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Development of Textbooks Operating Augmented Reality Assisted Office Machines to Increase Student's Learning Motivation

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Abstract

This study aims to: 1) determine the feasibility of Augmented Reality-assisted textbooks according to material experts, media experts, learning practitioners and students, 2) determine the effectiveness of Augmented Reality-assisted textbooks to increase learning motivation. This type of research is Research and Development (R&D) using the Borg and Gall model. The product feasibility test was carried out by 1 material expert, 2 media experts, 2 learning practitioners, 17 students of SMK Marsudi Luhur, and 28 students of SMK Muhammadiyah 2 Yogyakarta. The test subjects in testing the effectiveness of motivation were 28 students in the Automation and Office Governance Skills Competence (OTKP) of SMK Muhammadiyah 2 Yogyakarta with the subjects of Automation and Management of Facilities and Infrastructure. The results showed that 1) the assessment of the feasibility of the material carried out by material experts, media experts, learning practitioners, small group trial students and large group trial students in general was categorized as very good. These results indicate that the developed media is suitable for use in learning, 2) there is an increase in student learning motivation which is higher after using the media compared to before using the medium category.

Keywords: *Textbooks; Augmented Reality; Student Learning Motivation*

Introduction

Education is the need of every individual in improving the quality of self as well as one of the efforts for individuals, society, and the state in improving the quality of human resources. Vocational High School (SMK) is a form of education unit that is oriented towards providing students with skills to enter the world of work in accordance with the field of interest through the division of competency areas. Vocational schools that are designed to produce graduates who are ready to enter the world of work actually contribute to the highest unemployment rate in Indonesia. These problems are certainly a concern from the government, society, and the current education system as well as the factors that underlie the creation of incompetent SMK graduates. One of the factors that underlie the lack of competence of SMK graduates is the low learning motivation of SMK students. Khodijah (2014: 151) says that motivation is a driving force that converts one's energy into a real form of activity in order to achieve the desired goal. Meanwhile, another opinion was conveyed by Siagian (2004: 138) that motivation is a driving force that causes a person to be willing and willing to devote his ability, energy and time to achieve certain goals.

The results of research conducted by (Kurniawati et al., 2022) that learning motivation has a positive effect on student learning. Motivation is a power that can encourage someone to do a real activity, one of which is learning activities. A student will study seriously if there is a motivating factor, namely learning motivation. Students will learn well if they have a strong learning motivation.

The Office Automation and Governance (OTKP) skill competency is one of the skill competencies in secondary schools. One of the subjects in the OTKP expertise competency is Automation and Infrastructure Management. Ideally, this subject is dominated by practical learning, one of which is the practice of operating office machines. According to Vida Hasna Farida, et al (2008: 21) office machines are all tools used to collect, record, and process informational materials that work mechanically, electrically, electronically, magnetically, or chemically. Students can understand how to operate office machines if they can practice office machines directly. Practical learning must be supported by adequate school infrastructure and facilities, namely the availability of the tools or office machines needed. Meanwhile, schools that do not have complete facilities will certainly be hampered in the learning process, especially for practical learning. The learning process becomes meaningless if the learning that should be done with practice is not done properly. Learning that does not hit will make students' motivation to learn at school to be low.

Based on the results of observations made at SMK Muhammadiyah 2 Yogyakarta on Office Automation and Governance (OTKP) Expertise Competencies, it shows that the facilities owned are not adequate for learning the practice of operating office machines. The school only has 2 out of 10 office machines that should be available as office machines practice tools. The subject teachers use module media and youtube videos in providing material on the operation of office machines due to incomplete learning infrastructure in schools or the unavailability of office machines needed for practice. Based on the results of observations made at SMK Muhammadiyah Karangmojo there are obstacles in learning the practice of operating office machines due to the lack of tools or office machines used as practical tools. The school only has 4 out of 10 office machines that are ideally available as practice tools. Observations were also made at the Marsudi Luhur Vocational School in Yogyakarta City where the problems that occurred were not much different from the two previous schools. The school has 2 out of 10 office machines ideally available as practice tools.

