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Evaluation of Online Learning Implementation During Covid-19 Pandemic for Sustainable Education in the Higher Education Level

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Abstract

In the Covid-19 pandemic, starting from early 2020, technology has a vital role in education. During this pandemic, the learning process is carried out online, regardless of its positive and negative effects toward sustainable education. In an attempt to reduce the adverse effects, this study evaluated online learning by involving students. This study used a survey method and purposive sampling technique. The obtained data were analyzed and tested using the one-way ANOVA test. In collecting the data, we distributed a questionnaire to the Special Education Program students of Universitas Negeri Malang. Our survey results signified that 68.4% of participants were pleased with online learning, while the remaining 31.6% of participants were less satisfied with the assistance provided during online learning. Besides, we also observed different students' satisfaction levels based on their gender. From our data analysis results, it is

known that the female students tended to have higher satisfaction than the male students.

Keywords: satisfaction, online learning, gender, sustainable education

Introduction

In the recent disruptive era, progression has occurred rapidly. In this era, changes are happening massively due to the physical, digital and human aspect that alters the social system and order (Dewi et al., 2019). Accordingly, Sidiq (2019) posits that the disruptive era bears visible rapid transformation, primarily in the field of technology with innovative new technology replacing the older ones. Further & Bashori (2018) describes that the disruptive era is the forerunner of a massive number of new innovative interaction means. Meanwhile, Ulfah et al. (2022) explain that the disruptive era does not only carry effects on the technology, trading, information, communication, political, and agriculture fields, but it also influences the social behaviors as they are obligated to survive in this era. The disruptive era necessitates humans to adapt to the new advanced technology. Thus, this disruptive era is commonly known as the 5.0 society era. Some even suggest that the disruptive era emerges as the result of the technological advancement from the industrial revolution to the 5.0 society era.

The 5.0 society era was initiated by Japan in 2019 as the enhancement of the prior 4.0 industry, aiming to integrate the technology advancements in society, lower society worries about the adverse effects of technology, and construct a community that can operate technology effectively (Yaras & Öztürk, 2022). Nastiti & Nimal'Abdu (2020) also add that the 5.0 society era enables society to access cyberspace authentically. This era focuses on assembling a community with a great ability to resolve numerous challenges and social issues using existing innovations. Setiawan & Lenawati (2020) have expressed that the 5.0 society era was established to form a society that habituated to using technology optimally, such as big data, artificial intelligence (AI), and the Internet of Things (IoT), to improve their life quality.

This 5.0 society era also influences all aspects of human life, including in the education field. The technology aids teachers in finding more extensive learning materials and delivering the learning to ensure that students can access excellent quality education (Bochkareva & Akhmetshin, 2020; Hussain et al., 2018; Heasly et al, 2024. Linearly, in integrating technology and improving educational services, the Indonesian universities developed a learning management system (LMS) administered through a website as the primary technology facilitating online learning and communication between students and lecturers. Research by Razali et al. (2022) combines learning and active styles learning (Blended Learning Curriculum) using Learning Management System (LMS) in higher education students.

Since early 2020, we have encountered the Covid-19 pandemic, which has positioned technology as a crucial aspect of education. Consequently, all learning activities are obligated to adjust to the pandemic situation so that learning activities are carried out online using numerous supporting technology and digital platforms (Ritonga et al., 2022). Also, education institutions strive to complement their LMS as a digital learning platform.

The online learning system that continues to be implemented during the Covid-19 pandemic certainly has positive and negative impacts. The implementation of online learning during the COVID-19 pandemic faces more complex issues when considered

from a gender perspective. Firstly, the difference in access to technology is a major issue, where female students may be more prone to face difficulties in having adequate devices and internet connection compared to male students. This can result in disparities in participation and learning opportunities. Secondly, issues of equity in participation and interaction also arise. Female students may be more affected by household demands and a greater traditional role in looking after the family, so they have less time and energy to participate in online learning. This may impact the quality of their learning and academic performance.

In studies examining respondent's views toward online learning implementation, gender is the most commonly used indicator. However, another study has reported a significant gender gap. Men tend to have higher levels of self-esteem than women (Casale, 2020; Nang et al., 2022). Meanwhile, the measurement of teacher attitudes towards inclusive education reported by Alharti & Evans (2017), Ediyanto et al. (2020), and Saloviita (2020) suggest no difference in attitude between men and women. However, the differences among the above results represent that influence of gender in research remains to be debated, so that further research is required.

