





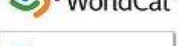




11. The Effect of the Application of E-Learning on the Use of Edmodo with Whatsapp Assisted on the Learning Outcomes of Students on the Concept of Sound Waves

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#4361 Review

SUMMARY
REVIEW
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Submission



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Section	Articles
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The Effect of the Application of *E-Learning* on the Use of *Edmodo* with *Whatsapp* Assisted on the Learning Outcomes of Students on the Concept of Sound Waves

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Abstract - This study aims to see the learning outcomes of students in the application of *e-learning* in the use of *whatsapp* assisted *edmodo* on learning outcomes in the concept of sound waves. In addition, students' responses to the treatments given are also observations as material for the evaluation of researchers. The research method used was experimental with a quasi-experimental approach as a research method. The implementation was carried out at SMA Negeri 1 Gorontalo even semester of the 2019/2020 academic year, with the research subjects of class XI IPA 8, with a total of 20 students. Data collection on learning outcomes was carried out based on the results of test results by students. Analysis of research data using data normality test and statistical t test. Based on the results of the hypothesis, it is known that the t value is 5.53 where this price is greater than 1.72 which is the price of the table, then H_0 is accepted and H_1 is rejected, so that there is a significant positive effect using *whatsapp* assisted *edmodo* on learning outcomes in the concept of sound waves. Judging from the mean value of the pretest and posttest students from the experimental class, it can be concluded that the increase in student learning outcomes on the concept of sound waves has a strong effect criteria.

Key words: *E-learning*, *Edmodo* with *Whatsapp* assistance, Learning Outcomes

Introduction

Educators have an important role in shaping human resources to become more qualified, so that learning in the mastery of science and technology must be better. In the learning process, there are two important things that support a quality of learning, namely methods and media. The position of learning methods and media is closely related because the main function of learning media is as a teaching aid that supports the use of learning methods used by educators.

Information Technology (IT) is able to become a media and a broad learning resource, enabling students to learn independently. The need for IT-based teaching and learning concepts and mechanisms is something that needs serious attention. This concept known as e-learning has an effect on the transformation of conventional education into digital form. This is in line with the opinion (Hanum, 2013) that e-learning is aimed at making a transformation of the learning process in

schools or colleges into a digital form bridged by internet technology.

Currently the *e-learning* program is a hot topic of conversation among educators, parents and students due to conditions and circumstances that demand e-learning. According to (Rusli et al, 2017: 74) *e-learning* is learning centered on students using electronic media or learning based on information technology or multimedia.

Since the *Covid-19* pandemic that occurred around the world, all teachers have been required to carry out learning activities from home. *E-learning* is one that is required in the world of education from elementary to tertiary level. In general, universities have an e-learning learning system created, but activities are very limited. Especially for Gorontalo State University, it already has e-learning through SIAT. The *Covid-19* emergency response requires lecturers and students to study and carry out online learning (Arota et al, 2020).

The use of *e-learning* as technology also needs a plan to be able to carry out effective learning and improve student learning outcomes. The atmosphere of *e-learning* will force students to play a more active role in learning, this is because *e-learning* requires students to look for other learning materials or resources with their own efforts and initiatives.

The emergence of e-learning shows the various kinds of online learning media used by teachers such as *google classroom*, *schoolology*, *edmodo* and others. Of the various kinds of learning media that exist, the writer is more interested in using *edmodo* as an e-learning medium. *Edmodo* is one of the e-learning media in Indonesia, *edmodo* is

interactive which is equipped with communication facilities between students and educators, among educators, and parents who can be connected with educators and students as well as other learning resources that can be accessed by students.

Edmodo is described as using a social networking concept that resembles *Facebook*, so that this system has features similar to *Facebook*, and even almost everyone says that *Edmodo* is the *Facebook* for educational schools. This is in line with the opinion (Kamarga, 2011) that *edmodo* is designed to be school-based to support the learning process. Apart from social networking among its users, *edmodo* is equipped with several learning activities, such as quizzes, assignments, polls, grade books, libraries, award badges, and parent code. For teaching materials, *edmodo* supports teaching materials in the form of files and links.

The problem around us is that the use of gadgets as information technology is underutilized in the education sector, instead it is used for things that are less useful, such as the use of online and offline games as well as excessive use of social media which is dominated by teenagers or students. *Whatsapp* as one of the most influential social media and is widely used by people in Indonesia. This is because *WhatsApp* messenger is an information technology application that is very easy to use as a communication tool (Sahidillah & Miftahurrisqi, 2019).

In *whatsapp* messenger there is a group chat feature which is very easy to use to form an online discussion forum (anywhere and anytime). The use of

whatsapp by students is only limited to communicating, it doesn't take advantage of the sending features in the form of files, videos and teaching materials that support the learning process and increase their knowledge (Sahidillah & Miftahurrisqi, 2019).

Research (Hapsari & Ariana, 2015) Most internet users in Indonesia are adolescents with an age range of 15-24 years with a percentage range of 26.7% -30%. The ease of internet access does not always have a positive impact. Nearly 80% of adolescents aged 10-19 years spread across 11 provinces in Indonesia are addicted to the internet, and most teenagers use the internet for things that are not supposed to be. 24% admitted to using the internet to interact with unknown people, 14% accessing pornographic content, and the rest for online games and other purposes.

Based on the description above, the formulation of the problem in this study is "How is the effect of the application of e-learning learning on the use of *WhatsApp* assisted *edmodo* on student learning outcomes on the concept of sound waves?"

Research Methods

The research method used in this study is an experimental method with an experimental design of One Group Pretest-Posttest Design. This design is a research technique by giving a pretest before treatment and posttest after being given treatment. This research design can be shown in table 1 below.

Table 1. Research Design

<i>Pre test</i>	<i>Treatmen</i>	<i>Post test</i>
X ₁	P	X ₂

Information:

X₁: Learning outcomes before treatment

P : Treatment, using *whatsapp* assisted *edmodo*

X₂: Learning outcomes after treatment

The treatment in this study refers to the use of *edmodo* assisted by *WhatsApp*. The pretest and posttest were in the form of essay questions totaling 11 numbers with sound wave material at the cognitive level of understanding (C2), applying (C3), and analyzing (C4). The learning aspects in the classroom can be shown in table 2 below.

Table 2. Learning Aspects

Aspek	Kelas Eksperimen
Nature of Meeting	Online
Learning Materials	Sound Waves
Time	8 Hours of Learning
Meeting	5 times Meeting
Learning Media	<i>Whatsapp</i> Social Media and <i>Edmodo</i>
Learning Tools	Laptop/ <i>Computer/Smartph one</i>
Learning Methods	Discussion, Assignment and Evaluation

Research Result

• Hypothesis testing

Hypothesis testing aims to determine whether there is a positive effect of the treatment given on student learning outcomes. The results of the hypothesis statistical test obtained can be seen in table 3 below.

Table 3. Hypothesis Testing Results

Class	T _{count}	T _{table}	Status
Experiment	5.53	1.72	H ₀ be Accepted

Based on table 3 shows the calculation of the hypothesis test, it is obtained that $t_{count} > t_{table}$ for the level $\alpha = 0.05$. Then H₀ is accepted and H₁ is rejected. So that the application of *e-learning* on the use of

Dikomentari [U1]: This statement is not directly related to the focus of the research. I suggest removing it

Dikomentari [U2]: State the results of previous research on the research topic and state the novelty of your research!

Whatsapp assisted *Edmodo* has a significant positive effect on student learning outcomes on the concept of sound waves.

- *Effect Size*

To see the effect size of learning outcomes in e-learning learning on the use of *Whatsapp* assisted *Edmodo* using an essay test of 11 question numbers with 6 indicators. The effect size can be considered as a measure of the meaning of a study. Based on the data analysis of the pretest and posttest results at the beginning and at the end of the meeting, the average score of students' learning outcomes tests and the effect size can be seen in table 4 below.

Table 4. Recapitulation of Average Learning Outcomes Tests and *Effect Size*

Tes	Average	<i>Effect Size</i>	
		Score	Criteria
Pretest	43.25	1.56	Strong effect
Posttest	68.83		

Based on table 4, it can be interpreted that the use of *WhatsApp* assisted *Edmodo* has increased in student learning outcomes with an average pretest or before treatment value of 43.25 and a posttest or after treatment value of 68.83 with an effect size value of 1.56 Strong effect criteria. The effect size value for each level of cognitive questions can be seen in Figure 1 below.

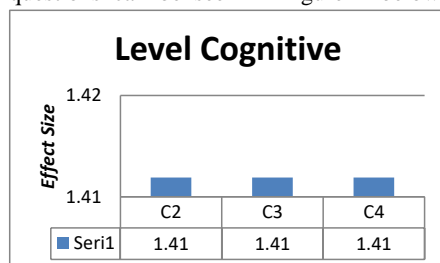


Figure 1. Effect size of each Cognitive Level Problem

Based on Figure 1 above, the effect size of each cognitive level of questions, be it C2, C3 or C4, has a value of 1.41 where this value is included in the strong effect criteria.

Discussion

This research, which was conducted at SMA Negeri 1 Kota Gorontalo, aims to see the effect of using *edmodo* assisted by *WhatsApp* on student learning outcomes. This research provides an alternative in teaching and learning activities between teachers and students with the current *Covid-19* pandemic state which requires learning from home. This distance learning e-learning requires internet facilities as the main factor for the smooth running of *e-learning*, this is in line with the opinion (Yazdi, 2013) that e-learning is a form of distance learning that uses electronic circuits such as the internet to convey learning content, interaction or guidance to students.

In its implementation, e-learning also requires a media or better known as a platform that can support the implementation of *e-learning* itself, one of the platforms that can be used in the e-learning learning process is *edmodo*. *Edmodo* is an attractive medium for teachers and students with social elements that resemble Facebook. *Edmodo* is often referred to as educators' facebook because *edmodo* is for educators and students, this is in line with the opinion (Vera & Nilam, 2019) *Edmodo* is an interesting application with social elements that resemble Facebook so that students are more interested in participating in *e-learning*.

The treatment or experiment of using *Whatsapp*-assisted *Edmodo* is complete, the teacher provides a posttest as a benchmark to see an increase in learning outcomes on the

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concept of sound waves before using *WhatsApp*-assisted *Edmodo* and after using *WhatsApp*-assisted *Edmodo*. After the pretest and posttest data obtained by the teacher, the teacher analyzes the hypothesis test data with the results of data analysis showing the use of *WhatsApp*-assisted *e-learning* has a positive effect on student learning outcomes. The effect size on the use of *WhatsApp* assisted *Edmodo* on learning outcomes obtained data analysis results of 1.56 with strong effect criteria. This is supported by previous research by (Vera & Nilam, 2019) *Edmodo*, a positive learning environment that provides a path of interaction among students and educators in an academic atmosphere, supported again by the opinion (Yazdi 2013) that *e-learning* refers to the use of the internet to send a series of solutions that can improve the knowledge and skills of learners.

