Jurnal Pendidikan Indonesia
Volume 11, Number 1, 2022 pp. 1-9
P-ISSN: 2303-288X E-ISSN : 2541-7207
Open Access: https://doi.org/10.23887/jpi-undiksha.v11i1.37031

The Utilization of Computer-Based Interactive Multimedia in Improving Entrepreneurial Attitudes of High School Students

Triana Rejekiningsih[1*], Sudiyanto[2], Mochamad Kamil Budiarto[3]

[1,2,3] Teknologi Pendidikan, Universitas Sebelas Maret, Surakarta, Indonesia

ARTICLE INFO

Article history:
Received July 12, 2021
Revised July 16, 2021
Accepted December 20, 2021
Available online March 25, 2022

Kata Kunci:
Multimedia Interaktif, Sikap, Kewirausahaan, SMA

Keywords:
Interactive multimedia, Attitude, Entrepreneurship, High School

ABSTRAK

Pendidikan kewirausahaan penting untuk disampaikan oleh mahasiswa di era digital. Melalui proses pembelajaran kewirausahaan yang terintegrasi dengan pemanfaatan media pembelajaran digital diharapkan dapat menciptakan lingkungan belajar yang lebih dinamis, aktif dan berpusat pada siswa sehingga dapat memudahkan siswa dalam mencapai tujuan pembelajaran yang telah ditetapkan. Penelitian ini bertujuan untuk menyampaikan hasil uji efektivitas multimedia interaktif terhadap peningkatan sikap kewirausahaan siswa dalam pembelajaran kerajinan dan kewirausahaan siswa SMA. Metode penelitian ini adalah metode eksperimen dengan desain eksperimen semu dengan pre and posttest pada kelas kontrol dan kelas eksperimen. Instrumen pengumpulan data yang digunakan adalah angket skala sikap. Penelitian ini diikuti oleh siswa SMA, pemilihan sampel menggunakan cluster random sampling yang diambil pada kelas tertentu yang sederajat. Hasil penelitian menunjukkan bahwa melalui penggunaan multimedia interaktif terdapat pengaruh yang signifikan dan diikuti dengan peningkatan sikap kewirausahaan siswa. Penelitian ini menyimpulkan bahwa multimedia interaktif dinilai cukup efektif dalam mempengaruhi dan meningkatkan sikap kewirausahaan siswa sebagai upaya pencapaian tujuan pembelajaran. Oleh karena itu, multimedia interaktif sangat cocok digunakan sebagai media pembelajaran mata pelajaran kriya dan kewirausahaan di SMA.

ABSTRACT

Entrepreneurship education is important to be delivered by students in the digital era. Through an entrepreneurial learning process that is integrated with the use of digital learning media, it is hoped that it will create a more dynamic, active and student-centered learning environment so that it can facilitate students in achieving the learning goals that have been set. This study aims to convey the results of the interactive multimedia effectiveness test on improving students' entrepreneurial attitudes in learning craft and entrepreneurship for high school students. This research method is an experimental method with a quasi-experimental design with pre and posttest in the control class and experimental class. The data collection instrument used was an attitude scale questionnaire. This study was followed by high school students, the sample selection used cluster random sampling which was taken in a certain class which is equivalent. The results showed that through the use of interactive multimedia, there was a significant effect and was followed by an increase in students' entrepreneurial attitudes. This study concludes that interactive multimedia is considered quite effective in influencing and improving students' entrepreneurial attitudes as an effort to achieve learning objectives. Therefore, interactive multimedia is very suitable for use as a learning medium for craft and entrepreneurship subjects in high school.

1. INTRODUCTION

Education in the modern era like today must pay more attention to increasing individual competence, therefore it is hoped that educational institutions will be able to equip students with the competencies needed in the 21st century coupled with strengthening of cultural values and responsibilities (Afandi et al., 2019; Wijaya et al., 2016). Recent research showed that in this era (digital era) entrepreneurial competence and entrepreneurial mindset are important competencies for individuals to have, considering the benefits of these competencies in supporting business activities and the country's economy (Robles & Zárraga-Rodríguez, 2015). The economy of a country is very closely related to entrepreneurship, this is because entrepreneurship makes a major contribution to economic development through a series of innovations, job creation which then has an impact on the creation of social welfare

*Corresponding author
E-mail addresses: triana_rizq@staff.uns.ac.id (Triana Rejekiningsih)

(Mahdi & Sakapurnama, 2019; Mirzanti et al., 2015; Purusottama & Trilaksono, 2019). The application of the latest curriculum as a fundamental innovation in the implementation of National education, basically aims to produce innovative, creative, productive and effective individuals through mastery of competencies in the cognitive, affective and psychomotor fields that are interconnected (Mitra & Purnawarman, 2019; Pramita et al., 2016). The implementation of the 2013 curriculum that applies nationally is considered to be able to accommodate students to master competencies regarding entrepreneurship as part of the 21st century competence. The contents of entrepreneurial competencies are found in Craft and Entrepreneurship subjects which are included in group B general subjects along with cultural arts subjects, as well as physical education (Mitra & Purnawarman, 2019; Rini, 2015). These subjects of craft and entrepreneurship are important to be conveyed to students considering the importance of mastering entrepreneurial competencies as one of the competencies needed in the 21st century (Sukardi, 2016). In addition, the course "Craft and Entrepreneurship" has the aim of fostering an entrepreneurial spirit or entrepreneurial attitude in students through learning activities which include training and managing the creation of a work along with how to sell their products (Fardila et al., 2015).

