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Digital Student Worksheets to Improving Students' Learning Independence

Netty Juliana[1*], Dina Ampera[2], Farihah[3], Baharuddin[4], Veronika Yulisna Sinukaban[5]
[1,2,3,4,5] Universitas Negeri Medan, Medan, Indonesia

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ABSTRAK

Kurikulum Belajar Kampus Merdeka (MBKM) yang dikembangkan saat ini menitikberatkan pada pembelajaran mahasiswa (student-centered) sehingga dosen tidak menjadi satu-satunya sumber belajar (teacher-centered). Penelitian ini dilatarbelakangi oleh kurangnya kemandirian belajar siswa dan rendahnya hasil belajar pada pembelajaran seni kriya. Penelitian ini bertujuan untuk menghasilkan Lembar Kerja Siswa Digital yang layak dan efektif dalam meningkatkan kemandirian belajar mahasiswa pada mata kuliah Seni dan Kerajinan di program studi Pendidikan Tata Busana. Desain penelitian yang digunakan dalam penelitian ini adalah model pengembangan Thiagarajan 4-D. Model ini terdiri 4 tahap, antara lain tahap analisis kebutuhan, tahap desain produk, tahap validasi dan evaluasi. Hasil validasi oleh ahli materi memperoleh rata-rata hasil sebesar 4,12 dengan kategori layak. hasil validasi ahli media memperoleh rata-rata skor sebesar 4.27dengan kategori layak. ini artinya, LKM digital layak digunakan pada pembelajaran kerajinan. Hasil uji coba yang dilakukan dosen dan mahasiswa memperoleh skor rata-rata sebesar 4,55 kategori sangat baik. Pada tahap ini dilakukan evaluasi terhadap seluruh kegiatan yang telah dilakukan, terutama masukan yang diberikan oleh para ahli dan pengguna. Hasil postest yang dilakukan memperoleh peningkatan sebesar 28% dalam meningkatkan hasil belajar. LKM Digital layak digunakan dalam pembelajaran dan memotivasi siswa dalam meningkatkan kemandirian siswa. LKM Digital dapat membantu siswa belajar secara mandiri. Implikasi penelitian ini yaitu LKM Digital ini dapat dimanfaatkan oleh guru karena dapat menyajikan permasalahan dengan lebih detail sehingga siswa dapat mengkonstruksikan pengetahuannya secara mandiri.

ABSTRACT

The independent campus learning curriculum currently being developed focuses on student-centered learning so that lecturers are not the only source of learning. This research was motivated by the lack of student learning independence and low learning outcomes in craft arts learning. The aim of the research is to produce Digital Student Worksheets that are feasible and effective in increasing student learning independence in Arts and Crafts courses in the Fashion Design Education study program. This development research uses the Thiagarajan 4-D development model. This model consists of 4 stages, including the needs analysis stage, product design stage, validation and evaluation stage. The results of validation by material experts obtained an average result of 4.12 in the feasible category. the validation results from media experts obtained an average score of 4.27 in the adequate category. The results of trials carried out by lecturers and students obtained an average score of 4.55 in the very good category. At this stage, an evaluation of all activities that have been carried out is carried out, especially the input provided by experts and users. The results of the posttest carried out obtained an increase of 28% in improving learning outcomes. Digital LKM is suitable for use in learning and motivates students to increase student independence. Digital LKM can help students learn independently. The implication of this research is that digital LKM can be used by teachers because it can present problems in more detail so that students can construct their knowledge independently.

1. INTRODUCTION

The rapid changes in science have developed new education models for the future. The combination of various technological speeds, interactions and developments in digital systems, artificial intelligence and virtuality makes the Industrial Revolution 4.0 different (Fazilla et al., 2022; Hermann et al., 2016; Lee et al., 2013). The Industrial Revolution 4.0 makes it easier for people to carry out their activities more effectively and efficiently. The revolutionary paradigm that continues to develop periodically is initiated by advances in science and technology as supports for this renewal (Cholily et al., 2019; Liao et al., 2018; Nurjani, 2020). The Industrial Revolution 4.0 era is a big challenge to be able to survive in the global era. The next generation needs to be equipped with various kinds of hard skills and soft skills, one of which is through education. Higher order thinking skills (HOTS) are soft skills that students must have in order to be able to compete and adapt to changing times.

