

The Implementation of Technology Integration During Distance Learning in the Graduate Program of Universitas Negeri Makassar

Syahrullah

syahrullah.s@gmail.com

Universitas Negeri Makassar

Syarifuddin Dollah

syarifuddindollah@unm.ac.id

Universitas Negeri Makassar

Sukardi Weda

sukardi.weda@unm.ac.id

Universitas Negeri Makassar

Abstract

This study aims (1) to investigate the implementation of technology integration in distance learning, (2) to discover students' perception of the implemented technologies, and also (3) to reveal students' motivation toward the implemented technologies during distance learning. The study is descriptive research that used a mixed-methods approach using a questionnaire survey and interviews in collecting the data. The subject of this study was lecturers and 60 students of the academic year 2021/2022 of English Education, Graduate Program of Universitas Negeri Makassar. The results of the study are; (1) technologies that had been integrated into the graduate program during distance learning were Zoom, SYAM-OK, WhatsApp, and Google Meet. The technology integration was successful with common problems such as connection issues and minimal support from the university. Furthermore, (2) the student's perception of accepting this technology based on the Technology Acceptance Model (TAM) showed positive perception, which the average overall score of those four applications being 74.1%. In detail, SYAM-OK had a positive perception (70%), Zoom had a positive perception (81.5%), Google Meet had a moderate perception (63.5%), and WhatsApp had a positive perception (81.25%). Additionally, (3) the analysis of student motivation indicated that the students had a positive level of motivation during the integration of technology in distance learning. The average percentage score was 74.5%, with Attention (70%), Relevance (74%), Confidence (78%), and Satisfaction (76%). All aspects were classified as high motivation. Overall, this study highlights the importance of integrating technology in distance learning to improve student motivation and enhance the learning experience.

Keywords: *Technology integration, distance learning, Technology Acceptance Model (TAM), ARCS model, SYAM-OK*

INTRODUCTION

The Integration of technology in the teaching and learning process is becoming a priority. Many studies showed that using electronic mail, messaging apps, social media, specific software or applications, and any electronic hardware in the classroom is an effective strategy to promote student-teacher communication and increase students' understanding of learning instruction and

materials (Archer et al., 2014; Schmid et al., 2014; Xu et al., 2019). It is essential to give students a positive and enriching learning experience through technology integration.

The COVID-19 pandemic has forced many educational institutions to shift from face-to-face to online learning. Technology integration become more extensively used to support online learning. As Prestiadi et al. (2020) conducted a meta-analysis study to show the effectiveness of online learning in 60 research articles that examine online learning. The results of this meta-analysis research show that the effectiveness of online learning is still lacking when compared to classical or face-to-face learning. Also, Rahmadi (2021) conducted a recent study involving 572 teachers in Indonesia to investigate the teachers' distance learning adoption levels of technologies. It showed that the teachers have increased the level of technology integration, so they can utilize technology as a learning transformation. Furthermore, Weda et al. (2022) stated that the associated factors with influenced online learning such as immature preparations, and unorganized classes. The teachers' adaptability in adopting this distance learning during the crisis sends a hopeful signal for future success in adapting and adopting technology to formal education environments, especially in higher education.

Based on the background above, the researcher formulated three research questions in this study as follows;

1. How was the implementation of technology integration during distance learning in the Graduate Program of Universitas Negeri Makassar?
2. What was the students' perception of the implementation of technology integration?
3. What was the students' motivation toward its implementation?

LITERATURE REVIEW

A review of the literature reveals various conceptualizations of technology integration in education. Hennessy et al. (2005) and Gilakjani (2017) proposed that technology integration entails the enhancement of existing pedagogical practices through the use of technology, as well as the transformation of these practices by exploiting the affordances of technology. Furthermore, Dockstader (2008) conceptualized technology integration as the application of technology to augment the educational environment. It facilitates classroom instruction by enabling learners to accomplish tasks on the computer that would otherwise require conventional tools such as pencil and paper. In addition, Weston (2004) defined integrated technology as the consistent and meaningful utilization of an application for the core purpose of class instruction or learning.

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is a widely used framework to explain and predict the user acceptance and usage of information systems. TAM was developed by Davis (1989) based on the Theory of Reasoned Action (TRA), which posits that an individual's behavior is influenced by their intention, which in turn is determined by their attitude and subjective norms. TAM proposes that two main constructs affect the user's intention to use a system: perceived usefulness and perceived ease of use. Perceived usefulness refers to the degree to which a user believes that using a system will enhance their performance or productivity. Perceived ease of use refers to the degree to which a user believes that using a system will be free of effort or difficulty (Venkatesh et al., (2003). TAM has been empirically tested and

validated in various contexts and domains and has been extended and modified by many researchers over time.

ARCS Motivational Model

The ARCS model of instructional design, proposed by John Keller, an American educational psychologist, in 1979, is a motivational framework that draws on the theory of expected value. Keller (2010) developed this model as a response to the need for more effective ways of understanding and enhancing the motivational factors in the learning process. The ARCS model is a learner-centered approach that requires intensive interaction between learners and instructors, which is essential for effective learning (Aşıksoy & Özdamlı, 2016). The implementation of the ARCS model with information and communication technologies (ICT) involves four basic dimensions: attention, relevance, confidence, and satisfaction (Chang et al., 2019; Keller, 2010).

