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## E-AGENDA SIMULATION: IS IT EFFECTIVE FOR IMPROVING STUDENTS' LEARNING COMPETENCIES AND MOTIVATION IN VOCATIONAL HIGH SCHOOL?

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### ABSTRACT

Innovative and interesting learning should be pursued by the teacher so that students will be more motivated to learn and can get better learning outcomes. In this study, we tried to test the effectiveness of the demonstration method assisted by e-Agenda simulation video learning media on the learning competence and motivation of filing subjects. The study was conducted with a quasi-experimental y with a nonequivalent control group design in SMK Negeri 1 Salatiga. There were 62 respondents in this study. Data were collected by two methods, namely tests and questionnaires. Independent sample tests were used for data analysis techniques. The findings showed that e-Agenda learning media can improve students' cognitive and psychomotor learning outcomes among students who learn to use e-Agenda learning media and students who learn to use manual agendas. We also found that e-agenda learning media influences student motivation. Thus, we concluded that the e-Agenda learning media can improve students' learning competencies and motivation. In addition, it also affects students to be more motivated to learn diligently. Future studies should explore other factors affecting media effectiveness.

**Keywords:** E-Agenda, learning media, student competencies, learning motivation

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#### Article history

*Received:*  
21 Maret 2022

*Revised:*  
13 April 2022

*Accepted:*  
01 Mei 2022

*Published:*  
27 May 2022

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**Citation (APA Style):** Ismiyati, Rahmanningrum, A. E., & Sholikah, M. (2022) E-agenda simulation: Is it effective for improving students' learning competencies and motivation in vocational high school? *Jurnal Pendidikan Teknologi dan Kejuruan*, 28(1), 47-62. <https://doi.org/10.21831/jptk.v28i1.33736>

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### INTRODUCTION

The development of industrial needs of the 4.0 industry demands all components in various fields, especially in education, to continue and thrive in line with the times. Thus, improvement efforts need to be made to prove the quality of education. Therefore, the essential aspect of determining education quality is the learning model and media. Supporting Chou, Chang, and Lu (2015), the benefits of media in the learning process are teaching materials will be more apparent meaning so that students can be better understood by students and master the learning objectives better.

Office Management program or Automation and Office Management (after this referred to as AOMP) has archival subjects in the curriculum 2013 revision 2018. There are materials in the storage of archives digitally and electronically. The results of learning archives subjects are

still not optimal. Therefore, one of the alternatives to increase the absorption of students in archives learning that highlights the ability to apply the basic concept of archives to create a good filling keeping process is to design teaching media development. Improving thinking in the educational process is a set of skills developed through the learning process (Kamania, et.al, 2014). Teachers in the learning process must strengthen and unite thinking with the mastery of knowledge or substance because knowledge and thinking can complement each other in further thought.

The use of Microsoft Access aims to make it easier for unstructured archives to be more systematic. Like Oktarina, et.al., (2019), Microsoft Access is one of the Microsoft Office Suites created to handle a database. Added by Westriningsih, Microsoft Access is a database program used for processing various types Westriningsih (2010). In Microsoft Access, some components support the creation of databases or databases, including tables, fields, queries, forms, reports, and data needed.

Vocational High School, which aims to prepare a work-ready workforce, is expected in the learning process to equip its students and adjust to the problems of the world of work. The competence of Automation and Office Governance expertise has archives subjects, in which there are storage materials and management of digital archives. On the other hand, this study discusses the AOMP. AOMP's skill package contains filing subjects. Filing subjects consist of document and records management. Handling incoming and outgoing letters is one of the materials in managing documents. However, the number of effective learning media is still limited, so students' skills are less than optimal as expected. This results in students having insufficient competence, so that they are less prepared to work in the industry.

Learning media is all that can be used to stimulate students' thoughts, feelings, attention, and abilities or skills. In addition, learning media also serves to encourage an effective learning process and to facilitate material from teachers to students. Added by Wibisono, Dyah, & Indrawati (2017) and Sholikah, Sutirman, & Hermanto (2020), learning media can increase student interest and willingness in a subject. Therefore, the role of learning media in education is indispensable.

Learning media is the most crucial component in school learning, because it can distribute knowledge more easily for students (De Jong, Specht, & Koper, 2008). On the grounds, the use of learning media should be adapted and improved according to technological developments. The development of technology produces learning processes based on digital technology. One of digital technology is simulation video.

