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ENHANCING ANIMATION LEARNING THROUGH INTEGRATION OF SELF-DIRECTED APPROACH IN INDONESIAN VOCATIONAL SCHOOLS

Ahmad Mursyidun Nidhom[1], Fathiyah Mohd Kamaruzaman[2*], Ruhizan Mohamad Yassin[3]

[1] Center of STEM Enculturation, Faculty of Education, Universiti Kebangsaan Malaysia, 43600 Bangi.
Department of Electrical and Informatics Engineering, Faculty of Engineering, Universitas Negeri Malang.
Email: p122056@siswa.ukm.edu.my, nidhom.ft@um.ac.id
[2] Center of STEM Enculturation, Faculty of Education, Universiti Kebangsaan Malaysia, 43600 Bangi.
Email: fathiyah@ukm.edu.my
[3] Center of STEM Enculturation, Faculty of Education, Universiti Kebangsaan Malaysia, 43600 Bangi.
Email: ruhizan@ukm.edu.my
[*] Corresponding Author

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Abstract:

This study aims to combine self-directed learning approaches that use four stages with learning that uses animated content in vocational schools in Indonesia. This study seeks to disseminate this approach's effectiveness in improving students' understanding and skills in the context of learning animation. The research methodology involved a quasi-experimental design with an experimental and control group totaling 83 students. The experimental group will receive learning with a self-directed learning approach structured in 4 stages, where students have more control over their learning process. Meanwhile, the control group will receive more conventional learning focusing on animation learning. Data was collected through understanding tests and practical assessments before and after the learning intervention. This test measures students' understanding of animation concepts and ability to apply relevant skills. Data analysis will be performed using appropriate statistical tests, such as paired t-tests. In addition, descriptive analysis will describe student understanding and skills changes in more detail. The results of this study show an increase of 43% in the learning process. This proves the potential of the self-directed learning approach in enriching animation learning in vocational schools. The practical implications of these findings can help teachers and educational institutions develop learning strategies that are more effective and responsive to the needs of students in today's digital era.

Keywords:

Self-Directed Learning, Animation, Vocational Education, Experimental

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Introduction

Education is a planned effort in organizing effective learning to activate students' potential so that they can develop the spiritual dimension and skills needed in accordance with the National Education System Law No. 20 of 2003. It is also one of the Indonesian government's fundamental programs to explore students' potential and help them develop the skills needed as the nation's next generation. This fact confirms that the Law has clearly detailed education in Indonesia. In addition, the development of science and information technology continues to increase every year and provides great benefits in the world of education. According to data from the Central Statistics Agency (Badan Pusat Statistik) (BPS.a 2022) Internet users in Indonesia in 2023 until the 2nd quarter have increased significantly to 73.7% of the total population or around 196.7 million users. This data also reflects that most internet users are more likely to access educational content, which may be due to remote learning during the pandemic in 2019. This situation provides an opportunity for teachers to utilize online media as a learning tool that can engage students effectively, efficiently, and allow learning materials to remain relevant in the long run. However, in reality, there are still various challenges in the world of education.

Vocational High Schools (SMK) are responsible for producing graduates who have special competencies and skills needed by the business world and industry, in line with the demands of the development of the business and industrial world. SMK has a curriculum structure that includes three programs, namely normative, adaptive, and productive programs, in accordance with the concepts described by (Ghavifekr and Yulin 2021). Therefore, the learning process in SMK must aim to create graduates who have competent abilities and skills in facing challenges in the business and industrial world. Learning animation today is expected to provide solutions to student saturation during learning time, learning animation serves to attract student interest in serving student learning needs, so that learning animation must be effective, efficient, and in accordance with student needs where of course it can be combined with the right method(Kellems et al. 2020). Inappropriate methods and media are the main obstacles in student learning problems, even though the application of a learning method has one component that needs to be considered so that a learning method can be sustainable and have an influence on its implementation (Pirnau et al. 2017). In addition, the use of learning animations in learning activities has an important role, namely to deliver material to students (Fázik and Steinerová 2021). The concept of learning animation itself applied to learning is not new, but this integration results in an interesting learning process, when combined with a self-directed learning approach that allows students to take an active role in their learning process. In the context of modern learning, the concept of animation has become a very effective tool in communicating complex information in a more visual and engaging way. Learning animations can explain difficult concepts in a simpler and easier way for students to understand.