Entrepreneurship education is one of the instruments used to increase the entrepreneurial activities of students (Bischoff et al., 2018; Rauf et al., 2021). Basically, entrepreneurship education will slowly be able to form the mindset, attitudes, and behavior of students to become entrepreneurs (entrepreneur), therefore students will be directed to become entrepreneurs or entrepreneurs as a career choice in their life (Kasimir, 2016; Sakthi & Moshi, 2021). Entrepreneurship is a very important subject. The importance of entrepreneurship in social life is not only a tool to improve and change the quality of life, but the role of entrepreneurship is very important in improving the quality of the nation (Blesia et al., 2021; Howorth et al., 2012). One of the expected outputs from the implementation of learning crafts and entrepreneurship is the increase in entrepreneurial attitudes among students. An entrepreneurial attitude is an individual positive attitude or behavior towards entrepreneurial activities so that it can be one of the important assets of an individual in carrying out entrepreneurial activities, where the individual entrepreneurial attitude will always lead individuals to be forward-oriented and have a passion for achievement (R. U. Sari et al., 2017; Sukardi, 2016). The formation of entrepreneurial attitudes should be carried out through the application of entrepreneurial crafts and learning. Another opinion states that there are still other factors that can affect individual attitudes towards entrepreneurship including: knowledge (education), skills, attitude (mental), and vigilance (Jati and Tri, 2015). Knowledge and education have an important role in shaping entrepreneurial attitudes, so the process of learning skills and entrepreneurship for senior secondary education needs attention, given the importance of individuals having entrepreneurial competencies as competencies needed in the 21st century (Rauch & Hulsink, 2015; Sari et al., 2017).

The lack of interest in entrepreneurship can be overcome in various ways, in the field of education, the provision of education needs to encourage and pay more attention to learning skills and entrepreneurship, so that entrepreneurial attitudes and entrepreneurial skills can be instilled from an early age. Although the effect of entrepreneurship education on entrepreneurial attitudes tends to be positive, these results are not in line with the increase in learning outcomes which are not significant (Kusmintarti et al., 2017; Rauf et al., 2021). One of the factors that causes this is the implementation of entrepreneurship education which tends to be theoretical, monotonous and irrelevant to social problems and does not touch the potential or advantages that exist around students, even though this potential is very adequate if it is used as part of entrepreneurial craft and learning (Nurwahidah, 2017; R. U. Sari et al., 2017). The importance of being an entrepreneur can be facilitated in educational activities, one of which is through hand-crafted learning and entrepreneurship, which in the output and learning objectives are expected to be able to equip students with skills to create something of economic value, motivation and entrepreneurial attitudes (Howorth et al., 2012; Suwena, 2016). The success and achievement of craft and entrepreneurship learning objectives cannot be separated from various factors, including the use of technology in the delivery of learning materials (Buchori et al., 2017; Softić, 2015). Learning media packaged in interactive multimedia formats is an innovation in the use of technology as a supporting tool for the teaching and learning process (Maharani et al., 2018; Marta, 2019; Mayer, 2017).

Interactive multimedia has several characteristics that make it special, namely interactive multimedia is able to provide an interactive process and provide easy feedback, and makes it easier for students to choose learning topics with systematic control (Khamzawi & Wiyono, 2015; Nusir et al., 2013). The application of interactive multimedia in the learning process is to describe the various uses of media in an integrated manner in presenting a material topic where each element of the interactive multimedia constituent reinforces each other in providing an interesting learning experience (Eladl & Musawi, 2020; Kao & Luo, 2020; Malik & Agarwal, 2012). In line with this, other research stated that the use of technology in the form of multimedia in the classroom allows students to have competencies regarding a technology (Husein et al., 2017; Sert & Boynueğri, 2016).

Various studies found that the use of computer-assisted multimedia (Computer Assisted Instruction) in the learning process is more effective than using conventional learning methods (Komalasari & Saripudin, 2018; Li & Ren, 2018; Shi, 2017). Overall interactive multimedia has basically been applied for a long time, the use of interactive multimedia technology has been empirically able to show an increase in student academic achievement (GebreYohannes et al., 2016; Suyitno, 2016), mastery of subject concepts (Kumar & Hema, 2017; Syawaludin et al., 2019), influencing affective aspects such as attitudes, character, and student motivation (Indah Septiani et al., 2020; Kao & Luo, 2020; Komalasari & Rahmat, 2019; Leutner, 2014; Suyantiningsih et al., 2016), as well as improving student skills (Nugraha & Wahyono, 2019). Based on various findings both theoretically and practically, it becomes an important point to conduct an assessment of a learning innovation, especially in entrepreneurship learning that was integrated with technology. It hopes the technology can facilitate the learning process. This research has succeeded in developing an interactive multimedia product and used as a medium for the learning process of craftsmanship and entrepreneurship. Therefore, this study aimed to see the results on testing the effectiveness of the product, so the purpose of this study is to see the effect and level of effectiveness of the use of interactive multimedia on learning activities.

