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The Content of the Learning Management System (SIPEJAR) for Early Childhood Learning Design Courses Based on the Case Method and Team-Based Project

I W. Sutama[1*], W. Astuti[2], Pramono[3], Lailatus S[4], Dewi Nur'Aini[5]

[1,2,3,4,5] Departemen Pendidikan Anak Usia Dini, Universitas Negeri Malang, Malang, Indonesia

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ABSTRAK

Reorientasi pembelajaran dalam bidang PAUD dapat dilakukan dengan cara mendesain pembelajaran yang inovatif. Hanya saja sebagian besar guru PAUD dan juga mahasiswa PGPAUD belum mampu membuat desain pembelajaran yang mengarah pada kompetensi tersebut. Tujuan dari penelitian ini yakni untuk mengembangkan desain pembelajaran yang inovatif dan diimplementasikan dalam sistem pengelolaan pembelajaran (SIPEJAR). Penelitian ini tergolong kedalam jenis penelitian pengembangan dengan model ADDIE. Populasi penelitian adalah seluruh mahasiswa PGPAUD FIP UM dengan sampel sejumlah 105 orang. Pengumpulan data menggunakan metode observasi, wawancara, dan angket, dengan instrument penelitian berupa instrument uji ahli media dan materi, serta instrument uji coba terbatas dan luas. Data yang diperoleh dalam penelitian kemudian dianalisis dengan menggunakan ukuran tendensi sentral (mean) untuk data kuantitatif, dan ditambah dengan data kualitatif berupa masukan/saran dari reviewer/validator dan peserta uji coba. Hasil analisis penelitian menunjukkan bahwa hasil uji media memperoleh hasil 90,38 yang berada pada kategori sangat layak, hasil uji materi memperoleh skor 94.42 yang berada pada kategori sangat layak, hasil uji kelompok terbatas memperoleh skor 84,39 berada pada ketegori sangat layak, dan hasil uji kelompok luas memperoleh hasil 88,92 dengan kategori sangat layak. Berdasarkan hasil tersebut maka dapat disimpulkan bahwa media SIPEJAR berbasis case method dan team-based project sangat layak untuk dikembangkan dan dibelajarkan kepada mahasiswa.

ABSTRACT

Learning reorientation in PAUD can be done by designing innovative learning. It is just that most PAUD teachers and PGPAUD students have yet to make learning designs that lead to these competencies. This research aims to develop and implement an innovative learning design in a learning management system (SIPEJAR). This research belongs to the type of development research with the ADDIE model. The research population was all PGPAUD FIP UM students, with a sample of 105 people. Data collection used observation, interview, and questionnaire methods, with research instruments in the form of media and material expert test instruments, as well as limited and broad trial instruments. The data obtained in the study were then analyzed using a measure of central tendency (mean) for quantitative data and supplemented with qualitative data in the form of input/suggestions from reviewers/validators and trial participants. The results of the research analysis showed that the media test results obtained 90.38, which was in the very feasible category; the material test results obtained a score of 94.42 which was in the very feasible category; the limited group test results obtained a score of 84.39 which was in the very feasible category, and the results the broad group test obtained a result of 88.92 with a very decent category. Based on these results, SIPEJAR media, based on the case method and team-based project, is very feasible to be developed and taught to students.

*Corresponding author.
E-mail addresses: wayan.sutama.fip@um.ac.id (I W. Sutama)

1. INTRODUCTION

The development of digital technology in the 21st century demands a change in mindset in mastering competence from lower-order thinking skills to higher-order thinking skills (Efriyanti & Annas, 2020; Rahayu et al., 2022). Students are not only sufficiently equipped with hard skills but are more directed to soft skills to adapt to various changes and developments (Andrian & Rusman, 2019; Rosnaeni, 2021). To achieve this, the learning process in tertiary institutions requires reorientation and redefinition to prepare graduates to face the era of society 5.0. College graduates need to master competencies that lead to high learning outcomes, such as critical thinking skills and problem-solving, being creative and innovative, collaborating, building extensive networks, and communicating effectively. It is just that the reality shows that mastery of the competencies referred to still needs to be improved. The study results show that the satisfaction level of college graduate users still needs to be improved. Data shows that 30% of users are unsatisfied, 45% are quite satisfied, and 25% are very satisfied. In addition, several other problems arise, such as student mastery of learning innovations that can increase learning outcomes at the level of higher-order thinking skills, which still need to be improved. Based on the results of learning achievements in the Learning design course in the odd semester of 2021, the average student achievement score is 75 on a scale of 0-100). The low average score occurs because, in the RPPH, most of the objectives and learning processes are designed to lead to learning outcomes in lower-order thinking skills.