A self-directed learning approach, or self-centered learning, gives students more control over their learning. Students can set the tempo and learning style according to their own preferences. With the integration of learning animations, students can take advantage of interactive visual tools to explore the subject matter in greater depth. They can repeat difficult parts, explore the content further, or focus on the areas they're most interested in. The result is a more engaging, interactive, and personalized learning experience. Students have the opportunity to understand the material better and develop critical skills such as problem solving, analysis, and creativity, with the integration of learning animation concepts and self-directed learning approaches, the learning process becomes more relevant and in accordance with the demands of modern

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education that emphasizes the development of independent thinking skills and adaptation to technological developments. Application is chosen in SMK based on the way of learning delivered by (Ghavifekr and Yulin 2021)(Fiandra et al. 2022) who conveyed that the concept of independent learning is at a mature age in making choices, this happens at the age of vocational schools which they are usually active in the learning process(Suharno, Pambudi, and Harjanto 2020). Therefore, there is a need for research that looks at how positive implications result from the integration of Learning Animation and self directed learning on improving the learning outcomes of vocational students.

Literature Review

Learning Animation Definition

Animation is a learning medium that can maximize visual effects so as to increase understanding during material distribution. Animation is a technique in displaying images sequentially so that students are able to receive illustrations of movement packaged in it. Animation has many advantages where it can provide exposure to complex material that is presented clearly through images, writing, and words(Schunk and DiBenedetto 2020). In addition, animation can also be used as a medium in showing the concept of a material that cannot be seen through the eye by displaying material visualizations so that teachers can be more creative in explaining material during learning. As revealed by (Nidhom et al. 2020) that the concept of animation results in a more creative learning experience because it can be done independently. The purpose of animation media in learning is as a maximum visualization of the material and to cause continuous interaction in understanding the material. This is shown by several advantages of learning media in the form of animation (Kellems et al. 2020) as follows: 1). facilitate adjustment of the physical size picture of matter or objects; 2). make it easier for teachers to provide complex material presentations; 3). combining several converging media i.e. audio and visual; 4). attract students' attention so as to increase interest in learning; 5). As an interactive media that can accommodate and support the response of students to the material. 6). Provide completeness and ease of use or called independent.

There are various types of animation that have been developed today, one of which is motion graphic animation or commonly referred to as motion graphic. The term motion graphics was first introduced by John Withney (Nidhom and Putro 2019), a famous animator in the 1960s. In general, animation of a type of motion graphic is widely used in the field of graphics such as in commercial advertisements to make it more attractive. Motion graphics are made with animation technology to produce hallucinations of movement or change the existence of a visual factor. The existence of a learning media, especially in the form of motion graphic videos, stimulates students' interest in learning the material optimally which can also increase student knowledge. This is evidenced by the results of the study (Hoesni et al. 2020) That media in the form of motion graphic videos responded well by students then there was an increase in learning achievement with a percentage of 21.6% after media use. Motion graphics is a learning medium that is widely applied at several levels of education(Gardeli and Vosinakis 2020). There are many advantages that can distinguish motion graphics from other media used before, where usually this media tends to be short in duration so that students do not get bored when using it. Motion graphics is a learning media created with the help of Adobe After Effects CC software by combining several graphic design images and making them an animation. The results of the animation will be combined with audio in the form of dubbing and background music that matches the narrative sourced from the material. Based on evaluation standards and

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instruments by (Fázik and Steinerová 2021) there are four aspects of learning media assessment, namely material (content), instructional design (instructional design), learning media & communication, and finally implementation power &; user response (implementability & user acceptance).

