Designing learning object using articulate storyline 3 for supporting Indonesia online learning system (SPADA)

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Abstract. This study aimed at design learning object using Articulate Storyline 3 for supporting the Indonesian Online Learning System (SPADA). This is a development research using ADDIE model. ADDIE Model development design was combined with the AGILE Method to develop learning tools. The expected benefit from this research is being able to integrate learning objects with other learning objects at SPADA Indonesia. The development stages were determining the course to be developed, conducting needs analysis, developing draft, utilizing the Universitas Pendidikan Ganesha E-learning software, and testing (a review from content expert and field testing). The results of the learning object design can help and facilitate lecturers and students to carry out the lecturing process better and be able to increase the level of mastery of the subject matter. Students and lecturers would not be limited to face-to-face meeting and time. Based on the validity test conducted by media, design and content experts, it could be said that the AS3-based learning object designed was "Very Valid" and could be used for lecturing process.

1. Introduction
Kampus Merdeka is a new concept in Indonesian education system. It is hoped that students have more time to engage beneficial activity outside their home university. The activity can be in the form of studying at another campus for one semester. This is in line with the Online Learning System or SPADA that has been implemented previously. SPADA is the implementation of Distance Education in Higher Education aimed at increasing fair access to quality learning [1]. The Indonesian online learning system SPADA provides opportunities for students from different university to take courses in other universities and their learning outcomes can be recognized equally by the college where they are registered. Therefore, to achieve a quality learning process, the learning object of courses at each university must be able to accommodate the concept of independent university and the SPADA system. Therefore, learning objects must have characteristics that match the characteristics of the learning process. This is stated in the Regulation of the Minister of Education and Culture (PERMENDIKBUD), Number 3, of 2020, concerning National Higher Education Standards, Article 11, Paragraph 1, saying that the characteristics of the learning process consist of interactive, holistic, integrative, scientific, contextual, thematic characteristics, effective, collaborative, and student-centered. The success of the learning
process is also inseparable from the availability of facilities and infrastructure provided by the university. The facilities and infrastructure referred are learning objects that support the learning process [2]. The functions and characteristics of the current learning object should be (1) generating motivation, interest or passion for student learning, (2) stimulating students’ motivation to learn further, (3) providing opportunities for students to respond to the material presented, (4) ensuring the development of students’ personality activities, (5) accommodating students in their own learning techniques and the way they acquire knowledge through personal efforts, and (6) developing students’ values and attitudes in everyday life. Interactive learning objects are media that have those characteristics.

However, in reality, many universities do not have this object yet. Undiksha is one of them. Since its establishment, Undiksha has been implementing conventional learning media. Conventional in the sense that it still uses outdated technology compared to the current technological development. The learning media used are still limited to physical teaching aids, PowerPoint presentation materials, and learning objects taken from the internet. Learning objects made by lecturers are less integrated, less interactive in terms of usage and distribution, and receive less attention by millennial students. The results of interviews with lecturers showed that the learning objects that they made were not interactive and no longer up-to-date. This is indicated by the lack of interest shown by students in using the given learning object. Undiksha has already accommodated its learning object, called Undiksha E-Learning. However, the objects in the course are still less qualified. Learning objects are still dominated by Portable Document Format (PDF) files, which in fact only convert physical files to digital files. This is not enough to produce qualified learning objects. The fact that Undiksha is less successful in implementing the concept of an independent campus is the concern of the present research. The aim of the SPADA system cannot be achieved in Undiksha if there is no visible solution.

The solution that can be offered is to use appropriate technology in developing learning objects. The final product of the learning object must have interactive, collaborative and integrative nature. There is a new application called Articulate Storyline 3. Its advantages are (1) functional and easy to use interface design, (2) being able to produce interactive media according to the storyline created, (3) being able to be distributed to various web-based e-learning platforms. It also offers the developers with simulations, quizzes, drag-and-drop interactions, screen recordings, and many other e-learning objects that allow interactions between lecturers, objects, and students. Articulate Storyline 3 can be used to create learning objects that present information in an innovative and interactive format.

Interactive learning objects have been proven effective in accommodating the learning process. Interactive learning objects increase the effectivity of the learning activities [3]. Articulate Storyline can also overcome the difficulties experienced by junior high school students in learning Algebra by producing valid, effective, and practical interactive media [4]. In addition, the AS3-based learning object also proved feasible to be used with a media feasibility percentage of 94.44% [5]. The research conducted by Nugraheni [6] revealed that developing a classroom learning media using the AS-based learning object increases the students’ interest in learning Indonesian history.

2. Method
The development model used in this research was the ADDIE model. This development model consisted of five stages, namely analysis, design, development, implementation, and evaluation. The development stages can be seen in Figure 1.
The analysis phase is the first step of the ADDIE model. At this stage the analysis processes that were done were subject analysis, analysis of the availability of learning resources, and analysis of learners’ characteristics.

The design stage was carried out based on the results of the analysis stage used as a reference in developing independent learning materials in the form of e-modules.

In the development stage, the product was developed based on the determined designs. The product was developed in the form of a program code using AS 3 as the main medium for learning media. The method used in the learning device development process was AGILE.