2. METHOD

The research method used is the experimental method, with a quasi-experimental type and uses a nonequivalent control group design (Sugiyono, 2018). The sample in this study was 27 students of XI A class and 25 high school students in XI B. The research design aims to compare the results obtained by the experimental group and the control group. The experimental group is a group that is given treatment through learning activities that use interactive multimedia, while the control group is a group that does not use interactive multimedia in the learning process. The instrument used to collect information about students' entrepreneurial attitudes was using a questionnaire. The attitude scale builds the formation of entrepreneurial attitude indicators that have been modified by researchers according to the use of theory and needs in development research carried out. The entrepreneurial attitude indicators used in this experimental study are presented in Table 1.

Table 1. Indicators of Entrepreneurial Attitudes

No.	Indicator	Number of Items
1.	Education (Cognitive)	5
2.	Confidence	5
3.	Independent	4
4.	Creative	5

(Jati & Tri, 2015)

Based on the results of the instrument validity test on 17 respondents whose processing results were assisted by the SPSS 19 application, it was stated that of the 19 items tested there were 3 invalid statement items and 16 valid statement items. Furthermore, the results of the instrument item reliability test using the Cronbach's Alpha test. Based on the table of reliability test results, the test results state a score of 0.889. While the r_{table} for the number of students 17 people is 0.396 (N = 17), then the instrument used in this study is valid if $r_{count} > r_{table}$, so 0.889> 0.396. This shows that the entrepreneurial attitude questionnaire distributed to students is declared reliable as a data collection tool. Data from the results of the pretest and posttest from each group. Then the effect test was conducted using the independent sample t-test to calculate whether there was a significant difference in the results of the students' posttest scores. If it is known that the treatment has a significant influence on students' entrepreneurial attitudes, then a further test is carried out to measure the effectiveness of the use of interactive multimedia products. The analysis used to determine the level of product effectiveness is the Gain score analysis (N-Gain) with the effectiveness criteria presented in Table 2.

Table 2. N-gain Classification (%)

Percentage (%)	Category
< 40	Ineffective
40 – 55	Less effective
56 – 75	Effective enough
> 76	Effective

(Meltzer, 2002)

3. RESULT AND DISCUSSION

Result

Obtaining test data using interactive multimedia for learning crafts and entrepreneurship are as follows. Based on statistical analysis, it is known that the mean (mean) and standard deviation of each class. Where the control class got an average of 44.12 and the experimental class an average of 77.59. Based on data analysis, the results of statistical tests with the SPSS 19 program showed that the measurement results of students' entrepreneurial attitudes with a significance level of 0.247> 0.05. In addition, it was found that classes using interactive multimedia products based on local potential had a higher mean (mean) than groups that did not use interactive multimedia products based on local potential. The Mean Difference column there is a score of -33,473 which indicates that there is a difference in the mean (mean) of the post-test results of students' entrepreneurial attitudes, the negative results indicate that the experimental class results are greater than the control class. In addition, to be able to see the results of the difference in the mean score of entrepreneurial attitudes, it can be done by looking at the significance column (Sig. 2-tailed). The decision is made, if the value of $t_{count} > t_{table}$, then H0 is rejected and H1 is accepted. The coefficient on t table refers to the value in column 'df'. In the table df = 50 has a t table value. 1.67591 (significance level of 0.05). So that 62,669> 1.67591. Although through the results of the influence test and it is concluded that interactive multimedia products can improve students' entrepreneurial attitudes, but as an effort to see the effectiveness of interactive multimedia products, further tests will be carried out using calculations that refer to the Gain score. The following are the results of the Gain score statistical test using data obtained from a questionnaire on student entrepreneurial attitudes in the experimental class and control class and processed with the help of the SPSS 19 program.

Table 3. Gain Score Test Results (N-Gain)

Class	Test	Total	Mean	Varians	St.dev
Eksperiment	Pretest	1203	8,01	30,575	5,529
	Posttest	2027			
Control	Pretest	1050	9,55	144,930	12,039
	Posstest	1341			

From the results of the calculation of the N-Gain test summarized in Table 3, it is known that the average (mean) value of entrepreneurial attitudes that had analyzed using N-Gain for the experimental class which in the implementation of learning uses interactive multimedia products is 58.01 or 58%, if referring to table 7, the N-Gain category is included in the Quite Effective category. While the average value obtained in the control class (not using interactive multimedia) is 19.55 or 20% which is included in the ineffective category. So that based on the results of the effectiveness test using N-Gain above, the use of interactive multimedia products based on local potential in learning crafts and entrepreneurship is considered quite effective in improving the entrepreneurial attitude of high school students. The results of testing interactive multimedia products for learning crafts and entrepreneurship have significant results in improving students' entrepreneurial attitudes, this can be seen from the results obtained that classes that use interactive multimedia products based on local potential have a higher mean than the group that uses interactive multimedia products based on local potential. not using interactive multimedia products based on local potential. This is also supported by the acquisition of the Mean difference with a score of -33.473 which indicates that there is a difference in the mean (mean) results of the post-test of students' entrepreneurial attitudes, negative results indicate that the results of the experimental class are greater than that of the control class.

Discussion

The effectiveness of interactive multimedia products as one of the learning media used is in line with Edgar Dale's theory of experience cones (Sari et al., 2020). This is because interactive multimedia that has been developed and used contains various kinds of visual components such as instructional videos, practice questions, pictures or illustrations, and contextual information that can provide access to students to reach the greatest levels in the learning experience (Husein et al., 2017; Kurniawan et al., 2020; Manurung & Panggabean, 2020a). In general, the application of interactive multimedia has many benefits in an effort to improve the quality of learning processes and outcomes, this can be seen from several studies which show that interactive multimedia contributes to improving the quality of learning (Komalasari & Rahmat, 2019; Primamukti & Farozin, 2018). The one of the benefits of interactive multimedia is that it is able to increase students' learning ability both in dancing subject material and practices, besides this multimedia is considered to have an interactive element and is integrated with technological devices so that it is more

capable (Fauyan, 2019; Kuswanto & Walusfa, 2017). To make it easier for students to learn according to their learning styles, this is indicated by the acquisition of a higher average value obtained by groups using interactive multimedia in their learning.

Given the importance of mastering entrepreneurial competencies in the era of the industrial revolution (Arsić & Milovanović, 2016; Otache et al., 2021). It is important for educational institutions to pay attention to the learning facilities that have been implemented so far. Therefore, in the term of achieving entrepreneurial competence, it can be facilitated through the use of interactive multimedia as a learning medium in the learning process in the classroom, given the position and role of education as a supporting factor in the growth of entrepreneurial motivation and attitudes (Blesia et al., 2021; Çera et al., 2018). For that, the implementation of entrepreneurship education in schools education providers should be prioritized. In addition, the use of interactive multimedia as a learning medium can be one of the innovations in achieving entrepreneurial competence both in hard skill aspects such as skills in creation, as well as aspects of soft skills related to personality and cognitive abilities (Dwi Riyanti et al., 2016; Kusa et al., 2022). Given the effectiveness that can be obtained through the application of interactive multimedia as a learning medium, it shows that interactive multimedia can be one of the foundations for educators to apply and disseminate it to various other educational institutions that are specifically directed at learning crafts and entrepreneurship. The process of integration between information and communication technology in the learning process is a must to see the various kinds of advantages that have been conveyed. Even so, basically, ICT does not automatically improve the teaching and learning process, the teacher must be able to plan an interesting learning process in accordance with the characteristics of the material and students (Tondeur et al., 2017).

Several studies have shown the success of learning media in the form of interactive multimedia in influencing the quality of student learning, especially in learning about entrepreneurship. However, this research focuses on the achievement of the affective domain of students, namely the entrepreneurial attitude of students. Compared to several relevant studies that have been submitted, the results of this study bring a theoretical framework where interactive multimedia in addition can affect student learning outcomes in cognitive and psychomotor aspects (Dwi Riyanti et al., 2016; Khan & Masood, 2015; Maharani et al., 2018; Saputro & Setyawan, 2020; Tondeur et al., 2016). But also can improve learning outcomes in the affective aspect. So that through this research it can be proven that the use of information and communication technology in interactive multimedia formats for entrepreneurship learning can be an alternative and innovation in improving student achievement, both from the cognitive, psychomotor and affective aspects. Overall, learning that utilizes technology as a learning medium in this case interactive multimedia, is proven theoretically and empirically to have a positive impact on increasing learning abilities and academic achievement of students both in the affective, psychomotor and cognitive domains (Nugraha & Wahyono, 2019; Sert & Boynueğri, 2017; Yue, 2017), increases student motivation (Irawan & Suryo, 2017; Li & Ren, 2018), student learning outcomes (Manurung & Panggabean, 2020b; Widyaningsih et al., 2020), even able to strengthen character in students (Indah Septiani et al., 2020; Suyantiningsih et al., 2016).

Improving the quality of the teaching and learning process is also influenced by the role of learning strategies used by teachers, besides technology also has a role in helping teachers facilitate effective teaching (Santi et al., 2020; Shatri, 2020). One of them is by utilizing technology-based learning media, in this study it is proven that interactive multimedia as another form of technology-based learning media can have a positive impact on student affective learning outcomes. Therefore, teachers can use technology in the classroom in the form of interactive multimedia as a medium of learning, this is aimed at achieving learning objectives, namely increasing students' entrepreneurial attitudes whose subject matter is taught through interactive multimedia. Thus, it is hoped that high school students who take entrepreneurship classes are more motivated to become entrepreneurs because the learning process is packaged in an interesting way and integrated with the use of ICT, when compared to students who are taught in the conventional way without using interactive multimedia. This study has limitations, namely the study of student entrepreneurial attitudes in this study still tends to be general in nature by only taking a few indicators of entrepreneurial attitudes that have been expressed by various experts. There are no indicators of entrepreneurial attitudes that become strict benchmarks for researchers to measure student entrepreneurial attitudes. In addition, the influence of increasing students' entrepreneurial attitudes is basically influenced by various factors, the educational factor is only one that affects entrepreneurial attitudes. For this case, it is necessary to pay attention to other factors that influence entrepreneurial attitudes, so that the information obtained about students' entrepreneurial attitudes with strict indicators becomes easier to identify.