Self Directed Learning Definition

Self-Directed Learning is a learning model that focuses on how students conduct the learning process based on their own initiative (Bahari, Zhang, and Ardasheva 2021). The general description of this model is where the teacher as a facilitator who provides direction to the development of student learning processes and outcomes. The benefit of self-directed learning is that students can be made aware and empowered so that they have responsibilities during learning. In addition, learning can be done anywhere, anytime and using a variety of learning resources (Johnes, Portela, and Thanassoulis 2017). The essence of self-directed learning is to provide as many opportunities as possible for students to be active in learning. The mindset that must be applied when using this model is a shift from student dependence on others to students who can learn independently. Independent learning means that students must be involved during the learning process that is meaningful and in accordance with learning objectives. According to (Mews 2020) There are principles of self-directed learning, including: (1) Learning resources are useful experiences; (2) Readiness is a requirement for independent learning; and (3) Students prefer to learn from problems arising from the content of the material. According to (Colin 2019), Four stages of self-directed learning are needed, namely planning, implementation, supervision, and assessment. The following is an explanation of each stage in Table 1.

Table 1: Stages Of Self-Directed Learning

Stages	Description
Planning	• Analysis of needs and problems student • Curriculum analysis • Analysis of student abilities • Design of continuous learning objectives • Resource design • Making daily learning activity plans
Implementing	Put learning on track
Monitoring	• Supervision of assigned tasks • Supervision of student learning activities • Supervision of students' awareness and sensitivity
Evaluatting	• Comparison of student learning outcomes • Assessment of student learning outcomes • Asking questions related to material that is not understood • Ask task-related questions

Definition of Student Learning Interests

There are several factors from inside and outside that always affect student learning success. One of the individual factors is the student's interest in learning. According to (Colin 2019) learning interest, intentional desire, and involvement in cognitive activities play an important

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part in learning. (Abdullah 2019) also stated that interest in learning is a sense of liking or being interested in something or learning activities without any coercion. This is reinforced by a theory from (Yu and Chen 2021)(Pirnau et al. 2017) where students who have an interest in learning usually maintain a sense of pleasure, involvement, and attentive attitude. Based on some of the definitions above, it can be concluded that interest in learning is a factor that encourages the development of student motivation in learning based on interest or pleasure and the desire to keep learning. In addition, according to (Fázik and Steinerová 2021), students can like and interest certain lessons if the learning media used during the process is classified as interesting.

Methodology

The development of learning animation integrated with Self Directed learning is a process in producing and developing animation learning media that are valid and considered suitable for use in the learning process. According to (Kellems et al. 2020) Research and development of learning media can be carried out with a combination research approach where the data used is quantitative and qualitative. Meanwhile, according to (Blaschke, Hase, and Associates 2019), research and development is a method in producing certain products and is also used to test the effectiveness of the product itself. The process of developing a learning media requires several components, namely concepts, procedures, and theories which are referred to as development models.

The research that will be carried out aims to expand knowledge about product development that will be produced, namely learning animations containing self-directed learning to increase student learning interest. The model used is research and development according to (Nayak, Kant, and Anjali 2020)) where basically through this model a product will be produced and then tested for the effectiveness of the product. The following is the procedure of the research and development model shown in Figure 1.