The Implementation stage was to implement the developed learning system in a real situation. At this stage the e-module that had been developed was tested based on its role and function in the learning process to determine the advantages of the product being developed. The trials carried out in the implementation stage consisted of testing by content expert, learning design expert, learning media expert, individual trials, small group trials, and field trials.

The evaluation stage was the stage to evaluate the product development process according to the model used. At this stage, formative evaluation used was aimed to collect data on the effectiveness and efficiency of the media to achieve the determined goals. The data was intended to improve and perfect the effectiveness and efficiency of the media developed. Formative evaluation consisted of expert reviews, individual evaluations, small group evaluations, and field tests.

The experts were a content expert, a learning design expert and one learning media expert. The instruments used for gathering review from content experts, media experts and learning design expert were questionnaires and interviews. The interviews were unstructured (free) and structured (questions that have been formulated in advance).

The qualitative descriptive analysis technique was used to process data from the review gathered from content experts in Basic Computer Systems courses, media experts and learning design expert. This analysis technique was carried out by grouping information from qualitative data in the form of input, response, criticism, and suggestions for improvement contained in the questionnaire and interview results. The results of this data analysis were then used to revise the developed product.

3. Result and Discussion
The final product of the present research was learning design. The development processes included designing e-learning content products, designing RPS (lesson plan), and designing instructional material modules that have been structured according to determined competencies, as well as designing questionnaires to measure the validity and response of research subjects. The learning design was developed in the form of a program code using AS3 as the main medium for learning media. The method used during the development process was AGILE.

The phases of the Agile Method are as follows:
1. Planning (System Planning). At this stage, learning objects that will be developed are identified, one of which is technical designing by using AS3.
2. Analysis. The result of the identification process on the learning objects was then analyzed to find solutions to existing problems.

3. Design. It is a stage where the AS3-based learning object system design is created.

4. Implementation. In this stage, the AS3-based learning object system is implemented.

5. Testing and Integration. Performing small- and large-scale system testing process then integrating AS3 into the Undiksha E-Learning system.

6. Maintenance. If there are problems found, a repair process will be carried out on the system that has been implemented.

The results of the design and the development process of AS3-based learning object system design can be seen in Figure 2, Figure 3, and Figure 4.

**Figure 2.** Dashboard Display of AS3-based Learning Object Design.

**Figure 3.** Dashboard Material.
In the evaluation stage of product development, namely by testing, the AS3-based learning object design was tested according to its role and function to determine the advantages of the developed product. The test was carried out by collecting reviews from content experts, learning design experts and media experts. The result of the validity test provided by the content expert gathered through a questionnaire by using the Gregory Formula was 1.00 which is categorized as "Excellent Validity". The result of the validity test provided by the learning design expert gathered through a questionnaire was 1.00, which is categorized as "Excellent Validity". The result of the validity test provided by the learning media expert gathered through a questionnaire was 1.00 which is categorized as "Excellent Validity".

| Expert Test                  | Result |
|------------------------------|--------|
| Learning Content Expert      | 1.00   |
| Learning Design Expert       | 1.00   |
| Learning Media Expert        | 1.00   |
| Average                      | 1.00   |

The average of the results of the validity test from the three experts is 1.00, and the conversion into the Criteria Table of the Expert Test validation level according to Candiasa [7] was "Excellent Validity". Based on the results of these calculations, it can be concluded that the AS3-based learning object design has “Excellent Validity” and is suitable for usage in the lecturing process. According to Sugiyono [8], product validation can be carried out by several experts or experienced experts to assess the weaknesses and strengths of the developed product so that a product can be used according to its purpose.
4. Conclusion
This development is important to be done because it supports Government policy. The Directorate General of Learning and Student Affairs RISTEKDIKTI issued a 2019 Indonesian Online Learning System (SPADA) guide. The SPADA guideline issued includes content guides, learning process, and evaluation. Based on this guideline, the development of learning objects must refer to SPADA. After the learning object is developed, it must be integrated into the learning system (e-learning) and the existing content must be used as a new learning resource.

The solution that can be offered is to use appropriate technology in developing learning objects. The final product of the learning object must have interactive, collaborative and integrative nature. There is a new application called Articulate Storyline 3. Its advantages are (1) functional and easy to use interface design, (2) being able to produce interactive media according to the storyline created, (3) being able to be distributed to various web-based e-learning platforms. It also offers the developers with simulations, quizzes, drag-and-drop interactions, screen recordings, and many other e-learning objects that allow interactions between lecturers, objects, and students. Articulate Storyline 3 can be used to create learning objects that present information in an innovative and interactive format. Based on research that has been conducted and published, Articulate Storyline has been widely used to develop learning media for engineering, science and social subjects so that it can be used to develop new learning media and can be widely shared during the COVID 19 pandemic in schools and colleges.

It is hoped that in the future Universitas Pendidikan Ganesha has qualified learning objects that are suitable to be used by the whole academic community and can also be widely accessed and disseminated to the community. Learning objects can be developed and combined in other lessons, making it easier and flexible for further development. The product of this research is expected to ease the process and time in producing teaching materials.

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