Interactive Media with Video Quiz Model to Enhance Student Engagement in the E-Service-Learning Program for the Civic Education Course

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Abstract

From the research on e-Service-Learning in higher education, it is found that there are still few studies related to e-service-learning design development and its impact on student engagement. Video as a learning media has been proven to increase student participation in the learning context. To help address the problem of student engagement at the partner location and students' needs related to media that can help their e-service-learning success, the researcher wants to develop an interactive video with e-service-learning as its pedagogy to increase student engagement at the partner location. The approach of this study is research and development, with ADDIE model. After the video has been developed, the next stage is implementation using e-Service-Learning as the pedagogy. From the implementation, data was taken from the observation form of student engagement report in learning with e-Service-Learning. The observation form was adapted from The Online Student Engagement (OSE) scale. The result shows there are significant engagement rate from class that use interactive video with N-gain = 0.42 and from the T-test result it showed statistically different. Students are more engaging and showed good participation during the e-Service-Learning program with an interactive video as the media. Based on the expert judge, the developed video is valid and ready to use as interactive learning media in Higher education e-Service-Learning program.

Keywords: *E-Service-Learning, Student Engagement, Interactive Media.*

INTRODUCTION

In the world of education, particularly higher education, there is an expectation to prepare individuals who are excellent and possess skills in critical thinking, creativity, innovation, effective communication, collaboration, and problem-solving. The "Merdeka Belajar-Kampus Merdeka" (Freedom of Learning-Independent Campus) policy is anticipated to serve as a medium to realize Indonesian individuals capable of contributing to the nation and internationally.

As per Circular No. 4 of 2020, which addresses the provision of education in emergency situations, it specifies targets for every individual to acquire 21st-century skills to compete in the global era. These competencies can be developed through education (Yulianti et al., 2022) and include critical thinking, creativity, collaboration, and communication skills.

Community service programs in villages are integral to the MBKM framework. One of the private universities in Indonesia, participates in this initiative through an activity known as service-learning. Service-Learning is a teaching form that connects theory and practice by providing students opportunities to participate in community service activities, fulfilling community needs while reflecting in the classroom to gain deeper insights (Resch & Schrittesser, 2023). Service-learning emerges as a pedagogy grounded in John Dewey's theory of learning by doing (García-Gutiérrez & Ruiz-Corbella, 2022). This program is integrated into Civic Education courses and considered part of the students' final semester assessment. The proposal preparation to the culminating activities spans approximately five weeks.

Students learn about Civic Education as an introduction to building awareness of the role of citizens, particularly the younger generation, to tackle six focal issues of the nation, as directed by SIMKATMAWA, which include

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national defense, love for the homeland, nationalism, anti-drug, anti-corruption, and student care. After six meetings learning the basic concepts about the state, citizens, the constitution, and the role of citizens, students. Prepare a service-learning activity proposal by selecting one of the six topics mentioned above. The preliminary step before drafting the proposal involves situational analysis at the partner location concerning the needs related to the six topics.

The situational analysis conducted then guides the students in selecting topics. Students develop the selected topic, and then implement service-learning at the partner location while also assisting with related facilities and infrastructure.

During several student reflection sheets, stories about difficulties they encountered in developing topics for service-learning were found, as well as challenges in collaborating with peers and partners. A simple survey among 21 students revealed that many students found it difficult to develop Service-Learning content, as relying solely on the internet did not enable them to effectively sift through valid and invalid information. Interviews with the managers of partner locations confirmed similar findings, indicating that the material brought was often inappropriate for the children's age group, poorly packaged, ultimately resulting in the students at the partner location showing little interest in participating in the service-learning activities.

Interactive video is a learning medium that can facilitate active participation of children in the classroom. By employing interactive videos, students are not merely passive viewers, but are assisted in becoming active learners (Q. Wang et al., 2023). One of the educational media that can boost motivation and support cognitive functions is interactive video (Barut Tugtekin & Dursun, 2022). Interactive learning videos are deemed effective for students to learn basic skills independently and at their own pace (Natarajan et al., 2022). It can be concluded that interactive video media, especially in the design of distance learning, has a positive potential in enhancing student engagement in class.