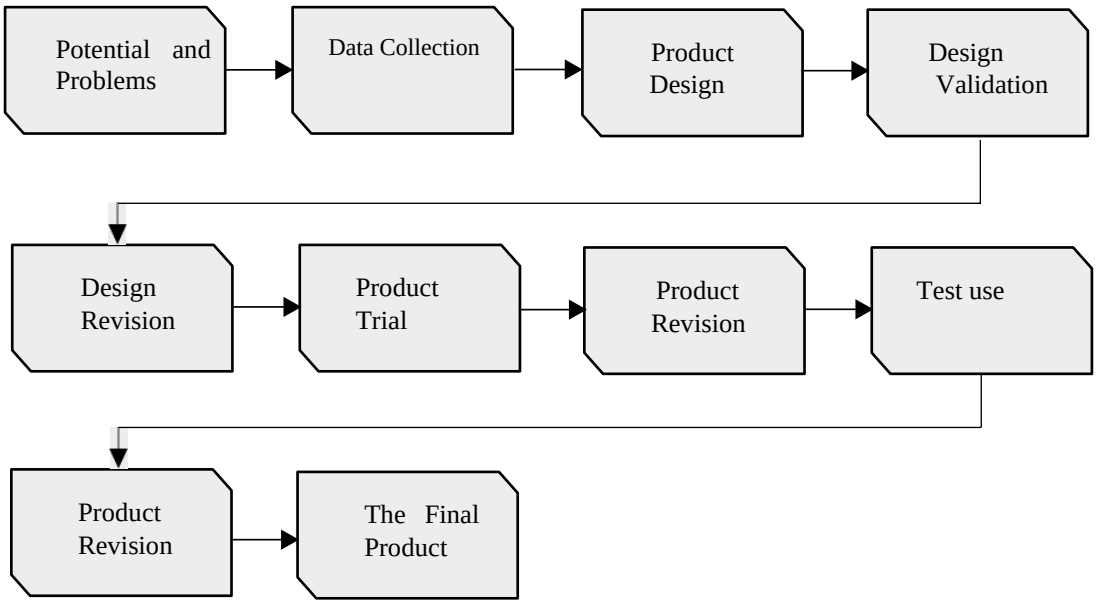

Figure 1: R&D Research Procedure

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The ten procedures implemented will produce learning animation products that are integrated in the learning process, through a series of processes that are carried out thoroughly through determining potential problems, collecting material data to be used, product design, product validation, product trial to the final product to show that the learning animation product is ready to use, the following in Figure 2 is shown one of the results of the development of learning animation integrated self directed learning.

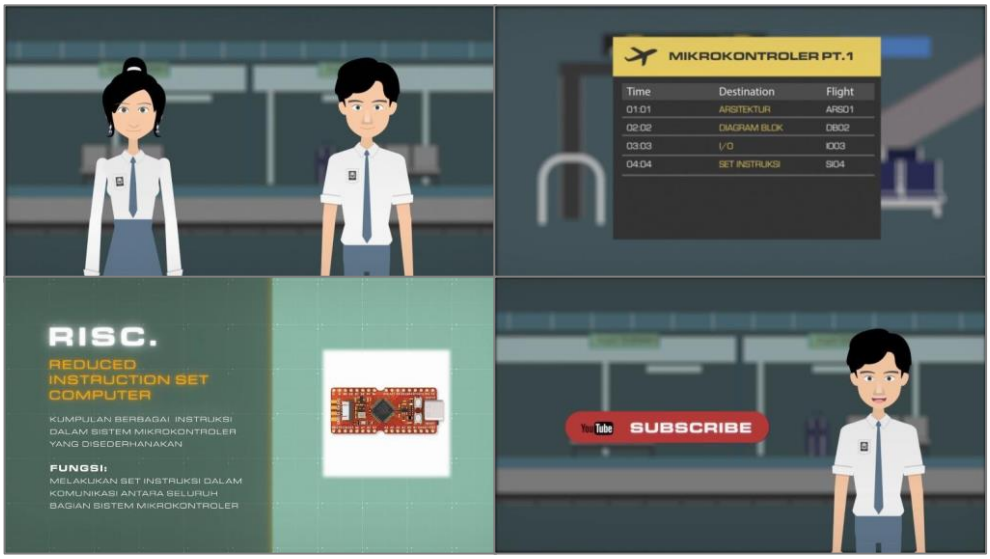

Figure 2: Learning Animations Used In The Study

After carrying out research procedures as the first step in developing learning animation products that are integrated with a self-directed learning approach with four stages in self-directed learning, namely planning, implementation, supervision, and assessment. The following is an explanation of each stage in Table 2.