This online learning which has been continuously carried out since the beginning of the Covid-19 pandemic, carries superiorities and weaknesses. To lower the negative influences toward sustainable education, improvements in educational qualifications are required, one of which is through evaluating the students' contentment with online learning. This evaluation can aid educational institutions in improving their educational services, following their needs. This study aimed to identify students' satisfaction levels with the online learning implemented in Universitas Negeri Malang, particularly in the special education program. Besides, this study also investigated students' satisfaction levels based on their gender.

Research Methods

This study used a survey method and purposive sampling technique. A survey enables an individual to gather important information for a study related to the respondents' opinions, behavior, characteristics, and beliefs (Adiyanta, 2019). We conducted the survey by distributing a questionnaire to students from the special education program of Universitas Negeri Malang in April 2021. Our samples were active students in the special education program of Universitas Negeri Malang. In the end, we involved 180 participants, with an age range between 19 to 21 years old.

This research pad uses a common understanding of evaluation principles and frameworks commonly used in educational settings to address issues related to online learning during the COVID-19 pandemic. Some of the underlying evaluation concepts include: satisfaction with online learning system, satisfaction with teachers in online learning, and satisfaction with technology in online learning.

The obtained data were analyzed and tested using one way ANOVA test of k sample average comparative hypothesis test to identify the students' satisfaction level based on their gender. We involved 180 participants, consisting of 13 male and 167 female students from the special education program of Universitas Negeri Malang.

We garnered data using a questionnaire containing several relevant questions. In the questionnaire, we provided four alternative answers to every question item, in which the participant would choose one of them. Our questionnaire was about the perception of online learning. This questionnaire consisted of three satisfaction aspects, namely, satisfaction with the learning process, the services provided by the teacher, and

the supporting technology. The detailed questionnaire items are discussed in the following.

Q1: satisfaction toward online learning compares to face-to-face learning; Q2: satisfaction on the online learning experience; Q3: ability to finish the online learning assignment, independently; Q4: active involvement during the online learning; Q5: interest on online learning; Q6: difficulties during the online learning; Q7: longer duration of online learning, compared to face-to-face learning; Q8: convenience of online learning as it is accessible from everywhere; Q9: completeness of materials in online learning; Q10: understanding on teachers' explanation during the online learning; Q11: ability to finish the online learning assignment; Q12: teachers guidance during the online learning; Q13: the use of supporting technology during the online; Q14: teachers' material explanation during the online learning; Q15: correction and assessment on students' work by the teachers; Q16: diversity of materials provided by teachers during the online learning; Q17: students' ability to operate the supporting technology in the online learning; Q18: student access to the supporting technology during the online learning; Q19: adequate network supporting students during the online learning; and Q20: student ability in operating the online learning platforms.

Research Finding

Results of Students Survey based on Different Aspects

Students' contentment with online learning affects their material comprehension. In our survey, we involved 180 students, consisting of 13 and 167 male and female students, respectively. Our survey results are presented in graphics and explained descriptively. To ease the data presentation, our survey data are divided into three parts, namely satisfaction with the learning process, technology use, as well as guidance and services provided by the teachers.