4. CONCLUSION

Interactive multimedia developed for learning crafts and entrepreneurship has an effect on students 'entrepreneurial attitudes and is proven to be empirically effective in improving students' entrepreneurial attitudes as a form of achievement learning objectives. The group that uses interactive multimedia has different results and means it is quite effective in increasing students' entrepreneurial attitudes.

5. ACKNOWLEDGEMENT

The author would like to thank high school students and teachers who have been willing to be research subjects and fully participate in this research, besides that the author also would like to thanks for all the associated personnel in any reference that contributed in this research. Further, this research had no conflict of interest and is not funded through any source.

6. REFERENCES

Afandi, Sajidan, Akhyar, M., & Suryani, N. (2019). Development Frameworks of the Indonesian Partnership 21st-Century Skills Standards for Prospective Science Teachers: A Delphi Study. *Jurnal Pendidikan IPA Indonesia*, *8*(1), 89–100. https://doi.org/10.15294/jpii.v8i1.11647.

Arsić, Z., & Milovanović, B. (2016). Importance of computer technology in realization of cultural and educational tasks of preschool institutions. *International Journal of Cognitive Research in Science, Engineering and Education*, *4*(1), 9–16. https://doi.org/10.5937/IJCRSEE1601009A.

Bischoff, K., Volkmann, C. K., & Audretsch, D. B. (2018). Stakeholder collaboration in entrepreneurship education: an analysis of the entrepreneurial ecosystems of European higher educational institutions. *The Journal of Technology Transfer*, *43*(1), 20–46. https://doi.org/10.1007/s10961-017-9581-0.

Blesia, J. U., Iek, M., Ratang, W., & Hutajulu, H. (2021). Developing an Entrepreneurship Model to Increase Students' Entrepreneurial Skills: an Action Research Project in a Higher Education Institution in Indonesia. *Systemic Practice and Action Research*, *34*(1), 53–70. https://doi.org/10.1007/s11213-019-09506-8.

Buchori, Rahmawati, S., & Wardani, S. (2017). The Development of A Learning Media for Visualizing the Pancasila Values Based on Information and Communication Technology. *Jurnal Cakrawala Pendidikan*, *36*(3), 502–521. https://doi.org/10.21831/cp.v36i3.12748.

Çera, G., Cepel, M., Zakutna, S., & Rozsa, Z. (2018). Gender differences in perception of the university education quality as applied to entrepreneurial intention. *Journal of International Studies*, *11*(3), 147–160. https://doi.org/10.14254/2071-8330.2018/11-3/13.

Dwi Riyanti, B. P., Sandroto, C. W., & Warmiyati D.W, M. T. (2016). Soft Skill Competencies, Hard Skill Competencies, and Intention to Become Entrepreneur of Vocational Graduates. *International Research Journal of Business Studies*, *9*(2), 119–132. https://doi.org/10.21632/irjbs.9.2.119-132.

Eladl, A., & Musawi, A. Al. (2020). Effects of students attitudes towards using E- books on their self-efficacy and academic motivation. *European Journal of Educational Research*, *9*(3), 1167–1176. https://doi.org/10.12973/EU-JER.9.3.1167.

Fardila, V., Subekti, S., & Setiawati, T. (2015). Manfaat Pembelajaran "Prakarya Dan Kewirausahaan" Dalam Penumbuhan Sikap Wirausaha Siswa Sman 1 Cimahi. *Media Pendidikan, Gizi, Dan Kuliner*, *4*(2), 66–78. https://doi.org/10.17509/boga.v4i2.8421.

Fauyan, M. (2019). Developing Interactive Multimedia Through Ispring on Indonesian Language Learning with The Insights of Islamic Values in Madrasah Ibtidaiyah. *Al Ibtida: Jurnal Pendidikan Guru MI*, *6*(2), 177. https://doi.org/10.24235/al.ibtida.snj.v6i2.4173.

GebreYohannes, H. M., Hadi Bhatti, A., & Hasan, R. (2016). Impact of multimedia in Teaching Mathematics. *International Journal of Mathematics Trends and Technology*, *39*(1), 80–83. https://doi.org/10.14445/22315373/IJMTT-V39P510.

Howorth, C., Smith, S. M., & Parkinson, C. (2012). Social Learning and Social Entrepreneurship Education. *Academy of Management Learning & Education*, *11*(3), 371–389. https://doi.org/10.5465/amle.2011.0022.

Husein, S., Herayanti, L., & Gunawan, G. (2017). Pengaruh Penggunaan Multimedia Interaktif Terhadap Penguasaan Konsep dan Keterampilan Berpikir Kritis Siswa pada Materi Suhu dan Kalor. *Jurnal Pendidikan Fisika Dan Teknologi*, *1*(3), 221. https://doi.org/10.29303/jpft.v1i3.262.

Indah Septiani, A. nisa N. S., Septiani, I., Rejekiningsih, T., Triyanto, & Rusnaini. (2020). Development of interactive multimedia learning courseware to strengthen students' character. *European Journal of*

Educational Research, *9*(3), 1267–1279. https://doi.org/10.12973/eu-jer.9.3.1267.

Irawan, E., & Suryo, T. (2017). Implikasi Multimedia Interaktif Berbasis Flash Terhadap Motivasi dan Prestasi Belajar Matematika. *Beta Jurnal Tadris Matematika*, *10*(1), 33. https://doi.org/10.20414/betajtm.v10i1.17.