Table 2: Stages of Self-Directed Learning

Stages	Teacher	Student
Planning	Teacher prepares Learning Tools: Implementation Plan Learning (RPP) Teaching Materials and Media	
Implementing	Teachers disseminate media in the form of learning animations via Youtube channel	Students pay attention to the learning animation that has been disseminated on Youtube channel
Monitoring	The teacher conducts a monitoring of complaints, problems and how much great student achievement.	Students present material and problems during learning with animated videos.
Evaluating	The teacher gives an evaluation of the student's work	Students do the evaluation through the link provided with a maximum time limit of 6 days after video aired

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This self-directed learning stage is integrated directly with learning animations that have been developed in the early stages, this self-directed learning stage makes it easier for teachers to manage the use of learning animations. At the implementation stage, the teacher disseminates learning animation media to students as the main media used which is then expected to increase student learning interest, this student learning interest network uses a questionnaire questionnaire consisting of predetermined indicators, the following in Table 3 is a grid of questionnaire indicators used.

Table 3: Learning Interest Questionnaire Grid

No.	Assessment Aspect	Indicator
1.	Interest	Enthusiasm during learning Does not delay tasks Watch learning animations
2.	Feelings of pleasure	Be present during learning Don't feel bored during learning
3.	Attention	Take notes or record learning materials Listen to explanations from learning animations
4.	Involvement	Be active in asking questions Be active during group discussions Actively answer questions

Data Analysis and Findings

Data analysis and findings are carried out based on data obtained through expert validation, small group trials, large group trials and the results of student learning interest questionnaires before and after learning using Learning Animation integrated with self-directed learning. Data from validity analysis the small group trial stage was carried out at SMK Negeri 4 Malang with 10 students who had taken computer system subjects because based on (Safara 2020)the minimum number of respondents for small groups was 10-20 respondents. Through this number, the target population or in this study is SMK students of Class X Expertise Program more easily described its representation. There are several aspects used in small group trials, namely: (1) Material; (2) Learning Design; then (3) Media and Communication. Based on the data processing method adjusted to the validity aspect, the following results are shown in Table 4.

Table 4: Small Group Trials

No.	**Aspect**	**∑TSe**	**∑TSh**	**P(%)**	**Criteria**
1.	Material	240	211	87,9	Very decent
2.	Learning Design	120	106	88,3	Very decent
3.	Media and Communication	440	380	86,4	Very decent
	Sum	800	697		
	Average			87,1	Very decent

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The large group trial stage was carried out at SMK Negeri 4 Malang with a total of 30 students who had taken computer system subjects. There are several aspects used in large group trials, namely: (1) Material; (2) Learning Design; then (3) Media and Communication. Based on the data processing method adjusted to the validity aspect, the following results are shown in Table 4.

Table 3: Big Group Trials

No.	Aspect	∑TSe	∑TSh	P(%)	Criteria
1.	Material	720	689	95,7	Very decent
2.	Learning Design	360	323	89,7	Very decent
3.	Media and Communication	1320	1264	95,8	Very decent
	Sum	800	2276		
	Average			95,7	Very decent

The stages in measuring student interest in learning are carried out by distributing questionnaires analyzing learning interest and then reviewed in terms of interest levels and aspects. Questionnaires can be filled out before and after students see animation of integrated self-directed learning in computer system subjects. In the study interest research, there were respondents, namely students of SMK Negeri 4 Malang who had taken class X and had taken computer system subjects. Meanwhile, the aspects needed in measuring interest in learning are: (1) Interest; (2) Feelings of pleasure; (3) Involvement; and (4) Caution, the following results are shown in Table 4.

