

Contribution of E-Book Implementation to Learning Achievement in Informatics Courses in Antartika

¹Muhammad Afifuddin Al Islami, ²Rahmania Sri Untari, ³Fitria Nur Hasanah, ⁴Dicka Y Kardono

^{1,2}Information Technology Education, Universitas Muhammadiyah Sidoarjo, Mojopahit St, No.666 B, Sidoarjo Regency, 61252, Indonesia

^{3,4}Software Engineering, SMK Antartika 1 Sidoarjo, Siwalan Panji St, Sidoarjo Regency, East Java, 61252, Indonesia

ARTICLE INFORMATION

Article History:

Accepted: 10-12-2022

Approved: 14-02-2023

Keywords:

E-book;
learning achievement;
informatics

Authors Correspondence:

Rahmania Sri Untari
Information Technology Education
Universitas Muhammadiyah Sidoarjo
Mojopahit St, No.666 B, Sidodayah, Sidoarjo Regency, East Java, 61215, Indonesia
E-mail: rahmania.sriuntari@umsida.ac.id

ABSTRACT

This study aimed to determine (1) the contribution of E-Books to Informatics class X RPL subject to student achievement at SMK Antartika 1 Sidoarjo (2) How significant is the contribution to student achievement in Informatics class X RPL at SMK Antartika 1 Sidoarjo after using the E-Book. This research uses a quantitative method with the type of pre-experimental design one research group pretest-posttest design to compare the results obtained from the pretest and posttest. The population used was 36 students, and the sample was taken using a saturated sampling technique, meaning that all population members were taken to be tested. The data analysis used was descriptive statistical analysis. Based on the results obtained from the implementation of the E-Book in class X RPL 1 SMK Antartika 1 Sidoarjo, it can be concluded that there is a significant contribution to students by increasing student achievement.

Education must be able to provide meaningful learning for students during the learning process as an effort to improve the quality of human resources as emphasized in the National Education System Law no. 20 of 2003, has a vision to organize an education system as a strong and authoritative social institution that enables all Indonesian citizens to develop into quality human beings, so that they can answer challenges and expectations (Adhi, 2020). The human qualities that Indonesia needs in the future can survive in the increasingly fierce competition between other countries in the world. The quality of the Indonesian nation depends on the quality of education (Kusumatuty et al., 2018). Therefore, the teacher has a very strategic task, role, and task. Article 39(2) of Law no. 20 of 2003 concerning the National Education System states that educators are professionals. As a professional teacher, his vision is to realize the implementation of learning in accordance with the principles of professionalism so that all citizens get quality education (Thoif, 2018).

The development of science and technology is increasingly encouraging renewal efforts in the use of technological results in the learning process (Aini et al., 2018). The world of education is affected by developments in information technology that can be felt by society, especially the world of education which influences learning media that are more innovative, creative, which of course can motivate and attract students' interest and achieve learning goals or improve learning achievement (Wahyu, 2017), teacher creativity in the teaching and learning process has an important role in improving the quality of student learning outcomes. Teacher creativity in a lesson greatly influences student development, because the more creative the teacher is in conveying the material, the easier it is for students to understand the lesson and make students more creative in learning too (Monawati & Fauzi, 2018). However, with traditional methods, the learning process applied by the teacher still dominates. This is too often observed by teachers who use the lecture method, delivering material only through printed books, this happens because the mention of learning resources and learning variations with other learning tools is not enough. Therefore, the success of students learning in informatics subjects is classified as low. To improve the quality of learning, it is necessary to update teaching materials. Innovative teaching materials play a role in fostering students' interest in independence and activity and improving their reading skills (Hasbiyati & Laila, 2017).

Saputri & Susilowibowo (2020) Teaching materials can be in the form of print or non-print media. With the development of science and technology, the use of non-print teaching materials or digital formats is increasingly effective and efficient. Suarez & Woodhuyusen (2013) Examples of non-printed educational materials are e-books, textbooks created and published using digital devices and adding additional features such as video/animation, images, and audio (Rahmah & Susilowibowo, 2021). The use of e-books as teaching materials should support the learning process and make it more effective. From some of the results of this study, it can provide information about the impact that can be given from the existence of media for developing teaching materials for student learning. E-books are digital books that make it easy for students to everyone, especially students, to use them. In addition to text and images, e-books can also display video and audio (Rosyadi &

Santoso, 2019). Learning in the 21st century requires students' ability to use learning media, namely electronic books (e-books), as a tool for distance learning, to overcome material problems that are difficult for educational experts to understand and to develop new learning methods (Oetomo, 2007) (Muhammad & Ambarwati, 2021). E-book media can be used offline, the e-book itself does not have to be distributed on-line either through local networks or the internet. Interaction using the internet can also be carried out on-line and real-time or offline or archived (Sukmawati et al., 2022).