Simulation videos conforming to Hakim (2017), Cheng et al. (2014), and Levett-Jones & Lapkin (2014) are interpreted as an audio visual in the concept of thematic learning, principles, procedures, and knowledge to help students understand learning materials. The simulation video

is processed into a learning medium with an attractive appearance. Depending on observations, student competence is still less because teachers still use conventional learning methods and teach only based on theory without practicing. Confirmed with the teacher of filing subject appeared that students are still not maximized in handling incoming and outgoing letters due to low intensity of the practice given, so students become less understanding about the material and practice.

The simulation video media is expected to help students improve their skills. Supporting the findings of Murtono & Miskiyah (2014) and Bell, Maeng, & Binns (2013), simulation learning was able to provide a positive influence for students in improving skills. Relevant research found that simulation media are appropriate learning media to improve students' intellectuals and skills (Ahlehagh & Dey, 2014; Berk, 2009; Muhariati, Nurlaila, & Mahdiyah, 2017). Currently the simulation video is very precise for the present, since students can be interested in observing the video.

Previous research explained that the development of digital archives learning media is considered effective in improving students' learning outcomes of SMK Negeri 3 Surakarta (Wahyu et.al, 2014). Supported by statistical calculations and obtained a significance score of  $0.002 < 0.005$  at the time of the effectiveness test between the experiment class and the control class showed a significant difference. The average value of the experiment class was 80.59; the control class was 77.97. The average score of post-test learning results concluded that the experimental class grade was better compared to the control class score. The difference between previous research with this research lies in digital archives learning video simulation in students' competency of AOMP. Also, this study also adds and motivational learning as a variable.

The purpose of this study was to determine the effectiveness of the learning media of e-Agenda (electronic agenda) to improve student competence. The use of appropriate learning media can help the learning process to run effectively. In the development of digitalization and the needs of industry 4.0, learning media based digital technology is needed. We choose digital technology media such as simulation video to be a source of student learning, since it can improve their skills. Additionally, simulation media are also beneficial for teachers to improve their skills and performance in using digital learning resources. Besides being useful for teachers, simulation media are beneficial for schools to improve the quality of learning in schools.

## **METHOD**

The study was a quasi-experimental study with a nonequivalent control group design. Implementation of this study is in SMK Negeri 1 Salatiga. This school is one of the most favorite vocational schools in Salatiga. The school was chosen because it has implemented a 2013 curriculum in which the curriculum not only prioritizes cognitive aspects, but also students'

affective and psychomotor aspects. The dependent variable is competences of cognitive, affective, and psychomotor. The independent variable is the simulation learning media and learning motivation.

The population is all students of AOMP in the 2019/2020 academic year. The population in this study was 106 students. We used purposive sampling to select for certain consideration. The consideration is found on the average grade value. Then, we determine the sample based on the two lowest average values of the three classes, namely class X AOMP3 (experimental class) and X AOMP1 (control class). Data collection uses two methods, namely test and questionnaire. Learning motivation is measured by adapting MSLQ (Motivated Strategies for Learning Questionnaires). The MSLQ instrument consists of 25 question items using five Likert scales (Josephine Ngina, Kinai, & Ndambuki, 2018; Lackey, 2014). Meanwhile, the measurement of student competency is carried out by giving a description test and practicum questions. The use of questionnaires is used to assess motivation and use of learning media.

Validation results for learning motivation show a greater correlation value ( $r_{count}$ )  $r_{cv}$  (critical value) of 0.254 and Cronbach's Alpha 0.971, which means the learning motivation questionnaire items are valid and reliable. The validation test is also carried out by considering the contents, constructs, and analysis of qualitative items. Data normality was tested with Kolmogorov Smirnov (KS), while homogeneity of variance was tested with the Levene test. Meanwhile, the research hypothesis was tested with paired samples t-test and independent sample t-test. Questionnaires for student motivation were analyzed with SPSS version 21.0 for windows.

## **RESULTS AND DISCUSSION**

Research data is collected before and after the learning process. Data is collected before the learning process is intended to classify and determine which classes are in the control class and experimental class. Data collected after the learning process aims to examine the differences of competency and the influence of learning media to learning motivation in the control class and experimental class.