** Corresponding Author: Netty Juliana:* dist.tira@gmail.com

Mastery of creative thinking skills is important and related to the ability to solve problems and create new ideas (Chan, 2013; Scheffer et al., 2018; Uzzi et al., 2013). However, Indonesian students creative thinking abilities are classified as low-medium. The results of the global creativity index state that Indonesia is at the bottom of the human resource creativity and innovation category. Most students are unable to make a connection between the concepts of the material studied and their application in everyday life (Ernawati & Sujatmika, 2021; Olinan & Sujatmika, 2017; Riyadi et al., 2018). Therefore, lecturers need to determine teaching materials that can arouse students' interest, motivation, learning independence, and understanding of learning activities. The teaching materials used can be adjusted to suit students' needs for the material provided in the learning process, such as Student Worksheets (LKM).

Student Worksheets (LKM) are printed teaching materials in the form of sheets of paper containing material, summaries and instructions for implementing learning tasks that must be carried out by students, both theory and practice which refer to the competencies that students must achieve (Wahyuni & Kurniawan, 2019; Yanto, 2019; Zayyadi et al., 2018). The LKM created is a worksheet that helps students find concepts that convey student understanding in independent learning. LKM consists of instructions and steps in the learning process that are built to build student knowledge (Fatmawati et al., 2021; Suyono & Hariyanto, 2015; Zulfah et al., 2018). Learning with Student Worksheets (LKM) will increase students' learning motivation so that it can have a positive effect on their thinking abilities. Apart from that, LKM can be used to improve learning in training students' independence to improve students' skills and abilities. Student Worksheets (LKM) function as a guide for students in studying and discovering concepts through the activities carried out. The use of Student Worksheets (LKM) can make student learning activities more focused (Anjarwati et al., 2018; Mahmud et al., 2022; Sari & Sugiyarto, 2015).

Based on observations, it appears that learning outcomes are still less than optimal. This can be seen from students who have not actively built their own knowledge. Students are reluctant to ask lecturers about material they do not understand. Apart from that, students are also reluctant to express their opinions in class. Lecturers still dominate the process of learning activities and are sources of knowledge when learning takes place. This is influenced by the lack of student independence in learning. Therefore, LKM is needed that is able to increase learning independence in participating in and completing learning. The use of worksheets can stimulate students to learn independently and have an impact on increasing student learning independence (Asih & Ramdhani, 2019; Sa'ida, 2021). Independent learning is a process that helps students manage their thoughts, behavior, and emotions to successfully navigate the learning experience. Indicators of Learning Independence consist of: 1) Self-confidence, 2) Active learning, 3) Discipline in learning, and 4) Responsibility in learning. Student Worksheets (LKM) can be used independently or in groups. Group activities provide students with the opportunity to learn independently so that their understanding of the material is deeper and learning becomes more meaningful (Desmita, 2017; Wati, 2015). Students' mastery of material is obtained from knowledge construction through learning activities that include scientific skills and attitudes, so that students can be actively involved and independent learning can be seen in completing learning projects independently or collaborating in teams. Learning independence can be observed directly from the behavior and attitudes of students (students) in the learning process in the lecture hall because learning independence requires students to have several skills including the ability to take action, asking questions, making decisions, thinking creatively and critically, the ability to have self-awareness and be able to work together with other people (Amalia & Purwanto, 2017; Sukmawati, 2020). The learning process can help students to develop learning independence and apply it in everyday life.

The use of digital Student Worksheets (LKM) is considered a suitable learning alternative because digital Student Worksheets (LKM) can help students add information about the concepts being studied through systematic learning activities. Digital Student Worksheets (LKM) are electronic teaching materials that enable lecturers to design very interesting teaching materials without paying attention to costs because these teaching materials can be enjoyed via computers, cellphones, and other devices that can access PDF programs (Gunawan et al., 2017; Rati et al., 2017; Taufiqurrohman et al., 2017). Digital-Based Student Worksheets (LKM) are student worksheets that are attractively designed to suit the character of the student, can be accessed offline or online by students and the components include a display design like a Student Worksheet (LKM) (Alenezi, 2020; Mahmud et al., 2022).