In today's rapidly evolving digital landscape, the integration of e-service-learning and the development of video as a learning medium have become increasingly prevalent in educational settings (Chua et al., 2015; Pricahyo et al., 2018). As the COVID-19 pandemic has forced educational institutions to adapt to remote learning, the need for effective video-based instructional tools has become more crucial than ever before (Khalil et al., 2021). The pandemic has highlighted the feasibility of e-learning and the user acceptability of e-learning at scale (Y. Wang et al., 2022). Remote learning via video conferencing technologies has enabled students to continue their learning journey, even when physical access to classrooms and laboratories is limited (Wang et al., 2022). However, the engagement of students in a virtual learning environment remains a significant challenge (Wang et al., 2022). To address this issue, educators are exploring ways to introduce interactive and real-time elements into their video-based lessons, as these elements can help reinforce engagement among class participants (Wang et al., 2022).

The use of video in higher education has been the subject of extensive research, with several meta-analyses indicating that technology, including video, can enhance student learning (Brame, 2016). Video may be particularly valuable for student preparation in biology classes, as it can be well-suited to illuminating abstract or hard-to-visualize phenomena that are a common focus in such courses (Brame, 2016). While the medium of video itself is not inherently effective, there are principles and guidelines that can be employed to maximize student learning from educational videos (Brame, 2016). As the integration of e-service-learning and video-based learning continues to evolve, it is essential for educators to carefully consider the best practices and principles for designing and implementing effective educational videos.

While the integration of e-service-learning and video-based learning holds significant promise, there remains a gap between the development of video as a learning medium and the actual benefits realized by students. One of the key challenges is ensuring that the design and implementation of educational videos effectively manage the cognitive load of students. Cognitive load theory suggests that the human working memory has a limited capacity, and overloading this capacity can hinder learning. Effective educational videos should be designed to minimize extraneous cognitive load, which can be achieved through techniques such as using clear and concise narration, avoiding distracting visuals, and structuring the content in a logical and coherent manner (Brame, 2016).

Additionally, maximizing student engagement with educational videos is crucial for promoting active learning. Strategies such as incorporating interactive elements, providing opportunities for reflection, and encouraging students to take notes or engage in discussion can help sustain student attention and foster deeper learning (Brame, 2016). Finally, it is essential to promote active learning from educational videos. Instructors should consider incorporating activities, such as pausing the video for discussion or problem-solving, to encourage students to actively process and apply the information presented (Brame, 2016).

As an interactive medium that supports learning, particularly distance learning, interactive video can also be developed to be implemented with the aid of e-Service-Learning pedagogy. Electronic service-learning or e-service-learning is a pedagogy that allows teachers or lecturers to design media-based learning and use a virtual mode to provide students opportunities to share knowledge and perform community service (Dapena et al., 2022). The engagement of students in distance learning designs is critical for their success. One of the factors of student engagement in learning is learning tools such as videos that clearly explain the learning objectives (Marcus et al., 2021). Therefore, it can be concluded that interactive videos will be beneficial when implemented in e-service-learning to enhance student engagement at partner locations.