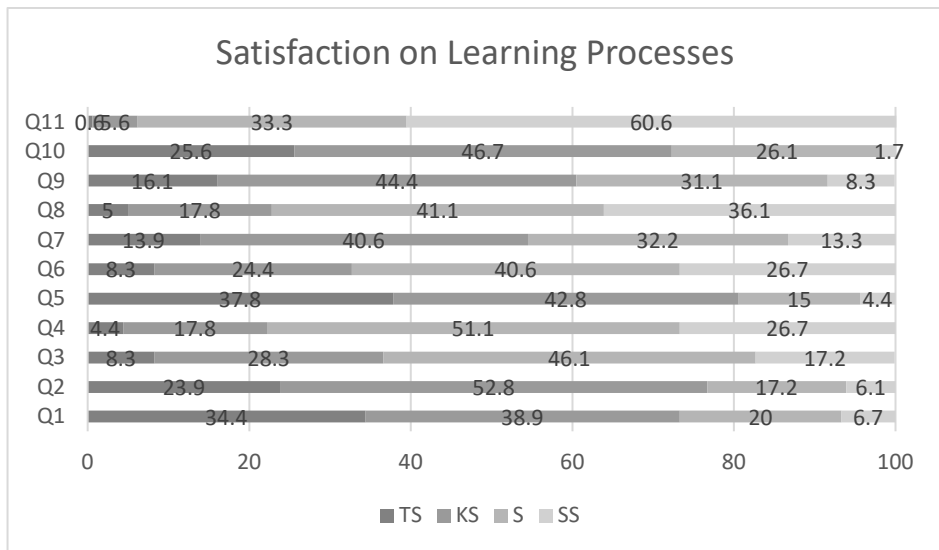
Satisfaction with Learning Processes

As illustrated in Figure 1, on item Q1 stating that students prefer online learning to face-to-face learning, 34.4% (62), 38.9% (70), 20.0% (36), and 6.7% (12) of students responded disagreed, less agreed, agreed, and highly agreed with the statement, respectively. These results indicated that around 38.9% of our participants favored face-to-face learning over online learning.

Item Q2 states that students are very excited about attending online learning. The questionnaire results showed that 23.9% (43), 52.8% (95), 17.2% (31), and 6.1% (11) students stated that they disagreed, less agreed, agreed, and very agreed to statement Q2. Around 52.8% of participants mentioned that they disagreed with the Q2 statement, signifying that most of our participants prefer face-to-face learning to online learning.

In item Q3, 8.3% (15), 28.3% (51), 46.1% (83), and 17.2% (31) of participants expressed that they disagreed, less agreed, agreed, and highly agreed with the statement that they have higher independence in completing the assignments from online learning. This finding indicates that the students attain greater independence in completing the tasks during online learning.

Figure 1.
Students' Satisfaction with Learning Processes



For the statement in Q4 about the students' active involvement during online learning, only 4.4% (8) of our participants disagreed, and 17.8% (32) of them less agreed with the statement, leaving 51.5% (92), and 26.7% (48) participants agreed and highly agreed to the statement. Thus, they acknowledge their better active involvement during online learning.

The Q5 statement mentions that students have a greater interest in online learning than learning in a face-to-face setting. Our results showed that 37.8% (68), 42.8% (77), 15% (27), and 4.4% (8) of participants disagreed, less agreed, agreed, and highly agreed with the Q5 statement. The majority of participants (42.8%) less agreed with the Q5 statement, indicating that most of them present greater enthusiasm in attending the face-to-face learning.

In addition, 8.3% (15), 24.4% (44), 40.6% (73), and 26.7% (48) of our participants disagreed, less agreed, agreed, and highly agreed to statement Q6. This result affirms students' difficulties during online learning.

In the Q7 item, 13.9% (25), 40.6% (73), 32.2% (58), and 13.3% (24) of our participants disagreed, less agreed, agreed, and very agreed with the statement that online learning has a longer learning period than the face-to-face learning in the classroom. As most of the participants (40.6%) disagreed with this item, the majority of them considered that online learning last faster than face-to-face learning.

The Q8 statement articulates that through online learning, students have a more flexible learning period. Around 5% (9), 17.8% (32), 41.1% (74), and 36.1% (65) of our participants disagreed, less agreed, agreed, and highly agreed with the statement. This data suggested that the majority of students consider online learning provides them with more flexible learning hours.

Figure 1 also shows that 16.1% (29), 44.4% (80), 31.1% (56), and 8.3% (15) of the participants disagree, less agree, agree, and extremely agree with item Q9 stating that online learning provides more comprehensive sources than the direct face-to-face

learning. This finding showed that the majority of our respondents consider face-to-face learning provides more extensive learning sources.

In item Q10, 25.6% (46), 46.7% (84), 26.1% (47), and 1.7% (3) of respondents disagreed, less agreed, agreed, and highly agreed with the statement, respectively. Item Q10 states that students encounter no problems in comprehending the learning materials in online learning. As the majority of respondents disagreed with this statement, most of the respondents better understand the learning materials delivered in face-to-face learning.

The Q11 item states that students complete all the assignments from online learning. There were 0.6% (1), 5.6% (10), 33.3% (60), and 60.6% (109) respondents who disagreed, less agreed, agreed, and highly agreed with the Q11 item. This finding suggests that the majority of students admit that they have finished all assignments from online learning.