The second problem is that students' mentality and learning performance could be more optimal and tend to follow a linear learning pattern, so there is no courage to learn innovations. The learning design in the Learning Design course has yet to lead to an innovative and productive learning process, so graduates become less adaptive to societal and technological developments. In addition, most teachers (75%) had difficulty preparing learning tools, namely learning implementation plans (Amelia, 2021; Widyastuti & Sakti, 2022). In addition, most teachers need to gain in-depth knowledge of the urgency of using learning effectively in the classroom (Harsela & Suryadi, 2021).

To overcome various problems related to making learning designs for early childhood, it is necessary to develop material for developing early childhood learning designs included in the learning management system (SIPEJAR). This learning design development material leads to a learning system based on Case Method & Team Based Project, Hybrid Learning, and integrates Technological, Pedagogical, and Content Knowledge (TPACK). It is done because problem/case-based learning and projects have advantages in preparing prospective teachers to develop critical thinking and problem-solving skills and be innovative and creative in developing learning designs (Astutik et al., 2022; Telaumbanua et al., 2022). In addition, problem-based learning can also facilitate interpersonal relationships in group work (Jamaludin & Alanur, 2021). Another advantage of problem-based learning is that it can make learning more meaningful so students can develop new knowledge responsibly (Rosidah & Pramulia, 2021; Tyas, 2017). Students become more courageous in expressing their opinions and ideas, think critically about a problem, and can make students interact effectively, and are multi-directional (Masril et al., 2020; Syawaly, 2020). Problem-based learning is carried out in several ways, including exposing students to problems both on teacher intervention and on their findings, analyzing problems and finding alternative solutions, implementing problem-solving strategies and reporting their findings and drawing conclusions, integration, reflection, and evaluation (Noviantii et al., 2020; Paramarta et al., 2019; Zakiah et al., 2019).

Besides being developed using problem-based learning, SIPERJAR content can also be developed using a project-based learning model. The project-based learning model has several advantages, including that students are skilled in planning, organizing, negotiating, and making consensus on various issues/task topics, managing the division of labor and responsibilities and managing information can train students to use rational reasons in solving problems, making hypotheses in problem-solving, critical and contextual thinking skills with problems, conducting trials in proving hypotheses, and training students in making decisions about problem-solving (Nurpratiwi et al., 2022; Riyaningrum et al., 2021; Tekad & Pebriana, 2022). Project-based learning also provides opportunities for educators to manage to learn using projects that can train students to overcome problems and interactions between students so that they become more adaptive and productive and can maintain their existence in the era of Disruption 4.0 and the era of Society 5.0 (Atika & Westhisi, 2019; Rahman et al., 2021). Effective and efficient learning planning (design) is needed to maximize the learning process and facilitate learning outcomes that lead to higher-order thinking skills starting from early childhood education (Atika & Westhisi, 2019). Project-based learning leads to providing opportunities for students to learn to make their own decisions within a predetermined framework, try to solve a problem or challenge, are encouraged to think critically, solve problems, collaborate, and try various forms of communication (Nursulistyo et al., 2021). In addition, they are also trained to take responsibility for finding and managing the information they collect, evaluate continuously during the project, and reflect and reflect on what they have done, both the process and the results (Rati et al., 2017).