The finding indicates that normality tests from the pretest and posttest in the experimental and control classes are more than  $\alpha$  ( $0.896 > 0.05$ ). It means that the competency values between the experimental and control classes are normally distributed. Levene test results for pretest data 0.575. The value is more than 0.05, so the value of competence in the pretest between the experimental class and the control class has homogeneous data. The significance value of the posttest data 0.682, so it can be concluded that the competency value in the posttest between the experimental and control classes has homogeneous data. After ensuring that the experimental class and the control class have the same level of knowledge, we can continue our research by providing treatment hinge on the experimental and control classes. E-Agenda video simulation

media is applied to the experimental class, while the control class still uses learning media as usual. The trial process lasted for three meetings. At the third meeting, students are given a test to see an increase in their learning competency.

Table 1. Descriptive statistics of students' competencies and motivation

Data	N	Range		$\bar{x}$		SD		
		Before	After	Before	After	Before	After	
Cognitive	C	28	24-100	41-100	57.7	79.4	6.38	2.53
	E	36	32-78	50-100	57.5	80.2	1.00	3.58
Affective	C	28	53-80	54-86	57.7	81.2	7.71	5.91
	E	36	47-73	48-99	44.2	71.6	6.42	5.53
Psychomotor	C	28	60-79	60-100	67.0	89.5	3.77	9.34
	E	36	35-86	70-100	49.0	96.7	3.87	5.91
Students' motivation	C	28	24-100	50-100	44.7	54.7	5.72	7.68
	E	36	30-100	41-100	43.7	56.5	6.26	9.61

\*C=Control class and E=Experimental class

Table 1 presents the findings before and after the learning process. Generally, the level of student learning motivation in each class tends to be low. Meanwhile, student competencies (pretest scores) at practicum of handling incoming and outgoing letters are also generally low. Both classes proved that significant differences in student motivation and competence (table 2). Previous research findings indicate that both classes have the same characteristics.

The next stage is the researchers collaborate with partners to plan learning activities for the experimental class. The series of activities before the learning process are (1) preparing the learning design using e-Agenda media; (2) preparing learning and tools; (3) preparing instrument assessment and data collection; (4) discussing the design of learning implementation, grouping students, and conducting simulations with students selected by partner teachers. During the learning process in class, the learning activities carried out by partner teachers are (1) explaining the competencies to be achieved in learning; (2) explaining the description of models and media learning that are applied; (3) grouping and organizing students into groups based on a predetermined plan; (4) asking students to simulate scheduling incoming and outgoing letters; (5) finishing the learning that has been done and the evaluating of learning process. The whole learning process was held in 3 meetings with 90 minutes of time allocated for each meeting.

After learning activities begin, students' motivation and competencies can be realized in table 1. In general, students' learning motivation in both classes is different. The average student learning motivation in the experimental class is lower than the control class. The average learning motivation in the experimental class was 43.78, lower than the average in the control class 44.72. However, the average motivation to learn in the final condition in the experimental class increased higher than the average in the control class.

*Effectiveness test*

The effectiveness test and hypothesis test in this study used the t test. Table 1 demonstrates students' competence in the control class is higher than the experimental class. On account of testing to prove whether there is a significant difference between the value of students' competency in the experimental and control classes by carrying the t test (table 2).

The test results in table 2 indicate that  $\alpha = 0,000$ . The significance value is less than 0.05, so it can be concluded that there are significant differences from the simulation video learning media on student motivation. Table 2 also marks that the posttest results from the experimental class were better than the control class. The results of this posttest showed an increase between the experimental and control classes than before.

The posttest results obtained were then tested using an independent sample test to prove whether there were significant differences between cognitive, affective, and psychomotor competencies in the experimental and control classes. These results indicate that students in the experimental class have better value than students in the control class. Next, we used paired samples t-test and independent sample t-test to test the hypothesis of cognitive, affective, and psychomotor competency data as illustrated in the table below.

