



DEVELOPMENT OF DIGITAL WORKSHEET BASED ON NGERTI, NGRASA, NGLAKONI TO IMPROVE COLLEGE STUDENT LIFESKILL

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Abstract

The application of technology in education in the 4.0 era can make it easier for students to build their knowledge. The model of this research is the Research and Development of Borg and Gall which was modified by Sukmadinata (2006) conducted to describe the development of a Tringo-based digital worksheet that is suitable for use in lectures on Natural Sciences III to increase students' lifeskill. This article discusses the Develop phase. Data collection techniques using a questionnaire technique. From the results of the study it can be concluded that the Digital Worksheet is appropriate to be used in Science III lectures with the average results of expert validator ratings on each aspect as follows: content worthiness of 32.25 (Very Good), Conformity of presentation with learning approaches of 36 (Very Good), Conformity with didactic requirements is 18.5 (Very Good), Conformity with construction requirements (linguistic) is 20 (Good) and Conformity with technical requirements (graphic) is 26.75 (Very Good). The validation results of tringo-based Digital worksheets are declared to meet valid criteria by the validator with an average total validity of 4.0 (valid). The use of digital worksheets was responded positively by students at 80.4% and Lecturers of Natural Sciences III at 84.4%.

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INTRODUCTION

Active and fun learning is learning enjoyed by every college student so that he can devote his attention to learning (Febriani, 2016). Learning is a process of communication between college students and lecturers, and collager and collager with the aim that changes in attitudes and mindsets will become a habit for students concerned. Integrated science is an integrative approach that synthesizes the perspectives (points of view/reviews) of all fields of study to solve problems. With integrated learning, students are expected to have a holistic science knowledge to deal with the problems of everyday life contextually. Through integrated learning science teacher candidates can see a meaningful relationship between the concepts of science; improve the level of thinking skills; presents the application or application of the real world experienced in everyday life and learning motivation can be improved and improved.

Worksheets are a means to assist and facilitate understanding of the subject matter, to increase student activity in improving learning achievement (Ramadhan & Setiadarma, 2014). Lecturers and prospective science teachers should be able to prepare worksheets for college students carefully because a worksheet must meet at least the criteria relating to the achievement or failure of basic competencies that must be mastered by students. Worksheets have a loose and open form and format, but at a minimum have the following components: identity, expected to learn indicators/achievements, the substance of teaching materials and performance questions according to the objectives and learning strategies set to enhance learning activities (Febriani, 2016). In the 4.0 era, students should be able to use the internet and technology as learning resources. Therefore, worksheets that will be developed in digital/electronic form to be environmentally friendly, paperless and reduce the high cost of procuring print worksheets.

Education is carried out through efforts to guide all-natural forces possessed by children, both as humans and as members of society to achieve the highest safety and happiness (Mujito, 2014). Life skills are needed by students to be able to behave adaptively and positively by translating knowledge, attitudes, and values into actual abilities so that they can face the demands and challenges of daily life (Anand & Anuradha, 2016; Prajapati, et.al., 2017; Jaya et al., 2018). In line with that, the success of college students in the 4.0 era can be pioneered by

developing social skills that are skills that allow each student to collaborate and interact with others (Behroz-Sarcheshmeh, et.al, 2017). The current education system needs to enrich the curriculum with effective life skills development programs so that students can actively interact with the environment, make full use of resources, see available opportunities and face community challenges (Daisy & Nair, 2018).

To face the era of globalization, the implementation of character education needs to be done comprehensively, both in formal, informal and non-formal education environments and the role of the tri education center in this case parents, teachers, community/environment, the press, and the mass media are vital in character education. Even in the tri education center, it is necessary to have a common vision and mission in providing character education. Character education can also be used in tringo-based learning. Through learning activities designed by lecturers, students can learn to "ngerti, ngrasa and nglakoni". This means that students through learning can be invited to learn to understand the concept of the material, feel the values of learning and apply by directly implementing the learning activities.

The implementation of the Tringo concept which consists of understanding (knowing), feeling (understanding) and nglakoni (doing) aims to increase students' knowledge about what they are learning, sharpen their sense to increase their understanding of what they know, and increase their ability to carry out what they learn (Indarti, 2018). Internalizing the application of tringo in this worksheet is when digging problems around that are relevant to the subject matter, students are invited to "feel" that around them there are problems that need to be solved together.

The problems to be examined in this study are: How is the development of a tringo-based Integrated Science worksheet that is feasible to use in Science III lectures to improve lifeskill? Through this research, the benefits that can be obtained are the availability of alternative teaching materials for learning so that students can develop more meaningful life skills and learning. Lecturers and prospective science teachers can be helped and facilitated in internalizing tringo in science learning by activating students with activities that are full of

skills and fun nuances. Science learning can be paperless and integrated with technology.