This digital Student Worksheet (LKM) will attract attention with its contemporary graphic design appearance, which can add new color to existing craft arts learning methods. The Student Worksheet (LKM) also presents open-ended questions, so that students can analyze various alternative solutions to a problem from various points of view. Through the use of Student Worksheets (LKM), it is hoped that student learning independence will increase. The development of digital LKM is very important because e-LKM is not yet available in arts and crafts courses. In addition, the activities carried out in e-LKM are designed based on the characteristics of the Case Study. This is expected to help students construct their understanding of the material being studied through cases that solve it. This will increase student learning independence. This research aims to analyze the feasibility and effectiveness of digital Student Worksheets (LKM) in increasing student independence and learning outcomes in Fine Arts and Crafts courses in the Fashion Design Education Study Program.

2. METHOD

This research is a type of development research that emphasizes the development of learning media in the form of digital Student Worksheets (LKM). This development research uses a 4-D development model which has been modified into a 3-D model. The development stages in this model are defined, design, and developed (Lestari, 2018). The research subjects were students of the Fashion Design Education study program with a total of 35 students. The Student Worksheet (LKM) used in this research is a formative evaluation where the model consists of 3 steps or stages, namely: (1) Self-evaluation which consists of analysis and design, (2) Prototyping which consists of expert review, one -to-one, and small groups, (3) Field test. The research and development procedures are show in Figure 1.

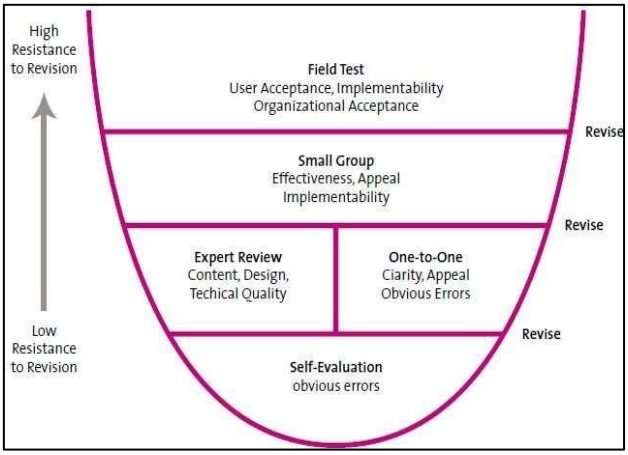

Figure 1. Formative Evaluation Design Flow

The analysis stage is the first step in development research. Researchers in this case analyze: (1) Conducting curriculum analysis which aims to adapt existing problems that are the basis for developing LKM with the MBKM curriculum, (2) Carrying out student analysis which aims to examine the characteristics of students as objects of LKM users, (3) Material analysis aims to identify, detail, and systematically organize the materials and skills that students must acquire. The instruments used in this research were a student needs analysis questionnaire, a material expert validation questionnaire and a media expert validation questionnaire to determine the suitability of Digital LKM in learning. Questionnaire grid are show in Table 1, Table 2, and Table 3.

Table 1. Questionnaire Grid for Student Needs

Assessment Aspect	Indicator
Initial Understanding	1. Student responses to Digital LKM
Learning Media Needs	1. Suitability of material with learning competencies
	2. Suitability of material to learning objectives
	3. Digital LKM motivates students' interest in learning
	4. Digital LKM is used as open material for independent learning
	5. Digital LKM makes it easier for students in the learning process
	6. There is a need to develop Digital LKM for varied learning

Table 2. Grids for Material Expert Validation Questionnaire

Assessment Aspects	Indicator
Content Feasibility	1. Load enrichment material
	2. The enrichment material presented can support the achievement of Core Competencies and Basic Competencies
	3. The material presented is accurate
	4. The material presented contains insight into productivity
	5. The material presented can stimulate curiosity
	6. The material presented can develop life skills
Linguistic	1. According to the student's level of development
	2. Communicative

Assessment Aspects	Indicator
	3. Dialogic and Interactive 4. Conformity with Indonesian language rules

Table 3. Grids for Media Expert Validation Questionnaire

Assessment Aspects	Indicator
Presentation	1. Completeness of Digital Student Worksheets 2. LKM presents learning that follows digital writing rules 3. The formulation of the instructions or instructions for the Digital Student Worksheet is simple so it is easy to understand 4. The formulation of learning activities in the Digital Student Worksheet is short and simple so it is easy to understand 5. Learning activities enable learning indicators to be achieved 6. Digital Student Worksheets facilitate students to carry out scientific activities, namely observing, asking questions, trying, analyzing, and concluding 7. Digital Student Worksheets facilitate students to communicate
Graphic	1. LKM Digital Cover 2. The attractive appearance of Digital LKM 3. Typography is appropriate for student development 4. Colored illustration

Questionnaire measurements use a Likert scale. The Likert scale is used to measure the attitudes and opinions of a person or group towards social events. The Likert scale used is strongly agree, agree, disagree, don't agree and strongly disagree.