**Table 2. Result of t-test for pretest and posttest**

Data		Levene's test				t-test		
		F	$\alpha$	t	Df	$\alpha$ (2-tailed)	Mean of difference	SE Difference
Students' competencies	Pre-test	0.176	0.575	1.750	62	0.000	3.772	2.698
	Post-test	0.788	0.935	2.822	62	0.000	7.621	2.274
Students' motivation	Initial	6.788	0.011	5.381	62	0.000	17.622	3.698
	Final	2.921	0.039	5.206	62	0.000	11.761	3.274

Table 3 indicates that the  $\alpha$  is  $0.000 < 0.05$ , and it means that hypothesis 1 (H1) which states there is an increase in students' cognitive learning outcomes by using e-Agenda is accepted. Improved learning outcomes are noted by the average cognitive value at pretest, the experimental class increases from 57.5 to 80.2 in the posttest. The average value of the control class also increased from 57.7 to 79.4, which means that the sum increase in the experimental class was 22.7 and in the control class was 21.7.

**Table 3. Test of paired samples t test**

Paired samples test	Data
Mean	19.80083
SD	11.08136
SE	1.84689

t	-10.721
$\alpha$ (2-tailed)	0.000

Next, we conducted an independent sample t-test as proven in table 3 to find out if there is a significant difference in the learning media for psychomotor learning outcomes between the control class and the experimental class (H2). Table 3 explained that  $\alpha = 0.000$  is lower than 0.05, then hypothesis 2 which states that there is a significant difference of media learning on psychomotor learning outcomes between the control class and the experimental class is accepted.

Table 4. Result of independent samples t-test

Variables	t-test for equality of means				
	t	Df	$\alpha$ (2-tailed)	MD	SE
Psychomotor competence	5.38	62	0.000	17.62	3.27
	5.82	62	0.000	17.62	3.02

The linear relationship between e-Agenda video simulation media and students' learning motivation was analyzed using regression (see table 5). Table 5 displayed that R (correlation) is 0.733. It means that the relationship between the two variables in the category is good. Correlation analysis table also proves that R square is 0.518 or 51.8%, so it can be assumed that the simulation video media affects 51.8% of student motivation.

Table 5. Coefficient test output

Information	Mean
R	0.733
R square	0.518
Adjusted R square	0.011
SE of the estimate	5.752

Table 6. Output of  $\alpha$  value

Data	Mean
Mean square	20.228
F count	0.611
$\alpha$	0.000

Table 6 aims to establish the significance or linearity of a regression. The criteria used are found on the significance value test where the significance value is lower than 0.05. Table 6 establishes the significance value of 0.000, meaning that the significance value is less than 0.05. On the other hand, the regression equation model is significant

*Result of learning media questionnaire*

Learning media analysis was used to find out the function of the learning media while the ease of use questionnaire was used to determine the level of ease of use of the learning media that has been given to students after participating in filing learning for 3 meetings. The data

recapitulation can be marked in Table 7. It declares that the control class with a percentage of 75.86% obtained an average answer agreed using agenda book (manual agenda) learning media while the experimental class obtained an average value of 82.8% or the criterion is very strongly agreed to use e-Agenda learning media on the material for handling letters in filing subjects. Meanwhile, a poll of the ease of use for learning media is presented in table 8 that the percentage of the control class reached 74.08% with the agreed criteria on the experimental class gaining an average of 85.98% with a highly agreed criteria in measuring the ease of use of learning media.

Table 7. Recapitulation of learning media function analysis

Function		$\Sigma$	Max.	%	Status
Increasing learning motivation of students	C	435	560	77.60	S
	E	598	720	83.05	SS
Providing and enhancing students learning variations	C	415	560	74.10	S
	E	600	720	83.33	SS
Providing structure for learning material and making it easier for students to learn	C	407	560	72.67	S
	E	577	720	80.13	S
Providing a systematic core of information making it easier for students to learn	C	335	420	79.76	S
	E	460	540	85.18	SS
Stimulating students to focus and analyze	C	300	420	71.42	S
	E	440	540	81.48	SS
Creating conditions and learning situations without pressure	C	423	560	75.53	S
	E	596	720	82.78	SS
Students systematically understand the subject matter presented by the instructor through learning media	C	448	560	80.00	S
	E	603	720	83.75	SS
Average	C			75.86	S
	E			82.81	SS

\*C uses agenda book media and E uses e-agenda learning media

Tabel 8. Recapitulation of students' ease questionnaire

Students' Ease	Class	Score	Max.	%	Status
Easy to learn	C	315	420	75.00	S
	E	454	560	84.07	SS
Controllable	C	368	560	65.71	R
	E	636	720	88.33	SS
Clear and understandable	C	342	420	81.42	SS
	E	446	540	82.59	SS
Flexible	C	310	420	73.80	S
	E	477	540	88.33	SS
Easy to become skillful	C	323	420	76.90	S
	E	481	540	89.07	SS
Easy to Use	C	310	420	71.67	S
	E	451	540	83.51	SS
Average	C			74.08	S
	E			85.98	SS



Found on the findings of hypothesis testing, it can be said that e-Agenda learning media is effectively used in filing subjects in the material, as the average class is overall more than 75%. Although the average of skills value of control class reached 67, while the average of skills value of experimental class reached 48. However, the average value of student's cognitive learning outcomes in the experimental class was higher than the control class. This difference is due to several factors affecting student learning outcomes. The first factor is the difference in the ratio of the number of students who take lessons, in which the student in control class is 28 students because 7 students are following the practice of the production unit, so they cannot participate in learning. Even if in the experimental class, there are 36 students. With the number of students, it will be affected by the materials learned, then the learning outcomes will be more improved, because there is concentration in attention, in turn learning outcomes will be more successful. In line with Wahyuningsih, Nurbayani, & Saugi (2019), there is an effect of the number of student ratios on the effectiveness of Islamic Religious Education learning in Samarinda Vocational High School at 7.9% .

The second factor that causes differences in learning outcomes is the different learning time, in which the control class is performed at 7 A.M. and 9 A.M., though for the experimental class takes place at 1 P.M. Learning time differences can affect student learning outcomes. This finding is consistent with the concept submitted by Siregar & Nara (2013) that there are external factors affecting learning outcomes. One of which is the learning time factor where learning in the morning is more effective than learning at other times. Supported by Lestari (2015), there is a significant influence of learning time on student learning outcomes. Furthermore, the third factor is filing learning where students are not accustomed to use learning media based technology digital. The level of mastery of technology is still lacking and students are still in the process of transition from using conventional learning media to technology which certainly needs training, so students are accustomed to use it.

The finding is consistent with the theory of Learning Law by Thorndike which is the law of readiness where the relationship between stimulus and response will be strong when practice is often done (Rifa'i & Anni, 2013). Reinforced with Hamalik (2011), practicing in teaching and learning relationships is an act of repetition that aims to improve learning outcomes. In line with Siagian (2015), students' learning habits influence learning achievement. Earliest studies also found that learning habits is very influential on student learning outcomes (Achmad, Mujasam, Yusuf, & Widyaningsih, 2018; Berutu & Tambunan, 2018; Magfirah, Rahman, & Sulasteri, 2015; Nur'ainun, 2017; Schwabe, Dickinson, & Wolf, 2011).

In the attitude assessment, there are five aspects that are observed, namely honesty, discipline, responsibility, critical and respect. Attitude assessment gained from observations by researchers using observation sheets. Attitude assessment aims to find out how students' attitudes

during the learning process both in the experimental class and the control class. On observing student attitudes, we obtain that experimental class gets excellent criteria for all aspects. While the control class gets excellent criteria for four aspects, and good criteria for aspects of critical attitude. In the enthusiastic learning process or the level of curiosity, the experimental class is higher than the control class. It proves that the activity level of students in the experimental class is more active than the control class. As stated in Kemp & Dayton (1985), the information in learning media should involve students. In accordance with Susanto (2016), learning is said to be effective if all students can be actively involved, both physically, mentally, and socially. From the three aspects of learning outcomes, it can be stacked up that learning media has an influence on learning outcomes of both cognitive, affective and psychomotor.

At all three competencies, the cognitive, affective and psychomotor aspects for the control class, they obtained a classical completeness of 78.8% with very effective criteria, and the experimental class of 75.03% with effective criterion. Therefore, the e-Agenda learning media is effective pursuant to the National Education Department stating that learning is said to be complete when it reaches  $\geq 75\%$ . In line with the theory of connectionism, learning is the process of interaction between stimulus (which may be thoughts, feelings, or movements) and responses (which can also form thoughts, feelings, or movements). Supported by Mardhiah & Akbar (2018), Sawyer et al. (2012), Williams-Bell, Kapralos, Hogue, Murphy, & Weckman (2015) explained that effective learning media can improve student learning outcomes.