METHOD

The approach used is development, with the development of an interactive video on the topic of national defense using the ADDIE model. The ADDIE development model is chosen due to its ease of understanding and implementation (Ginting et al., 2021). The topic that will be raised in the video is national defense for teenagers. The planned video duration is around 5 minutes, in line with recent research findings suggesting that educational videos should ideally range from 5-6 minutes (Mashuri & Budiyono, 2020). The design of the interactive video will be developed in the following stages:
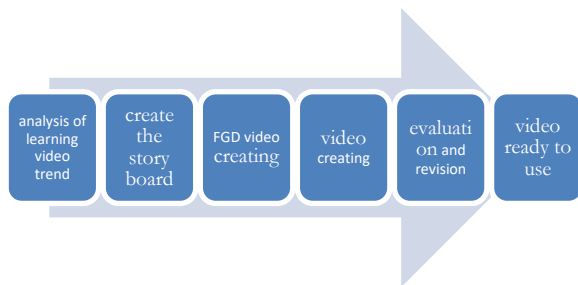
After the development of the video is completed, the next stage is implementation using e-Service-Learning. In e-Service-Learning program student will use this interactive video to teach about national defence for students in partner location. From this implementation, data will be collected from the students' e-SL implementation reports regarding the number of students participating and engagement during the sessions. Additional data will be gathered from interviews with the leaders of the partner organizations about the involvement of their students in the e-SL process. The research process can briefly be observed from the diagram.
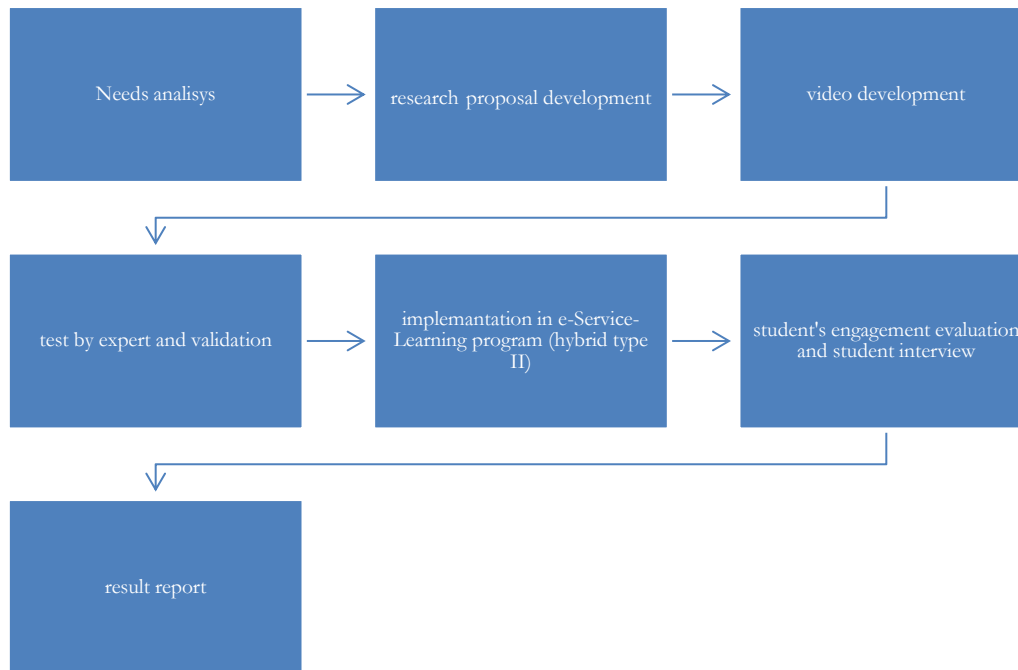
The instrument to measure the engagement of the students was adapted from Student engagement instrument for grade 3-5 developed by Minnesota University (Check & Connect, 2020). There are 16 questions to measure students' engagement during the lesson in the classroom. Data for this questionnaire are analysed using paired sample T-Test and see the N-gain score using formula from Microsoft excel.

RESULTS AND DISCUSSION

RESULT

Implementation Description

The development of the educational video was guided by three critical aspects highlighted by Brame (Brame, 2015) focusing primarily on cognitive load management. The final product was an 8-minute video, divided into two segments of 4 minutes each. This chunking technique was employed with the expectation that it would help maintain student retention and prevent the material from being too overwhelming for them to assimilate. The second component involved enhancing student engagement through non-cognitive elements. The video was designed as an animation with appealing colour choices to ensure that students remain attentive to the learning object utilized in the educational process.

Figure 3. Example of the second component in developed video.

The third component is a feature that promotes active learning. The video developed adopts the quiz video model (Licorish et al., 2018) incorporating simple questions interspersed throughout the video along with gamification principles within the learning object. This question feature fosters classroom interaction during the learning process, as illustrated in the following image.

Figure 4. Student's engagement during the lesson.

The development of the educational video is based on three key elements of effective instructional video design as outlined by Brame (2015), summarized in the following image

Figure 5. Important element in learning video development.