Jati, B. M. ., & Tri, K. P. (2015). *Kewirausahaan: Technopreneurship untuk mahasiswa ilmu-ilmu eksakta*. CV Andi Offset.

Kao, C.-C., & Luo, Y.-J. (2020). Effects of Multimedia-Assisted Learning on Learning Behaviors and Student Knowledge in Physical Education Lessons: Using Basketball Game Recording as an Example. *International Journal of Emerging Technologies in Learning (IJET)*, *15*(01), 119–139. https://doi.org/10.3991/ijet.v15i01.11393.

Kasimir. (2016). *Kewirausahaan*. PT Raja Grafindo Persada.

Khamzawi, S., & Wiyono, K. (2015). Pengembangan Multimedia Interaktif Berbasis Model Pembelajaran Problem Based Leaning Pada Mata Pelajaran Fisika Pokok Bahasan Fuida Dinamis Untuk SMA Kelas XI. *Jurnal Inovasi Dan Pembelajaran Fisika*, *2*(1), 100–108. https://doi.org/10.36706/jipf.v2i1.2594.

Khan, F. M. A., & Masood, M. (2015). The Effectiveness of an Interactive Multimedia Courseware with Cooperative Mastery Approach in Enhancing Higher Order Thinking Skills in Learning Cellular Respiration. *Procedia - Social and Behavioral Sciences*, *176*, 977–984. https://doi.org/10.1016/j.sbspro.2015.01.567.

Komalasari, K., & Rahmat, R. (2019). Living Values Based Interactive Multimedia in Civic Education Learning. *International Journal of Instruction*, *12*(1), 113–126. https://doi.org/10.29333/iji.2019.1218a.

Komalasari, K., & Saripudin, D. (2018). The Influence of Living Values Education-Based Civic Education Textbook on Student's Character Formation. *International Journal of Instruction*, *11*(1), 395–410. https://doi.org/10.12973/iji.2018.11127a.

Kumar, R. R., & Hema, G. (2017). Effects Of Multimedia Instructional Strategy For Enhancing Students' Learning And Retention In Mathematics. *Journal on School Educational Technology*, *13*(2), 7–13. https://doi.org/10.26634/jsch.13.2.13826.

Kurniawan, F. Y., Siahaan, S. M., & Hartono, H. (2020). Pengembangan multimedia interaktif berbasis adventure game pada materi prinsip animasi. *Jurnal Inovasi Teknologi Pendidikan*, *6*(2), 183–195. https://doi.org/10.21831/jitp.v6i2.28488.

Kusa, R., Duda, J., & Suder, M. (2022). How to sustain company growth in times of crisis: The mitigating role of entrepreneurial management. *Journal of Business Research*, *142*. https://doi.org/10.1016/j.jbusres.2021.12.081.

Kusmintarti, A., Riwajanti, N. I., & Asdani, A. (2017). Pendidikan Kewirausahaan dan Intensi Kewirausahaan dengan Sikap Kewirausahaan sebagai Mediasi. *Journal of Research and Applications: Accounting and Management*, *2*(2), 119. https://doi.org/10.18382/jraam.v2i2.160.

Kuswanto, J., & Walusfa, Y. (2017). Pengembangan Multimedia Pembelajaran pada Mata Pelajaran Teknologi Informasi dan Komunikasi Kelas VIII. *Innovative Journal of Curriculum and Educational Technology IJCET*, *6*(2), 58–64. https://doi.org/10.15294/ijcet.v6i2.19335.

Leutner, D. (2014). Motivation and emotion as mediators in multimedia learning. *Learning and Instruction*, *29*, 174–175. https://doi.org/10.1016/j.learninstruc.2013.05.004.

Li, M., & Ren, Y. (2018). A Multimedia Teaching Model for "Sports Statistics" Based on ARCS Motivation Theory. *International Journal of Emerging Technologies in Learning (IJET)*, *13*(09), 15. https://doi.org/10.3991/ijet.v13i09.8972.

Maharani, Y. S., Suryani, N., & Ardianto, D. T. (2018). Pengembangan Multimedia Pembelajaran Interaktif Pada Mata Pelajaran Pengolahan Citra Digital di Sekolah Menengah Kejuruan Negeri 8 Semarang. *Teknodika*, *16*(1), 73. https://doi.org/10.20961/teknodika.v16i1.34757.

Mahdi, R., & Sakapurnama, E. (2019). Analysis On Entrepreneurial Intention, Motivation And Personality Traits: Study At Universitas Indonesia. *Hasanuddin Economics and Business Review*, *2*(3), 201. https://doi.org/10.26487/hebr.v2i3.1679.

Malik, S., & Agarwal, A. (2012). Use of Multimedia as a New Educational Technology Tool–A Study. *International Journal of Information and Education Technology*, *2*(5), 468–471. https://doi.org/10.7763/ijiet.2012.v2.181.

Manurung, & Panggabean. (2020a). Improving Students' Thinking Ability In Physics Using Interactive Multimedia Based Problem Solving. *Cakrawala Pendidikan*, *39*(2), 460–470. https://doi.org/10.21831/cp.v39i2.28205.