3. RESULT AND DISCUSSION

Result

This research was carried out in the Fashion Education Study Program in the Arts and Crafts course. This research uses a 4D development model consisting of Define, Design, Develop and Disseminate. At the define stage, a preliminary analysis is carried out. Based on the Curriculum of the Fashion Design Education Study Program, in Fine Arts and Crafts courses, with competency students can increase their individual creativity. Based on this, the author then made observations of students' learning behavior when studying courses which contained material that could be developed from analysis of course product innovation. student analysis was carried out and it was found that application capabilities alone are not enough so they must be developed further to the next level. To achieve this goal, students' deductive reasoning must be built through constructivist learning, one of which is through learning media that can be used, namely student worksheets (LKM). The results of the analysis of student needs were 97.5% of students needed digital LKM to help learn arts and crafts. Material analysis is carried out so that it is in line with learning objectives. So the picture of student learning achievement is that after successfully starting craft art material, students are trained to solve problems in independent learning related to the innovative work that students will develop.

The design stage is carried out by selecting a format and initial design to meet student learning needs. The initial format planned is (1) LKM contains a clear and operational explanation of learning objectives; (2) contain teaching materials concisely; (3) contains initial information as teaching material; (4) contains questions in accordance with the learning objectives. Apart from that, design preparation is also carried out at the design stage. Based on the experience of teaching Craft Arts courses, researchers obtained several information, namely (1) students' learning independence in taking Craft Arts courses is still low; (2) The use of media in Arts and Crafts courses is still limited. These obstacles cause students to tend to lack understanding of Fine Arts and Crafts subjects. Next, the researchers developed indicators for Arts and Crafts courses, according to competency standards. In this student analysis, the following information was obtained: (1) academic abilities. Based on the results of students' midterm exam scores. This value is very far from expectations; (2) student experience. Researchers obtained information that so far the use of learning media in each lesson is still very minimal, learning media is still limited to very few reference books; (3) student learning independence.

Product trials carried out include limited trials and field trials. Limited trials were carried out on 3 students who were randomly selected taking into account their level of ability, namely students with low, medium, and high abilities. Students are asked to provide feedback and input or suggestions regarding the digital LKM products being developed. The next stage is to carry out data analysis and product revisions based on the results of limited trials. The revised product was then tested on students in field trials for classroom learning. The field trial used a

quasi-experimental method with One Group Pretest-Posttest Design. The field trial subjects were 35 sixth-semester students of the Fashion Design Education study program. Data analysis and product revisions were carried out based on the results of field trials to produce the final Digital LKM product. The next stage is to disseminate the final product of digital-based student worksheets that have been developed on a wider scale.

Product dissemination is limited to 2 lecturers in the Fashion Design Education Study Program. It is hoped that the Digital LKM can be used as supporting teaching material in the learning process to increase student learning independence. The quality of the Digital LKM product developed in this research is reviewed from the didactic, construction, and technical requirements which are described into eight aspects, namely aspects of correctness of the art and craft concept, depth and breadth of concepts, clarity of sentences, language, assessment of learning outcomes, student activities, implementation, and physical appearance. The digital-based LKM developed in this research is designed as a supporting book to create an effective learning process, increase student interest and participation in the learning process, and increase student learning independence.

To find out whether there is a difference in the average value of learning independence before and after learning with digital-based LKM, t-test statistics are used, namely the paired sample t-test. The data used for analysis is pretest and posttest score data. Before carrying out the t-test, a prerequisite analysis test is first carried out, namely the normality test. After the prerequisite tests are met, the t-test is then carried out is show in Table 4.

Table 4. Results of Paired Sample T-Test Data on Student Learning Independence Pretest and Posttest Scores

	Paired Differences					t	f	Sig. (2-tailend)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Pretes-Postest	-3.38889E1	12.53440	4.17813	-43.52368	-24.25410	-8.111		0.000

Based on Table 4, the significance value obtained from the analysis results is greater than 0.05 (Sig > 0.05) so H_o is accepted, so it can be concluded that both the pretest and posttest data on student learning independence in the experimental class and control class are normally distributed. Based on Table 4, the significance value obtained from the analysis results is less than 0.025 (Sig < 0.025) so H_o is rejected, so it can be concluded that there has been a significant increase in student learning independence before and after learning with digital-based student worksheets.