Based on the results of observations made in the three schools, they have the same problems related to learning the practice of operating office machines, namely the limitations of tools or practical facilities owned by the school and the use of learning media that is not in accordance with the characteristics of the subject. The limitations of tools are certainly not an easy matter to find a solution because these problems are related to the ability of each school in the procurement of school facilities. Another problem is the use of learning media modules and learning videos via YouTube as a substitute for practical learning. According to Cheppy Riyana (2007) learning video media is media that presents audio and visuals that contain good learning messages that contain concepts, principles, procedures, knowledge application theory to help understanding of a learning material. Video is a visible and heard learning material (audio visual) because it can present sound and visual simultaneously. The use of instructional video media is very well used to support the learning process in order to attract students' interest compared to the use of print media such as modules or Student Worksheets (LKS). However, the use of learning video media is not suitable for use as a medium for learning the practice of operating office machines. This is because students can only see and hear but cannot touch or use office machines in the video. The other media in question must be able to facilitate students' practical learning but not give an excessive burden to the school by providing complete practical facilities. Thus, students can be motivated to participate in practical learning with limited facilities. Students who are motivated to learn will certainly have an impact on student learning outcomes in the form of increasing the skills of vocational students optimally. Desire and desire to succeed, drive and need for learning, future hopes and aspirations, appreciation in learning, and a conducive learning environment (Hamzah B. Uno, 2011: 23).

Based on a preliminary study conducted in January 2020 online, data was generated that the learning media preferred by students were as follows 87% of students liked learning media in digital form. One of the digital learning media that can be developed is a mobile application. The use smartphones owned by students must be used to support learning in this digital era, especially for vocational students who are required to be ready to enter the world of work with qualified skills. This can be achieved if it is supported by effective and efficient learning activities at the SMK level. Based on this, supporting facilities are needed in the form of learning media that can help increase student motivation with the following specifications: (1) learning media in the form of books and digitally by utilizing smartphones, (2) being able to display a visual object in three dimensions as a substitute for machines. office machines due to conceptual learning of office machines and lectures are less able to overcome the lack of mastery in operating office machines, (3) flexible or can be used anywhere and anytime not limited by space and time, and (4) selection of machines office machines contained in textbooks are adapted to the needs of the world of work and the curriculum used. One of the media that contains the above specifications is an Augmented Reality-assisted textbook.

According to Muslich (2010: 56-57) for students, textbooks are one of the effective media or tools to take experience and practice and seek information. Suryaman (2006: 5-6) also explains that textbooks provide structured material for student learning needs with a scientific basis, student needs, material and language readability, relevance, consistency, and adequacy. Augmented Reality (AR) is a technology that builds two-dimensional or three-dimensional virtual objects into a real three-dimensional environment, then projects these virtual objects in real time, but this system is closer to the real world. In short, Augmented Reality (AR) can be interpreted as a technology that combines the real world and digital technology. AR combines the real and virtual worlds (Akçayır & Akçayır, 2017; Azuma, 1997; KT Huang et al., 2019; Li et al., 2013) and changes the way humans interact with the physical environment. According to Dhika Prihantoro (2013: 1) the workings of the Augmented Reality (AR) application is that if a marker isdetectedby the camera, the results will be added to 2D and 3D objects displayed on the monitor screen. The results of combining real and virtual conditions are displayed interactively and in real-time.

The development of augmented reality-assisted learning media is expected to assist students in increasing motivation in learning.In this study, the measurement of motivation based on aspects of attention, relevance, satisfaction and trust can be done using the Instructional Materials Motivation Survey (IMMS) (Keller, 2010). IMMS is used to measure and identify issues related to student motivation in independent learning. This study uses the measurement of motivation with IMMS. The IMMS instrument has been widely used and has been proven to have consistency and validity in measuring student motivation, especially in electronic-based learning (B. Huang & Hew, 2016; Keller, 2010). IMMS has been used in various studies to measure motivation in electronic-based learning (Bolliger, Supanakorn, & Boggs, 2010; Cook, Beckman, Thomas, & Thompson, 2009; B. Huang & Hew, 2016; WH Huang, 2011; W. Huang, Huang, Diefes-dux, & Imbrie, 2006; Pittenger & Doering, 2010) and to measure students' motivation in learning with Augmented Reality (AR)-based media (Bacca, Baldiris, Fabregat, Kinshuk, & Graf, 2015; Bhagat et al., 2019; Di Serio et al., 2013)

The problem in this study is whether the textbook for operating office machines with augmented reality assistance that was developed is suitable for learning for students of class XI Vocational High Schools in the Department of OTKP? Can the augmented reality-assisted textbooks used to operate office machines increase students' learning motivation?

The purpose of this study was to determine the location of the book on operating office machines with augmented reality assistance for class XI OTKP which was developed in this study. Knowing the effectiveness of textbooks operating office machines assisted by augmented reality in increasing students' learning motivation.

Research Methods

This research uses the Research and Development (R&D) method.assisted textbooks augmented reality The procedure for developing this research has 10 development steps that have been modified, including: 1) preliminary study, 2) planning, 3) initial product development, 4) validation test, 5) revision I, 6) small group trial, 7) revision II, 8) large group trial, 9) final product revision, 10) dissemination. The trial design in this study consisted of several stages, including: 1) expert validity testing, 2) small group trials, and 3) large group trials. In the validity test, this research was conducted by 2 media experts, 1 material expert, and 2 learning practitioners who will provide an assessment of the product developed. Small group trials were conducted on 17 students of class XI OTKP SMK Marsudi Luhur. Meanwhile, large group trials will be conducted on 28 students of class XI OTKP SMK Muhammadiyah 2 Yogyakarta. The quasi-experimental design that will be used by the researcher is the one group pretest-posttest (Borg & Gall, 2007: 41).

The instruments used to collect data consisted of interview guidelines, product assessment feasibility questionnaires, and student learning motivation assessment questionnaires. The interview guide is used to find out the need for the product to be developed. Validation sheets are used to assess and evaluate the quality of the products developed both from the aspect of learning materials, aspects of learning media and the effect of pedagogy on learning. Student learning motivation assessment questionnaire was used to assess student learning motivation before and after using the developed product.

The instruments that have been made are then validated. This instrument uses expert judgment in determining validity. Determination of validity can use the V Aiken approach. Aiken's V value is said to be inappropriate if it is in the 0.0-0.4 range, said to be feasible with a value range of 0.4-0.8 and very feasible in the 0.8-1.00 range (Andrian, Kartowagiran, & Hadi, 2018). Meanwhile, the reliability calculation uses Cronbach's alpha. The instrument is said to be valid if it has a Cronbach's alpha coefficient of at least 0.70 (Hasani & Adnan, 2020; Suranto et al., 2014).

The initial data analysis technique obtained before the implementation of the research is data derived from questionnaires on student and teacher needs, interviews, observations and document studies, then the data obtained are analyzed using descriptive analysis techniques.

The technique of analyzing product feasibility data and student responses to the product is by means of data in the form of scores into qualitative data (interval data) with a scale of four. P The overall media feasibility assessment is carried out using the following formula:

$$Xt = \frac{\Sigma Xt}{N}$$

Description:

Xt = average score

Xt = total score

N = number of test subjects

The interpretations are categorized into "Very Bad", "Poor", " Good", and "Very Good".categories can be presented in the following table:

Table 1. Quality Criteria for Augmented Reality Assisted Textbooks

No	Interval	Criteria
1	>3.25 – 4.00	Very Good
2	>2.50 – 3.25	Good
3	>1.75 – 2.50	Poor
4	1.00 – 1.75	Very Poor

Source: (Widoyoko, 2015: 112)

The feasibility value of augmented reality-assisted textbook products is at least a "B" with the criteria of "Good".

The analytical technique to determine the increase in students' learning motivation in learning is carried out experimental activities. The type of experiment carried out in this study was the one group pretest-posttest design. Pretest and post-test based textbooks for Augmented Reality office machines. The pretest was conducted by giving motivational questionnaires to students during OTK learning facilities and infrastructure for office machines. The increase in student motivation is expressed in the standard Gain. Absolute Gain is obtained from the posttest average value minus the pretest average value with the formula:

$$\text{Std gain } \langle g \rangle = \frac{\text{Xposttest} - \text{Xpretest}}{\text{X} - \text{Xpretest}}$$

Where:

Xposttest = Mean Value Posttest

Xpretest = Mean Value Pretest

X = Maximum Value

The resulting standard gain is interpreted according to the following table:

Table 2. Criteria for Learning Motivation Gain

Value Value g	Classification
g 0.7	High
0.7 > g 0.3	Medium
g < 0.3	Low

The product developed is declared to be effective in increasing motivation student learning when getting a score with a moderate category.