To enhance learners' motivation, instructors need to consider four components: attention, relevance, confidence, and satisfaction. 1) Attention refers to capturing and maintaining learners' interest by incorporating elements of novelty or surprise, posing a question, presenting a challenge, or offering up a problem for learners to solve. To diversify their attention, instructors can present material in multiple formats and offer learners different modalities of learning, such as games, text, video, discussions, etc. 2) Relevance refers to establishing the connection between the new skill or information and the learners' needs, goals, or prior experiences. Instructors can demonstrate how the new skill or information will help learners solve a problem that they've experienced, meet their needs, or enable them to enhance or apply skills they already possess. Instructors can also model a desired behavior or use a desired skill to establish relevance. 3) Confidence refers to fostering learners' belief that they can apply new skills or knowledge successfully. To achieve this, instructors can create scaffolding that guides learners from fundamental knowledge to more complex information or skills. Instructors can also establish clear goals and provide guidance and feedback that helps learners progress without becoming overwhelmed. 4) Satisfaction refers to providing learners with meaningful achievements and rewards. Instructors can provide learners with opportunities to use what they've learned on the job. They can empower them to apply their new skills to solve a problem that they've encountered in their work and earn feedback and rewards that are meaningful to them.

METHOD

This research applied mix method which combined descriptive qualitative and descriptive quantitative research. The mixed-method study mixes both qualitative and quantitative data in a single study (Creswell & Creswell, 2017). The study was conducted at the Graduate Program of Universitas Negeri Makassar. The subject of this study was 2 English Lecturers, 1 IT staff of the Graduate Program, and 60 students of the English Education Program academic year 2021/2022 which were taken using purposive sampling. Interview and questionnaire were used in collecting the data, the interview consisted of nine questions and the questionnaire consisted of 56 statements.

In determining the classification of students' perception, the researcher followed criteria based on the range of percentages below:

Table 1. Students' perception classification

Percentage Range	Interpretation
85-100	<i>Strongly positive</i>
69-84	<i>Positive perception</i>
53-68	<i>Moderate</i>
37-52	<i>Negative perception</i>
20-36	<i>Strongly negative</i>

Source: (Gay et al., 2011)

In determining the classification of students' motivation, the researcher followed criteria based on the range of percentages below:

Table 2. Students' motivation classification

Percentage Range	Interpretation
90-100	<i>Very high motivation</i>
70-89	<i>High motivation</i>
50-69	<i>Moderate motivation</i>
30-49	<i>Low motivation</i>
10-29	<i>Very low motivation</i>

Source: (Best, 1981; Degang, 2010)

FINDINGS AND DISCUSSIONS

The Implementation of Technology Integration during Distance Learning

The research findings reveal what technology that had been adopted in the graduate program of Universitas Negeri Makassar during distance learning. The results of the interviews indicate that these four technologies in general were integrated for supporting the distance learning process during the Covid-19 pandemic: 1. Syam-OK, 2. Zoom, 3. Google Meet, 4. WhatsApp. The overall implementation of these technologies in the graduate program was considered to be successful. The result from the students' survey, the Zoom application was the most successfully implemented, 100 percent of students choose Zoom over Google Meet for their online meetings, while for students' satisfaction was 76.7% of the students were satisfied, while only 23.3% were not satisfied with their learning experience during distance learning. The research findings supported by the research study by Pratama et al. (2020) revealed that the successful implementation of virtual meeting applications is very helpful in the teaching and learning process between teachers and students. Furthermore, the students believe that the lecturers had leveraged the potential of technology in the virtual class meetings was a positive indication of the quality of the distance learning experience. However, the fact that almost a quarter of students disagrees suggested that there might be room for improvement in terms of utilizing technology effectively.

Furthermore, for the institutional support for the implementation of this technology integration, the finding showed that ICT training was provided for lecturers, which was a positive indication that efforts were made to ensure the effective use of technology in the online classroom. However, the result indicated that the university did not provide financial support,

including a paid Zoom account, which highlights a potential limitation in the university's support for distance learning. However, lack of recognition and institutional support for faculty teaching online have been identified as two of the most significant barriers to online education (Pedro & Kumar, 2020). This lack of support can have a significant impact on the student's ability to fully participate in the virtual learning experience. These findings highlighted the need for institutions to provide comprehensive support, including ICT training and financial support, to ensure the success of technology integration in distance learning programs. The institution's support plays a critical role in ensuring that students have access to the necessary resources and tools to succeed in a virtual learning environment (Pedro & Kumar, 2020).

In addition, the research finding also identified the constraints and problems encountered during the technology implementation in the graduate program. The common problem of students was network issues and students forgetting their passwords for their LMS accounts. It highlights the importance of proper training and support for students in using technology effectively. This result was critical for understanding the challenges that arose during the distance learning experience and how they impacted students. As Sakkir et al. (2021) found that the success of technology integration during online learning can be impacted by various factors, such as signal and network conditions, lack of quota data, and lack of interaction.