E-books can help students process material that is difficult to understand. Oetomo (2007) states that education experts have tried to study this and create new learning methods. However, these different methods are of course nothing other than the role of the media as a means of delivery. The media can be in the form of books, magazines, journals, videos and finally the internet as online media. The internet allows you to try e-books to present learning to be interactive and become the right tool for students (Zahara et al., 2017).

Regarding teaching materials such as e-books, not all schools can have sufficient learning media both in quality and quantity. The availability of instructional media is not sufficient due to limited funding sources and centers for obtaining teaching materials, which means that school human resources, in this case teachers, have not been utilized optimally (Weda et al., 2018). Especially in the field of curriculum development. The electronic media available to students has various advantages and functions. Vocational secondary and higher education, which is a level of formal education designed to prepare workers with the appropriate knowledge and skills for professional programs. The achievement of a workforce that has expertise, skills and competencies must be supported by a good learning process (Mertayasa, 2019). Antarctic Vocational School 1 Sidoarjo has 3 (three) competency skills, one of which is the software engineering expertise program (RPL) in which one of the important subjects in software engineering is informatics (Divayana & Sugihartini, 2018). Informatics subject is one of the productive subjects in software engineering (Weda et al., 2018), whose goal is to equip students with knowledge and mastery of basic concepts in the field of technology and information, which will later become the basis for further in-depth subjects or material. and continued with the creation of projects (Erick et al., 2019). In improving the quality of learning that affects the learning achievement of students there are many ways, for example determining appropriate learning media according to what students need. Antarctica 1 Sidoarjo Vocational School is a Vocational High School dedicated to developing quality human resources with the independent curriculum they use.

Based on initial observations made on September 26-29, 2022, the researchers obtained information that the learning resources or teaching materials used for learning were limited to power point books and LKS (Student Worksheets). most of the teachers still apply the lecture learning method which causes the condition of the students to get bored and results in a decrease in student learning outcomes and the teachers there still use printed textbooks as a learning resource. Even though the students there have characteristics that are always curious and eager to learn during the learning process, but because the media and learning tools are less varied, it is boring and most of them only see and hear the teacher's explanations (Magdalena et al., 2020). Therefore, the learning environment used by the teacher has a significant influence in supporting the teaching and learning process. Students' passivity can be overcome by using an appropriate and versatile learning environment (Faisol, 2018).

Therefore, there is interest from researchers to study further the application of the E-Book in Informatics Subject class X RPL 1 SMK Antarctica 1 Sidoarjo. The aim is to find out how much change is related to student achievement in the class that will be achieved if the e-book used during the teaching and learning process. The method used is quantitative and this type of research is *pre-experimental design* and this type of research is *pre-experimental design*. The research design used is *one-group pretest posttest design* to compare the results of the pretest and posttest. This research is entitled "The Contribution of E-Book Implementation on Learning Achievement in Informatics Subjects at SMK Antarctica 1 Sidoarjo".

METHODS

This study uses research methods-*Experimental One Groups Pretest-Posttest Design*. The research design used only one group without a comparison group *Pretest* used to determine the achievement of student achievement prior to implementation *treatment*. Then the intake *Posttest* done *aftertreatment* to find out if there has been a change. The subjects of the study were all students of class X RPL 1 for the 2022/2023 school year. To measure the effect of *treatment* given by the researcher using an instrument in the form of 10 multiple choice questions. The data analysis technique used is descriptive quantitative analysis (Abdullah, 2015) by using the T test for two paired samples. (*Paired sample t-test*) then tested with the help of SPSS 26 for windows (Untari et al., 2022). Analysis is needed to measure differences in student learning achievements before and after being given treatment.