METHODS

The method of this research is the Research and Development of Borg and Gall which was modified by Sukmadinata (2006) to produce certain products and test the effectiveness of these products. This study aims to describe the development of a Tringo-based Integrated Science worksheet that is appropriate to be used in IPA III studies to develop the lifeskill of college students. This research was conducted for 7 months from May to November 2019 in the odd semester of the academic year 2019/2020. Research data collection techniques include documentation and questionnaires. The documentation process is carried out for all digital worksheet development activities from start to finish. The questionnaire that will be used to collect data in this study includes a digital worksheet validation questionnaire for both the science subject matter experts and also digital teaching material experts, and the response questionnaire for the use of digital worksheets by lecturers and college students.

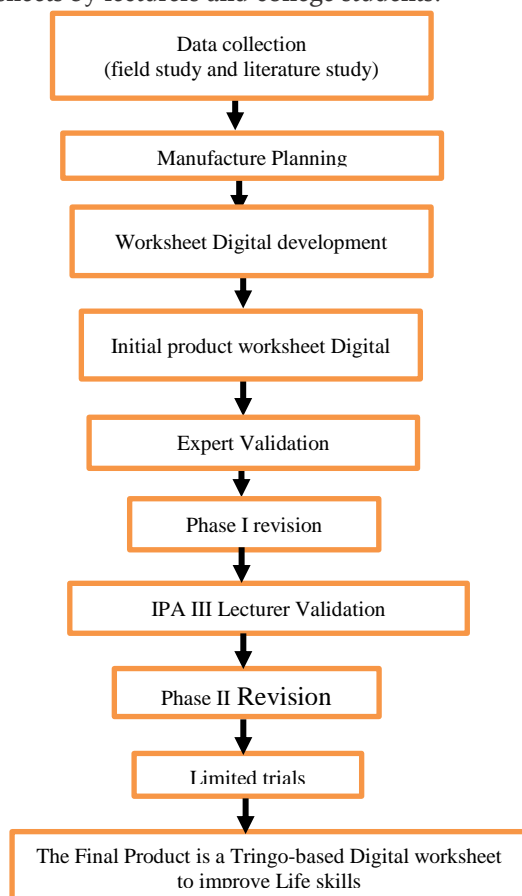


Figure 1. Chart of Development Procedures

The feasibility of digital worksheets is obtained from data validation of science material and assessment of the quality of digital worksheets at the validation and limited trial stages. Digital worksheets are considered feasible if you get a good minimum quality category. Data on the quality assessment of digital worksheets in the form of quantitative data on a scale of 1-5 which according to Widoyoko (Setiyowati, et al, 2018) were analyzed by calculating the average score for each aspect of the assessment of digital worksheets is presented in Table 1.

Table 1. Quality categories of digital worksheets

Score Range	Category
$X > X_i + 1,8 \text{ SBi}$	Very good
$X_i + 0,6 \text{ SBi} < X \leq X_i + 1,8 \text{ SBi}$	Good
$X_i - 0,6 \text{ SBi} < X \leq X_i + 0,6 \text{ SBi}$	Enough
$X_i - 1,8 \text{ SBi} < X \leq X_i - 0,6 \text{ SBi}$	Less
$X_i \leq X_i - 1,8 \text{ SB}$	Very less

Noted:

(X_i) = Ideal average

The formula $X_i = \frac{1}{2}$ (maximum ideal score + ideal minimum score)

(SBi) = Ideal standard deviation

SBi formula = $\frac{1}{6}$ (maximum ideal score - ideal minimum score)

(x) = score obtained

The results obtained are written on the total average line. Matching the total average with the criteria of validity, (Khabibah, 2006: 90) namely:

$3 \leq \text{RTVTK} \leq 4$: valid

$2 \text{ TK RTV TK} < 3$: valid enough

$1 \text{ TK RTV TK} < 2$: invalid

Determine the average of positive responses from college students and lecturers, then determine the categories of responses given by lecturers and students to a criterion by matching the results of the percentage with positive criteria according to Khabibah (2006: 97), namely:

$85\% \leq \text{RS}$: Very Positive

$70\% \leq \text{RS} < 85\%$: Positive

$50\% \leq \text{RS} < 70\%$: Less Positive

$\text{RS} < 50\%$: Not Positive

Noted:

RS = response to certain criteria.