Moreover, the connection issues experienced by students, particularly in remote areas with poor signal, was a more significant challenge that could impact the quality of the virtual learning experience. This could result in students missing important class sessions or being unable to participate fully in the online classroom. Thus, it is crucial to address these challenges and provide adequate support to students to ensure successful technology integration in online learning.

In conclusion, the implementation of technology integration during distance learning had shown that technology played a crucial role in distance learning for graduate students at Universitas Negeri Makassar. The successfulness of the implementation was seen through the positive responses from lecturers and students towards the use of technology applications to support online learning such as; Syam-ok, Zoom, Google Meet, and WhatsApp. However, there were also limitations to the implementation such as the lack of support for premium apps and subscriptions, and the constraints faced by students in remote areas with poor signal. In addition, the study also highlights the importance of ICT training for lecturers and providing more consistent engagement from lecturers to ensure the effectiveness of online learning and it is crucial to address the constraints and limitations of technology implementation in graduate programs to enhance the quality of distance learning experiences for students.

The Students' Perception of the Implementation of Technology Integration during Distance Learning

The finding aims to show the students' perception of the implementation of technology integration during distance learning. The questionnaire contained 10 statements of Likert Scale items with TAM motivation model indicators developed by Davis. The statements were classified into four aspects: ease of use, usefulness, intention to use, and actual use of the technology.

The integrated technologies which had been studied in this research were: 1) Syam-OK, 2) Zoom, 3) Google Meet, and 3) WhatsApp. The student's perceptions of their acceptance of these integrated technologies are presented below:

SYAM-OK

Table 3. Students' Frequency Response to SYAM-OK

(TAM Model)	STATEMENTS	Frequency Response, N= 60				
		<i>SD</i>	<i>D</i>	<i>N</i>	<i>A</i>	<i>SA</i>
		1	2	3	4	5
Ease of Use	1. I had no difficulty in using LMS SYAM-OK	0	9	15	26	10
	2. Overall SYAM-OK and its feature were easy to use.	2	8	10	26	14
	3. Using SYAM-OK during online classes made me easy to achieve the learning objective.	3	6	14	27	10
Usefulness	4. Using SYAM-OK made it easier for me to understand the learning material	0	6	11	31	12
	5. Using SYAM-OK increased my learning motivation	3	9	17	25	6
	6. Overall SYAM-OK had many benefits for supporting teaching and learning	2	5	17	27	9
Intention	7. I kept using SYAM-OK because its feature	3	7	23	22	5
	8. I want to keep using SYAM-OK in the future	2	10	22	21	5
Actual Use	9. I always used SYAM-OK as an LMS platform for learning and teaching instruction during online learning	3	7	15	22	13
	10. I am satisfied with the implementation of SYAM-OK during the Covid-19 pandemic.	4	6	16	28	6
Total		22	73	160	255	90
Percentage		3.7%	12.2%	26.7%	42.5%	15.0%

Based on Table 3, The results of the implementation of SYAM-OK showed a mix of opinions among the respondents. The majority of respondents (42.5%) agreed with the implementation, while a significant number of respondents (15%) strongly agreed with it. On the other hand, a considerable number of respondents (12.2%) disagreed with the implementation, and a smaller number of respondents (3.7%) strongly disagreed with it. The remaining 26.7% of respondents had a neutral stance. Based on the data, the researcher gave scores to students' responses and then presented the overall score below:

Table 4 Students' perception of SYAM-OK based on TAM criteria

Indicators	Score		Percent	Avg. %	Category
	Max	Mean			
<i>Ease of use</i>	900	654	73%	70%	Positive perception
<i>Usefulness</i>	900	647	72%		
<i>Intention of use</i>	600	396	66%		
<i>Actual use</i>	600	421	70%		

Based on the data analysis from Table 4, the researcher found that the students' perception of the acceptance of SYAM-OK was positive. It can be seen from the result of the average percentage score which was 70%. The ease of use of SYAM-OK was perceived positively by the students, with an average percentage score of 73%, and the usefulness aspect was perceived positively with an average score of 72%. The students also had a moderate intention to use SYAM-OK, with an average percentage score of 66%. The actual use of SYAM-OK was perceived positively, with an average percentage score of 70%.

The results of the perception analysis showed that the students had a positive overall perception of SYAM-OK. The average percentage scores for all dimensions were in the positive perception range (69-84%). These findings suggest that the students found SYAM-OK to be easy to use, and useful, and had a moderate intention to use it. Furthermore, they have used the system and had a positive perception of its actual use.

This result indicated that SYAM-OK as a Learning Management System (LMS) developed by Universitas Negeri Makassar was successfully implemented and well accepted by students. Tandirerung (2021) stated the SYAM-OK aims to provide an open knowledge platform for online learning and teaching. As she evaluated the performance of Syam-ok that Syam-ok had a high level of performance and quality as an LMS, demonstrating its effectiveness and efficiency for online education.

The positive perception of LMS Syam-ok demonstrated the role that technology can play in enhancing the learning experience. The ease of use and usefulness of the tool increased students' engagement and motivation, which can have a positive impact on their academic performance. The results also suggest that the tool is well-suited to meet the needs of the students, which can lead to increased satisfaction with their learning experience. It is important to note that the perceived ease of use and perceived usefulness of LMS Syam-ok are closely related. A tool that is easy to use is also more likely to be seen as useful. In turn, a tool that is seen as useful is more likely to be used, which can reinforce its perceived usefulness. The findings from the study suggest that LMS Syam-ok is successful in both facilitating ease of use and providing useful features, which can contribute to its overall positive perception among students. Moreover, the high intention to use the tool and actual usage of the tool also highlights the students' willingness to adopt new technology in their learning. This highlights the importance of continuous improvement and innovation in the field of educational technology to keep up with the changing needs and preferences of students.

Overall, the results of this study suggest that the implementation of LMS Syam-ok has been successful. It demonstrated that LMS Syam-ok has achieved its objective of providing a supportive and engaging learning environment for the students. The implication of this study showed that there was room for improvement for SYAM-OK to maximize its potential to give a

better teaching-learning experience for students and lecturers. The study has some limitation in demonstrating the implementation of SYAM-Ok and still need further research in this area.

Zoom

Table 5. Students' Frequency Response to Zoom

(TAM Model)	STATEMENTS	Frequency Response, N=60				
		<i>SD</i>	<i>D</i>	<i>N</i>	<i>A</i>	<i>SA</i>
		1	2	3	4	5
Ease of Use	1. I had no difficulty using Zoom	0	3	11	19	27
	2. Overall Zoom and its feature were easy to use.	0	1	4	28	27
	3. Using Zoom during online classes made me easy to achieve the learning objective.	1	3	13	24	19
Usefulness	4. Using Zoom made it easier for me to understand the learning material	1	3	14	29	13
	5. During using Zoom Application, it increased my learning motivation	3	4	16	29	8
	6. Overall Zoom had many benefits for supporting teaching and learning	0	2	7	33	18
Intention	7. I kept using Zoom because its feature	0	4	8	32	16
	8. I want to keep using Zoom in the future	1	2	9	28	20
Actual Use	9. I always used Zoom in the learning and teaching process during distance learning	0	1	3	26	30
	10. I was satisfied with the implementation of the Zoom app for distance learning during the Covid-19 pandemic.	0	2	12	24	22
Total		6	25	97	272	200
Percentage		1%	4.2%	16.2%	45.3%	33.3%

Based on the results presented in Table 5, showed that the implementation of Zoom received a mix of opinions from the respondents. The majority of respondents (45.3%) agreed with the implementation, while a significant number of respondents (33.3%) expressed strong agreement with it. However, a considerable number of respondents (4.2%) disagreed with the implementation, and a smaller number of respondents (1%) strongly disagreed with it. The remaining 16.2% of respondents were neutral in their stance toward the implementation of Zoom. Based on the data, the researcher gave scores to students' responses and then presented the overall score below:

Table 6 Students' perception of Zoom based on TAM criteria

Indicators	Score		Percent	Avg. %	Category
	Max	Mean			
<i>Ease of use</i>	900	748	83%	81.5%	Positive perception
<i>Usefulness</i>	900	692	77%		
<i>Intention of use</i>	600	484	81%		
<i>Actual use</i>	600	511	85%		

The results of the data analysis based on TAM model criteria showed that the Zoom implementation was perceived positively by the students. The average percentage score of 81.5% indicated a positive perception of the Zoom implementation. The ease-of-use dimension of Zoom was perceived positively, with an average percentage score of 83%. The usefulness dimension also received a positive perception with an average percentage score of 77%. Furthermore, the students had a positive intention to use Zoom, with an average percentage score of 81%. The actual use of Zoom was perceived positively by the students, with an average percentage score of 85%.

Zoom application had been widely used in the educational field due to its usefulness. The related study findings show that it can be easier for lecturers and students to interact synchronously in the learning process by applying the Zoom meeting application to learning during this pandemic (Gunawan et al., 2021). It was indicated also the use of the Zoom application in the Graduate Program because it was useful and easy to use.

The students' perception of the implementation of Zoom indicated that the application was well-received by the students. The positive perception of Zoom highlighted the increasing reliance on technology in the educational sector and the potential benefits that technology can bring to the learning experience. The ease of use and usefulness of the tool can increase students' engagement and motivation, which can have a positive impact on their academic performance. The results also suggest that Zoom is well-suited to meet the needs of the students, which can lead to increased satisfaction with their learning experience. It is worth noting that the high intention to use the tool and actual usage of the tool highlights the students' willingness to adopt new technology in their learning. This highlights the importance of continuous improvement and innovation in the field of educational technology to keep up with the changing needs and preferences of students.

Overall, the implementation of Zoom has been successful in meeting the needs of the students. The positive perception of the tool highlights the importance of technology in enhancing the learning experience and the potential for further research in this area. The results can also inform the development and implementation of other educational technologies in the future.