Satisfaction with Guidance and Assistance

Figure 2.
Satisfaction with Teachers' Guidance and Assistance

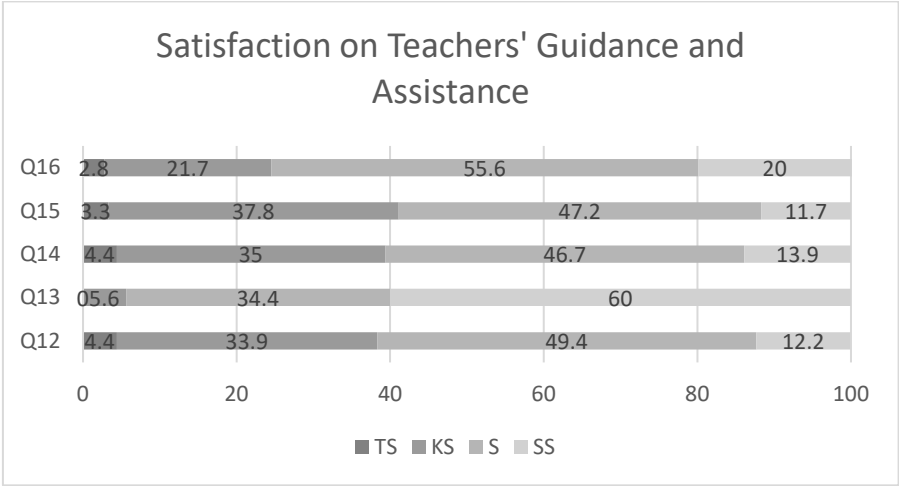


Figure 7 presents that 4.4% (8) and 33.9% (61) of the participant disagree and less agree with item Q12, while 49.4% (89) and 12.2% (22) of the respondents agree and extremely agree with the statement. This finding indicates that most students believe teachers have provided sufficient guidance during online learning.

In item Q13, 0%, 5.6% (10), 34.4% (62), and 60% (108) of respondents disagreed, less agreed, agreed, and highly agreed with the statement. This finding showed that the teachers had adopted sufficient supporting technology during online learning.

The Q14 item states that teachers have given adequate unambiguous assignments during online learning. There were 4.4% (8), 35% (63), 46.7% (84), and 13.9% (25) respondents who disagreed, less agreed, agreed, and highly agreed with the Q14 item. The participants consider that the teachers have provided sufficiently clear assignments during online learning.

In item Q15, 3.3% (6), 37.8% (68), 47.2% (85), and 11.7% (21) of our respondents disagreed, less agreed, agreed, and extremely agreed with the statement that the teachers have evaluated and assessed students' work. Thus, the participants considered that the teacher's assessment on their work was sufficient.

In addition, approximately 2.8% (5), 21.7% (39), 55.6% (100), and 20% (36) disagreed, less agreed, agreed, and highly agreed with the Q16 statement, respectively. This finding suggested that the teachers have presented diverse materials in online learning.

Satisfaction with Technology Adoption in Learning Process

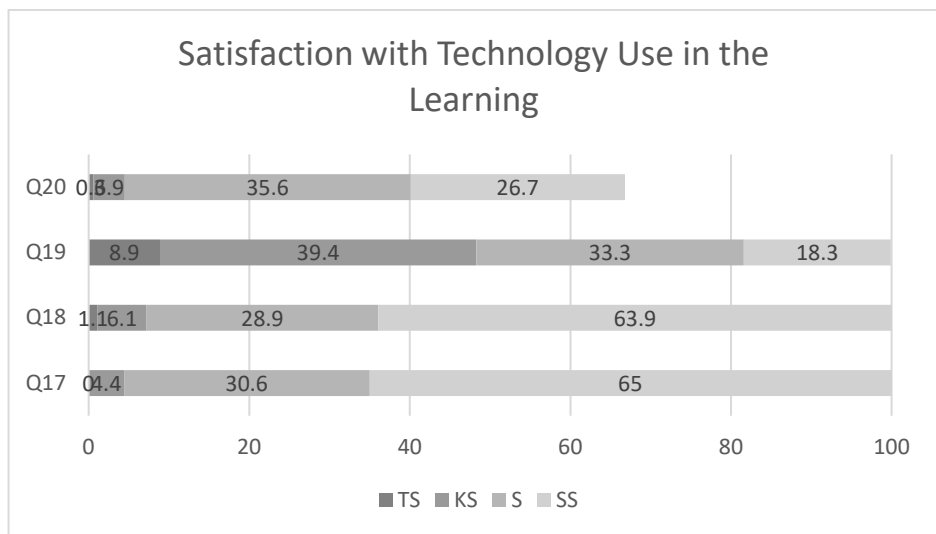
According to Figure 3, 0%, 4.4% (8), 30.6% (55), and 65% (117) of respondents disagree, less agree, agree, and extremely agree with the Q17 statement saying that students have the capacity to operate the technologies required in the online learning. Thus, this finding confirms the students' sufficient technology literacy.

In item Q18, 1.1% (2), 6.1% (11), 28.9% (52), and 63.9% (115) of respondents disagreed, less agreed, agreed, and highly agreed with the statement that they have sufficient technology necessitated in online learning. Thus, this finding suggests that the majority (63.9%) of participants have adequate technology.

The Q19 item mentions that the students have adequate internet connection for online learning. In this item, 8.9% (16), 39.4% (71), 33.3% (60), and 18.3% (33) of respondents disagreed, less agreed, agreed, and highly agreed with the Q19 item. This finding illustrates that the majority of students (39.4%) have adequate internet connections for online learning.

Figure 3.

Satisfaction with Technology Use in the Learning

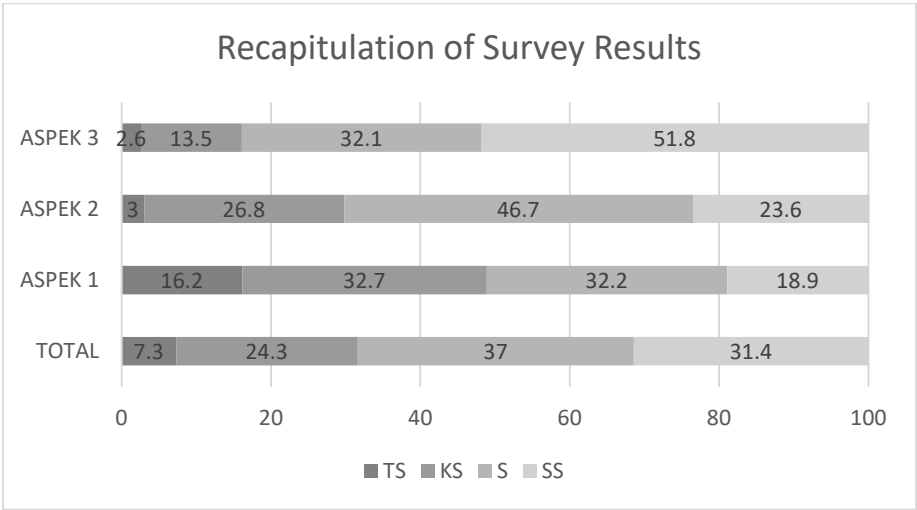


In addition, 0.6% (1), 3.9% (7), 35.6% (64), and 60% (108) of respondents disagreed, less agreed, agreed, and extremely agreed to the Q20 item stating that their online learning had adopted online learning platforms, such as quizizz, google classroom, and others. The obtained data showed that the online classes already used online learning platforms.

From the obtained data, we estimated the average survey results on the students' satisfaction with online learning implementation based on each questionnaire aspect, and the results are illustrated in Figure 4.

In the first aspect of students' satisfaction with the learning process, on average, 16.2, 32.7, 32.2, and 18.9% of respondents disagreed, less agreed, agreed, and highly agreed. Meanwhile, in the second aspect, on average, 3, 26.8, 46.7, and 23.6% of respondents disagreed, less agreed, agreed, and extremely agreed on the aspect of satisfaction toward the guidance and assistance from the teachers. Lastly, 2.6, 13.5, 32.1, and 51.8 % of the respondents disagreed, less agreed, agreed, and exceptionally agreed upon the satisfaction with the supporting technology used in online learning. Comprehensively, 7.3 and 24.3% of respondents disagreed and less agreed that they were satisfied with online learning, while the remaining 37 and 31.4% of respondents agreed and highly agreed that they were satisfied with online learning.

Figure 4.
Recapitulation of Survey Results



Results of Data Analysis: Comparison of Online Learning Satisfaction Levels Based on Their Gender

The obtained data were analyzed using the Anova test to identify the different students' satisfaction with online learning based on their gender. The results of the ANOVA test are presented in Table 1.

Table 1 shows the obtained mean of 24.92 and 28.14 for male and female respondents, respectively, in the aspects of students' satisfaction with the learning process, with an F of 6.836 and sig. 0.010. In the aspects of students' satisfaction with the teacher's performance, the means of 14.23 for male and 14.56 for female

respondents were obtained, along with an F of 0.212 and sig. 0.646. For the satisfaction with the involvement of supporting technology, we obtained means of 11.15 and 13.49 for male and female respondents, respectively, with F of 15.946 and sig. 0.000. In total, we attained means of 50.31 and 56.20 for male and female respondents, along with an F of 8.315 and sig. 0.0004.