Table 4: Student Learning Interest Outcomes Prior To Treatment

No.	Level of interest	Grand total (n)	Number of Interest (F)	P (%)	Criteria
1.	Very High	30	0	30	Low
2.	Tall	30	9		
3.	Keep	30	14		
4.	Low	30	4		
5.	Very Low	30	0		

After the distribution of student interest questionnaires before treatment is then carried out with the distribution of questionnaires after treatment, the treatment in question is the application of self-directed learning integrated learning animations, the results obtained can be seen in Table 5.

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Table 5: Student Learning Interest Outcomes After Treatment

No.	Level of interest	Grand total (n)	Number of Interest (F)	P (%)	Criteria
1.	Very High	30	23	83,3	Very High
2.	Tall	30	2		
3.	Keep	30	1		
4.	Low	30	4		
5.	Very Low	30	0		

Discussion and Conclusion

The study aimed to combine self-directed learning approaches with animated content to enhance students' understanding and skills in animation learning within the context of vocational schools in Indonesia. The research methodology involved a quasi-experimental design with an experimental and control group totaling 83 students. The self-directed learning approach was structured in four stages, allowing students to have more control over their learning process. The study sought to measure the effectiveness of this approach in improving students' understanding of animation concepts and their ability to apply relevant skills. The findings revealed a significant increase of 43% in the learning process, indicating the potential of the self-directed learning approach to enrich animation learning in vocational schools. The study's results provide valuable insights into the effectiveness of integrating self-directed learning with animated content, offering a promising approach to address the challenges in vocational education and enhance students' engagement and learning outcomes.

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References

Abdullah, Sri Muliati. 2019. “Social Cognitive Theory : A Bandura Thought Review Published in 1982-2012.” *Psikodimensia* 18(1):85. doi: 10.24167/psidim.v18i1.1708.

Bahari, Akbar, Xue Zhang, and Yuliya Ardasheva. 2021. “Establishing a Computer-Assisted Interactive Reading Model.” *Computers and Education* 172.

Blaschke, Lisa Marie, Stewart Hase, and Australia Associates. 2019. “Heutagogy and Digital Media Networks: Setting Students on the Path to Lifelong Learning.” *Pacific Journal of Technology Enhanced Learning* 1(1):1.

BPS.a. 2022. “Statistik Pendidikan.” *2022*. Retrieved (https://www.bps.go.id/publication/2022/11/25/a80bdf8c85bc28a4e6566661/statistik-pendidikan-2022.html).

Colin, Jones. 2019. “The Promise of Andragogy, Heutagogy and Academagogy to Enterprise and Entrepreneurship Education Pedagogy” edited by P. Kathryn. *Education + Training* 61(9):1170–86. doi: 10.1108/ET-10-2018-0211.

Fázik, Jakub, and Jela Steinerová. 2021. “Technologies, Knowledge and Truth: The Three Dimensions of Information Literacy of University Students in Slovakia.” *Journal of Documentation* 77(1):285–303. doi: 10.1108/JD-05-2020-0086.

International Journal of Modern Education
IJMOE
EISSN: 2637-0905
Volume 6 Issue 20 (March 2024) PP. 283-293
DOI: 10.35631/IJMOE.620022

Fiandra, Yudha Aditya, NFn Ambiyar, M. Giatman, NFn Usmeldi, and Nurhasan Syah. 2022. "The Effectiveness of Ict Utilization on Cognitive Achievement in the Vocational Education During the Covid-19 Outbreak in Indonesia." *Kwangsan: Jurnal Teknologi Pendidikan* 9(2):259. doi: 10.31800/jtp.kw.v9n2.p259--272.

Gardeli, Anna, and Spyros Vosinakis. 2020. "The Effect of Tangible Augmented Reality Interfaces on Teaching Computational Thinking: A Preliminary Study BT - The Challenges of the Digital Transformation in Education." Pp. 673–84 in, edited by M. E. Auer and T. Tsiatsos. Cham: Springer International Publishing.