Google Meet

Table 7. Students' Frequency Response to Google Meet

TAM Model	STATEMENTS	Frequency Response, N=60				
		SD	D	N	A	SA
		1	2	3	4	5
Ease of Use	1. I had no difficulty using Google Meet	1	9	18	18	14
	2. Overall Google Meet and its feature were easy to use.	1	8	22	20	9
	3. Using Google Meet during online classes made me easy to achieve the learning objective.	3	13	23	17	4
Usefulness	4. Using Google Meet made it easier for me to understand the learning material	3	11	25	16	5
	5. During using Google Meet, it increased my learning motivation	4	12	26	15	3
	6. Overall Google Meet had many benefits for supporting teaching and learning	1	8	21	21	9
Intention	7. I kept using Google Meet because its feature	2	9	27	17	5
	8. I want to keep using Google Meet in the future	4	10	23	16	7
Actual Use	9. I always used Google Meet in the learning and teaching process during distance learning	7	25	22	5	1
	10. I am satisfied with the implementation of Google Meet	6	13	22	17	2
Total		32	118	229	162	59
Percentage		5%	20%	38%	27%	10%

Based on the results presented in Table 7, it can be observed that the implementation of Google Meet received a mix of opinions from the respondents. The majority of respondents (27%) agreed with the implementation, while a significant number of respondents (10%) expressed strong agreement with it. However, a considerable number of respondents (20%) disagreed with the implementation, and a smaller number of respondents (5%) strongly disagreed with it. The remaining 38% of respondents were neutral in their stance toward the implementation of Google Meet. Based on the data, the researcher gave scores to students' responses and then presented the overall score below:

Table 8. Students' perception of Google Meet based on TAM criteria

Indicators	Score		Percent	Avg. %	Category
	Max	Mean			
<i>Ease of use</i>	900	516	68%	63.5%	Moderate perception
<i>Usefulness</i>	900	403	62%		
<i>Intention of use</i>	600	370	67%		
<i>Actual use</i>	600	180	57%		

The data analysis in Table 8 reveals that the implementation of Google Meet was perceived moderately by the students, with an average percentage score of 63.5%. The ease-of-use dimension of Google Meet received a moderate perception, with an average percentage score of 68%. The usefulness dimension was also perceived moderately, with an average percentage score of 62%. However, the students indicated a positive intention to use Google Meet, with an average percentage score of 67%. In contrast, the actual use of Google Meet was perceived negatively by the students, with an average percentage score of 57%. Notably, the actual use dimension received the lowest score among all dimensions.

The students' perception of the implementation of Google Meet reveals that the technology is well received but with some limitations. The respondents perceived the implementation of Google Meet moderately, with the actual use dimension as a virtual meeting classroom, receiving the lowest score compared to the student's perception of Zoom. The positive intention to use Google Meet suggests that students had an interest in using the system, but their experience with the actual use of the system was not entirely satisfactory. These findings suggest that there may be some areas of improvement for the implementation of Google Meet to better meet the communication needs of the users.

Furthermore, the study showed the opposite result to the research finding of Ulwiah et al. (2022), that Google Meet was perceived very positively by most students as an online learning tool. The students reported that Google Meet had good features that supported their learning, such as interactive and engaging discussions with lecturers and peers. They also appreciated that Google Meet enabled them to continue their micro-teaching practice despite the challenges of offline classes.

Overall, the results of this study suggest that the implementation of Google Meet has been successful in meeting the needs of the students to some extent, but there is still room for improvement. The positive perception of the tool underscores the significance of technology in enhancing the learning experience and the need for further research in this field. The findings can inform the development and implementation of other educational technologies in the future.

WhatsApp

Table 9. Students' Frequency Response to WhatsApp

(TAM Model)	STATEMENTS	Frequency Response, N=60				
		<i>SD</i>	<i>D</i>	<i>N</i>	<i>A</i>	<i>SA</i>
		1	2	3	4	5
Ease of Use	1. I had no difficulty in using WhatsApp as a group class and course instruction during online class	1	1	5	12	41
	2. Overall WhatsApp and its feature were easy to use.	0	2	5	11	42
	3. Using WhatsApp during online classes made me easy to achieve learning objectives.	3	6	22	9	20
Usefulness	4. Through WhatsApp discussion made it easier for me to understand the learning material	1	3	6	12	38
	5. During using WhatsApp Application, it increased my learning motivation	6	8	12	17	17

	6. Overall WhatsApp had many benefits for supporting teaching and learning	3	6	8	17	26
Intention	7. I kept using WhatsApp because its feature	0	8	12	18	22
	8. I want to keep using WhatsApp in the teaching-learning process in the future	0	1	11	17	31
Actual Use	9. I always used WhatsApp in the learning and teaching process during distance learning as media learning instruction	0	5	8	18	29
	10. I am satisfied with the implementation of WhatsApp group chat for supporting distance learning during the Covid-19 pandemic.	2	7	11	17	23
Total		16	47	100	148	289
Percentage		2%	8%	17%	25%	48%

Based on Table 9, the findings of the implementation of WhatsApp show a mix of opinions among the respondents. The majority of respondents (48%) strongly agreed with the implementation, while a significant number of respondents (25%) agreed with it. On the other hand, a considerable number of respondents (8%) disagreed with the implementation, and a smaller number of respondents (2%) strongly disagreed with it. The remaining 17% of respondents had a neutral stance. Based on the data, the researcher gave scores to students' responses and then presented the overall score below:

Table 10 Students' perception of WhatsApp based on TAM criteria

Indicators	Score		Percent	Avg. %	Category
	Max	Mean			
<i>Ease of use</i>	900	761	85%	81.25%	Positive perception
<i>Usefulness</i>	900	474	79%		
<i>Intention of use</i>	600	471	79%		
<i>Actual use</i>	600	741	82%		

The data analysis in Table 10 indicates that the implementation of WhatsApp was perceived positively by the students. The overall positive perception with a score of 81.25%. The ease-of-use aspect of WhatsApp was perceived positively, with an average percentage score of 85%. The usefulness and the intention to use aspect of WhatsApp also received a positive perception, with both getting average percentage scores of 79%. The actual use of WhatsApp was also perceived positively by the students, with an average percentage score of 82%.

The student's perception of the implementation of WhatsApp in the graduate program of the Universitas Negeri Makassar shows a positive perception. This high level of acceptance and usage suggests that the technology is well-suited to meet the students' needs and can contribute to improved communication and collaboration among students, as well as increased engagement and motivation. WhatsApp was successfully implemented and widely accepted by the students because WhatsApp was a popular messaging application widely used by students and teachers for communication and collaboration purposes and WhatsApp had many useful features such as

voice notes, video calls, group chats, file sharing, and status updates that could facilitate interaction and feedback among learners and teachers (Munir et al., 2021). Because of those features, WhatsApp was widely used in the graduate program of Universitas Negeri Makassar to support teaching-learning process to support teaching-learning process. The students mostly used WhatsApp groups to interact with their classmates and lecturers.

Furthermore, the results of this study were consistent with findings from other research journals that have investigated the use of technology in education such as Lee and Munir et al. found that most students had positive views on the use of WhatsApp for online learning because it was easy to use, convenient, interactive, engaging, and supportive (Lee et al., 2023; Munir et al., 2021). This is echoed in results, where students rated WhatsApp as having a high level of perceived ease of use and usefulness, indicating a strong potential for the tool to enhance their learning experiences. Additionally, other research has shown that technology can play a critical role in promoting communication and collaboration among students (Haleem et al., 2022). The results support these findings, with a high level of actual usage and intention to use WhatsApp among students, suggesting that the technology is well-suited to support these goals.

Overall, this study revealed that WhatsApp was a useful and effective tool for online learning in the graduate program of Universitas Negeri Makassar. The students had a positive perception of WhatsApp and used it frequently for communication and collaboration with their classmates and lecturers. However, further research is needed to explore how WhatsApp can be integrated with other learning platforms and how it can enhance the quality of learning outcomes. WhatsApp is not only a popular messaging application but also a potential pedagogical tool that can enrich online learning experiences.

The Students' Motivation during the Implementation of Technology Integration

The finding aims to show student motivation toward the implementation of technology during distance learning. The questionnaire contained 10 statements of Likert Scale items with ARCS motivation model indicators. The statements were classified into four categories; attention, relevance, confidence, and satisfaction. The results of the data on student motivation were shown in the table below:

Table 11 Students' Motivation Frequency Response

ARCS Model)	STATEMENTS	Frequency Response, N=60				
		<i>SD</i>	<i>D</i>	<i>N</i>	<i>A</i>	<i>SA</i>
		1	2	3	4	5
Attention	1. I had been motivated to learn during the pandemic because of the interesting learning process of online learning	0	10	17	27	6
	2. Lecturers provided good teaching materials to attract students' interest in learning.	1	11	21	22	5
	3. I was interested in online learning because the technologies that have been implemented in Graduate Program are very helpful.	0	7	15	31	7
Relevance	4. Lecturers used ICT Technology /applications that are relevant to the material being taught.	0	5	17	29	9

	5. Lecturers used teaching materials that are suitable for achieving learning objectives.	1	3	16	31	9
Confidence	6. I feel that I have successfully achieved learning goals during my online class	2	3	8	36	11
	7. I am sure and confident that the knowledge gained during that online learning will be useful in my career	0	1	14	33	12
Satisfaction	8. I am satisfied with the lecturers' teaching performance during the online class.	0	4	19	29	8
	9. I am satisfied with the feedback given by the lecturers during the learning process.	0	6	19	25	10
	10. I enjoyed the online learning experience at the UNM Graduate Program during covid-19	0	3	12	23	22
	Total	4	53	158	286	99
	Percentage	1%	9%	26%	48%	16%

Based on Table 11, The research finding showed a mix of opinions among the respondents toward the attitude of motivation during the implementation of technology integration in distance learning. The majority of respondents (48%) responded with agree statement, while a significant number of respondents (26%) strongly agree with it. On the other hand, a considerable number of respondents (9%) disagreed opinion, and a smaller number of respondents (1%) strongly disagreed with it. Based on the data, the researcher gave scores to students' responses and then presented the overall score below:

Table 12 Students' Motivation based on ARCS Model

Indicators	Score		Percent	Avg. %	Category
	Max	Mean			
<i>Attention</i>	900	626	70%	74.5%	High Motivation
<i>Relevance</i>	600	446	74%		
<i>Confidence</i>	600	467	78%		
<i>Satisfaction</i>	900	684	76%		

The result on students' motivation during online learning indicated that students had a high level of motivation, with an overall score of 74.5%. Students' motivation was high in classification from all aspects of the ARCS model. This was a positive sign for the effectiveness of online learning, as students who were engaged and motivated were more likely to be confident in their ability and satisfied with their studies. The result was in line with other research studies that explored students' motivation in online learning. For example, a study by Baber (2020) found that interaction in the classroom, instructor knowledge, the relevance of course structure, and satisfaction with online classes were important factors that influenced their motivation and overall learning outcomes.

Additionally, the high level of motivation in terms of attention further underscores the positive impact of online learning. Students who are highly motivated to pay attention in class are more likely to actively participate in the learning process, to be engaged in the material, and

to avoid boredom in learning during online classes. The relationship between motivation and boredom has been explored in previous studies. For instance, Susana et al. (2021) found that students with high levels of motivation tend to lose interest in tasks that are repetitive or monotonous, which negatively affects their performance and learning outcomes. This study's results are consistent with this result finding, suggesting that high-motivated students may benefit from more varied and challenging activities that stimulate their attention.

Furthermore, students also need to maintain their high confidence in learning. Students who have high confidence in their ability to learn online are more likely to persevere through challenges and persist in their studies. In line with a research finding by Irianti (2021) that personalized classroom environment, and relevant courses, make students feel confident and have their own goals were the factors that help students to increase their learning motivation.

Overall, the results suggested that students have high levels of motivation during online learning, with a particular emphasized the aspects of attention, relevance, confidence, and satisfaction. This study implies that educators should design and deliver online courses that capture students' attention, relate to their goals, and needs, enhance their confidence in their abilities, and provide them with satisfying feedback and outcomes.

CONCLUSIONS

The study examined the successful implementation of technology integration during distance learning in the Graduate Program of Universitas Negeri Makassar. The researcher found that four technologies were used by students and lecturers: Zoom, Syam-ok, WhatsApp, and Google Meet. The study revealed that the implementation had some challenges such as connection issues and a lack of institutional support.

The study also employed the Technology Acceptance Model (TAM) to evaluate the students' perception of the implementation of technology integration during distance learning. The results showed that students had an overall positive perception of the technology integration, with an average score of 74.1%. Three integrated technologies; Zoom, Syam-OK, and WhatsApp received positive perception, while only Google Meet received a moderate perception score. Furthermore, the student's motivation during the technology integration was assessed based on the ARCS criteria, and the results indicated that students had a high level of learning motivation, with an average percentage score of 74.5%.

In conclusion, the study provides evidence of the successful implementation of technology integration during distance learning in the Graduate Program of Universitas Negeri Makassar. The study shows that the integration of technology during distance learning can be an effective tool to enhance the learning experience of the students. The key determinants of the effectiveness of technology integration in distance learning were the student's perception and motivation toward the use of technology. Positive attitudes and high levels of motivation can enhance students' engagement, satisfaction, and learning outcomes. Hence, universities need to provide adequate support and resources to facilitate the adoption and implementation of technology integration in distance learning. This may include providing technical assistance, training sessions, feedback mechanisms, incentives, and recognition for students who use technology effectively.

REFERENCES

- Archer, K., Savage, R., Sanghera-Sidhu, S., Wood, E., Gottardo, A., & Chen, V. (2014). Examining The Effectiveness of Technology Use in Classrooms: A Tertiary Meta-analysis. *Computers & Education*, 78, 140–149. <https://doi.org/10.1016/j.compedu.2014.06.001>
- Aşıksoy, G., & Özdamlı, F. (2016). Flipped Classroom Adapted to the ARCS Model of Motivation and Applied to a Physics Course. *EURASIA Journal of Mathematics, Science and Technology Education*, 12(6). <https://doi.org/10.12973/eurasia.2016.1251a>
- Baber, H. (2020). Determinants of Students' Perceived Learning Outcome and Satisfaction in Online Learning during the Pandemic of COVID19. *Journal of Education and E-Learning Research*, 7(3), 285–292. <https://doi.org/10.20448/journal.509.2020.73.285.292>
- Best, J. W. (1981). *Research in education* (4th ed). Prentice-Hall.
- Chang, Y.-H., Chao, P.-C., & Fang, R.-J. (2019). ARCS and RGT Integrated High-Efficiency E-Books. *Education Sciences*, 9(2), 94. <https://doi.org/10.3390/educsci9020094>
- Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.
- Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- Degang, M. (2010). *Motivation toward English Language Learning of the Second Year Undergraduate Thai Students Majoring in Business English at English –Medium University*. Srinakharinwirot University.
- Dockstader, J. (2008). *Teachers of the 21st century know the what, why, and how of technology integration*. <http://the-tech.mit.edu/Chemicool/>
- Gay, L. R., Mills, G. E., & Airasian, P. W. (2011). *Educational research: Competencies for analysis and applications*. Pearson Higher Ed.
- Gilakjani, A. P. (2017). A Review of the Literature on the Integration of Technology into the Learning and Teaching of English Language Skills. *International Journal of English Linguistics*, 7(5), 95. <https://doi.org/10.5539/ijel.v7n5p95>
- Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*, 3, 275–285. <https://doi.org/10.1016/j.susoc.2022.05.004>
- Hennessy, S., Ruthven, K., & Brindley, S. (2005). Teacher perspectives on integrating ICT into subject teaching: Commitment, constraints, caution, and change. *Journal of Curriculum Studies*, 37(2), 155–192.
- Irianti, N. (2021). *Students' Motivation in Learning English in A Rural Area of Toraja Utara South Sulawesi*. State University of Makassar.
- Keller, J. M. (2010). The Arcs Model of Motivational Design. In *Motivational Design for Learning and Performance: The ARCS Model Approach* (pp. 43–74). Springer US. https://doi.org/10.1007/978-1-4419-1250-3_3

- Lee, C. E. (Catherine), Chern, H. H., & Azmir, D. A. (2023). WhatsApp Use in a Higher Education Learning Environment: Perspective of Students of a Malaysian Private University on Academic Performance and Team Effectiveness. *Education Sciences*, 13(3), 244. <https://doi.org/10.3390/educsci13030244>
- Munir, S., Erlinda, R., & Afrinursalim, H. (2021). Students' Views on the Use of WhatsApp during Covid-19 Pandemic: A Study at IAIN Batusangkar. *IJELTAL (Indonesian Journal of English Language Teaching and Applied Linguistics)*, 5(2), 323. <https://doi.org/10.21093/ijeltal.v5i2.740>
- Pedro, N. S., & Kumar, S. (2020). Institutional Support for Online Teaching in Quality Assurance Frameworks. *Online Learning*, 24(3). <https://doi.org/10.24059/olj.v24i3.2309>
- Pratama, H., Azman, M. N. A., Kassymova, G. K., & Duisenbayeva, S. S. (2020). The Trend in Using Online Meeting Applications for Learning During the Period of Pandemic COVID-19: A Literature Review. *Journal of Innovation in Educational and Cultural Research*, 1(2), 58–68. <https://doi.org/10.46843/jiecr.v1i2.15>
- Prestiadi, D., Maisyaroh, Arifin, I., & Bhayangkara, A. N. (2020). Meta-Analysis of Online Learning Implementation in Learning Effectiveness. *2020 6th International Conference on Education and Technology (ICET)*, 109–114. <https://doi.org/10.1109/ICET51153.2020.9276557>
- Rahmadi, I. F. (2021). Teachers' Technology Integration and Distance Learning Adoption Amidst the Covid-19 Crisis: A Reflection for the Optimistic Future. *Turkish Online Journal of Distance Education*, 26–41. <https://doi.org/10.17718/tojde.906472>
- Sakkir, G., Dollah, S., & Ahmad, J. (2021). E-Learning in COVID-19 Situation: Students' Perception. *EduLine: Journal of Education and Learning Innovation*, 1(1), 9–15. <https://doi.org/10.35877/454RI.eduline378>
- Schmid, R. F., Bernard, R. M., Borokhovski, E., Tamim, R. M., Abrami, P. C., Surkes, M. A., Wade, C. A., & Woods, J. (2014). The Effects of Technology Use in Postsecondary Education: A Meta-Analysis of Classroom Applications. *Computers & Education*, 72, 271–291. <https://doi.org/10.1016/j.compedu.2013.11.002>
- Susana, H., Afidah, M., Wahyuni, S., & Khudri Sembiring, A. (2021). Analisis motivasi belajar siswa dalam pembelajaran menggunakan media google classroom. *Bio-Lectura*, 8(1), 71–78. <https://doi.org/10.31849/bl.v8i1.6583>
- Tandirerung, V. A. (2021). Analisis Performansi LMS SYAM OK dalam Pembelajaran di UNM. *Jurnal MediaTIK*, 4(1), 42. <https://doi.org/10.26858/jmtik.v4i1.19967>
- Ulwiah, P., Atmowardoyo, H., & Tahir, M. (2022). *THE STUDENTS' PERCEPTION TOWARDS THE USE OF GOOGLE MEET IN MICRO TEACHING*. 1(1).
- Venkatesh, Morris, Davis, & Davis. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*, 27(3), 425. <https://doi.org/10.2307/30036540>
- Weda, S., Atmowardoyo, H., Pasenrigading, A. R., & Sakti, A. E. F. (2022). Anxiety and Associated Factors with Online Learning in the COVID-19 Pandemic among the EFL

Students at Higher Institution in Indonesia. *International Journal of Scientific and Management Research*, 05(02), 223–235. <https://doi.org/10.37502/IJSMR.2022.5215>

Weston, T. (2004). Formative Evaluation for Implementation; Evaluating Educational Technology Application and Lessons. *American Journal of Evaluation*, 51–64.

Xu, Z., Banerjee, M., Ramirez, G., Zhu, G., & Wijekumar, K. (Kay). (2019). The Effectiveness of Educational Technology Applications on Adult English Language Learners' Writing Quality: A Meta-Analysis. *Computer Assisted Language Learning*, 32(1–2), 132–162. <https://doi.org/10.1080/09588221.2018.1501069>