Several previous studies have revealed that the application of SIPEJAR is included in the good category and is easy for students to use in the learning process (Qonita et al., 2019). The results of other studies reveal that the team-based project learning model can significantly influence student learning outcomes and interest (Pangaribuan et al., 2022). The results of further research reveal that the learning media developed using the Case Method and Team-Based Project models are in the valid category. Hence, they are very feasible to learn (Aulia et al., 2022). Based on some of the results of these studies, SIPEJAR media, case method learning models, and team-based projects are very appropriate for teaching students and students. In previous studies, no studies specifically discussed the development of learning management system content (SIPEJAR) for early childhood learning design courses based on the case method & team-based project. So this research is focused on this study to develop an innovative learning design and implement it in a case method & team-based project learning management system (SIPEJAR).

2. METHOD

This research belongs to the development research type developed using the ADDIE development model. The ADDIE development model comprises five stages: analysis, design, development, implementation, and evaluation. The analysis phase is carried out by analyzing the needs for developing SIEPJAR/SPADA content. The design stage is carried out by developing a design/blueprint regarding the SIPEJAR/SPADA content of the selected course. The development stage (Develop) is carried out by creating SIPEJAR content products according to the number of designs in the second stage. The implementation phase is carried out by implementing the SIPEJAR content in the early childhood learning design course in the odd semester of 2022/2023. And at the evaluation stage, the researcher conducted a formative evaluation of the four components, which later became material for improving all SIPEJAR/SPADA components. The subject for the limited trial was one student offering from batch 2020, totaling 34 people, while a wider trial was carried out on two student offerings from class 2020, totaling 55 people. Data collection in the study was carried out using observation, interview, and questionnaire methods, with research instruments in the form of media and material expert test instruments, as well as limited and broad trial instruments. The questionnaire instrument grids used can be seen in Tables 1, 2, and 3.

Table 1. Instruments for Media Expert Testing

Aspect	Indicator	Item Number
Explainer Videos	Video display quality (image, sound, color, animation	1,2,3,4,5
	Video fun	6
Audio Content	Audio display quality (audio back sound design, color composition, sound clarity)	7,8,9
	The attractiveness of the audio content	10
Motion Graphics	Motion graphics display quality (image quality, color composition, animation suitability)	11,12,13
	Exciting motion graphics	14
Info Graphic	The quality of the infographic display (the neatness of the infographic design, the integration of infographic colors, the composition and placement of shapes, and the use of fonts)	15,16,17,18
	Interesting infographics	19

Table 2. Instruments for Material Expert Test

Aspect	Indicator	Item Number
Explainer Videos	Completeness of Video components (Titles/subtitles)	1
	Information clarity	2
	Interesting information presented	3
	Content Update	4
Audio Content	Clarity of Subtitles in each segment of audio content	5
	Compatibility of audio content with the lesson plan	6
	The usefulness of audio content	7
	Subtitle updates are delivered in the audio content	8
Motion Graphics	Suitability of the contents of the Motion Graphic with the lesson plan	9
	Complete information Motion Graphics	10
	The Usefulness of Motion Graifs Content	11

Aspect	Indicator	Item Number
Info Graphic	Content provides a new paradigm of 21st Century Learning	12
	Compatibility Fill in the infographic with the lesson plan	13
	Completeness of contents in graphic info	14
	The attractiveness of the contents of the infographics	15
	Updating the information conveyed in graphic info	16
Learning Design Manuscript	Completeness of the contents of the course handout. Early childhood learning design	17
	Appropriateness of the contents of the handout with the lesson plan	18
	Readability of the contents of the handout for the Learning Design course	19
	Ease of understanding the contents of the handout for the Learning Design course	20
	Update on the information in the Content Handout for the Early Childhood Learning Design course	21
	Completeness of reference sources to support the contents of the handout for the Early Childhood Learning Design course	22
	Practical Use of the Handout for the Early Childhood Learning Design Course	23