Manurung, S. R., & Panggabean, D. D. (2020b). Improving students' thinking ability in physics using interactive multimedia based problem solving. *Cakrawala Pendidikan*.

https://doi.org/10.21831/cp.v39i2.28205.
Marta, L. C. (2019). The Integration of digital devices into learning spaces according to the needs of primary and secondary teachers. *TEM Journal*, *8*(4), 1351–1358. https://doi.org/10.18421/TEM84-36.
Mayer, R. E. (2017). Using multimedia for e-learning. *Journal of Computer Assisted Learning*, *33*(5), 403–423. https://doi.org/10.1111/jcal.12197.
Meltzer, D. E. (2002). The relationship between mathematics prepration and conceptual learning gains in physics: a possible "hidden vaiable" in diagnostics pretest scores. *American Journal of Phsysics*, *70*(12), 1269 – 1268. https://doi.org/10.1119/1.1514215.
Mirzanti, I. R., Simatupang, T. M., & Larso, D. (2015). Mapping on Entrepreneurship Policy in Indonesia. *Procedia - Social and Behavioral Sciences*, *169*, 346–353. https://doi.org/10.1016/j.sbspro.2015.01.319.
Mitra, D., & Purnawarman, P. (2019). Teachers' Perception Related to the Implementation of Curriculum 2013. *Indonesian Journal of Curriculum and Educational Technology Studies*, *7*(1), 44–52. https://doi.org/10.15294/ijcets.v7i1.27564.
Nugraha, C. A., & Wahyono, S. B. (2019). Developing Interactive Multimedia Learning for Psychomotor Domain to Students of Vocational High School. *Jurnal Kependidikan: Penelitian Inovasi Pembelajaran*, *3*(2), 220–235. https://doi.org/10.21831/jk.v3i2.21797.
Nurwahidah, L. S. (2017). Pembelajaran Literasi Berbasis Potensi Lokal Untuk Pengembangan Kearifan Lokal Dalam Upaya Pemberdayaan Perempuan. *Caraka: "Jurnal Pendidikan Bahasa Indonesia & Bahasa Daerah STKIP-Garut*, *6*(2), 1–10. https://doi.org/10.31980/caraka.v6i2.83.
Nusir, S., Alsmadi, I., Al-Kabi, M., & Sharadgah, F. (2013). Studying the impact of using multimedia interactive programs on children's ability to learn basic math skills. *E-Learning and Digital Media*, *10*(3), 305–319. https://doi.org/10.2304/elea.2013.10.3.305.
Otache, I., Edopkolor, J. E., & Okolie, U. C. (2021). Entrepreneurial self-confidence, perceived desirability and feasibility of hospitality business and entrepreneurial intentions of hospitality management technology students. *The International Journal of Management Education*, *19*(2). https://doi.org/10.1016/j.ijme.2021.100507.
Pramita, M., Mulyati, S., & Susanto, H. (2016). Implementasi Desain Pembelajaran pada Kurikulum 2013 dengan Pendekatan Kontekstual. *Jurnal Pendidikan*, *1*(3), 289–296.
Primamukti, A. D., & Farozin, M. (2018). Utilization of interactive multimedia to improve learning interest and learning achievement of child. *Jurnal Prima Edukasia*, *6*(2), 111–117. https://doi.org/10.21831/jpe.v6i2.19183.
Purusottama, A., & Trilaksono, T. (2019). The presence and persistence of entrepreneurship education In Indonesia: a cross sectional study. *International Journal of Evaluation and Research in Education (IJERE)*, *8*(1), 71. https://doi.org/10.11591/ijere.v8i1.16528.
Rauch, A., & Hulsink, W. (2015). Putting Entrepreneurship Education Where the Intention to Act Lies: An Investigation Into the Impact of Entrepreneurship Education on Entrepreneurial Behavior. *Academy of Management Learning & Education*, *14*(2), 187–204. https://doi.org/10.5465/amle.2012.0293.
Rauf, R., Wijaya, H., & Tari, E. (2021). Entrepreneurship education based on environmental insight: Opportunities and challenges in the new normal era. *Cogent Arts & Humanities*, *8*(1). https://doi.org/10.1080/23311983.2021.1945756.
Rini, K. M. (2015). Analisis Kesiapan Guru Sekolah Dasar dalam Mengimplementasikan Pembelajaran Tematik Integratif Menyongsong Kurikulum 2013. *JPI (Jurnal Pendidikan Indonesia)*, *3*(2), 460–470. https://doi.org/10.23887/jpi-undiksha.v3i2.4462.
Robles, L., & Zárraga-Rodríguez, M. (2015). Key Competencies for Entrepreneurship. *Procedia Economics and Finance*, *23*, 828–832. https://doi.org/10.1016/S2212-5671(15)00389-5.
Sakthi, T., & Moshi, A. A. M. (2021). Effectiveness measurement study on entrepreneurship awareness camp for technical education students using Kirkpatrick's model. *Materials Today: Proceedings*, *45*(2). https://doi.org/10.1016/j.matpr.2020.08.419.
Santi, E. A., Gorghiu, G., & Pribeanu, C. (2020). Teachers' Perceived Self-Efficacy Concerning the Use of Mobile Technology in Education, Considering the "Working from Home" Format. *Revista Romaneasca Pentru Educatie Multidimensionala*, *12*(1Sup2), 157–166. https://doi.org/10.18662/rrem/12.1sup2/259.
Saputro, S. D., & Setyawan, A. (2020). The Effectiveness Use of Virtual Reality Media in Physics Education of Solar System Towards Cognitive Learning Outcomes. *JPI (Jurnal Pendidikan Indonesia)*, *9*(3), 389–400. https://doi.org/10.23887/jpi-undiksha.v9i3.23105.
Sari, A. I., Suryani, N., Rochsantiningsih, D., & Suharno, S. (2020). Digital Learning, Smartphone Usage, and Digital Culture in Indonesia Education. *Integration of Education*, *24*(1), 20–31.

https://doi.org/10.15507/1991-9468.098.024.202001.020-031.
Sari, R. U., Rusdarti, R., & Syamwil, R. (2017). Pengembangan Model Pembelajaran Kewirausahaan Berbasis Potensi Lokal di Sekolah Kejuruan Wilayah Kalimantan Barat. *Journal of Vocational and Career Education*, *2*(2), 87–95. https://doi.org/10.15294/jvce.v2i2.13858.
Sert, N., & Boynueğri, E. (2016). Digital technology use in ELT classrooms and self-directed learning. *World Journal on Educational Technology*, *8*(1), 51. https://doi.org/10.18844/wjet.v8i1.501.
Sert, N., & Boynueğri, E. (2017). Digital technology use by the students and english teachers and self-directed language learning. *World Journal on Educational Technology: Current Issues*, *9*(1), 24. https://doi.org/10.18844/wjet.v9i1.993.
Shatri, Z. G. (2020). Advantages and Disadvantages of Using Information Technology in Learning Process of Students. *Journal of Turkish Science Education*, *17*(3). https://doi.org/10.36681/used.2020.36.
Shi, X. (2017). Application of multimedia technology in vocabulary learning for engineering students. *International Journal of Emerging Technologies in Learning*, *12*(1), 21–31. https://doi.org/10.3991/ijet.v12i01.6153.
Softić, S. K. (2015). Teacher's technology use and attitude towards e-learning in higher education. *Proceedings of the European Distance and E-Learning Network 2015 Annual Conference*, 531–539.
Sugiyono. (2018). Metode penelitian kuatintatif , kualitatif dan R & D. In *Bandung: Alfabeta*.
Sukardi, S. (2016). Desain Model Prakarya dan Kewirausahaan Berbasis Ekonomi Kreatif Berdimensi Industri Keunggulan Lokal. *Jurnal Cakrawala Pendidikan*, *1*(1), 114–124. https://doi.org/10.21831/cp.v1i1.8381.
Suwena, K. R. (2016). Pentingnya Penilaian Potensi Diri Wirausaha Sebagai Pondasi Untuk Mensukseskan Program Mahasiswa Wirausaha. *Jurnal Ilmu Sosial Dan Humaniora*, *4*(2). https://doi.org/10.23887/jish-undiksha.v4i2.6385.
Suyantiningsih, Munawaroh, I., & Rahmadona, S. (2016). Pengembangan Multimedia Pembelajaran Berbasis Scientific Approach Terintegrasi Nilai Karakter. *Jurnal Kependidikan*, *46*(1), 1–13.
Suyitno, S. (2016). Pengembangan Multimedia Interaktif Pengukuran Teknik untuk Meningkatkan Hasil Belajar Siswa SMK. *Jurnal Pendidikan Teknologi Dan Kejuruan*, *23*(1), 101–109. https://doi.org/10.21831/jptk.v23i1.9359.
Syawaludin, A., Gunarhadi, & Rintayati, P. (2019). Development of augmented reality-based interactive multimedia to improve critical thinking skills in science learning. *International Journal of Instruction*, *12*(4), 331–344. https://doi.org/10.29333/iji.2019.12421a.
Tondeur, J., Pareja Roblin, N., van Braak, J., Voogt, J., & Prestridge, S. (2017). Preparing beginning teachers for technology integration in education: ready for take-off? *Technology, Pedagogy and Education*, *26*(2), 157–177. https://doi.org/10.1080/1475939X.2016.1193556.
Tondeur, J., van Braak, J., Siddiq, F., & Scherer, R. (2016). Time for a new approach to prepare future teachers for educational technology use: Its meaning and measurement. *Computers & Education*, *94*, 134–150. https://doi.org/10.1016/j.compedu.2015.11.009.
Widyaningsih, S. W., Yusuf, I., Prasetyo, Z. K., & Istiyono, E. (2020). Online Interactive Multimedia Oriented to HOTS through E-Learning on Physics Material about Electrical Circuit. *JPI (Jurnal Pendidikan Indonesia)*, *9*(1), 1–14. https://doi.org/10.23887/jpi-undiksha.v9i1.17667.
Wijaya, E. Y., Sudjimat, D. A., & Nyoto, A. (2016). Transformasi Pendidikan Abad 21 Sebagai Tuntutan. *Jurnal Pendidikan*, *1*, 263–278.
Yue, N. (2017). Computer multimedia assisted English vocabulary teaching courseware. *International Journal of Emerging Technologies in Learning*, *12*(12), 67–78. https://doi.org/10.3991/ijet.v12.i12.7955.