Research Results and Discussion

The product is in the form of an Augmented Reality-assisted textbook consisting of textbooks and applications that can be used in the learning process of office machines for subjects in Automation of Facilities and Infrastructure Governance in Office Automation and Governance Expertise Competencies.This application has the name of office machine application. Office machine applications require markers contained in textbooks to run applications. The office machine application has a capacity of 111 MB and can be used on the Android operating system with a minimum specification of Android OS 4.4.5. This product was developed to overcome the problems that occur, namely the limitations of the tools used to practice operating office machines. This provides obstacles to students in implementing the

theory that has been studied. This product can be used by students in learning without using internet signals and packages because it is offline.

The results of this product's feasibility data include feasibility data by material experts, media experts, and learning practitioners. The data from the media expert assessment consists of 7 aspects, namely guidance and information on teaching materials, systematics of teaching materials, aesthetics of teaching materials, program performance, program systematics, program aesthetics, and animation quality. The data on the results of product feasibility assessments by media experts can be seen in table 3. In the aspect of guidance and information on teaching materials, the average value of 3.33 in the very good category, the systematic aspect of textbooks gets an average value of 3.79 in the very good category, and the aesthetics of textbooks. got an average score of 3.75 in the very good category, program performance got an average value of 3.33 in the very good category, program systematics got an average value of 3.33 in the very good category, program aesthetics got an average value of 3.63 in the very good category, and animation quality got an average value of 3.38 in the very good category. The overall average value of all aspects is 3.51 with a very good category.

Media feasibility assessment according to material experts consists of 4 aspects. The data on the results of the product feasibility assessment by media experts can be seen in table 4. The data according to the material expert shows an average score of 4.00 on the guidance and information aspects with a very good category, an average score of 3.85 on the material aspect with a very good category. an average score of 4.00 on the linguistic aspect in the very good category, and an average score of 3.80 on the pedagogical effect aspect in the very good category. The total average score is 3.88 in the very good category. So overall, AR-assisted textbook media according to material experts has a very good category.

The assessment of the feasibility of AR-assisted textbook media based on learning practitioners consists of 7 aspects. The data on the results of the product feasibility assessment by learning practitioners can be seen in table 5. The assessment data shows the results of an average score of 3.33 on the guidance and information aspects with a very good category, an average score of 3.57 on the material aspect with a very good category, an average score of 3.83 on the design aspect and media facilities in the very good category, the average score of 3.60 on the pedagogical effect aspect in the very good category, the average score of 3.33 on the systematic aspect in the very good category, an average of 3.38 on the aesthetic aspect in the very good category, and an average score of 3.70 on the aspect of narration and animation quality in the very good category. The average score of the total media feasibility assessment of learning practitioners is 3.60 with a very good category. So, overall, AR-assisted textbook media according to learning practitioners has a very good category.

Table 3. Data Feasibility Assessment of Media Experts

Aspect	Average Value	Category
of Guide and Textbook Information	3.33	Very Good
Textbook Systematics	3.70	Very Good
Textbook Aesthetics	3.75	Very Good
Program Performance	3.33	Very Good
Program Systematics	3.33	Very Good
Program Aesthetics	3.63	Very Good
Animation Quality	3.38	Very Good
Total	**3.51**	**Very Good**

Table 4. Feasibility Assessment Data Expert Material

Aspect	Average Value	Category
Guide and Information	4.00	Very Good
Material	3.85	Very Good
Language	4 ,00	Very Good
Pedagogical Effect	3,80	Very Good
Total	**3,88**	**Very Good**

Table 5. Feasibility Assessment Data for Media Experts

Aspect	Average Value	Category
Guide and Information	3,33	Very Good
Material	3,57	Very Good
Media Design and Facilities	3,83	Very Good
Pedagogical Effects	3.60	Very Good
Systematic	3.33	Very Good
Aesthetics	3.38	Very Good
Narration and Animation Quality	3.70	Very Good
Total	**3.60**	**Very Good**

Textbooks operating augmented reality-assisted office machines that have been evaluated by media experts, materials experts and learning practitioners are then used for small group trials. Small group trials were conducted on class XI students majoring in OTKP at SMK Marsudi Luhur Yogyakarta which consisted of 17 students. Data from student responses include aspects of guidance and information, materials, media design and facilities, and pedagogical effects. The data on student responses are presented in table 6. The results of the small group trial show that the guidance and information aspects get an average score of 3.47 with a very good category, the material aspect gets an average score of 3.54 with a very good category, the design aspect and media facilities get an average score of 3.67 in the very good category, and the pedagogical effect aspect gets an average score of 3.54 in the very good category. So that the conclusion from the small group trial results get an average value of 3.56 with a very good category.

The large group trial was carried out at SMK Muhammadiyah 2 Yogyakarta in Class XI Office Automation and Governance Skills Competence on 17-19 May 2022. This trial was attended by 28 students using AR-assisted office machine textbooks in learning Automation and Governance Facilities and infrastructure. The large group trial aims to test the feasibility of the media and determine the effectiveness of the media in increasing learning motivation and skills to operate office machines in class XI OTKP students. The large group trial resulted in the feasibility of the media which is presented in table 7.

The results of the large group trial show that the guidance and information aspects get an average score of 3.57 in the very good category, the material aspect gets an average score of 3.50 with a very good category. good, the design aspect and media facilities get an average score of 3.62 in the very good category, and the pedagogical effect aspect gets an average score of 3.46 in the very good category. So that the conclusion of the large group trial results get an average value of 3.54 with a very good category.

Table 6. Feasibility of Trial Media Small group

Aspect	Mean Value	Category
Guide and Information	3,47	Very Good
Material	3,54	Very Good
Media Design and Facilities	3,67	Very Good
Pedagogical Effect	3,54	Very Good
Total	**3,56**	**Very Good**

Table 7. Feasibility of Test Media Small group

Aspect	Mean Value	Category
Guide and Information	3,57	Very Good
Material	3,50	Very Good
Media Design and Facilities	3,62	Very Good
Pedagogical Effect	3,46	Very Good
Total	**3,54**	**Very Good**

Motivational results students before and after using were calculated using the standard gain. The results of the calculations are shown in table 8. Table 8 of the standard values for learning motivation gain shows that the results of the pretest and posttest are different and indicate a change in student motivation. The pretest value has an average value of 119.18 and the posttest value has an average value of 139.89 so that the standard gain value is 0.34 in the medium category.

Table 8. Standard Gain Values of Learning Motivation

Average Pretest Values Average Posttest	Values	Standard Gain Values
119.18	139.89	0.34

Motivation scores indicate that students have increased motivation scores after using office-assisted textbooks augmented reality.

Conclusion

Based on the results of data analysis and discussions that have been carried out, the following conclusions can be drawn.

In general, the quality of textbooks operating office machines assisted by augmented reality produced in the very good category, this can be seen from the results of the evaluation of material experts, media experts, learning practitioners, student responses in small group trials and large group trials on product developed. Thus, the product development of textbooks operating augmented reality that have been developed is suitable for use in learning.

assisted office machine textbooks augmented reality in practical activities to operate office machines can increase students' learning motivation. Students' learning motivation has a higher average score after using AR-assisted textbooks compared to before using the media.

Suggestions

Based on the research results that have been presented, the following can be suggested. First, this product can be used in learning OTK subjects. Facilities and Infrastructure for operating office machines, second, to carry out this learning the teacher can print or reproduce textbooks measuring 22 cm x 22 cm using hardcover on the cover and ivory paper on the content, third, this application can be installed by students for free and is not limited, but it is necessary to pay attention to the minimum specifications of cellphone that can be used and the available internal memory.

Reference

Akçayır, M., & Akçayır, G. (2017). Advantages and challenges associated with augmented reality for education: A systematic review of the literature. Educational Research Review, 20, 1–11. https://doi.org/10.1016/j.edurev.2016.11.002

Azuma, R. T. (1997). A survey of augmented reality. Presence: Teleoperators and Virtual Environments, 6(4), 355–385. https://doi.org/10.1162/pres.1997.6.4.355

Bacca, J., Baldiris, S., Fabregat, R., Kinshuk, & Graf, S. (2015). Mobile Augmented Reality in Vocational Education and Training. Procedia Computer Science, 75(Vare), 49–58. https://doi.org/10.1016/j.procs.2015.12.203

Bhagat, K. K., Liou, W. K., Michael Spector, J., & Chang, C. Y. (2019). To Use Augmented Reality or Not in Formative Assessment: a Comparative Study. Interactive Learning Environments, 27(5–6), 830–840. https://doi.org/10.1080/10494820.2018.1489857

Bolliger, D. U., Supanakorn, S., & Boggs, C. (2010). Computers & Education Impact of Podcasting on Student Motivation in the Online Learning Environment. Computers & Education, 55(2), 714–722. https://doi.org/10.1016/j.compedu.2010.03.004

Borg, W. R. and Gall, D. M. (1983). *Educational Research an Introduction, Fifth Edition.* USA: Pearson.

Cheppy Riyana. (2007). *Pedoman Pengembangan Media Video*. Jakarta: P3AI UPI.

Cook, D. A., Beckman, T. J., Thomas, K. G., & Thompson, W. G. (2009). Measuring Motivational Characteristics of Courses : Applying Keller ' s Instructional Materials Motivation Survey to a Web-Based Course. 84(11), 1505–1509.

Di Serio, Á., Ibáñez, M. B., & Kloos, C. D. (2013). Impact of an Augmented Reality System on Students' Motivation for a Visual Art Course. Computers and Education, 68, 586–596. https://doi.org/10.1016/j.compedu.2012.03.002

Hamzah B. Uno. (2011). *Teori Motivasi dan Pengukurannya: Analisis di Bidang Pendidikan*. Jakarta: Bumi aksara.

Hasani, L. M., & Adnan, H. R. (2020). Factors Affecting Student ' s Perceived Readiness on Abrupt Distance Learning Adoption : Indonesian Higher-Education Perspectives. (June). https://doi.org/10.13140/RG.2.2.22908.16008

Huang, B., & Hew, K. F. (2016). Measuring Learners ' Motivation Level in Massive Open Online Courses. 6(10). https://doi.org/10.7763/IJIET.2016.V6.788

Huang, K. T., Ball, C., Francis, J., Ratan, R., Boumis, J., & Fordham, J. (2019). Augmented versus virtual reality in education: An exploratory study examining science knowledge retention when using augmented reality/virtual reality mobile applications. Cyberpsychology, Behavior, and Social Networking, 22(2), 105–110. https://doi.org/10.1089/cyber.2018.0150

Huang, W., Huang, W., Diefes-dux, H., & Imbrie, P. K. (2006). A Preliminary Validation of Attention, Relevance, Confidence and Satisfaction Model-Based Instructional Material Motivational Survey in a Computer-Based Tutorial Setting. British Journal of Educational Technology, 37(2), 243–259. https://doi.org/10.1111/j.1467-8535.2005.00582.x

Keller, J. M. (2010). Motivational Design for Learning and Performance. In Springer Science & Business Media. https://doi.org/10.1007/978-1-4419-1250-3

Khodijah, N. (2014). Psikologi Pendidikan. Jakarta: Rajawali Press.

Kurniawati, P. D., Indartono, S., & Efendi, R. (2022). The Effect of School Environment and Learning Motivation on Economic Learning Absorption. *International Journal of Multicultural and Multireligious Understanding*, *9*(3), 17–23.

Li, R., Zhang, B., Sundar, S. S., & Duh, H. B. L. (2013). Interacting with augmented reality: How does location-based AR enhance learning? IFIP Conference on Human-Computer Interaction, 616–623. https://doi.org/10.1007/978-3-642-40480- 1_43

Muslich, Masnur. (2010). *Text Book Writing: Dasar-dasar Pemahaman, Penulisan, dan Pemakaian Buku Teks*. Yogyakarta: Ar-ruzz Media.

Pittenger, A., & Doering, A. (2010). Influence of Motivational Design on Completion Rates in Online Self-Study Pharmacy-Content Courses. Distance Education, 31(3), 275–293. https://doi.org/10.1080/01587919.2010.513953

Siagian, S.P. (2004). Teori Motivasi dan Aplikasinya. Jakarta: Rineka Cipta

Suranto, S., Muhyadi, M., & Mardapi, D. (2014). Pengembangan Instrumen Evaluasi Uji Kompetensi Keahlian (Ukk) Administrasi Perkantoran Di Smk. Jurnal Penelitian Dan Evaluasi Pendidikan, 18(1), 98–114. https://doi.org/10.21831/pep.v18i1.2127

Vida Hasna Farida, Lilis Nurlaela, dan Asep Sumaryana. (2008). *Mengelola Peralatan Kantor SMK*. Bandung: CV Armico

Widiyoko, E. P. (2009). *Penilaian Hasil Belajar.* Yogyakarta: Pustaka Pelajar.

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