Table 1.

Results of ANOVA Analysis on Survey Data

No	Aspects	Mean		F	Sig.
		Male	Female		
1	Satisfaction with the learning process	24.92	28.14	6.836	0.010
2	Satisfaction toward the guidance and assistance from teachers	14.23	14.56	0.212	0.646
3	Satisfaction toward the adoption of technology in the learning process	11.15	13.49	15.946	0.000
	Total	50.31	56.20	8.315	0.004

*number of participant 180 (13 male, 167 female)

Discussion

It is undeniable that the online learning implemented during the Covid-19 pandemic bears positive and negative consequences. Windhiyana (2020) lists a number of adverse effects of online learning, such as requiring a sufficient internet connection and high internet connection cost, while obstructed internet connection directly impairs the learning processes. Meanwhile, the superiorities of online learning are enhanced lecturer-student interaction, flexible learning accessible from anywhere, widely accessible for students, and ease of data storage and delivery without the print-out version. Linearly, Purwanto et al. (2020) state that the adverse effects of online learning subsist of inadequate infrastructure for some students, students' adaptation to the system, and a high tendency of boredom among students.

Web-based online learning positively affects student physiological analysis learning outcomes (students with visual and hearing impairment) (Ratnawulan et al., 2021). However, in ethnomathematics, online platforms can be a new approach to promote culture in the mathematics learning process (Peni, 2022). Astuti et al. (2022) said that online learning could use animated videos to improve student learning outcomes and increase participation. In an attempt to minimize the negative effects of online learning, improvement in the educational service qualities is needed, such as through an evaluation of students' satisfaction with online learning. Through this evaluation, the relevant educational institution can enhance their services by minimizing the unfavorable influence of online learning.

In the current study, we successfully conducted a survey on 180 students (13 male and 167 female students) from the special education program of Universitas Negeri Malang, with ages ranging from 19 to 20 years old. Our survey evaluated three central aspects, consisting of satisfaction with the learning process, supporting technology, as well as guidance and assistance from teachers during online learning. In general, the average result of our data analysis showed that 7.3 and 24.3% of our respondents disagreed and less agreed on online learning, while 37 and 31.4% of them agreed and

highly agreed - therefore, 68.4 % of our respondents were satisfied with the online learning implemented in the special education program of Universitas Negeri Malang, with the remaining 31.6% of them less confident with the learning. In line with other research, online learning can potentially improve learning outcomes for undergraduate students (Andajani, 2020)).

Limitations of experts, inadequate infrastructure, and low parental support are obstacles for teachers to provide assessments and can be solved by digital applications (Wulandari et al., 2022). The results of research by Maulana et al. (2022) found that the obstacles to using online learning (Mobile Learning Media) were the lack of socialization or training and concerns about the negative impact on students (82.3% of teachers).

The results showed an average of 24.92 and 28.14 for male and female respondents, respectively, indicating that female respondents showed better satisfaction with online learning than male respondents and this result is in line with research conducted by (Setiawan & Lenawati, 2020). Then, in terms of satisfaction with the guidance and assistance provided by the teacher, female respondents show higher satisfaction compared to men and this result is also in line with the research of Mamesah & Kusumawardhani, (2020) which states that women have higher satisfaction with the guidance and assistance provided by teachers. For satisfaction with supporting technology in online learning, this study shows that female respondents have greater satisfaction than male respondents and these results are also in line with the research of Shahzad et al., (2021).

Conclusions

To improve the quality of education services in Indonesia, online learning implemented during the Covid-19 pandemic requires evaluation. One of the methods that can be used to conduct this evaluation is a survey. This study conducted a survey of student satisfaction with the online learning process. The results of the survey that we conducted at the Special Education of State University of Malang showed that 68.4% of respondents were satisfied with online learning, while the other 31.6% of respondents were dissatisfied with the online learning implemented.

In addition, we also observed different satisfaction levels between different genders. Our analysis results show that female respondents tend to show higher satisfaction compared to male respondents. Ultimately, the results of this survey can be used as a means of evaluating how well online learning has been implemented. Further research can be conducted to identify factors that contribute to the level of student satisfaction.

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