RESULTS AND DISCUSSION

This research develops a Tringo-based Digital Worksheet to improve students' lifeskills in Natural Sciences III lectures. The results of the Expert Validator Assessment on the 1st Validation and the 2nd validation per aspect are as follows:

Table 2. Evaluation of worksheets by Expert Validators on 1st Validation and 2nd validation per aspect

No	Assessment Aspects	Validation to	Validator 1	Validator 2	Average Per aspect	Average Validation Results
1	Content	1	31	32	31.5	32.25
	Feasibility	2	32	34	33	Good
2	Conformity of Presentation with Learning Approach	1	35	35	35	36
	Compliance with Didactic Terms	2	38	36	37	Good
3	Conformity with Construction requirements (language)	1	17	18	17.5	18.5
	Compliance with Technical Requirements (Graphic)	2	21	18	19.5	Good
4	Conformity with Construction requirements (language)	1	20	20	20	20
	Compliance with Technical Requirements (Graphic)	2	20	20	20	Very Good
5	Conformity with Construction requirements (language)	1	27	24	25.5	26.75
	Compliance with Technical Requirements (Graphic)	2	29	27	28	Good

Based on the results of the assessment of experts obtained the following results:

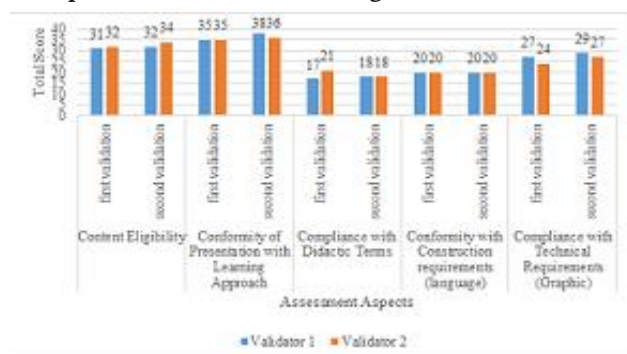


Figure 2. Digital Worksheet Assessment Chart from the Expert (Validator)

To measure the validity of a tringo-based digital worksheet as follows:

Table 3. Validity tables of Tringo-based Digital Worksheets

No	Assessment Aspects	Ai	
		Validation to 1	Validation to 2
1	Content	4	4.13
	Feasibility		
2	Conformity of Presentation with Learning Approach	3.89	4.11
	Compliance with Didactic Terms		
3	Conformity with Construction requirements (language)	3.5	3.9
	Compliance with Technical Requirements (Graphic)		
4	Conformity with Construction requirements (language)	4	4
	Compliance with Technical Requirements (Graphic)		
5	Conformity with Construction requirements (language)	3.64	4
	Compliance with Technical Requirements (Graphic)		
Total		19	20
Average (V_{LKM})		3.8 (Valid)	4 (Valid)

Ai = average of each aspect

V_{LKM} = Average total validation of the worksheet

Validation data analysis shows that this tringo-based digital worksheet is valid because the value is above 3. The results of validation by the validator are as follows: (1) the average total validity of the tringo-based digital worksheet (V_{LKM}) is 4 so that it is included in the valid category and both validators states that the digital worksheet for college students based on tringo can be used with little revision. The results of the revised draft of worksheet 1 product, which was then called product draft 2, were then trialled in practicality to lecturers of Natural Sciences III.

The results of the responses of lecturers of Natural Sciences III to the use of tringo-based digital worksheets that is giving a positive response to the use of tringo-based digital worksheets and with a little revision. Furthermore draft 2 was tried out in a limited way. The limited test is conducted on November 22-26, 2019 for Science III college students consisting of 3 people. The results of limited trials show that the practicality analysis of the Digital worksheet from the results of the responses of college students and Lecturers of Natural Sciences III shows that the average percentage of the number of college student

responses is 80.4%, so that student responses are included in the positive category.

The success of achieving the objectives of lectures depends on the quality, structure, planning, systematization and differentiation of student lecture activities where the effects of the learning process depend on the didactic-methodological features, the quality and systematization of student lecturing activities (Pejchinovska & Talevski, 2013). To internalize lifeskills in lectures, creativity and competence of lecturers are needed with the depth and breadth of specific knowledge that supports topics in the range of disciplines that make up life skills (Dixon et al., 2018). Through this digital worksheet, students can more easily study the media, references, and worksheets to be active both intellectually, attitudes and psychomotor. Also, with this digital worksheet students and lecturers can more easily practice innovative and creative learning models so that students can try and develop their skills and life skills. The development of this worksheet is also supported by the dual-code theory of memory which explains what information is stored in long-term memory in two forms: visual and verbal (Prasetya & Khabibah, 2016). After using this worksheet, students must be able to present and respond to information to other students correctly, so that students will not only study the material but also experience learning activities by finding, feeling, presenting and listening. Moreover, life skills include psychological competence and interpersonal skills that help students to make decisions, practice leadership, take responsibility, solve problems, think critically, communicate effectively, interpersonal skills, build healthy relationships, empathize with others, and overcome the management of their lives healthily and productively (Dhingra & Chauhan, 2017; Keithellakpam & Purnima, 2018).

The development of this digital worksheet still has weaknesses, even though it is already digital in the form of pdfs and also flipbooks, but college students cannot fill in answers directly. This worksheet also does not emphasize specific life skills indicators such as critical thinking and creative aspects so that they are still general in nature. In this worksheet, the theme is still limited to "food security" and does not contain final evaluation questions or formative tests and also assessments related to the aspects of ngerti, ngrasa, nglakoni in each activity. