* is considered more accessible and faster to coordinate lecture-related matters. The *Zoom Meeting* platform came in second place (35%) for direct interaction between lecturers and students. Meanwhile, the *UNY Be Smart* platform ranked third (20%) as a virtual face-to-face learning tool. In addition to these three platforms, students also used other applications (about 5%) such as *Google Meet*, *Google Classroom*, *Powtoon*, *Geneally*, *Padlet*, *Quizziz*, and *Jamboard*. Although the use rate of these applications was notably low, these applications still contributed to the online learning processes. These results indicate a wide selection of platforms used in the online learning, providing flexibility for lecturers and students to choose tools that suit their learning needs.



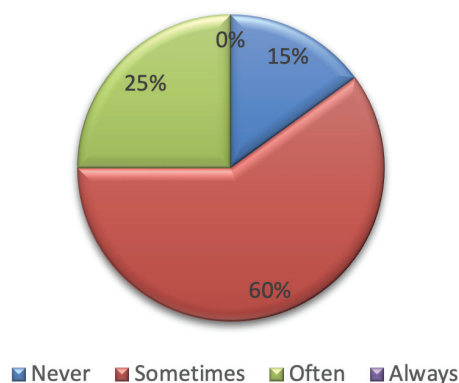
**Figure 1.** Percentages of platforms used in the online learning.



### *Students' Experiences of Learning Loss Symptoms*

#### *Attending Class while Working on other Activities*

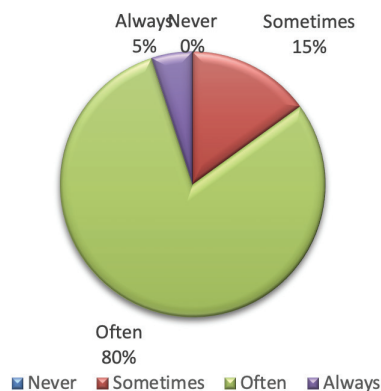
Attending lectures while working on other activities refers to multitasking by simultaneously carrying out two or more tasks during the lecture processes. The survey results in Figure 2 show that a large number of students, as many as 60%, admitted that they sometimes did multitasking activities unrelated to learning during the online courses. Approximately 25% of the students said they frequently did multitasking in ways unrelated to the learning main task. Only 15% of the students responded that they sometimes did multitasking during the main class activity. These survey results reflect variations in the level of discipline and quality of learning experience among students.



**Figure 2.** Percentages of students multitasking while working on the main class activity.

#### *Nobody Responds to the Lecturer's Queries*

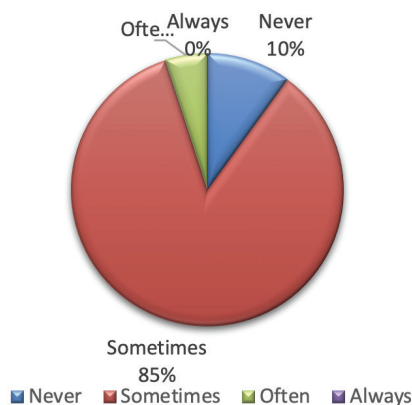
During online lectures, the role of lecturers is more dominant than that of students in virtual classes. This situation reflects the imbalance that occurs in the dynamics of online learning. Lecturers tend to manage the learning process and take a more active part in starting discussions. In the study, as many as 80% of the respondents, as shown in Figure 3, acknowledged that they frequently neglected to respond to the lecturer's queries. In contrast, 15% of students stated they occasionally responded to the lecturer's queries, showing that some students were occasionally engaged in class discussion. Only about 5% of students responded that they always answered the lecturer's questions. The results of this survey can be an essential signal for lecturers and educational institutions to identify problems in student engagement during online lectures.



**Figure 3.** Percentages of students' responses to the lecturer's questions.

### *Turning off the Camera during Lectures*

During the online lecture period, many students tended to leave their cameras turned off. Based on the survey results, as presented in Figure 4, students reported that they sometimes turned off their cameras (85%), never turned off their cameras (10%), and often turned off their cameras (5%). This means that many students would let their cameras on during the online class, some students never turned off their cameras, and a small number often turned off their cameras. There was a great variety in the preference of the students to show their faces on the screens.



**Figure 4.** Percentages of students who turned off their cameras during lectures.

### *Passive Discussion during Group Presentations*

The major technique of class assignments in the on-line class sessions was a group discussion and presentation of the results of the discussion in each group. Based on the survey results (Figure 5), 45% of the students reported that they often asked and answered questions during the group presentations, 20% of the students responded that they sometimes asked questions, about 15% of students responded that they always asked questions, and about 20% of the students stated that they never asked questions in the question and answer session of the presentation. This result shows that a relatively small number of students were consistently active in the question and answer session after the group presentation.

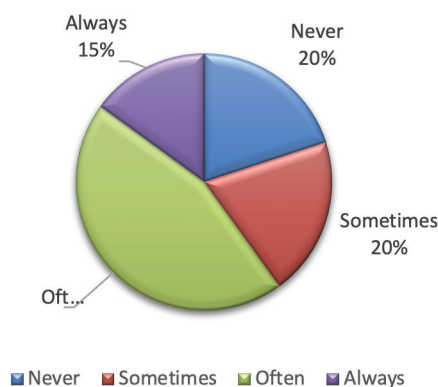


Figure 5. Percentages of students' discussion after group presentations.

## Discussion

This study investigates the types of platforms used in online learning and the symptoms of learning loss experienced by students at Yogyakarta State University.

### *The Impact of Learning during Pandemic*

Learning during a pandemic has an inevitable impact on both students and teachers. The sudden transition of learning from offline to online has indeed affected many things. Preparation is so lacking that teachers feel online learning is a big challenge, especially regarding technology. Many teachers find online learning difficult because they lack competence regarding distance learning technology. This has an impact on students who do not learn optimally. The initial learning process also requires adaptation. This adaptation can include four aspects of adaptation, Rinaldi & Nugraheni (2021), namely adaptation to (1) learning methods or strategies; (2) teaching preparation carried out by the teacher; (3) learning process; and (4) evaluation of learning outcomes.

Online learning, which can be carried out from home, apart from being constrained by limited technology, also requires different quotas or Wi-Fi for students. Teachers also sometimes experience the same problems, not to mention areas where Internet connection is difficult, causing frequent problems. Learning loss also occurs due to minimal interaction. Online learning creates a lack of participation, interaction, and motivation. This makes learning not optimal.

Based on the study conducted by Tandrayen-Ragoobur, *et al.*, (2023) titled "Digital Learning Response in the Midst of the Covid-19 Pandemic: The Case of Mauritius", the Covid-19 pandemic has become a major disruption in the higher education fields. For example, although online learning approaches are used, students taking STEM (Science, Technology, Engineering and Mathematics) courses are more affected than those taking non-STEM courses. About a third of the students state that online learning is a big challenge, especially for those from low-income groups who lack the digital tools needed to adapt to this new learning environment. An unfavor-



able home environment also has a negative impact on students' concentration and ability to cope with their studies. These findings provide support for studies that have been conducted: the conditions are almost the same; many teachers and students still feel that technology cannot fully master and facilitate learning, especially online learning.

The impact of learning during the pandemic has also been felt by English lecturers in Indonesian universities. Muhaji, *et al.*, (2023) explained in their research that, despite the challenges in adopting online technology and the limited number of online platforms used, the lecturers showed a very positive perception of the usefulness of online technology in their learning. Despite initially facing a complicated process in shifting from face-to-face learning to online learning, teachers remain optimistic and persistent in using online technology in their learning. This positive perception was driven by their understanding of the benefits of online technology in facilitating learning. This is also evident from the research conducted this time which relates to the notion that, after initial difficulties, in the end many lecturers admit that technology is quite helpful and has a positive impacts on learning.

### ***The Types of Platforms Used in Online Learning***

The results of the present study indicate that the types of platforms used in the classes are *WhatsApp*, *Zoom*, *UNY Be Smart*, *Google Meet*, *Google Classroom*, *Powtoon*, *Genially*, *Padlet*, *Quizziz*, and *Jamboard*. Results of other prior studies also show that various platforms have become a trend in online education, not only at Yogyakarta State University but also at various other departments and institutions. For instance, Aziza (2021) found that the platforms used in online mathematics learning are *WhatsApp*, *Google Classroom*, and *Cisco Webex*. In the present study, the platforms are used both for face-to-face learning (synchronous) and non-face-to-face learning (asynchronous). It reflects the flexibility in an online learning environment, which allows students to learn according to their schedules and preferences. This finding is in line with the research by Andriani *et al.* (2021), who also identified various platforms used in online learning at other universities, including *Google Classroom*, *WhatsApp*, *Line*, *YouTube*, *Zoom*, *Edlink*, *Edmodo*, *Slack*, *Asana*, *E-mail*, and *Skype*. The involvement of these various platforms reflects the diversity of approaches in delivering online learning, which can be adapted according to the learners' needs and preferences and the institutional contexts.

Face-to-face features are found in the *Zoom* and *Google Meet* platforms, which allow real-time interaction between lecturers and students. Meanwhile, platforms such as *UNY Be Smart*, *WhatsApp*, *Google Classroom*, *Powtoon*, *Genially*, *Padlet*, *Quizziz*, and *Jamboard* are used for non-face-to-face learning, which can include assignments, learning materials, and other learning activities that students can access according to their schedule. According to the online survey, *WhatsApp* dominates the usage among all

platforms with a percentage of 40%. This is in line with Gunawan *et al.* (2020) who found that *WhatsApp* is most widely used by a large number of students and lecturers with a percentage closing to 94%. Meanwhile, the study by Zhafira *et al.* (2020) noted that *WhatsApp* is one of the platforms used significantly during online learning, with a usage percentage of 37%. All this suggests that *WhatsApp* has an essential role in supporting communication and information distribution in the context of online learning.

*WhatsApp* is becoming a very well-liked and successful tool for online learning. Agung *et al.* (2020) emphasized the compatibility and friendliness of *WhatsApp*, making it the most widely used communication platform by students. This is consistent with Astini (2020), in *WhatsApp*'s growing appeal as a flexible communication platform that enables several sorts of communication, including text, voice, and video. In addition, *WhatsApp* has also proven effective in improving the quality of learning and student achievement (Ramdhani & Nandiyanto, 2021; Yensy, 2020). The platform serves as a means of information distribution, encourages collaboration between students and lecturers, and increases student motivation in the learning process (Echeverría, 2011; Rambe & Bere, 2013; Rambe & Chipunza, 2013). *WhatsApp* also provides the necessary support for information interaction and discussion, which helps students understand learning materials (Mulyono *et al.*, 2021). However, Mawarni *et al.* (2020) showed that using *WhatsApp* makes it difficult for students to understand the learning process, including unstable internet networks, limited internet quota, and difficulty focusing on learning.

### ***Students' Experiences of Learning Loss Symptoms***

Apart from the use of various platforms, although online learning provides excellent flexibility in accessing education, it also negatively impacts students' learning loss symptoms. Based on the survey, four symptoms of learning loss were found. First, lecturing while working on other activities. During online lectures, students can participate in virtual classes while doing work, housekeeping, traveling, playing games, surfing the internet, or doing other activities not related to learning. It indicates that many students experience challenges in maintaining their focus during lectures. It reflects that some students are more likely to engage in other activities during online courses regularly, which may interfere with their understanding and quality of experience in online learning. While some may be able to manage multitasking well, others need more effort to improve the quality of their participation and understanding during online courses.

Second, nobody responding to the lecturer. This problem may stem from various factors, including a lack of engagement from students who may lack motivation or feel uncomfortable participating actively. In addition, a barrier can be a lack of comfort speaking in front of the camera or an online setting. Technical challenges like poor internet connectivity or de-

vice troubles also impact students' capacity to participate effectively in on-line courses. This high percentage indicates a pattern where most students are less active in participating in the learning process. It is a small group of students who are very active and responsive in online learning.