Conclusion

Based on the results of the research and data analysis obtained, it can be concluded that there is a significant positive effect on the use of *WhatsApp*-assisted *Edmodo* on student learning outcomes. This influence is shown through the criteria for testing the hypothesis where t is greater than t table. This means that the average value of the experimental class exceeds the minimum completeness criteria (KKM). The effect size obtained is 1.56 with strong effect criteria.

Suggestion

1. Lesson planning should be organized, communicative and flexible.
2. Providing more interactive learning will bring a more enjoyable learning atmosphere and is well absorbed by students.

3. The freedom or freedom for students to explore other learning sources.

Bibliography

- Arota Anjas., Mursalin., Abdul Haris Odja. 2020. The effectiveness of e-learning based on SETS to improve students' critical thinking skills in optical instrument material. *Journal of physics: Conference Series. Conf. Ser.* 1521 022062.
- Hanum, Numiek Sulisty. 2013. Keefktifan *E-Learning* Sebagai Media Pembelajaran (Studi Evaluasi Model Pembelajaran *E-Learning* SMK Telkom Sandhy Putra Purwokerto). *Jurnal Penelitian Vokasi*. Vol 3 No 1.
- Hapsari, A., & Ariana, A. D. 2015. Hubungan Antara Kesepian dan Kecenderungan Kecanduan Internet pada Remaja. *Jurnal klinis dan kesehatan mental*, 164-171.
- Kamarga, Hansiswany. 2011. Constructing Online Based History Learning: Comparison Of Learning Content Management System (LCMS) To Learning Management System (LMS). *International Journal of History Education*. Vol. XII, No. 2.
- Rusli Muhammad, Dadang Hermawan, Ni Nyoman Supuwingsih. 2017. *Multimedia Pembelajaran Yang Inovatif Prinsip Dasar Dan Model Pengembangan*. Yogyakarta: Penerbit Andi.
- Sahidillah, Muhammad Wildan & Miftahrrisqi, Prarasto. 2019. Whatsapp sebagai media digital literasi siswa. *Varia Pendidikan*. Vol.31 No.1.52-57.
- Vera Dewi Kartini Omposunggu & Nilam Sari. 2019. Efektifitas Penggunaan E-Learning Berbasis Edmodo Terhadap

Dikomentari [U5]: *Add with the latest references from various international journals
 *The number of main references is at least 20 (80% are research articles in journals or proceedings)
 *we highly recommend to cite min. 2 relevant articles in the Jurnal Pendidikan Fisika

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Kemampuan Komunikasi
Matematika. *Jurnal Curere*. Vol.3
No.2.

Yazdi, Mohammad 2013. E-Learning
Sebagai Media Pembelajaran Interaktif
Berbasis Teknologi Informasi. *Jurnal
Ilmiah Faristek*. Vol. 2 No. 1.



The Effect of the Application of *E-Learning* on the Use of *Edmodo* with *Whatsapp* Assisted on the Learning Outcomes of Students on the Concept of Sound Waves

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Abstract – This study aims to see the learning outcomes of students in the application of *e-learning* in the use of *whatsapp* assisted *edmodo* on learning outcomes in the concept of sound waves. In addition, students' responses to the treatments given are also observations as material for the evaluation of researchers. The research method used was experimental with a quasi-experimental approach as a research method. The implementation was carried out at SMA Negeri 1 Gorontalo even semester of the 2019/2020 academic year, with the research subjects of class XI IPA 8, with a total of 20 students. Data collection on learning outcomes was carried out based on the results of test results by students. Analysis of research data using data normality test and statistical t test. Based on the results of the hypothesis, it is known that the t value is 5.53 where this price is greater than 1.72 which is the price of the table, then H_0 is accepted and H_1 is rejected, so that there is a significant positive effect using *whatsapp* assisted *edmodo* on learning outcomes in the concept of sound waves. Judging from the mean value of the pretest and posttest students from the experimental class, it can be concluded that the increase in student learning outcomes on the concept of sound waves has a strong effect criteria.

Keywords: *Edmodo*, *E-learning*, Learning Outcomes, *Whatsapp* assistance

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I. INTRODUCTION

Educators have an important role in shaping human resources to become more qualified, so that learning in the mastery of science and technology must be better. In the learning process, there are two important things that support a quality of learning, namely methods and media. The position of learning methods and media is closely related because the main function of learning media

is as a teaching aid that supports the use of learning methods used by educators.

Information Technology (IT) is able to become a media and a broad learning resource, enabling students to learn independently. The need for IT-based teaching and learning concepts and mechanisms is something that needs serious attention. This concept known as e-learning has an effect on the transformation of

conventional education into digital form. This is in line with the opinion (Hanum, 2013) that e-learning is aimed at making a transformation of the learning process in schools or colleges into a digital form bridged by internet technology.

Currently the *e-learning* program is a hot topic of conversation among educators, parents and students due to conditions and circumstances that demand e-learning. According to (Rusli et al, 2017: 74) *e-learning* is learning centered on students using electronic media or learning based on information technology or multimedia.

Since the *Covid-19* pandemic that occurred around the world, all teachers have been required to carry out learning activities from home. *E-learning* is one that is required in the world of education from elementary to tertiary level. In general, universities have an e-learning learning system created, but activities are very limited. Especially for Gorontalo State University, it already has e-learning through SIAT. The *Covid-19* emergency response requires lecturers and students to study and carry out online learning (Arota et al, 2020).

The use of *e-learning* as technology also needs a plan to be able to carry out effective learning and improve student learning outcomes. The atmosphere of *e-learning* will force students to play a more active role in learning, this is because *e-learning* requires students to look for other learning materials or resources with their own efforts and initiatives.

The emergence of e-learning shows the various kinds of online learning media used by teachers such as *google classroom*, *schoolology*, *edmodo* and others. Of the various kinds of learning media that exist, the writer is more interested in using *edmodo* as an e-learning medium. *Edmodo* is one of the e-learning media in Indonesia, *edmodo* is interactive which is equipped with

communication facilities between students and educators, among educators, and parents who can be connected with educators and students as well as other learning resources that can be accessed by students.

Edmodo is described as using a social networking concept that resembles *Facebook*, so that this system has features similar to *Facebook*, and even almost everyone says that *Edmodo* is the *Facebook* for educational schools. This is in line with the opinion (Kamarga, 2011) that *edmodo* is designed to be school-based to support the learning process. Apart from social networking among its users, *edmodo* is equipped with several learning activities, such as quizzes, assignments, polls, grade books, libraries, award badges, and parent code. For teaching materials, *edmodo* supports teaching materials in the form of files and links.

The problem around us is that the use of gadgets as information technology is underutilized in the education sector, instead it is used for things that are less useful, such as the use of online and offline games as well as excessive use of social media which is dominated by teenagers or students. *Whatsapp* as one of the most influential social media and is widely used by people in Indonesia. This is because *WhatsApp* messenger is an information technology application that is very easy to use as a communication tool (Sahidillah & Miftahurrisqi, 2019).

In *whatsapp* messenger there is a group chat feature which is very easy to use to form an online discussion forum (anywhere and anytime). The use of *whatsapp* by students is only limited to communicating, it doesn't take advantage of the sending features in the form of files, videos and teaching materials that support the learning process and increase their knowledge (Sahidillah & Miftahurrisqi, 2019).

The application of e-learning learning from various learning media that was used previously was fairly stiff and boring, resulting in a lack of student interest in learning during e-learning. In this study, the learning media used are very communicative and flexible with a social media approach, namely the use of edmodo which resembles Facebook and has features that support e-learning learning and is assisted by WhatsApp social media which is easy to use as a means of communication between educators and learners.

II. METHODS

The research method used in this study is an experimental method with an experimental design of One Group Pretest-Posttest Design. This design is a research technique by giving a pretest before treatment and posttest after being given treatment. This research design can be shown in table 1 below.

Table 1. Research Design

Pre test	Treatment	Post test
X1	P	X2

Information:

X₁: Learning outcomes before treatment

P : Treatment, using *whatsapp* assisted *edmodo*

X₂: Learning outcomes after treatment

The treatment in this study refers to the use of *edmodo* assisted by *WhatsApp*. The pretest and posttest were in the form of essay questions totaling 11 numbers with sound wave material at the cognitive level of understanding (C2), applying (C3), and analyzing (C4). The learning aspects in the classroom can be shown in table 2 below.

Table 2. Learning Aspects

Aspek	Kelas Eksperimen
Nature of Meeting Learning Materials	Online Sound Waves

Time Meeting Learning Media Learning Tools Learning Methods	8 Hours of Learning 5 times Meeting <i>Whatsapp</i> Social Media and <i>Edmodo</i> Laptop/Computer/Smart phone Discussion, Assignment and Evaluation
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III. RESULTS AND DISCUSSION

The results of the research obtained will be tested in the hypothesis which aims to determine whether there is a positive effect of using *whatsapp* assisted *edmodo* on student learning outcomes. After that, we will also see the scale of effectiveness in the use of *whatsapp* assisted *edmodo* by using the effect size analysis which aims to determine the level of effectiveness of the treatment model or learning method that has been applied to students.

Results

• Hypothesis testing

Hypothesis testing aims to determine whether there is a positive effect of the treatment given on student learning outcomes. The results of the hypothesis statistical test obtained can be seen in table 3 below.

Table 3. Hypothesis Testing Results

Class	T _{count}	T _{table}	Status
Experiment	5.53	1.72	H ₀ be Accepted

Based on table 3 shows the calculation of the hypothesis test, it is obtained that $t_{\text{count}} > t_{\text{table}}$ for the level $\alpha = 0.05$. Then H₀ is accepted and H₁ is rejected. So that the application of *e-learning* on the use of *Whatsapp* assisted *Edmodo* has a significant positive effect on student learning outcomes on the concept of sound waves.

• Effect Size

To see the effect size of learning outcomes in e-learning learning on the use of *Whatsapp* assisted *Edmodo* using an essay test of 11 question numbers with 6 indicators.

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The effect size can be considered as a measure of the meaning of a study. Based on the data analysis of the pretest and posttest results at the beginning and at the end of the meeting, the average score of students' learning outcomes tests and the effect size can be seen in table 4 below.

Table 4. Recapitulation of Average Learning Outcomes Tests and *Effect Size*

Test	Average	<i>Effect Size</i>	
		Score	Criteria
Pretest	43.25	1.56	Strong
Posttest	68.83		effect

Based on table 4, it can be interpreted that the use of *WhatsApp* assisted *Edmodo* has increased in student learning outcomes with an average pretest or before treatment value of 43.25 and a posttest or after treatment value of 68.83 with an effect size value of 1.56 Strong effect criteria. The effect size value for each level of cognitive questions can be seen in figure 1 below.

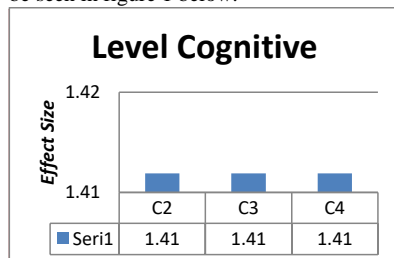


Figure 1. Effect size of each Cognitive Level Problem

Based on Figure 1 above, the effect size of each cognitive level of questions, be it C2, C3 or C4, has a value of 1.41 where this value is included in the strong effect criteria. Thus the use of whatsapp-assisted *edmodo* both in terms of understanding, application and analysis of students experiences strong effectiveness when learning e-learning.

Discussion

This research, which was conducted at SMA Negeri 1 Kota Gorontalo, aims to see

the effect of using *edmodo* assisted by *WhatsApp* on student learning outcomes. This research provides an alternative in teaching and learning activities between teachers and students with the current *Covid-19* pandemic state which requires learning from home. This distance learning e-learning requires internet facilities as the main factor for the smooth running of *e-learning*, this is in line with the opinion (Yazdi, 2013) that e-learning is a form of distance learning that uses electronic circuits such as the internet to convey learning content, interaction or guidance to students.

In its implementation, e-learning also requires a media or better known as a platform that can support the implementation of *e-learning* itself, one of the platforms that can be used in the e-learning learning process is *edmodo*. according to (Vera & Nilam, 2019) *edmodo* is a positive learning environment that provides a path for interaction among students and educators in an academic atmosphere.

Edmodo can be used as a learning communication platform to support learner learning at the individual, group and whole class level, both inside and outside the classroom, which can be used across formal and informal learning settings, enabling learners to collaborate, communicate, submit assignments and uploading and downloading files, and educators to share lecture notes with students, connect to useful websites, upload and download learning references for students, create online quizzes, notification news and agenda events (Kong & Song, 2014).

An educator can easily manage a system that provides the best and practical features, so that teachers are always connected with students and manage students' activities easily. Learning activities that can be used are in accordance with the features available on *edmodo*, namely content sharing

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or sharing subject matter, assignments, quizzes, and allowing discussion activities on the comments feature, this is in line with the opinion (Al-said, 2015) states that *edmodo* learning can accessed via the web and smartphone (Windows Phone, iOS, Android, etc.) online in which there is a virtual room for educators and students to discuss ideas and share files (text, images, audio, and video).

Planting concepts can be easily accepted for students if the teaching and learning process at *edmodo* is not preoccupied with other things such as advertisements, online games and so on, this is supported by the opinion (Shams et al, 2015) that *edmodo* is a safe online learning environment and free of advertisements, games and other distractions that can be used to communicate between educators and students both lessons, homework, and collaborating with classmates. The results of research conducted by (Al-said, 2015) state that the *edmodo* learning process can create interesting, innovative and effective learning activities and can save time. Other research is also supported by (Al-Kathiri, 2015) which states that using *edmodo* has many challenges and good potential in learning.

IV. CONCLUSION AND SUGGESTION

Conclusion

Based on the results of the research and data analysis obtained, it can be concluded that there is a significant positive effect on the use of *WhatsApp*-assisted *Edmodo* on student learning outcomes. This influence is shown through the criteria for testing the hypothesis

where is greater than t table. This means that the average value of the experimental class exceeds the minimum completeness criteria (KKM). The effect size obtained is 1.56 with strong effect criteria.

Suggestion

1. Lesson planning should be organized, communicative and flexible.
2. Providing more interactive learning will bring a more enjoyable learning atmosphere and is well absorbed by students.
3. The freedom or freedom for students to explore other learning sources.

REFERENCES

- Al-kathiri F. (2015). Beyond the Classroom Walls Edmodo in Saudi Secondary School EFL Instruction, Attitudes and Challenges. *Journal Canadian Center of Science and Education*. 8(1), 189-204.
- Al-said, K. M. (2015). Student's Perceptions of Edmodo and Mobile Learning and their Real Barriers towards them. *The Turkish online Jurnal of Educationnal Technology (TOJET)*. 14 (2), 167-180.
- Arota Anjas., Mursalin., Abdul Haris Odja. (2020). The effectiveness of e-learning based on SETS to improve students' critical thinking skills in optical instrument material. *Journal of physics: Conference Series. Conf. Ser. 1521 022062*.
- Hanum, Numiek Sulisty. (2013). E-Learning Effectiveness as Learning Media (Evaluation Study of E-Learning Learning Model of Telkom Sandhy Putra Purwokerto Vocational School). *Journal of Vocational Research*. Vol 3 No 1.
- Kamarga, Hansiswany. (2011). Constructing Online Based History Learning: Comparison Of Learning Content Management System (LCMS) To

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We highly recommend to cite min. 2 relevant articles of this journal.

- Learning Management System (LMS). *International Journal of History Education*. Vol. XII, No. 2.
- Kong, S. C., & Song, Y. (2014). The Impact of a Principle-based Pedagogical Design on Inquiry-based Learning in a Seamless Learning Environment in Hong Kong. *Educational Technology & Society*, 17(2), 127–141.
- Rusli Muhammad, Dadang Hermawan, Ni Nyoman Supuwiningsih. (2017). *Innovative Multimedia Learning Basic Principles And Development Models*. Yogyakarta: Publisher Andi.
- Sahidillah, Muhammad Wildan & Miftahrisqi, Prarasto. (2019). Whatsapp as a digital media for student literacy. *Varia Education*. Vol. 31 No.1.52-57.
- Shams Abadi, B. B., Ahmadi, S. D., & Mehrdad, A.G. (2015). The Effect of Edmodo on EFL Learner's Writing Performance. *International Journal of Educational Investigations*. 2(2), 88–97.
- Vera Dewi Kartini Omposunggu & Nilam Sari. (2019). The Effectiveness of Using Edmodo-Based E-Learning on Mathematics Communication Skills. *Curere's Journal*. Vol. 3 No.2.
- Yazdi, Mohammad (2013). E-Learning as Information Technology Based Interactive Learning Media. *Faristek Scientific Journal*. Vol. 2 No. 1.



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The Effect of the Application of *E-Learning* on the Use of *Edmodo* with *Whatsapp* Assisted on the Learning Outcomes of Students on the Concept of Sound Waves

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Abstract – This study aims to see the learning outcomes of students in the application of *e-learning* in the use of *whatsapp* assisted *edmodo* on learning outcomes in the concept of sound waves. In addition, students' responses to the treatments given are also observations as material for the evaluation of researchers. The research method used was experimental with a quasi-experimental approach as a research method. The implementation was carried out at SMA Negeri 1 Gorontalo even semester of the 2019/2020 academic year, with the research subjects of class XI IPA 8, with a total of 20 students. Data collection on learning outcomes was carried out based on the results of test results by students. Analysis of research data using data normality test and statistical t test. Based on the results of the hypothesis, it is known that the t value is 5.53 where this price is greater than 1.72 which is the price of the table, then H_0 is accepted and H_1 is rejected, so that there is a significant positive effect using *whatsapp* assisted *edmodo* on learning outcomes in the concept of sound waves. Judging from the mean value of the pretest and posttest students from the experimental class, it can be concluded that the increase in student learning outcomes on the concept of sound waves has a strong effect criteria.

Keywords: *Edmodo*, *E-learning*, Learning Outcomes, *Whatsapp* assistance

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I. INTRODUCTION

Educators have an important role in shaping human resources to become more qualified, so that learning in the mastery of science and technology must be better. In the learning process, there are two important things that support a quality of learning, namely methods and media. The position of learning methods and media is closely related because the main function of learning media is

as a teaching aid that supports the use of learning methods used by educators.

Information Technology (IT) is able to become a media and a broad learning resource, enabling students to learn independently. The need for IT-based teaching and learning concepts and mechanisms is something that needs serious attention. This concept known as e-learning has an effect on the transformation of conventional education into digital form.

This is in line with the opinion (Hanum, 2013) that e-learning is aimed at making a transformation of the learning process in schools or colleges into a digital form bridged by internet technology.

Currently the *e-learning* program is a hot topic of conversation among educators, parents and students due to conditions and circumstances that demand e-learning. According to (Rusli et al, 2017: 74) *e-learning* is learning centered on students using electronic media or learning based on information technology or multimedia.

Since the *Covid-19* pandemic that occurred around the world, all teachers have been required to carry out learning activities from home. *E-learning* is one that is required in the world of education from elementary to tertiary level. In general, universities have an e-learning learning system created, but activities are very limited. Especially for Gorontalo State University, it already has e-learning through SIAT. The *Covid-19* emergency response requires lecturers and students to study and carry out online learning (Arota et al, 2020).

The use of *e-learning* as technology also needs a plan to be able to carry out effective learning and improve student learning outcomes. The atmosphere of *e-learning* will force students to play a more active role in learning, this is because *e-learning* requires students to look for other learning materials or resources with their own efforts and initiatives.

The emergence of e-learning shows the various kinds of online learning media used by teachers such as *google classroom*, *schoolology*, *edmodo* and others. Of the various kinds of learning media that exist, the writer is more interested in using *edmodo* as an e-learning medium. *Edmodo* is one of the e-learning media in Indonesia, *edmodo* is interactive which is equipped with communication facilities between students and educators, among educators, and parents who can be

connected with educators and students as well as other learning resources that can be accessed by students.

Edmodo is described as using a social networking concept that resembles *Facebook*, so that this system has features similar to *Facebook*, and even almost everyone says that *Edmodo* is the *Facebook* for educational schools. This is in line with the opinion (Kamarga, 2011) that *edmodo* is designed to be school-based to support the learning process. Apart from social networking among its users, *edmodo* is equipped with several learning activities, such as quizzes, assignments, polls, grade books, libraries, award badges, and parent code. For teaching materials, *edmodo* supports teaching materials in the form of files and links.

The problem around us is that the use of gadgets as information technology is underutilized in the education sector, instead it is used for things that are less useful, such as the use of online and offline games as well as excessive use of social media which is dominated by teenagers or students. *Whatsapp* as one of the most influential social media and is widely used by people in Indonesia. This is because *WhatsApp* messenger is an information technology application that is very easy to use as a communication tool (Sahidillah & Miftahurrisqi, 2019).

In *whatsapp* messenger there is a group chat feature which is very easy to use to form an online discussion forum (anywhere and anytime). The use of *whatsapp* by students is only limited to communicating, it doesn't take advantage of the sending features in the form of files, videos and teaching materials that support the learning process and increase their knowledge (Sahidillah & Miftahurrisqi, 2019). The application of e-learning learning from various learning media that was used previously was fairly stiff and boring, resulting in a lack of student interest in learning during e-learning. In this study, the learning media

used are very communicative and flexible with a social media approach, namely the use of edmodo which resembles Facebook and has features that support e-learning learning and is assisted by WhatsApp social media which is easy to use as a means of communication between educators and learners.

II. METHODS

The research method used in this study is an experimental method with an experimental design of One Group Pretest-Posttest Design. This design is a research technique by giving a pretest before treatment and posttest after being given treatment. This research design can be shown in table 1 below.

Table 1. Research Design

<i>Pre test</i>	<i>Treatment</i>	<i>Post test</i>
X1	P	X2

Information:

X₁: Learning outcomes before treatment

P : Treatment, using *whatsapp* assisted *edmodo*

X₂: Learning outcomes after treatment

The treatment in this study refers to the use of *edmodo* assisted by *WhatsApp*. The pretest and posttest were in the form of essay questions totaling 11 numbers with sound wave material at the cognitive level of understanding (C2), applying (C3), and analyzing (C4). The learning aspects in the classroom can be shown in table 2 below.

Table 2. Learning Aspects

Aspect	Experiment Class
Nature of Meeting	Online
Learning Materials	Sound Waves
Time	8 Hours of Learning
Meeting	5 times Meeting
Learning Media	<i>Whatsapp</i> Social Media and <i>Edmodo</i>
Learning Tools	Laptop/Computer/Smart phone
Learning Methods	Discussion, Assignment and Evaluation

III. RESULTS AND DISCUSSION

The results of the research obtained will be tested in the hypothesis which aims to determine whether there is a positive effect of using *whatsapp* assisted *edmodo* on student learning outcomes. After that, we will also see the scale of effectiveness in the use of *whatsapp* assisted *edmodo* by using the effect size analysis which aims to determine the level of effectiveness of the treatment model or learning method that has been applied to students.

Results

• Hypothesis testing

Hypothesis testing aims to determine whether there is a positive effect of the treatment given on student learning outcomes. The results of the hypothesis statistical test obtained can be seen in table 3 below.

Table 3. Hypothesis Testing Results

Class	T_{count}	T_{table}	Status
Experiment	5.53	1.72	H ₀ be Accepted

Based on table 3 shows the calculation of the hypothesis test, it is obtained that $t_{count} > t_{table}$ for the level $\alpha = 0.05$. Then H₀ is accepted and H₁ is rejected. So that the application of *e-learning* on the use of *Whatsapp* assisted *Edmodo* has a significant positive effect on student learning outcomes on the concept of sound waves.

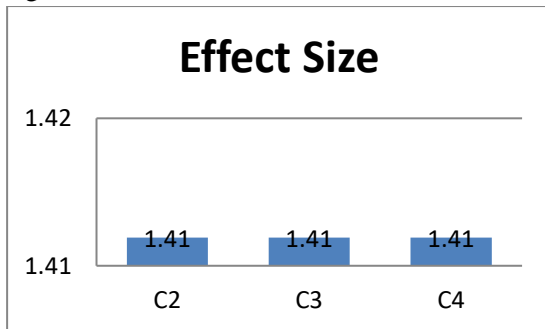
• Effect Size

To see the effect size of learning outcomes in e-learning learning on the use of *Whatsapp* assisted *Edmodo* using an essay test of 11 question numbers with 6 indicators. The effect size can be considered as a measure of the meaning of a study. Based on the data analysis of the pretest and posttest results at the beginning and at the end of the meeting, the average score of students' learning outcomes tests and the effect size can be seen in table 4 below.

Table 4. Recapitulation of Average Learning Outcomes Tests and *Effect Size*

Test	Average	<i>Effect Size</i>	
		Score	Criteria
<i>Pretest</i>	43.25	1.56	<i>Strong effect</i>
<i>Posttest</i>	68.83		

Based on table 4, it can be interpreted that the use of *WhatsApp* assisted *Edmodo* has increased in student learning outcomes with an average pretest or before treatment value of 43.25 and a posttest or after treatment value of 68.83 with an effect size value of 1.56 Strong effect criteria. The effect size value for each level of cognitive questions can be seen in figure 1 below.

**Figure 1.** Effect size of each Cognitive Level Problem

Based on Figure 1 above, the effect size of each cognitive level of questions, be it C2, C3 or C4, has a value of 1.41 where this value is included in the strong effect criteria. Thus the use of *whatsapp*-assisted *edmodo* both in terms of understanding, application and analysis of students experiences strong effectiveness when learning e-learning.

This effectiveness is able to provide a positive influence on student learning outcomes, at the same time it can be a good alternative when learning distance with a choice of communicative and flexible learning media.

Discussion

This research, which was conducted at SMA Negeri 1 Kota Gorontalo, aims to see the effect of using *edmodo* assisted by *WhatsApp* on student learning outcomes. This research

provides an alternative in teaching and learning activities between teachers and students with the current *Covid-19* pandemic state which requires learning from home. This distance learning e-learning requires internet facilities as the main factor for the smooth running of *e-learning*, this is in line with the opinion (Yazdi, 2013) that e-learning is a form of distance learning that uses electronic circuits such as the internet to convey learning content, interaction or guidance to students.

In its implementation, e-learning also requires a media or better known as a platform that can support the implementation of *e-learning* itself, one of the platforms that can be used in the e-learning learning process is *edmodo*. according to (Vera & Nilam, 2019) *edmodo* is a positive learning environment that provides a path for interaction among students and educators in an academic atmosphere.

Edmodo can be used as a learning communication platform to support learner learning at the individual, group and whole class level, both inside and outside the classroom, which can be used across formal and informal learning settings, enabling learners to collaborate, communicate, submit assignments and uploading and downloading files, and educators to share lecture notes with students, connect to useful websites, upload and download learning references for students, create online quizzes, notification news and agenda events (Kong & Song, 2014).

An educator can easily manage a system that provides the best and practical features, so that teachers are always connected with students and manage students' activities easily. Learning activities that can be used are in accordance with the features available on *edmodo*, namely content sharing or sharing subject matter, assignments, quizzes, and allowing discussion activities on the comments feature, this is in line with the opinion (Al-said, 2015) states that *edmodo* learning can accessed via the web and smartphone (Windows Phone,

iOS, Android, etc.) online in which there is a virtual room for educators and students to discuss ideas and share files (text, images, audio, and video).

Planting concepts can be easily accepted for students if the teaching and learning process at *edmodo* is not preoccupied with other things such as advertisements, online games and so on, this is supported by the opinion (Shams et al, 2015) that *edmodo* is a safe online learning environment and free of advertisements, games and other distractions that can be used to communicate between educators and students both lessons, homework, and collaborating with classmates. The results of research conducted by (Al-said, 2015) state that the *edmodo* learning process can create interesting, innovative and effective learning activities and can save time. Other research is also supported by (Al-Kathiri, 2015) which states that using *edmodo* has many challenges and good potential in learning.

IV. CONCLUSION AND SUGGESTION

Conclusion

Based on the results of the research and data analysis obtained, it can be concluded that there is a significant positive effect on the use of *WhatsApp*-assisted *Edmodo* on student learning outcomes. This influence is shown through the criteria for testing the hypothesis where is greater than t table. This means that the average value of the experimental class exceeds the minimum completeness criteria (KKM). The effect size obtained is 1.56 with strong effect criteria.

Suggestion

1. Lesson planning should be organized, communicative and flexible.
2. Providing more interactive learning will bring a more enjoyable learning atmosphere and is well absorbed by students.
3. The freedom or freedom for students to explore other learning sources.

REFERENCES

- Al-kathiri F. (2015). Beyond the Classroom Walls Edmodo in Saudi Secondary School EFL Instruction, Attitudes and Challenges. *Journal Canadian Center of Science and Edocation*. 8(1), 189-204.
- Al-said, K. M. (2015). Student's Perceptions of Edmodo and Mobile Learning and their Real Barriers towards them. *The Turkish online Jurnal of Educationnal Technology (TOJET)*. 14 (2), 167–180.
- Arota Anjas., Mursalin., Abdul Haris Odja. (2020). The effectiveness of e-learning based on SETS to improve students' critical thinking skills in optical instrument material. *Journal of physics: Conference Series. Conf. Ser.* 1521 022062.
- Hanum, Numiek Sulistyo. (2013). E-Learning Effectiveness as Learning Media (Evaluation Study of E-Learning Learning Model of Telkom Sandhy Putra Purwokerto Vocational School). *Journal of Vocational Research*. Vol 3 No 1.
- Kamarga, Hansiswany. (2011). Constructing Online Based History Learning: Comparison Of Learning Content Management System (LCMS) To Learning Management System (LMS). *International Journal of History Education*. Vol. XII, No. 2.
- Kong, S. C., & Song, Y. (2014). The Impact of a Principle-based Pedagogical Design on Inquiry-based Learning in a Seamless Learning Environment in

- Hong Kong. *Educational Technology & Society*, 17(2), 127–141.
- Rusli Muhammad, Dadang Hermawan, Ni Nyoman Supuwiningasih. (2017). *Innovative Multimedia Learning Basic Principles And Development Models*. Yogyakarta: Publisher Andi.
- Sahidillah, Muhammad Wildan & Miftahrrisqi, Prarasto. (2019). Whatsapp as a digital media for student literacy. *Varia Education*. Vol. 31 No.1.52-57.
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LETTER OF ACCEPTANCE
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The officials of Jurnal Pendidikan Fisika (JPF) (Nationally Accredited) give special thanks for submitting article for January 2021 Edition. Based on reviewers' decision, we as the officials stated that:

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is **accepted** and is going to be published in Jurnal Pendidikan Fisika (JPF) January 2021 Edition.

The admission letter is made for appropriate use only. Thank you for the cooperation.

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Editor in-Chief
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