After developing the interactive video using the quiz video model, the learning object was then implemented in the execution of e-Service-Learning. The e-Service-Learning used in this study is a hybrid type III e-SL, where the service and learning activities are conducted partially online and partially offline (Huang, 2022). There were 30 third-grade students who participated in this activity. The learning object utilized was an interactive video in the form of a quiz video, implemented in the Civic Education subject. The learning occurred over a period of two hours, with the following quantitative results.

Variabel 1	Variabel 2
34	62
34	62
32	64
43	65
36	64
43	64
36	65

36	60
34	64
40	62
34	62
34	62
32	64
43	65
36	64
43	64
36	65
36	60
34	64
40	62
34	62
34	62
32	64
43	65
36	64
43	64
36	65
36	60
34	64
40	62

Descritive Statistics	Variabel 1	Variabel 2
Mean	36.8	63.2
Median	36.0	64.0
Mode	34.0	64.0
Std Devian	3.7	1.6
Variances	14.0	2.4
Max	43.0	65.0
Min	32.0	60.0
Range	11.0	5.0
Sum	1104.0	1896.0
Count	30.0	30.0
Skewness	0.7	-0.7
Kurtosis	-0.9	-0.5
Inter-rater reliability/test-retest reliability	0.24	
Score Ideal	18	
N-GAIN	0.42	MEDIUM
Tail	2	If 1: uses a one-tailed distributionIf 2: uses a two-tailed distribution.
Type	2	If 1: a paired test is performedIf 2: a two-sample equal variance (homoscedastic) test is performed.
Alpha	0.05	If .5: linientIf .1: strict
t-test	0.00	**Statistically DIFFERENT**

Qualitative Analysis

In addition to the quantitative analysis using N-gain and paired sample t-tests, qualitative analysis was also conducted by posing several questions to students and teachers after the learning session concluded. The questions aimed to gather insights into their experiences and perceptions of the interactive video session.

For students, the questions included:

What did you like about today's learning session?

Were there parts of the video that you did not understand?

Did the educational video make you more interested in learning?What did you do after watching the video?

For teachers, the questions were

How was your experience using the interactive video in teaching?

Did you notice any changes in student engagement during the learning process?

Do you have any suggestions for improving the developed video?

These questions were designed to provide a deeper understanding of both the effectiveness of the educational content and the delivery method, as well as to identify any areas for improvement in future video productions.

DISCUSSION

This study aimed to develop an interactive video and evaluate the effectiveness of using an interactive video quiz model to enhance student engagement in Civic Education (PKn). Statistical analysis using paired sample t-tests revealed a significant difference in students' pretest and posttest scores ($p < 0.05$), indicating improved material comprehension following the implementation of the interactive quiz video.

Furthermore, the calculation of n-gain yielded a value of 0.42, which falls into the medium gain category according to the classification (Hake, 1998). This indicates that the interactive video with quiz model successfully improved students' understanding significantly, though not maximally. The medium gain category suggests that the learning method is effective but still requires some adjustments to achieve its full potential (Reyaz Ahmad Bhat, 2023).

These results are significant for the teaching practices in Civic Education as they demonstrate that the integration of interactive technologies such as quiz videos can enrich students' learning experiences and enhance their engagement. Research by Cavinato also underscores that the use of interactive technologies in classrooms can help students be more active and motivated during the learning process (Cavinato et al., 2021).

CONCLUSIONS

Suggestions

The conclusion of this research is the developed video is valid and ready to use as the learning media. The developed video was considering the cognitive load of student, therefore the creator maintains the content and the duration as well to. Another conclusion from this research is that the use of interactive videos with quiz models is effective in enhancing student engagement and understanding in Civic Education (PKn). However, there is room for improvement in the design and implementation to maximize the potential for learning and student engagement. Based on these findings, it is recommended to further develop the quiz video design, such as by adding more varied and comprehensive gamification elements to target students' intrinsic motivation more deeply. The idea that well-designed gamification can significantly enhance student engagement and learning outcomes is supported by this research.

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