Third, turning off the camera during lectures. This phenomenon occurs due to connectivity issues, unprepared performance, or technical constraints. It shows that many students have a habit of occasionally turning off their cameras during the online learning process. It reflects the diverse preferences and constraints that students may face in the context of distance learning.

Fourth, passive discussion presentation. In the study program, almost all courses use presentations as assignments. Assignments have a variety of positive benefits for students, including allowing them to go in-depth, honing their collaboration skills in groups, and improving their speaking skills and ability to answer questions in front of an audience. However, when the question and answer session occurs after the presentation, there is a problem where only a few students or only one or two persons actively ask questions. It shows that some students are passive in participating in the session. It can be an essential signal for lecturers to identify factors that influence student participation and work towards creating a supportive environment that encourages more students to participate.

In a similar manner, Andriani *et al.* (2021) and Lismandasari & Farhan (2022) also found symptoms of learning loss in university students during online learning, primarily related to the lack of interaction activities between lecturers and students. The risk of learning loss is most likely related to the often-one-way interaction, as in the traditional lecture method used in online learning (Soekanto, 2021). In this condition, students become more passive and struggle to participate in discussions or questions actively. This decreased interaction can result in less than-optimal understanding and unsatisfactory learning outcomes. Therefore, extra attention is needed in designing online learning strategies that are more interactive and support better two-way interaction between lecturers and students. Therefore, it is imperative to design online learning strategies that are more interactive and support better two-way interaction between lecturers and students. It can include using more dynamic communication tools, online discussions, and learning platforms that support student-to-student collaboration. In this way, online learning can be more effective and help students maximize their learning outcomes, even in a different and challenging environment such as online learning.

## CONCLUSION

The present study has highlighted the use of technology and learning loss of undergraduate students at Yogyakarta State University, particularly in the Indonesian Language and Literature Education Study Program. The

results show that there are 10 types of online learning platforms used including 1) *WhatsApp*, 2) *Zoom*, 3) *UNY Be Smart*, 4) *Google Meet*, 5) *Google Classroom*, 6) *Powtoon*, 7) *Geneally*, 8) *Padlet*, 9) *Quizizz*, and 10) *Jamboard*. Using several platforms prevents students from experiencing boredom during the learning process. Using various platforms as learning media is also an effort to train students to have creativity and innovation.

On another side, online learning that provides many benefits also causes symptoms of learning loss in online lectures. Learning loss symptoms experienced by students are 1) lecturing while working on other activities; during online lectures, students can participate in virtual classes while doing other work, housekeeping, traveling, playing games, surfing on the Internet, or doing other activities not related to learning, 2) nobody responding to the lecturers' queries; this problem may stem from various factors, including a lack of engagement from students who may lack motivation or feel uncomfortable participating actively. In addition, a barrier can be a lack of comfort speaking in front of the camera or an online setting. Technical challenges like poor internet connectivity or device troubles also impact students' capacity to participate effectively in online courses, 3) turning off the camera during lectures; this phenomenon occurs due to connectivity issues, unprepared performance, or technical constraints, and 4) passive discussion presentation; in the study program, almost all courses use presentations as assignments. Assignments have a variety of positive benefits for students, including allowing them to go in-depth, honing their collaboration skills in groups, and improving their speaking skills and abilities to answer questions in front of an audience. However, when the question and answer session occurs after the presentation, there is a problem where only a few students or only one or two persons actively ask questions.

Learning loss symptoms can lead to not maximizing the learning process. It will result in the quality of information obtained by students and student learning outcomes that are also not maximized. As a result, the quality of students can decrease. In order to improve the quality of students in the Indonesian Language and Literature Education study program at Yogyakarta State University and prevent the potential for learning loss, the university needs to conduct more in-depth observations and evaluations of various symptoms that appear in undergraduate students, supposing that the online learning system is still implemented without evaluation. In that case, there is a potential for a decrease in the quality of students in the Indonesian Language and Literature Education Study Program due to learning loss.

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