Table 1. Experimental Design One Groups Pretest-Posttest Design

O1	X	O2
----	---	----

Information:

- O1 : Pretest before being treated
- O2 : Posttest after being given treatment
- X : Implementation of E-book (treatment)

Source: Donald T.Campell and Julian C.Stanley (1966:7) (Untari et al., 2020).

RESULT

Based on research conducted in class X RPL 1 SMK Antarctica 1 Sidoarjo, researchers obtained data *pretest* and *posttest* for the purposes of measuring student achievement through the provision of 10 questions in the form of multiple choice for the posttest. The total number of students in the class is 36 students who are given *treatment* in the form of learning using E-Book media.

Table 2. Frequency of student achievement data (Pretest)

Interval	Frequency	Percentage	qualification
90-100	0	0	Very good
80-89	8	22,2%	Very good
71-79	28	77,8%	Good

Based on table 2, which shows data on student achievement before being given *treatment*, results *pretest* This shows that the learning achievement in class X RPL 1 cannot be said to be very good as a whole, because the average score of the students is 78.6.

Table 3. Frequency of student achievement data (Posttest)

Interval	Frequency	Percentage	qualification
90-100	4	11,1%	Very good
80-89	32	88,9%	Very good
71-79	0	0	Good

Based on Table 3 above which shows data on student achievement after getting *treatment*, results *posttest* This shows that learning achievement in class X RPL 1 has increased very well overall, because the average the average score of the students was 82.5.

Table 4. Results of Hypothesis Testing with SPSS

	Paired Samples Test		
	t	df	Sig. (2tailed)
Pretest - Posttest	-3.599	35	.001

Based on Table 4 the significance value of the hypothesis test *Paired-Samples T test* student achievement obtained results of 0.001 <0.05, the implementation of the E-Book showed a significant contribution to student achievement in class X RPL 1 SMK Antarctica 1 Sidoarjo. This was also evidenced by an increase in the frequency of student scores in the interval 80-89 and a decrease in the value of the interval 71—79.



Figure 1 (a) shows the appearance of the E-Book homepage along with the choice of material and Figure 1 (b) shows the cover or initial appearance of the selected material.



Figures 2 (a) and (b) show the appearance of the contents of the E-book material.

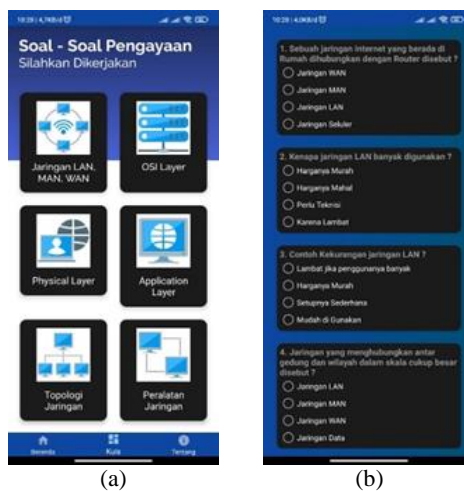


Figure 3 (a) shows the appearance of the quiz feature and Figure 3 (b) shows the display of the quiz that has been selected according to the material.

DISCUSSION

Class learning achievement after being given the treatment of e-book implementation is much better than before being given treatment, seen from the average student achievement score, namely the average learning achievement score after being given treatment is higher than before being given treatment ($82,5 < 78,6$). This is due to the positive impact of learning to use the e-book. The significance value of the hypothesis test *Paired-Samples T test* student achievement obtained results of $0.001 < 0.05$ then the implementation of the E-Book showed a significant effect on student achievement in class X RPL 1 SMK Antarctica 1 Sidoarjo.

Students understand informatics lessons more quickly in the learning process. Because e-books can facilitate students' search and optimize students' time, allowing them to study at home and not limited to studying at school, students immediately receive concise material properly according to the indicators set, so students can understand what they are learning moreover when the available learning tools are appropriate and interesting. During the implementation of learning activities, when using e-book learning media students were seen to be more active in learning compared to using school printed books. This is because e-book learning media can trigger students to be more active with various features such as quizzes and a much more interesting appearance and content, whereas learning using school printed book media only has writing that tends to make students bored.

In this study, researchers encountered several obstacles when implementing e-books, namely learning facilities such as laptops and internet connections were not maximized, most students did not bring laptops or internet connections in each learning session. One solution that researchers can use given the limitations of this research is to place the e-book on the LCD projector in front of the class so that students can read and view the e-book material. Based on theoretical and operational aspects, from the point of view of constructivism learning theory, this research implies that students must actively participate in classroom learning, and students must become centers of learning (Saidah, 2021). Students must be able to apply their own ideas, students must build knowledge in their heads. themselves to achieve better learning achievement. Teaching materials or tools that can be used to achieve better learning achievement is to use e-books as learning media.

This research also supports the research of Khsanul Hakim, Muhaimini and Wilda Syahri. researchers developed metacognition-based eBook teaching materials on the role of chemistry in life in the form of 3D page flips in Class X MIPA SMAN 1 Muoro. As a result of this study, e-book metacognition about the role of chemistry in life was rated by media experts as very good (90.6%), facts very good (86.7%), teacher notes very good (92.0%) and the assessment of students is very good (90.4%). From the research results, it can be concluded that the metacognitive e-book is very suitable for chemistry learning about the role of chemistry in life. The similarity of this research is testing e-books to be used as teaching or learning resources for students (Faisol, 2018).

In addition, the research conducted by Mumu Muhammad, Dian Rahadian and Ema Retna Safitri entitled "Use of Android-Based Digital Books to Increase Motivation and Reading Skills in Arabic Lessons. The research design used was Non-equivalent control group pre-test and post- test design". An unequal control group was used as the study design. Pre and posttest planning. The results of this study indicate that there are significant differences in the development of reading literacy between students who use digital books versus those who use printed books. At 76.88, the reading ability of the experimental class was significantly better than that of the control class (63.75)(Faisol, 2018).

CONCLUSION

Based on the results obtained from the implementation of the E-Book in class X RPL 1 SMK Antarctica 1 Sidoarjo and several previous studies, it can be concluded that the use or application of e-books in learning has a significant contribution, namely it can improve student achievement. Besides being able to improve learning achievement, e-books are very easy to use because they can be opened with a smartphone, can improve teacher performance and improve student development. Suggestions that researchers can give to teachers need a variety of learning media such as e-books in the learning process so students don't get bored quickly and thus improve student learning achievement. For schools or educational institutions this can be used as a basis for steps in providing school facilities that are feasible and provides an internet network in the use and development of learning media in an integrated manner between different fields of study. like an e-book or something.

REFERENCES

- Abdullah, P. M. (2015). Living in the world that is fit for habitation: CCI's ecumenical and religious relationships. *Aswaja Pressindo*.
- Adhi, K. (2020). *The effect of using electronic books (E-Books) on increasing student learning outcomes in ICT class XI IPA subjects at SMA Negeri 14 Makassar*.
- Aini, N., Wirasmita, R. H., & Uska, M. Z. (2018). Pengembangan mobile learning berbasis android pada mata pelajaran jaringan dasar. *EDUMATIC: Jurnal Pendidikan Informatika*, 2(1), 34–41.

- Divayana, D. G. H., & Sugihartini, N. (2018). Pengaruh e-modul berbasis metode pembelajaran problem-based learning pada mata pelajaran basis data terhadap hasil belajar dan motivasi Siswa (Studi kasus: kelas XII rekayasa perangkat lunak di SMK Negeri 1 Negara). *Jurnal Nasional Pendidikan Teknik Informatika: JANAPATI*, 7(2), 121–131.
- Erick, S. P. G., Agustini, K., & Sugihartini, N. (2019). mbelajaran Project Based Learning Pada Mata Pelajaran Videografi untuk Siswa Kelas X Desain Komunikasi Visual di SMK Negeri 1 Sukasada. *Jurnal Nasional Pendidikan Teknik Informatika (JANAPATI)*, 70–78.
- Faisol, A. A. (2018). *Pengaruh penggunaan e-book sebagai sumber belajar sejarah terhadap prestasi belajar siswa Kelas X IPA Madrasah Aliyah Negeri 2 Kota Probolinggo*. Universitas Islam Negeri Maulana Malik Ibrahim Malang.
- Hasbiyati, H., & Laila, K. (2017). Penerapan media e-book bereksistensi EPUB untuk meningkatkan minat dan hasil belajar siswa SMP pada mata pelajaran IPA. *Jurnal Pena Sains*, 4(1).
- Kusumatuty, A. J., Baedhowi, T., & Murwaningsih, T. (2018). The implementation of problem based learning (Pbl) based e-book to improve the learning outcome of vocational high school (Vhs) students. *International Journal of Educational Research Review*, 3(4), 103–110.
- Magdalena, I., Sundari, T., Nurkamilah, S., Nasrullah, N., & Amalia, D. A. (2020). Analisis bahan ajar. *Nusantara*, 2(2), 311–326.
- Mertayasa, I. N. E. (2019). E-modul interaktif berorientasi VAK content mata pelajaran komunikasi data. *Jurnal Nasional Pendidikan Teknik Informatika: JANAPATI*, 8(3), 208–216.
- Monawati, M., & Fauzi, F. (2018). Hubungan kreativitas mengajar guru dengan prestasi belajar siswa. *Jurnal Pesona Dasar*, 6(2).
- Muhammad, R. A., & Ambarwati, R. (2021). Pengembangan e-book keanekaragaman hayati sebagai sumber belajar untuk melatih literasi digital peserta didik kelas X SMA. *Berkala Ilmiah Pendidikan Biologi (BioEdu)*, 10(2), 326–334.
- Rahmah, S. M., & Susilowibowo, J. (2021). Pengembangan bahan ajar berupa e-book pada mata pelajaran akuntansi keuangan kompetensi dasar akuntansi piutang kelas XI berbasis pendekatan saintifik di SMK Yapalis Krian. *Jurnal Riset Pendidikan Ekonomi*, 6(2), 60–70.
- Rosyadi, I., & Santoso, A. B. (2019). Pengembangan e-book sebagai media pembelajaran interaktif berbasis 3D flipbook pada mata pelajaran perekayasaan sistem radio dan televisi kelas XI TAV di SMK Negeri 2 Surabaya. *Jurnal Pendidikan Teknik Elektro*, 8(1).
- Saidah, Z. (2021). Relevansi teori belajar konstruktivisme perpsektif Ibnu Khaldun terhadap karakteristik belajar siswa milenial. *Al-Tarbawi Al-Haditsah*, 6(2), 110.
- Sukmawati, E., ST, S., Keb, M., Fitriadi, H., Pradana, Y., Dumiyati, M. P., & Kasmanto Rinaldi, S. H. (2022). *Digitalisasi sebagai pengembangan model pembelajaran*. Cendikia Mulia Mandiri.
- Thoif, M. (2018). Analisis kebijakan UU No. 20 Tahun 2003 tentang sisdiknas. *AT-Ta'DIB: Jurnal Kependidikan Dan Keagamaan*, 2(1), 170–185.
- Untari, R. S., Hasanah, F. N., Wardana, M. D. K., & Jazuli, M. I. (2022). Pengembangan augmented reality (AR) berbasis Android pada pembelajaran pemodelan bangun ruang 3D. *Jurnal Pendidikan: Teori, Penelitian, Dan Pengembangan*, 7(5).
- Untari, R. S., Liansari, V., & Su'udiah, F. (2020). Open problem-based learning (OPBL) scenario on 2D text animation using Polya approach. *Jurnal Ilmu Pendidikan*, 26(1), 22–28.
- Wahyu, L. M. N. (2017). Pengaruh pemanfaatan buku sekolah elektronik dan motivasi belajar terhadap prestasi belajar siswa. *Ilmu Pendidikan: Jurnal Kajian Teori Dan Praktik Kependidikan*, 2(1), 38–43.
- Weda, K. S., Agustini, K., & Sugihartini, N. (2018). Pengaruh E-Modul berbasis discovery learning pada mata pelajaran sistem komputer terhadap hasil belajar siswa kelas X Smk Negeri 3 Singaraja. *Jurnal Nasional Pendidikan Teknik Informatika: JANAPATI*, 7(2), 141–150.
- Zahara, N., Djufri, D., & Sarong, M. A. (2017). Optimalisasi pembelajaran dengan e-book dan media pembelajaran berbasis multimedia untuk meningkatkan hasil belajar siswa kelas X SMA pada materi dunia tumbuhan. *BIOTIK: Jurnal Ilmiah Biologi Teknologi dan Kependidikan*, 2(2), 105–109.