



## Use of Technology in Active Learning: Increasing Student Interaction and Engagement

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### ABSTRACT

In today's digital age, the world is faced with rapid technological advances. It is undeniable that education today must be able to keep up with these advances. This technology can be utilized in various forms of media such as WA groups, classrooms, zoom and so on for distance learning facilities. However, many schools have not fully utilized technology. Moreover, currently there are many cases of students being less active, less interacting and involved during distance learning. So this research emerges to answer this problem with a focus on the utilization of technology in an effort to increase student interaction and involvement in active learning. The purpose of this research is to investigate the impact of technology utilization in active learning. Then to find out the extent to which technology can encourage student interaction. Through technology, it is also possible to measure the level of student engagement in distance learning. The research method used is quantitative method. Data was obtained through distributing questionnaires to students online utilizing google form. The results obtained from respondents during the distribution of questionnaires were then processed into an application called SPSS with the oneway anova test. After processing the data, the researcher then presents the data in the form of a table containing the response rate of the respondents. The results of this study show that technology has a positive impact. Technology brings active learning. Learning is more fun, interesting and not boring. Then technology is able to increase interaction between students and students, student interaction with learning so that learning is effective. The conclusion of the research is that technology is an important tool used in the fields of life today such as government, economy, social, media, including education. The technology is very much needed in the world of education. The integration of technology wisely in the context of active learning is able to increase student interaction and involvement so as to facilitate the learning process so that educational goals are achieved and the quality of education increases.

**Keywords:** *Active Learning, Distance Learning, Student Interaction*

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## INTRODUCTION

The world today is experiencing great progress that is very rapid and significant in all aspects of human life (Woolley et al., 2023). This progress is none other than the result

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of the high level of technological advancement in the modern era of the 21st century (Shao et al., 2021). Technology is no stranger to being heard and talked about by everyone regardless of age limitations from children, teenagers, adults, even from the elderly. So high is the level of technology that is talked about in various worlds today because of the many changes that are felt from the existence of this technology which brings changes in lifestyles, styles and ways of learning, ways of communicating and ways of working in every field of human life (Dwivedi et al., 2022) . The uniqueness of the perceived technology is its speed, which makes all work and activities can be completed quickly (Hasegawa et al., 2020). Because in this modern era, everything is required to be fast and timely. Access to information is also getting easier. It makes it easier for people to interact and communicate with others even though they are hindered by distance and time. In addition, technology is very interesting and fun to use so it cannot be denied that humans really need and cannot be separated from technology.

Technology is needed and its existence is very important in the life of the 5.0 era (Gill et al., 2020). Its existence is very supportive of various human activities in a country such as government, social and economic, cultural and in terms of education (Liu et al., 2020), (W. Bao, 2020). Education is one of the determinants of a country's success (Al-Okaily & Al-Okaily, 2022). Education is a teaching process carried out by an educator to students (Mishra et al., 2020). Where the expected goal of this education is to form individuals to have intellectual abilities, develop skills and social, spiritual values in preparing them to face future challenges (Schuelka & Engsig, 2022), (Conde et al., 2019). There are demands in the world of education to always keep up with technological developments in order to improve the quality of education in the learning process (Zafar et al., 2020). Therefore, various countries are trying to integrate technology in learning because changes in the education system and innovation are needed so as not to be left behind from the progress influenced by technological developments.

Learning has always been identical to being done in a classroom. The classroom in question here is a space in which there are a number of students, teachers, there are chairs and tables and blackboards. The way the teacher explains learning to students through lecture methods, discussions and group learning activities. The tools or facilities used by the teacher are in the form of a blackboard and package books or other printed books. Then to conduct an assessment, written exams or oral quizzes are carried out. This kind of learning is called conventional learning (Bui et al., 2020). In this method, students are often made only as objects because they only receive information from the teacher, students only remember information rather than understanding deeply. So that students tend to be passive, less active, less motivated in learning activities (Morrell et al., 2021). This certainly causes a lack of student involvement, interaction between students and each other. The results obtained, limited potential to develop critical skills, creativity and in solving a problem.

Conventional learning is currently less suitable to be applied because it is too passive and learning media is not diverse which allows students to get bored learning and student activeness and involvement will decrease (C. Li, 2021). The demands of today

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require learning to be carried out in a modern rather than traditional manner in accordance with the digital era (Villarreal-Villa et al., 2019). Learning is not always done in the classroom. There are times when education is conducted remotely due to certain factors that result in online learning. Choosing the right media is one of the keys to success in online learning (Chakraborty et al., 2020). Learning media is an important thing that can support the process of teaching and learning activities. Here the role of the teacher is very strategic in the smooth learning process. A great teacher is a teacher who is good at choosing the right learning media and according to the needs of students because it is very important to increase interest in learning, activeness and student involvement (Krukowski et al., 2021). Teachers are now required to innovate in teaching methods so as not to cause student boredom. Therefore, teachers must be literate with technological developments in the era of revolution 5.0.

Based on the results of the exposure, the problem is identified that technology can be integrated into distance learning. The utilization of technology in learning is a solution for teachers and students so that they can still carry out learning even though the situation is far apart. Technology in the field of education is in the form of using tools in the form of applications and platforms to facilitate the teaching and learning process (Chick et al., 2020). The various types of technology can be software, hardware, internet, web-based learning, game-based learning, augmented reality, virtual reality and so on (Marchal et al., 2019). As for if in the form of applications that can be used such as Whatsapp Group, Google Classroom, Zoom, or Google Meeting. Through technology students can access various information quickly (Estacio et al., 2019). In addition, teachers as teachers can be creative in delivering material in an interesting and varied way so that it is not monotonous which makes students interested and excited about learning. With the existence of technology, students and teachers will be more free and very flexible (Pedicini et al., 2020).

Learning techniques used in educational settings have evolved as a result of digital technology. In the past, student learning was often passive due to the teacher's lecture style (Zeng et al., 2020). But now more interactive, collaborative and problem-based learning approaches are available thanks to this technology. Utilizing a variety of media can encourage active student engagement, hands-on problem solving and increasingly critical thinking, all of which can help students learn and develop new skills. In the past, printed books were often the main source of learning (Yoo, 2022). Not with today's technology, information can be accessed in various ways, namely through e-books, the internet, or in the form of learning videos (Sayers et al., 2022). Students can learn by utilizing various learning media in the form of sound, learning videos, animations and texts that really help students absorb and understand information easily (Xiao et al., 2020).

The reason why we raise this issue is because we want to analyze and reveal how important digital technology is in learning, especially distance learning. Through this research, the researcher wants to ensure that all students get access to learning. Through online learning platform or application, students can follow the learning program without having to attend the class directly. Students can discuss with fellow students, discuss with

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teachers or with anyone through online discussion forums which will increase student engagement, increase student knowledge, increase curiosity and increasingly think critically (Gewirtz-Meydan et al., 2019). In addition, it also allows students to learn independently, organize their learning methods well and repeat material that is considered difficult until they understand it so that students' ability to understand their own progress increases. Teachers can measure the extent of students' abilities by conducting quizzes online.

The method that researchers use in this research is quantitative method. The structured method begins with collecting, analyzing and processing data properly. Researchers made questions to students in a questionnaire distributed through google form. For more in-depth information, researchers also conducted interviews directly with students in one of the high schools. The data was collected one by one from respondents who had filled out the questionnaire and who had completed the interview. The data obtained is presented in tabular form. In this case the researcher used SPSS to analyze the data that had been obtained. The reason researchers choose to use SPSS is because the resulting data is easy to read and understand. In addition, the data generated is very valid and relevant. So that the data obtained can help researchers minimize errors in calculations.

The purpose of this research is to identify and understand the positive impact that will be caused if a learning is carried out through the use of technology and how much benefit is obtained (Loderer et al., 2020). Because essentially the quality of education depends on the quality of learning. Good learning must of course be supported by sophisticated technology (Fridman et al., 2019). This makes it a challenge for every educator to be able to be literate with technology so that learning is more effective and efficient. Improve the quality of education and increase learning outcomes. Furthermore, it aims to know the ways technology can increase student interaction and involvement in active learning. Technology should also be able to contribute to producing a generation that is able to compete in the future. Nevertheless, education should not ignore the challenges that may arise from the existence of this technology. The researcher's biggest hope is that this article can be useful for the general public, especially for the world of education and can be a consideration for further researchers.

## **RESEARCH METHODOLOGY**

### **Research Design**

The research method directs what systematic steps the researcher will take to be able to collect various kinds of data which will then be analyzed and presented in order to provide answers to the research conducted so as to achieve the research objectives (Dash & Paul, 2021). Research methods are indispensable in the context of the success of a study, developing various sciences in more depth. The research conducted by researchers is using a quantitative research design. Quantitative research method is a scientific approach used to collect and analyze data in the form of numbers (numbers) or numerical data (Bauer et al., 2021). Data in the form of numbers or numbers will certainly be easily

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measured clearly, real, tested and reliable. The data collected through this quantitative method can then be measured using statistical, mathematical or computational techniques. This method has its own characteristics that are specific, clear, detailed, and static (Wu et al., 2020). Today's fast-growing technology can be used as learning media and can be developed through quantitative methods. Quantitative research design is very helpful for researchers to know and evaluate how much technology can be utilized in active learning more accurately and objectively. This research uses two types of variables, namely dependent variables and independent variables. Where this independent variable means the variable that will be measured as well as observed during the research, while the dependent variable is the result that will be expected from a study. The dependent variables used here are student interaction and student engagement while the independent variable is the use of technology in active learning. All data obtained will be processed through SPSS with the One Way Anova method. The purpose of this research is to find out, study, utilize, optimize and solve the problems being discussed in the research.

### **Research Setting and Participants**

The research procedure carried out by the researcher began by distributing a questionnaire containing questions through an online google form link. The questions that the researcher asked were related to the utilization of technology in active learning: improving student interaction and engagement. The questions consisted of two variables: student interaction and engagement and technology utilization in learning. Each group contains 10 questions that will be the main focus in determining the research results. The possible answers that the researcher gave to the respondents consisted of four parts, namely "disagree", "disagree", "agree" and "strongly agree" in the form of multiple choice options. In this questionnaire distribution activity, various questions were answered by several students at the school who had used technology in learning. Then the results obtained from distributing the questionnaire are that there are around 20 people who have answered the questions sent via the google form link. In general, these students agree with the use of technology in learning because through technology students are more eager to learn which makes them more active and involved in learning which then has a big effect on student learning outcomes. And a small proportion of students disagree with learning using technology because they feel learning becomes ineffective. In addition, researchers also conducted interviews with teachers and students during the learning process. Researchers chose high school educational institutions located in Pasaman Regency. Researchers first looked for information on which universities have implemented technology in learning because this is important to get accurate information. The choice of university that was finally determined by the researcher was at Samudra University Langsa, Aceh. The population of this study were all students of Universitas Samudra Langsa, Aceh. The sample was 4th semester students of class unit 1 and unit 2 who were taken randomly in 2 classes, namely class 1 and class 2. The students chosen were of course those who were actively involved in learning activities and knew the benefits of technology. Researchers also conducted further interviews with students so that researchers gained broader and deeper knowledge about the use of these technologies.

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### **Ethical Considerations**

In conducting this research, researchers pay close attention and adhere to the research code of ethics. This research activity was carried out honestly in obtaining various data and openly reporting the data that had been obtained. This honesty certainly makes correspondents trust and believe that the data is indeed tested for accuracy, without any data manipulation and can be accounted for (Lajoie & Landry, 2022). Before distributing questionnaires to respondents, the researcher first asked for permission and the respondent's willingness to fill out the questionnaire. Furthermore, the researcher explained to the respondent the procedure and how to fill out the questionnaire while ensuring the respondent's willingness to fill out the questionnaire that had been provided in the google form. No less important, researchers strictly uphold applicable legal regulations regarding maintaining and protecting data privacy. This is important so that the confidentiality of respondent data with one another, both teachers and students, is not easily known and identified so that it is strictly protected without harming the respondent. Data can only be accessed by the researcher concerned and other authorized researchers. The next ethical consideration is that researchers ensure that all students have access to the technology used in learning. The disparity in the use of technology should be addressed as all learners have access to technology regardless of their social status and different backgrounds. It is also very important to tell learners that in using technology, they must pay attention to the ethics that they should not cheat and plagiarize other people's work. The researcher also noted that the use of technology in learning has significant benefits to the advancement of education and ensures long-term beneficial implications to society and future education.

### **Data Collection and Analysis**

Data collection conducted by researchers took place during September in the odd semester of 2023. The distribution of the google form questionnaire begins when you have obtained permission from the school and students. The questionnaire distribution began on September 20-30, 2023 to participants where the questionnaire contained 20 questions that the researcher had made beforehand. The questionnaire was divided into two groups where the first 10 questions were submitted to class 12 A while the next 10 questions were submitted to class 12 B. The data that has been collected based on the respondents' answers is then summed up the percentage in each question where the percentage results are first processed into excel and then processed into the SPSS application. The total percentage of the two classes is presented in the table as an overview of the data conclusions from distributing questionnaires through the previous google form.

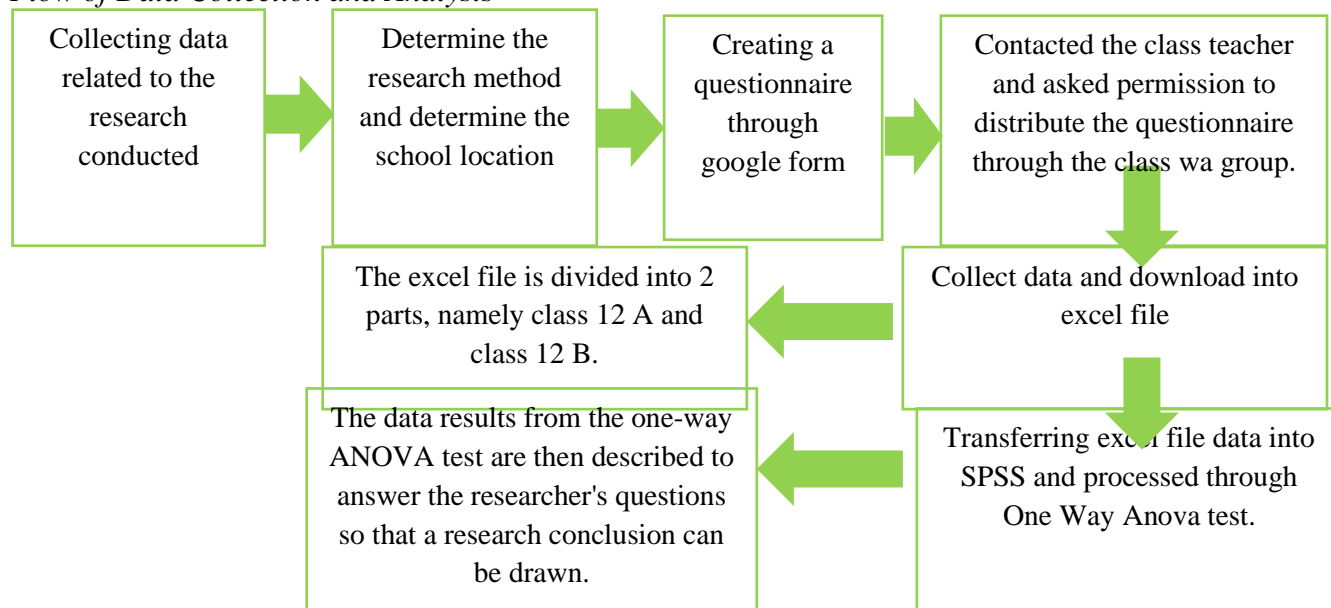
**Table 1.**

*Student Class List*

No	Department	Number of Participants	Percentage (%)
1.	Unit 1	10	50%
2.	Unit 2	10	45%

**Figure 1.**

*Flow of Data Collection and Analysis*



The data that has been obtained through questionnaire distribution activities will be imported into the SPSS application which the researcher then processes with the One Way Anova test. Anova One Way is used to compare the averages of the questionnaires obtained. The significance level of the data test through Anova One Way is 0.05 to get the difference between Class 12 A and Class 12 B. The results of the Anova One Way test will provide information that the utilization of the questionnaires is significant. The Anova One Way test results will provide information that the utilization of technology in active learning has a significant effect on student interaction and engagement. The percentages that have been obtained between the two classes have been listed in table 1 above.

## **RESULT AND DISCUSSION**

### **The use of technology in learning can increase student engagement**

In the statement stating that learning using technology can make students participate freely and actively during discussions, the most respondents were found at a percentage of 60% in the agree category, and the least respondents were found in the strongly agree category with a percentage of 5%, in the category of disagreeing respondents were found with a percentage of 20%, while in the disagree category a percentage of 15% was obtained. When summing up all these percentages, students who agree with the use of technology into learning have a percentage of 65% and the rest is the percentage of the categories of disagree and disagree. In general, students agree more with the use of technology in learning because it can make students more free to participate in learning or discussion when they want to express their opinions so that students' activeness arises which makes learning not rigid.

In the next statement regarding the use of technology in learning can increase student interest in learning. In this statement, the most respondents were still in the agree category with a percentage of 70% and in the strongly agree category a percentage of 15% was

obtained. This means that if you add up the percentages, you get 85%. In general, three quarters of students agree with the statement. Respondents who answered in the disagree category obtained a percentage of 15%, while in the disagree category there were no answers from respondents. So overall, students feel that their interest in learning increases if technology is presented because learning with technology is more exciting and fun for students. Meanwhile, students who disagree with the statement that with the presence of technology there is a possibility of misuse by students so that it has an impact on their lack of interest in learning.

#### **Make it easy for students to access materials from various learning resources**

Students find it easier to access learning materials from various sources with the help of technology, this statement obtained answers from 10 respondents with a percentage of 65% in the agree category, in the strongly agree category with a percentage of 20%. The percentage in the disagree category is only 15% while in the disagree category there are no answers from respondents. So almost three-quarters of students already feel that technology really helps students to access various information from various sources. It can be concluded that 85% of students prove that they find it easier to find subject matter from various sources such as textbooks which are not only limited to books provided by the school library but more than that, subject matter can be obtained from electronic books such as e-books, digital libraries that can be accessed anywhere, and can also be through browsing on e-learning websites. For students who disagree with this statement, maybe some of them have not utilized technology in learning so that their sources of information are only sourced from books given by lecturers or those in universities.

Table 2.

Percentage of questionnaires obtained from the answers of respondents of class 12 A

No	Question	Answer			
		Strongly Agree	Agree	Disagree	Strongly Disagree
1.	The use of technology in learning can increase students' interest in learning	15%	70%	15%	0%
2.	Technology helps students understand the subject matter easily	10%	70%	20%	0%
3.	Students feel more involved in learning when technology is used	15%	45%	40%	0%
4.	The use of technology makes the learning process more interesting and fun	15%	60%	20%	5%
5.	Students are more motivated to learn with the help of technology	10%	65%	25%	0%
6.	With the presence of technology, the interaction between fellow students is quite good	5%	50%	40%	5%
7.	Technology can make students participate freely and actively during discussions	5%	60%	20%	15%
8.	Technology facilitates communication between	10%	60%	25%	5%



	students and their classmates and teachers.				
9.	Technology can help students develop their digital skills	5%	75%	20%	0%
10.	Students find it easier to access learning materials from various sources with the help of technology	20%	65%	15%	0%

The table presented above is data obtained from distributing questionnaires that researchers have conducted. It can be seen from the table that there are ten questionnaire statements along with the percentage obtained from the survey conducted by the researcher which is the answer given by the respondent. The results of the data were obtained from students of SMA Negeri 1 Tigo Nagari, namely class 1 and class 1 semester 4. the way researchers distribute questionnaires is through sending a google form questionnaire link to the class teacher concerned then the lecturer sends it to students via wa group. The questions were made by researchers regarding the use of technology in active learning: increasing student interaction and involvement. By utilizing the sophistication of technology that exists today can provide various benefits that will facilitate the learning process up close and remotely.

From the table, the researcher made four options that could be chosen by respondents, namely the categories of strongly agree, agree, disagree and disagree. The highest percentage of the agree category obtained a value of 75% regarding the question of technology can help students develop their digital skills. In the strongly agree category, the highest percentage of 20% was obtained regarding the question of students feeling easier to access learning materials from various sources with the help of technology. In the disagree category, the highest percentage was obtained, namely 40% regarding students feel more involved in learning when technology is used and the same regarding the statement that the interaction between fellow students is quite good. Finally, in the disagree category, the highest percentage obtained was 15% regarding the statement that technology can make students participate freely and actively during discussions.

In statement number one that has been submitted by the researcher, the highest percentage of agreed options is 70%. In the second statement regarding technology helping students understand the subject matter easily showed the highest percentage results in the agree option with a gain of 70%. In the current statement, researchers managed to get the highest percentage of 45% regarding students feeling more involved in learning when technology is used with the agreed category. In the fourth statement where researchers still get the largest percentage in the agree option of 65% regarding the use of technology makes the learning process more interesting and fun. While in the fifth statement in the table above, researchers also obtained in the agree category as the highest percentage, namely 60% regarding students being more motivated to learn with the help of technology.

With the technology, the interaction between fellow students is quite good, which is in the sixth statement shows a percentage of 50% as the largest percentage in the agree option. In the seventh statement from the table above regarding technology can make

students participate freely and actively during discussions, researchers also get the largest percentage, namely 60% in the agree category. Regarding technology making communication easier between students and their classmates and teachers in the eighth statement also obtained the highest percentage in the agree category of 60%. The ninth statement also obtained the highest percentage results in the agree option with a value of 75% regarding the statement that technology can help students develop their digital skills. As for the last statement, namely the tenth, it shows that it is still in the agree category, obtained the highest percentage of 65% and the category strongly agrees with a percentage gain of 20% related to Students find it easier to access learning materials from various sources with the help of technology.

From all the percentages obtained above that overall almost all students answered agree to utilize technology in active learning. Only a small percentage of them stated that they did not agree to utilize technology in active learning. This means that bringing technology into learning is very suitable and has a positive impact on education in today's modern era. Technology can present a diverse and varied education that makes learning more fun and not boring in contrast to conventional learning methods that use more lecture methods. This will certainly make students increase their interest in learning, more motivated to solve a problem or problem presented so that they will be actively involved in providing their ideas and responses when the discussion takes place. Students' understanding is also broader and deeper because knowledge can be obtained from various sources. This will certainly make learning more effective, interactive and efficient.

Table 3.

Percentage of questionnaires obtained from the answers of respondents of class 12 B

No	Question	Answer			
		Strongly Agree	Setuju	Disagree	Strongly Disagree
1.	The use of technology will make students feel more prepared for the digital world	20%	60%	20%	0%
2.	Technology helps improve collaboration between students on learning projects	5%	65%	25%	5%
3.	The use of technology in learning allows flexibility in study schedules	5%	85%	10 %	0%
4.	Technology brings different and varied learning methods	15%	60%	25%	0%
5.	Unstable internet signal is a barrier to learning using technology	35%	50%	15%	0%
6.	Technology in learning supports inclusive education	20%	55%	20%	5%
7.	Technology is an important aspect in the future development of education	10%	65%	15%	10%
8.	Modern education is more suitable for technology-based learning methods than conventional learning methods.	15%	60%	20%	5 %

9.	The use of technology in learning can improve student achievement	15%	60%	20%	5%
10.	Technology utilization can improve the quality of education	20%	65%	15%	0%

Based on the results of the research statement table above, it can be seen that the highest percentage is in the agree category with a percentage of 85% related to the statement regarding the use of technology in learning allows flexibility in learning schedules, while the highest percentage of the strongly agree category obtained answers from respondents of 35% about the statement regarding unstable internet signals being an obstacle in learning using technology. Furthermore, in the disagree category, the highest percentage is 25% regarding the second question about technology helping to improve collaboration between students in learning projects and the fourth question which is about technology presenting different and varied learning methods. Finally, the highest percentage of the disagree category received answers from respondents of 10% regarding technology is an important aspect in the development of education in the future.

In the first statement regarding the use of technology will make students feel more prepared to face the digital world, the highest percentage in the agree category is 60%, while in the strongly agree and disagree categories both get a percentage of 20% and finally in the disagree category no answers were obtained from respondents. The second statement received the highest percentage with a value of 65% while the category strongly agreed by 5%, the category disagreed by 25%, the category disagreed by 5% which is the statement regarding technology helps improve collaboration between students in learning projects. Regarding the third statement related to the use of technology in learning allows flexibility in learning schedules, the answers from respondents amounted to 80% as the highest percentage in the agree category. And the category of strongly agreeing gets a percentage of 5%, the category of less agreeing researchers get a percentage of 10% and no one disagrees with this statement. It is evident that students are more flexible and free to determine the lesson schedule because it is no longer hindered by distance and time.

In statement number four, it is known that the highest respondent's answer got a percentage of 60% in the option to agree with the statement regarding technology presenting different and varied learning methods, and in the category of strongly agreeing the percentage was 15% while in the category of disagreeing the answer was obtained with a percentage of 25%. In general, 75 percent of students agree more with this statement. In the fifth statement regarding unstable internet signals being an obstacle in learning using technology, the largest results were in the agree category with a value of 50%, a strongly agree category with a percentage of 35% and while in the disagree category the results were 15%. In the disagree category there were no answers from respondents. It can be concluded that internet signal is an obstacle often faced by students in using technology because they feel that not all places have internet network speed. The sixth statement shows the largest percentage result of 55% in the agree category, the strongly agree category is 20%, the disagree category is 20% and in the disagree category

the percentage is 5%. This percentage was obtained regarding the statement that technology in learning supports inclusive education.

Technology is an important aspect in the development of education in the future, which is the seventh statement, shows the results that the largest respondent's answer is in the agree category with a value of 65%, in the strongly agree category the percentage is 10% and in the disagree category is 15% while in the disagree category it is 10% as well. Furthermore, regarding the eighth statement that modern era education is more suitable for learning methods using technology than conventional learning methods, it obtained a percentage of 60% in the agree option, 15% in the strongly agree category, 20% in the disagree category and only 5% disagreed. Next, in the ninth statement regarding the use of technology in learning can improve student achievement, the highest answer was still in the agree category, namely with a percentage of 60%, in the strongly agree category the percentage was 15%, 20% in the disagree category and only 5% disagreed with the statement. Finally, the tenth table regarding the use of technology can improve the quality of education shows answers in 3 categories in which the agree category is the largest percentage, namely 65%, in the category strongly agreeing the percentage is 20% and the category disagreeing the percentage is 15%. While in the disagree category the researcher found that there were no answers from respondents.

Based on the statements in table 1 and table 2 above, the researcher can draw a conclusion that of all the questions that the researchers have asked the respondents, on average they give more answers in the agree category. However, there were also those who gave their answers in the strongly agree, disagree and disagree categories. However, in general, more gave answers in the agree category and this category was always superior in the sense that the answers were always the highest. Therefore, technology has a very real impact on the world of education today. Living in modern times is something that must follow technological developments, especially for the world of education because this can have a good impact on the quality of education and prepare a generation that is able to face future challenges

Table 4.

One Way Anova Test class 12 A

		ANOVA				
		Sum of Squares	Df	Mean Square	F	Sig.
X.1	Inter Group	6.000	12	.500	.	.
	In Group	.000	7	.000		
	Total	6.000	19			
X.2	Inter Group	5.133	12	.428	4.492	.028
	In Group	.667	7	.095		
	Total	5.800	19			
X.3	Inter Group	8.583	12	.715	4.292	.031
	In Group	1.167	7	.167		
	Total	9.750	19			

X.4	Inter Group	9.383	12	.782	4.692	.025
	In Group	1.167	7	.167		
	Total	10.550	19			
X.5	Inter Group	6.050	12	.504	7.058	.008
	In Group	.500	7	.071		
	Total	6.550	19			
X.6	Inter Group	7.783	12	.649	3.892	.040
	In Group	1.167	7	.167		
	Total	8.950	19			
X.7	Inter Group	10.450	12	.871	2.438	.122
	In Group	2.500	7	.357		
	Total	12.950	19			
X.8	Inter Group	7.083	12	.590	1.549	.288
	In Group	2.667	7	.381		
	Total	9.750	19			
X.9	Inter Group	3.883	12	.324	3.398	.057
	In Group	.667	7	.095		
	Total	4.550	19			
X.10	Inter Group	6.450	12	.538	7.525	.006
	In Group	.500	7	.071		
	Total	6.950	19			

It is known that the highest significance is in number eight with a sig value of 288 regarding technology facilitating communication between students and their classmates and teachers. The sum of squares is 7,083 with df which is known as the degree of freedom with a value of 12 and f-statistics  $f = 1,549$ . In the sixth Sum of Square getting thousands with a result of 7,783 explains how each research group has a comparison. On a score of 7,783 how to describe each group that has a lot of variety. In df which is called the degree of freedom or degree of freedom, with the number 12 describing how many degrees of freedom are used in statistical analysis. To get the average square of each group that represents the estimated variation in the Mean Square table shows a value of 649 by dividing the Sum of Square by the number of degrees of freedom (df). The statistical test on anova is 3,892 by halving the mean square in order to illustrate the comparison of the groups studied. The value of 3.892 is the result obtained from the comparison of MS between variation groups and between groups with MS within groups.

Table 5.  
One Way Anova Test class 12 B

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
y.1	Inter Group	6.583	12	.549	2.711	.097
	In Group	1.417	7	.202		

	Total	8.000	19			
y.2	Inter Group	7.450	12	.621	5.794	.014
	In Group	.750	7	.107		
	Total	8.200	19			
y.3	Inter Group	2.950	12	.246	.	.
	In Group	.000	7	.000		
	Total	2.950	19			
y.4	Inter Group	7.133	12	.594	6.242	.011
	In Group	.667	7	.095		
	Total	7.800	19			
y.5	Inter Group	7.783	12	.649	3.205	.065
	In Group	1.417	7	.202		
	Total	9.200	19			
y.6	Inter Group	11.050	12	.921	8.594	.004
	In Group	.750	7	.107		
	Total	11.800	19			
y.7	Inter Group	11.083	12	.924	9.698	.003
	In Group	.667	7	.095		
	Total	11.750	19			
y.8	Inter Group	8.467	12	.706	2.371	.129
	In Group	2.083	7	.298		
	Total	10.550	19			
y.9	Inter Group	9.800	12	.817	7.622	.006
	In Group	.750	7	.107		
	Total	10.550	19			
y.10	Inter Group	6.950	12	.579	.	.
	In Group	.000	7	.000		
	Total	6.950	19			

The significant value of normal distribution is categorized with a value of more than 0.05, which means it reaches a significant or relevant level. In statement number two there is a comparison that varies between groups obtained from the results of the one way anova test which shows a comparison of the f value of 5.794 regarding technology helps improve collaboration between students in learning projects. In statement number two, the normal distribution is acceptable with a significant value of 0.14. It can be seen that the normal distribution in this second statement that the significant value is acceptable. To find which distribution value is significant, the value must be 0.05 or above 0.05. If the significant value obtained is below 0.05 then the data obtained is not normal. Researchers managed to illustrate that technology can increase collaboration between students in making projects which means that it can be seen that the involvement between students is high.



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The Sum of Square table above in the eighth statement has a value of 8,467 regarding modern era education is more suitable for learning methods using technology than conventional learning methods. With a df of 12, and a Mean Square of 706 while the f-statistic with a value of 2,371. Statement number eight gets a normal significant value where the value is obtained above 0.05, namely 129. In the ninth statement related to the statement that the use of technology in learning can improve student achievement. The Sum of Square value is 9,800, the degree of freedom value is 12, the Mean Square value is 817 while the f-statistic is 7,622. This statement also has a normal significant value, which is 0.06. From the results of this one-way Anova test, researchers can find out that learning using technology can improve student learning achievement.

## **DISCUSSION**

### **Technology Utilization in Active Learning**

Research conducted by researchers is about the use of technology in learning is very good to be applied in the world of education because of the various benefits that will be obtained (Sabeti et al., 2019). Education is an effort made by educators to transfer intellectual abilities or knowledge to students (Hodge et al., 2019). Then the knowledge must be developed so that a skill is formed to prepare them to reach the future with various challenges that will be faced and be able to participate in social life, contributing in all matters both social, economic and cultural. Education will be successful if the learning method is also in accordance with the needs of today's learners (Miyato et al., 2019). This is because the learning method so far has only focused on the teacher while students only accommodate what is given without the involvement of the students given. This method needs to be changed in accordance with the demands of the times considering that traditional learning is no longer relevant to today's world of education. Education must be able to adjust to the rapid changes in the world, one of which is the presence of technology that greatly helps the various needs of students so it really needs to be integrated into the learning system.

Technology is a tool used to facilitate human work in various aspects of life. daily which includes various things ranging from hardware tools such as computers, cell phones and machines while in the form of software it can take the form of an application or computer programs to make it easier to solve a problem (Frank et al., 2019). When linked to education, it can be explained that technology in education refers to the use of technological tools, software, hardware, and methods to improve the learning and teaching experience in the educational environment (Scherer et al., 2019). This involves the use of computers, mobile devices, projectors, learning software, e-learning platforms, and many other technological devices. All of these are great for schools to implement to increase effectiveness and efficiency in learning. Learning with technology strongly supports active learning, which means that learning emphasizes the activeness and participation of students. Learning should involve students in learning activities, actively asking questions, collaborating with friends, so that the ability to think critically to solve problems of students becomes honed and the passivity of students can be overcome to the maximum.

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Technology in education is great when applied. Various types of tools and platforms have been provided to support active learning. First, in e learning, platforms such as Moodle, or Google Classroom are used to provide materials to be learned, assignments and exams online which allow students to learn from anywhere without being limited by place (De Medio et al., 2020). Teachers can monitor the extent of their students' progress and provide quick feedback to them. Secondly, learners can access learning materials from various sources through online platforms such as Coursera and Khan Academy which help students to access online discussion forums from all over the world so that it is possible for students to learn independently and be able to measure the extent of their abilities. Furthermore, technology enables virtual classrooms, where students and teachers can interact digitally using applications such as Zoom or Google Meet, Microsoft Teams and Whatsapp Group (Malkawi et al., 2020). Third, technology also provides learning applications for interactive learning and facilities for applying knowledge practices, such as Duolingo or Rosetta Stone applications for learning foreign languages quickly.

Fourth, there is a digital library that allows students to search for information online such as e-books, scientific journals (Mehta & Wang, 2020). Fifth, technology can display learning videos that will make it easier for students to understand concepts that are difficult to understand because they can be watched until the student really understands (L. Bao et al., 2019). Platforms that teachers can use to create learning videos such as Articulate Storyline and Adobe Captivate. The seventh application is the use of augmented reality and virtual reality that will allow students to get a more interactive and real learning experience. For example, students can visit historical places as if they were originally there when only using technological assistance (Feng et al., 2020). Finally, the application of technology in the form of gamification simulation, which will present learning by making games fun and interactive. There are many applications or platforms that can be utilized, such as kahoot, minecraft, quizlet. By looking at what technology can be applied in education, of course, the expected active learning will be realized.

### **Utilizing Technology to Increase Student Interaction and Engagement**

The use of technology in learning has many benefits for the digital era education system. Technology can increase student interaction and engagement. This interaction is very important in learning activities so that student understanding increases (Cheng & Tsai, 2019). Interaction with the teacher means that the teacher's role is to explain the material to students while students ask questions, discuss the problems faced so that interaction can be seen here. Interaction between fellow learners means that fellow students conduct group discussions or make a project together, while interaction with the material means that students interact directly with the material either in the form of books, digital material which includes reading, watching or doing exercises. In terms of student involvement, this relates to activeness, interest and motivation in learning. When students actively think, analyze information, this means that their knowledge engagement is high (Bouchrika et al., 2021). Meanwhile, if students have a high interest and motivation in a topic, it means that the level of affective engagement is also high.

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Researchers also found a further benefit of enriching the learning experience. Technology makes it easier for students to understand difficult lessons because technology provides various multimedia resources such as presenting learning videos, a simulation and interactive content, for example in science lessons animated videos are used to explain blood circulation videos, or the water cycle so that they are easy to understand and interesting for students (Zhang et al., 2019). Through technology, it can also improve the efficiency and effectiveness of learning. Online learning/e learning platforms such as khan academy provide learning videos that can be accessed by learners at any time so that students can learn and adjust their own learning pace. Furthermore, technology can expand the accessibility of education which means that the use of technology in learning has overcome the problem of distance limitations where all people in various locations can access education without geographical restrictions and learning schedules (Gargoum & Karsten, 2021). For example, the use of platforms such as Coursera will allow students from all over the world to take courses held by renowned universities.

Furthermore, the existence of technology can prepare students for a world of work that is increasingly connected to technology, in the sense that technology can prepare students' digital skills to face the world of work to come. For example, by participating in training on the use of software such as Microsoft Office or Google Workspace, which are basic skills that generally must exist in the world of work. Furthermore, technology supports adaptive and personalized learning, which means that the learning curriculum can be adjusted to the needs, level of understanding of each individual. The last benefit is improving the quality of teaching and student learning outcomes, where technology can help a teacher to improve his teaching by utilizing interactive tools to monitor and conduct better assessments (Van Alten et al., 2019). For example, lecturers can use moodle to know the progress of students and lecturers can adjust what teaching should be like to suit the needs of learners.

Despite the many benefits that technology brings to learning, there are challenges that must be faced and should not be ignored (Ferrell & Ferrell, 2020). Problems with internet connection and access to technology are often heard and felt by both learners and schools (Raubitzek & Neubauer, 2021). Not all schools or students have equal access to the necessary technological devices such as mobile phones or computers or laptops. As a result, a gap will arise between wealthy students and students who are less well-off, so that students who lack access will have difficulty learning to use technology. On the other hand, sometimes even though the necessary devices are available, the network is an obstacle that is often felt because not all places have the same network speed such as rural areas where the internet connection is very poor. The next challenge is about data security (Yang et al., 2020). Learning using technology is at great risk to the security of personal data that may be attacked or misused by irresponsible parties such as cybercrime or hackers, sometimes there is even sensitive content that suddenly appears on students' devices that should not be seen by them. This requires awareness on the part of learners to be careful and strengthen the priest so as not to be influenced or fall for the misleading content.

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Frequent use of technology in learning will certainly have an impact on dependence, which causes the development of students' thinking skills to be inhibited because information is all in technological devices, so they are more likely to search than think because it is considered fast and easy (Y. Li et al., 2019). Not only that, frequent use of technology will cause harm to the health of the body. When you spend too much time studying in front of a computer or cellphone, it will certainly cause eye strain because the light from the device is very dangerous and can even cause eye pain, addiction to technology sometimes makes students forget time so that sleep time is neglected and the body becomes stiff because it is rarely done to move. Finally, the impact that may arise with this technology is the decline in the interpersonal skills of students because when we learn remotely through digital devices the interaction between students and students or with teachers is not direct so that when they meet directly they are unable to communicate well or are unable to work together in teams. However, this impact can be partially minimized by staying away from bad habits that will harm these students. The school also needs to do careful planning and ensure that the school and participants are ready to use technology so that learning becomes effective as expected.

## **CONCLUSION**

Based on the research on the utilization of technology in active learning: increasing student interaction and involvement, it can be concluded that technology is very good to be applied in learning activities in order to create active learning with a focus on increasing student interaction and involvement. This is because now humans live in an era where technology is developing rapidly, in all aspects of human activities ranging from economic, political, governmental, social and cultural activities have used technology to facilitate activities in these fields. Therefore, in the field of education, technology should be integrated into the learning process because education today must be adapted to changing times and adapted to the needs of students. Initially, students only acted as objects, while the teacher was the main source in providing lessons, so students tended to be passive and lacked involvement from the students. With the presence of this technology, it has changed the old learning methods by providing many opportunities for educational institutions to realize active learning so that it allows the creation of interaction and involvement from students as expected in education so far.

The presence of technology in education plays a very important role. Learning is possible to be done remotely. Teachers can deliver learning materials in a varied and interesting way either in the form of text, images, or in the form of learning videos that allow students to be interested in learning. This interest will certainly make students more motivated so that it increases the curiosity of students about a problem that is presented which makes students think critically to solve the problem. Students will actively ask the teacher, conduct discussions with friends so that the interaction between the teacher and fellow students is getting better. Through technology, students can do learning from anywhere without being limited by distance and time. The sources of information provided are also of various kinds that can be accessed from all over the world. Learning

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can be done with applications and platforms where the features provided are very interesting according to the needs of students, such as classrooms, zoom, whatsapp groups, moddle, virtual reality and augmented reality, and also gamefication platforms to simulate students, all of which can be accessed anywhere.

Apart from all that, learning with technology certainly has challenges such as unstable network access in various places and also not all students have access to the technology devices needed because of the influence of the economic background of the learners. In addition, strict supervision is needed for students so that when using technology it does not lead to misuse of technology and fall into actions that damage their knowledge. Teachers also need to be given training on technology so that learning can be effective and efficient and technology provides optimal benefits. All of this can be overcome if there is good cooperation between the local government, related schools and the local community to support the implementation of this technology-based learning because it is very good for modern era education..

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