Table 3. Limited and Wide Trial Instruments

Aspect	Indicator	Item Number
RPS/SAP	Completeness of the lesson plan components for the Early Childhood Learning Design course	1
	Clarity of the contents of the lesson plan for the Early Childhood Learning Design course	2
	Conformity of the contents of the lesson plan with the Learning Outcomes of the Learning Design Course	3
	Clarity of Assessment Techniques in the lesson plan for the Early Childhood Learning Design Course	4
	Conformity of the contents of the activities in the lesson plan with the demands of 21st Century Competence	5
	Benefits The existence of a lesson plan as a lecture contract	6
Hand Out of Learning Design course	Completeness of the contents of the handout for the Early Childhood Learning Design course	7
	Conformity of the contents of the handout with the lesson plan for the Early Childhood Learning Design course	8
	Readability of the contents of the handout for the Early Childhood Learning Design course	9
	The ease of understanding the contents of the handout for the Early Childhood Learning Design course	10
	The novelty of the information in the contents of the handout for the Early Childhood Learning Design course	11
	Completeness of information sources to support the contents of the handout for the Early Childhood Learning Design course	12
	The practicality of using handouts for the Early Childhood Learning Design course	13
Video *Explainer*	Video Display Quality (Image, Sound, Color, Animation	14,15
	Completeness of Video components (Titles/subtitles)	16
	Information clarity	17
	The attractiveness of the information presented	18
Audio Content	Audio Display Quality (Audio Backsound Design, color composition, sound clarity)	19,20
	Compatibility of audio content with the lesson plan	21
	The usefulness of audio content	22
	Ease of understanding audio content	23
Motion Graphic	Compatibility of the content of the Motion Graphic with the lesson plan	24

Aspect	Indicator	Item Number
Infographics	Completeness of Motion Graphic information	25
	Clarity of information conveyed in motion graphics	26
	Exciting contents of Motion Graphics	27
	The attractiveness of the appearance of Motion Graphics	28
	Compatibility Fill in the infographic with the lesson plan	29
	Completeness of contents in graphic info	30
	The clarity of the information displayed in the infographics	31
	The attractiveness of the contents of the infographics	32
	The attractiveness of the graphical info display	33
Assessment Tools	Appropriateness of the exam material with learning outcomes in the Early Childhood Learning Design course	34
	Levels of thinking ability as measured through the exam material	35
	The depth of the content of the exam material	36
	The difficulty of the questions on the exam text	37
	The function of the answer distractor on the answer choices	38
	Readability of the questions presented	39
	Effectiveness The use of words and sentences in each question and answer options	40

The data obtained in the study were then analyzed using a measure of central tendency (mean) for quantitative data and supplemented with qualitative data in the form of input/suggestions from reviewers/validators and trial participants. The results of quantitative data analysis in product feasibility percentages were then analyzed using a Likert scale modified by the researcher, as shown in Table 4.

Table 4. Product Feasibility Category with Likert Scale

No.	Score	Description
1.	$\mathbf{76 \leq P \leq 100}$	Very Good
2.	$\mathbf{51 \leq P \leq 75}$	Enough
3.	$\mathbf{26 \leq P \leq 50}$	Less
4.	$\mathbf{0 \leq P \leq 25}$	Bad

3. RESULTS AND DISCUSSION

Result

The research analysis is based on the stages of the ADDIE development model. The results of each stage of development are as follows: In the early stages, a needs analysis was carried out for the development of SIPEJAR/SPADA content in several courses in the PGPAUD Study Program through collegial discussions to agree on the courses being developed in SIPEJAR/SPADA, until finally it was agreed that the Learning Design course content would be developed in SIPEJAR/Spada. In the second phase, design or planning for SIPEJAR/SPADA content was carried out, which included lesson plans for early childhood learning design courses based on the Case method & Team Based Project, design of Text/Hand Out Materials for 14 meetings, design of Presentation Slides for 14 meetings, five units of Video Explainer design, two units of Motion Graphics design, five units of Infographic design, four units of Audio content design, two sets of Assessment Tools each containing 35 multiple choice questions and five essay questions. The third stage is the creation of SIPEJAR content products according to the number of designs in the second stage. An overview of the SIPEJAR content products can be seen in Figure 1.

Figure 1. Product in the Form of an Explainer Video

The fourth stage is applying all SIPEJAR content in the Early Childhood Learning Design course in the odd semester of 2022/2023. However, before being tested on users, a validation test was carried out on media and material experts. Media experts consist of 2 lecturers with educational technology expert backgrounds and lecturers from educational technology. Material experts are 2 PGPAUD lecturers who have areas of expertise in curriculum and learning. The results of validation by media and material experts can be seen in Table 5.

Table 5. Validation Results of Media Experts and Material Experts

No.	Expert	Average Score	Category
1.	Media	90.38	Very Good
2.	Material	94.42	Very Good

Based on the data in Table 5, it can be seen that the average score of media experts for all components is 90.38. It shows that the SIPEJAR component set for the Early Childhood Learning Design course is very feasible to use with several revisions according to suggestions from the validator. The things that need to be improved are infographics: One image frame is too full. It can be separated into another frame; the picture on the side is disturbing, and the background color with less contrasting text. Motion graphics: background color with less contrasting text, and the picture on the side is disturbing. Explainer video: the picture on the side is disturbing. The validation results to material experts obtained an average score of material expert validation results of 94.42. These results indicate that the content of SIPEJAR in the Early Childhood Learning Design course is classified as very high and feasible to use. It is because the content of the SIPEJAR Early Childhood Learning Design course has very high relevance to the needs of PGAUD students.

The next step taken by researchers in this fourth stage is to implement product development on research subjects. This implementation was tested on a limited basis, with one offering with 34 lecture participants. It aims to find out the parts that need to be perfected. Then it was applied to the following two offerings in different classes with 55 participants. The results of limited trials and trials on larger subjects can be seen in Table 6 and Figure 2.

Table 6. Results of the SIPEJAR Content Trial for Early Childhood Learning Design Courses

No.	Trial	Average Score	Category
1.	limited group	84.39	Very Good
2.	Broad group	88.92	Very Good

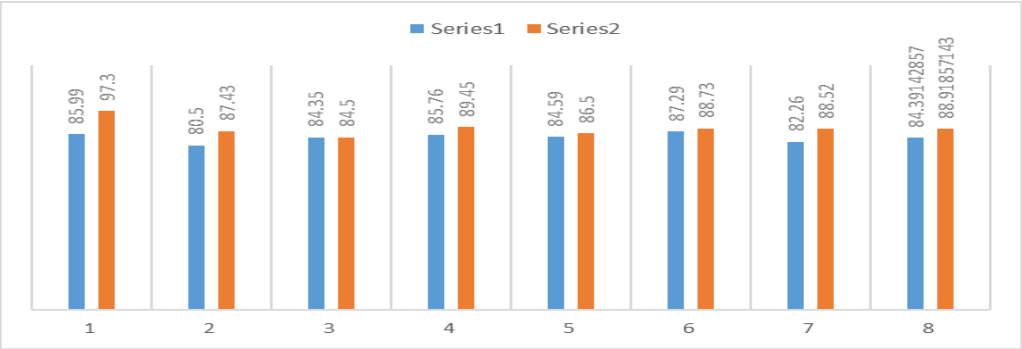

Figure 2. Graph of Limited and Broad Group Trial Results

The test results among students as users, as presented in Table 3 and Figure 6, show that student content has a very high eligibility level (more than 85%). Some of the notes submitted by the participants were as follows: first, almost all participants stated that the quality of the course content was good and the delivery and explanation were very interesting. Second, several things that need to be improved are the audio volume being less loud. There is noise, the pictures are more creative, and the videos are added with explanatory words for each chapter discussed. Third, some participants suggested that the SIPEJAR content for the Learning Design course be uploaded immediately to facilitate the learning process. In the broad group trial, the average score was 88.88.92. It shows that the feasibility level of the SIPEJAR content in the Learning Design course is very high. It is measured in terms of the completeness of the content, relevance,

and quality of the SIPEJAR content set for the Learning Design course that meets the requirements. In the fifth stage, the researcher conducted a formative evaluation of the four components, which were used as materials to improve all SIPEJAR/SPADA components.