Ghavifekr, Simin, and Shi Yulin. 2021. "Role of ICT in TVET Education: Teaching & Learning amid COVID-19 Pandemic." *International Journal of Advanced Research in Education and Society* 3(1):119–31.

Hoesni, Wan Elisa Wan, Fatin Nabilah Abu Hassan, Muhammad Talhah Ajmain, and Nurul Atika Mohd Rosli. 2020. "The Effects of ICT Towards Students' Attitude." *Khazanah Pendidikan Islam* 2(2):90–99. doi: 10.15575/kp.v2i2.9270.

Johnes, Jill, Maria Portela, and Emmanuel Thanassoulis. 2017. "Efficiency in Education." *Journal of the Operational Research Society* 68(4):331–38. doi: 10.1057/s41274-016-0109-z.

Kellems, Ryan O., Cade Charlton, Kjartan Skogly Kversøy, and Miklós Győri. 2020. "Exploring the Use of Virtual Characters (Avatars), Live Animation, and Augmented Reality to Teach Social Skills to Individuals with Autism." *Multimodal Technologies and Interaction* 4(3):1–11. doi: 10.3390/mti4030048.

Mews, Joseph. 2020. "Leading through Andragogy." *College and University* 95(1):65–68.

Nayak, Subash Ranjan, Nikhil Kant, and Kumari Anjali. 2020. "Strategy of Using ICT in ODL to Disseminate Higher Education in Tribal Communities: A Case of MP, India." *Asian Association of Open Universities Journal* 15(2):189–206. doi: 10.1108/aaouj-05-2020-0029.

Nidhom, Ahmad Mursyidun, Amat Mukhadis, Januar Kustiandi, Andika Bagus Nur Rahma Putra, Azhar Ahmad Smaragdina, Aulia Herdiani, and Setiadi Cahyono Putro. 2020. "The Effect of Integrated Project Based Learning MOOCs on Student Result of Vocational High School Students." (January):123–27. doi: 10.5220/0008783401230127.

Nidhom, Ahmad Mursyidun, and Setiadi Cahyono Putro. 2019. "Penerapan Heutagogi Gamifikasi Terhadap Evaluasi Pembelajaran Geografi Di Sekolah Menengah Pertama." *Tekno* 29(2):190. doi: 10.17977/um034v29i2p190-197.

Pirnau, Claudiu, Mironela Pirnau, Stefan Titu, and Aurel Mihail Titu. 2017. "Comparative Educational Study between Online and Offline Interactions in the Knowledge-Based Economy." *Balkan Region Conference on Engineering and Business Education* 3(1):320–27. doi: 10.1515/cplbu-2017-0042.

Safara, Fatemeh. 2020. "A Computational Model to Predict Consumer Behaviour During COVID-19 Pandemic." *Computational Economics* (0123456789). doi: 10.1007/s10614-020-10069-3.

Schunk, Dale H., and Maria K. DiBenedetto. 2020. "Motivation and Social Cognitive Theory." *Contemporary Educational Psychology* 60:101832. doi: 10.1016/j.cedpsych.2019.101832.

Suharno, Nugroho Agung Pambudi, and Budi Harjanto. 2020. "Vocational Education in Indonesia: History, Development, Opportunities, and Challenges." *Children and Youth Services Review* 115(January):105092. doi: 10.1016/j.childyouth.2020.105092.

International Journal of Modern Education
IJMOE
EISSN: 2637-0905
Volume 6 Issue 20 (March 2024) PP. 283-293
DOI: 10.35631/IJMOE.620022

Yu, Fu Yun, and Chiao Yi Chen. 2021. "Student- versus Teacher-Generated Explanations for Answers to Online Multiple-Choice Questions: What Are the Differences?" *Computers and Education* 173.