Lecturers also plan activities that students will carry out in learning, for example creating a flow of experiments that will be carried out, carrying out experiments according to the steps that have been prepared, collecting experimental data correctly, and compiling reports on experimental results properly. Students are guided to design experiments with craft arts materials and discuss problems with the materials, practical work steps, tools, and materials to be used as well as formulate hypotheses, then the designs are consulted with the lecturer and presented in front of the class. Percentage of e-LKM product validity is show in Table 5.

Table 5. Percentage of e-LKM Product Validity

e-LKM Arts and Crafts Course	Score Percentage (%)
Process Skills	92.36%
Lecturer Creativity Factors in Craft Arts Learning	86.11%
Digital LKM in Learning	87.50%

Validation assessment by material experts consists of content aspects and language aspects. The content suitability aspect assessed includes several indicators, including (a) contains enrichment material, (b) the enrichment material presented can support the achievement of Core Competencies and Basic Competencies, (c) the material presented is accurate, (d) the material presented contains insight productivity, (e) The material presented can stimulate curiosity, (f) The material presented can develop life skills. Table 6 show the recapitulation of the results of content feasibility validation by two experts. The explanation from Table 6 shows that the material expert validation score for the content aspects provided by the two experts is 51 with an average of 4.25 in the very good category. Recapitulation of linguistic aspect validation results is show in Table 7.

Table 6. Recapitulation of Content Aspect Validation Results

No	Content Feasibility Indicator	Score	
		Validator 1	Validator 2
1	Load enrichment material	5	5
2	The enrichment material presented can support the achievement of Core Competencies and Basic Competencies	5	5
3	The material presented is accurate	5	4
4	The material presented contains insight into productivity	4	3
5	The material presented can stimulate curiosity.	4	4
6	The material presented can develop life skills.	4	3
	Amount	**51**	
	Average	**4.25**	
	Criteria	**Very Good**	

Table 7. Recapitulation of Linguistic Aspect Validation Results

No	Indicators of Linguistic Appropriateness	Score	
		Validator 1	Validator 2
1	According to the student's level of development	5	4
2	Communicative	4	3
3	Dialogic and Interactive	4	3
4	Conformity with Indonesian language rules	4	5
	Amount	**32**	
	Average	**4.0**	
	Criteria	**Very good**	

Based on Table 7, it is known that the score obtained from material expert validation in the language aspect is 34 with an average of 4.0 in the very good category. Media expert validation is assessed from the appearance and graphic aspects. The results of media expert validation on the display aspect can be seen in Table 8.

Table 8. Recapitulation of Presentation Aspect Validation

No	Presentation Feasibility Indicators	Score	
		Validator 1	Validator 2
1	Completeness of Digital Student Worksheets	5	5
2	LKM presents learning that follows digital writing rules	4	4
3	The formulation of the instructions or instructions for the Digital Student Worksheet is simple so it is easy to understand	4	4
4	The formulation of learning activities in the Digital Student Worksheet is short and simple so it is easy to understand	4	5
5	Learning activities enable learning indicators to be achieved	4	5
6	Digital Student Worksheets facilitate students to carry out scientific activities, namely observing, asking questions, trying, analyzing, and concluding	3	5
7	Digital Student Worksheets facilitate students to communicate	3	5
	Amount	**60**	
	Average	**4.29**	
	Criteria	**Very good**	

Based on Table 8, it is known that the results of media validation by 2 validators obtained a score of 60 with an average of 4.29. Thus it can be seen that the Digital Student Worksheet is in the very good category. The final aspect assessed by media expert validators is the graphic feasibility aspect. Recapitulation of graphic aspect validation is show in Table 9.