Discussion

Based on the validation results from media experts, with an average score of 90.38, and material experts, with an average score of 94.42, it can be concluded that the content of SIPEJAR in Early Childhood Learning Design Courses is generally categorized as very suitable for use. The results of a large-scale trial of 88.92 shows that SIPEJAR content is appropriate and necessary in implementing lectures in the Early Childhood Learning Design course. It is necessary because early childhood learning design lectures that are managed on a problem/case and project basis can be very relevant to the demands of 21st-century competencies, namely critical thinking skills, innovative and creative, collaborative and networking and communication (Andrian & Rusman, 2019; Prayogi & Estetika, 2019; Rosnaeni, 2021). It is the first step, starting with prospective teachers who are used to learning in problem- and project-based contexts, which will later be implemented in real learning in class. Judging from the learning tools used, the results of the expert test show that they are very feasible to use, and there are still some suggestions for improvement. Apart from that, the material expert test also showed very high results. It is by several research results on the use of explainer videos that are proven effective as learning media, influential, and can improve learning outcomes (Pamungkas & Koeswanti, 2022; Puspita, 2017).

The success of media development is influenced by several factors, including the developed media presents material according to student needs. In learning early childhood learning design courses, students need teaching materials to develop their understanding of media use suitable for early childhood. Good learning media is media that can help the process of achieving learning objectives. It is because the suitability of media content with learning objectives will help students understand the material presented. The determining factor for the success of the second development is that the media developed has utilized an interesting learning model so that students can play an active role in the learning process. The learning model applied is a problem-based learning model (case method). Problem-based learning presents problems with stimulating thought processes (Jamaludin & Alanur, 2021). Problem-based learning allows students to develop critical thinking and problem-solving skills and be innovative and creative in developing learning designs (Astutik et al., 2022; Telaumbanua et al., 2022). In addition, problem-based learning can also facilitate interpersonal relationships in group work (Masril et al., 2020; Syawaly, 2020). Another advantage of problem-based learning is that it can make learning more meaningful so students can develop new knowledge responsibly (Rosidah & Pramulia, 2021; Tyas, 2017).

Besides being developed using the case method model, SIPEJAR media is also developed using the team-based project model. Where this learning model invites students to manage to learn using projects that can train students to overcome problems and interactions between students so that they become more adaptive and productive and can maintain their existence in the era of disruption 4.0 and the era of society 5.0 (Atika & Westhisi, 2019; Nursulistyo et al., 2021). Project-based learning leads to providing opportunities for students to learn to make their own decisions within a predetermined framework, try to solve a problem or challenge, are encouraged to think critically, solve problems, collaborate, and try various forms of communication (Rati et al., 2017). Presentation of the case method model and the team-based project will enable students to learn by developing thinking skills and skills in creating a work that is useful for students later (Nurpratiwi et al., 2022; Riyaningrum et al., 2021; Tekad & Pebriana, 2022). The results obtained in this study align with previous research results, which also revealed that the application of SIPEJAR was included in the good category and was easy to use by students in the learning process (Qonita et al., 2019). The results of other studies reveal that the team-based project learning model can significantly influence student learning outcomes and interest (Pangaribuan et al., 2022). The results of further research reveal that the learning media developed using the Case Method and Team-Based Project modes are in the valid category. Hence, they are very feasible to learn (Aulia et al., 2022). Based on the results of this research, SIPEJAR media, case method learning models, and team-based projects are very feasible to teach students and students.

4. CONCLUSION

Based on the data analysis and discussion results, it can be concluded that the SIPEJAR content in the Early Childhood Learning Design course is classified as very suitable for use and used as a reference for students to attend lectures. It is based on the test results of media experts. The SIPEJAR content supporting tools, including explainer videos, graphic info, audio content, motion graphics, and handouts according to media requirements, meet the requirements for use. Judging from the material expert test results, overall,

the material contained in the SIPEJAR content in the Early Childhood Learning Design course already has very high relevance, so it is feasible to use. Meanwhile, the results of the student trial showed that the SIPEJAR content in the Early Childhood Learning Design course was very appropriate to use and could help students attend lectures.

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