The results of linear regression analysis displayed that the e-Agenda simulation video learning media has a significant effect on students' learning motivation. We indicate that the coefficient of determination is 0.518, and it means the learning with this media has a positive effect of 51.8% on increasing student motivation. Meanwhile, 48.2% is influenced by other factors not examined in this study. Furthermore, the results of t-test presented that there is a significant influence between the e-Agenda learning media on learning motivation. The count of t values is greater than t table ( $9,455 > 1,671$ ) with  $\alpha = 5\%$ . So, the hypothesis which states the e-Agenda video simulation media influences learning motivation significantly. Similar with previous studies that the simulation video media has a very high impact on learning motivation (Asari, 2017; Hidayat, Hadi, Basith, & Suwandi, 2018; Oh, Jeon, & Koh, 2015; Putri Srinadi, 2015). Added by Sukiyasa & Sukoco (2013), Cook & Artino (2016), and Candralaela, Jubaedah, & Ningsih (2018), significantly, the use of video simulation media affects learning outcomes and motivation. Several studies also found that students' learning outcomes and motivation taught with video simulation media is higher than conventional media and powerpoint (Guillén-Nieto & Aleson-Carbonell, 2012; Khan, Sun, & Ifeachor, 2012).

In the use of learning media, student response factors are very important to note because the success of learning is not only seen from the results of learning, but also supported by students'

responses after participating in learning in Filing Subjects. Found on the results of the analysis of the learning media function, the percentage result of the control class is 75.9% of students, while 82% of students in the experimental class answered strongly agree. Similar to Sundayana (2015), learning media has functions such as increasing students' motivation, giving the learning variations, so students can systematically understand the subject through learning media. In line with Winarto, Haryanto, & Sugianto (2019), students' learning motivation increased from the result of N-gain test around 0.8 in the high category after using simulation video as learning media.

In addition, when we check on a poll of the ease of use of learning media, the average student in the control class answered agrees with the ease of using the agenda book (73.5%). Meanwhile, the average student in the experimental class strongly agrees with the ease of use of e-Agenda (86.1%). The findings are consistent with the ease of use theory by Davis (1993) and Jogiyanto (2007) that is easy to learn, control, become skilled, and flexible conforming to the use of e-Agenda learning media. Setiawan (2018) states that in developing the scientific and communication skills, the use of media learning based ICT is more effective than the use of teaching aids learning media. In consonance with Ningsih, Riyanto, & Suyanto (2019) and Bhatnagar, Saoji, & Banerjee (2011), the feasibility of learning media based IT is demonstrated through teachers and students responses to media questionnaires which can enhance student creativity and improve learning outcomes.

The use of learning media is certainly related to the selection of learning methods used so that learning can run effectively. The learning method used in this study is the demonstration method, because it adapts to the learning media used, namely the agenda book and e-Agenda. Previous research found that students' learning outcomes taught by demonstration methods are better used in simulation video media, because it can improve the learning outcomes (Fawaz & Hamdan-Mansour, 2016; Kizilcec & Schneider, 2015; Nurhayati, Fadilah, & Mutmainah, 2014). Depending on the students' responses, the use of demonstration methods assisted by e-Agenda learning media is effective for use in filing learning, because it can attract students' interest to learn and make the learning process more interactive. In addition, it is very efficient in costs, providing the learning experiences and improving the quality of students' learning outcomes.

## **CONCLUSION**

Depending on the results and discussion of the study, it can be concluded that (1) e-Agenda learning media can improve student cognitive learning outcomes. It can be found out from the pre-test and post-test values of the experimental class which were tested by paired samples t-test with a significance of 0.00 which is less than 0.05. (2) There is a significant difference in psychomotor learning outcomes with e-Agenda learning media. It can be seen from

the results of the experimental class practice results and the control class are tested with independent samples t-test, which is a significance of 0.00 less than 0.05. (3) The e-Agenda learning media is effectively implemented in filing subjects. It is seen from the average classical completeness of the experimental class that is equal to 75.03%. (4) The adoption of simulation video learning media can increase student motivation. Therefore, the learning media is not only aimed at improving student' competence, but also increasing student' learning motivation about handling incoming and outgoing letters on filing subjects. For subsequent research, they can investigate more variables affecting the effectiveness of learning media.

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