Table 9. Recapitulation of Graphic Aspect Validation

No	Graphic Feasibility Indicators	Score	
		Validator 1	Validator 2
1	LKM Digital Cover	5	4
2	The attractive appearance of Digital LKM	5	4
3	Typography is appropriate for student development	4	3
4	Colored illustration	4	5
	Amount	**34**	
	Average	**4.25**	
	Criteria	**Very good**	

Based on Table 9, it is known that the validation results of the two media experts obtained a score of 34 with an average of 4.25, which is included in the very good category in the graphic aspect. Based on the explanation above, it can be seen that the material expert validator obtained an average result of 4.12 in the feasible category. The validation results from media experts obtained an average score of 4.27 in the adequate category. This means that digital LKM is suitable for use in craft learning. However, there are several notes given as reflection material to improve the Digital LKS before use, for example in terms of content, apart from containing enrichment material, meeting material must also be presented as introductory material. Apart from that, in the linguistic aspect, sentences should have a maximum of 6 words to suit the development of students' thinking so that they can be used as independent learning. Furthermore, in the presentation aspect, the why and how questions should also be included so that children are encouraged to find out. The final input on the graphic aspect is that the presentation of Digital LKM should use more color, not black and white. After revisions were made, this digital LKM was tested in the field and, in this case, commented on by users (lecturers and students). The results of trials by lecturers and students obtained an average score of 4.55 which can be categorized as very good. The final stage of the LKM product development process is evaluation. At this stage, an evaluation is carried out of all activities that have been carried out, especially the input provided by experts and users. Next, students are asked to present the results of the practicum and submit a practicum report, and at the end of the lesson they are given practice questions. The learning activities carried out can accommodate hands-on and mind-on activities. Through this learning, it is hoped that students will be more motivated and active in learning so that they can increase student learning independence. The learning process was observed by two observers to determine the level of implementation of learning using digital LKM. A comparison of the average pretest and posttest scores for student learning independence is shown in Figure 2.

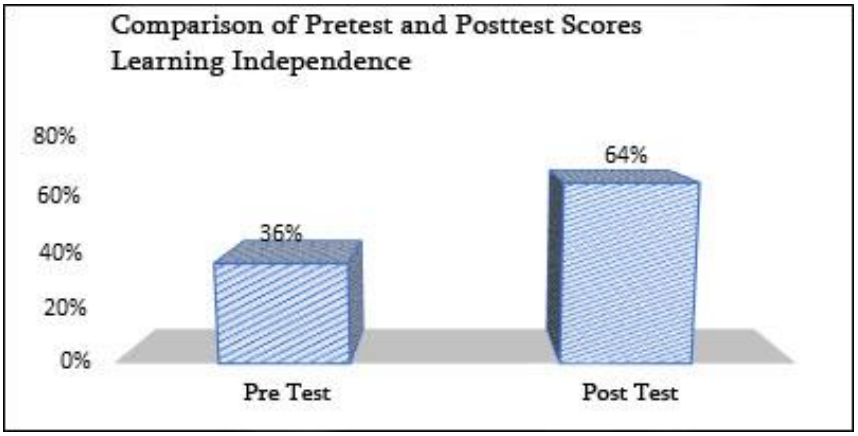

Figure 2. Comparison 0f Pretest and Posttest Scores for Learning Independence

Figure 2 shows that the use of digital LKM makes learning more effective and meaningful so that the use of digital LKM can present problems in more detail. Students can get a clearer picture of the problem, making it easier for them to carry out investigations to solve the problem. Apart from that, students are more active in learning. Confident in expressing opinions and responsible in completing tasks assigned to e-LKM.

Discussion

Digital Student Worksheets (LKM) are electronic teaching materials that contain material, summaries and instructions for implementing learning tasks that must be carried out by students, both theory and practice which refer to the competencies that students must achieve which can be accessed by students offline or offline.

on line. Based on the development results, it is known that the average score given by experts is 4.28, which means it is very good and worthy of being tested on a limited basis. Likewise, the average score given by users, in this case teachers and students, is 4.55, which means it is suitable for use. This is in accordance with research results which state that digital student worksheets (LKM) are suitable for use in learning (Destiansari et al., 2022; Hikmawati & Ayub, 2021).

This Student Worksheet (LKM) contains material, student activities and student independent assignments. This LKM is also equipped with solution steps given for each question. The LKM is also designed in an attractive way which is expected to influence student motivation in carrying out learning. In this student activity, instructions or guides are provided for students in solving the problems given, so that they can help students understand the concepts and solve the problems given. This is in line with the statement state that in learning craft arts courses, the use of appropriate media and learning models will influence students' levels of motivation and understanding. The next step is a literature study (Yulina et al., 2019). The literature study was carried out by collecting and studying information regarding the competencies contained in the arts and crafts course curriculum, project-based learning models, and independent learning. This material has great potential to train students' learning independence for independent learning. Based on this, worksheets are needed that can increase interest, and learning participation, and help students understand and apply the concepts of their knowledge when faced with problems regarding the application of arts and crafts courses in increasing creative independent learning.

The problems and questions presented by LKM on arts and crafts material require a high level of learning independence in solving them. Student Worksheets can provoke students to get involved in the learning process. Through learning with digital LKM, students become more interested in actively participating in learning so that their interest increases, their understanding of the material becomes deeper and their learning independence increases. Previous study stated that activities on worksheets help motivate students to discover concepts independently (Hairida, 2016). LKM can be used to improve learning in training student independence to improve student skills and abilities (Mahmud et al., 2022; Ramadhona & Izzati, 2018). In this research, learning independence that can be developed through learning with digital LKM is (a) fluency, (b) detail, (c) flexibility, and (d) originality. Based on the description above, it can be concluded that the use of worksheets has a positive influence on learning independence. This component of learning independence ultimately forms a positive relationship with learning outcomes. This of course can help students to achieve success in the academic field. Students need to have independent learning to achieve success in school. In line with what was stated by previous study state independent learning is very relevant to academic success (Dörrenbächer & Perels, 2016). Meanwhile, other countries such as Turkey consider learning independence as an important aspect in academic achievement and success (Tanriseven, 2014). Based on observations made by researchers, student learning independence in arts and crafts courses tends to be sufficient. This can be seen from the lack of active participation of students in the process of teaching and learning activities in class.

The use of Student Worksheets (LKM) during lectures can make students more active and motivated when solving the problems given (Rasul et al., 2022). This is because, Student Worksheets (LKM) have their own advantages compared to other teaching materials, one of the advantages of Student Worksheets (LKM) is that the contents of Student Worksheets (LKM) have been summarized from several sources which are presented in a simpler form so that it is easy to use to be understood by students (Mawardi et al., 2020; Rasul et al., 2022). Based on research conducted by previous study using Student Worksheets (LKM) during lectures can increase student activity by up to 89% (Febriani, 2016). Furthermore, research conducted using Student Worksheets (LKM) during lectures can help students more easily understand the concepts of the material provided (Prastiti et al., 2017).

Digital LKM is said to be effective if it has a good effect or influence on achieving learning objectives. Student effectiveness can be seen in student learning outcomes in the learning process. The results of data analysis of student activities during the learning process obtained results of 86.7% in the very good category. The effectiveness of using LKM in helping improve problem solving abilities (Melawati et al., 2022; Ramadhona & Izzati, 2018). The results of observations of the implementation of the RPS show that the implementation of learning using LKM has gone well. Learning activities are also appropriate to the time available. Although at first some activities were not carried out well due to time constraints and some students were not yet accustomed to this learning activity. However, for the next meeting, the lecturer was able to correct the deficiencies that occurred and directed students to express their opinions and always work seriously. In this case, it can be seen that the LKM developed can be easily applied by teachers, meaning that the LKM developed is practical.

The contribution of this research is that Digital LKM can be used as additional teaching material for teachers in implementing learning, both offline and bold, so that the results of this research can be used as a reference in learning arts and crafts. The implication of this research is that this Digital LKM can be used by teachers because it can present problems in more detail so that students can construct their knowledge independently. In this research there is a limitation, namely that the Digital LKM is not yet equipped with interactive exercises, so it is hoped that further research will develop a Digital LKM by displaying documents such

as student worksheets that students can use to carry out interactive online evaluation exercises by providing direct feedback in the form of evaluation results and expanding the material for craft arts practice.

4. CONCLUSION

Based on the results of research and development, the following conclusions can be drawn: (1) the stages of developing digital-based LKS are preliminary study, planning, initial product development, product validation, limited trials, product revision based on the results. limited trials, field trials, product revisions based on field trial results, and limited socialization; (2) The quality of digital-based worksheets developed based on a review of learning, construction and technical requirements which are broken down into eight aspects, namely aspects of creative arts material development sentences, depth and breadth of concepts, clarity, language, assessment of learning outcomes, student activities, implementation, and physical appearance is included in the good category. Thus, the digital-based LKS product developed is suitable for use in learning, and (3) the use of digital-based LKS in arts and crafts learning increases students' creative thinking abilities and independence.

5. REFERENCES

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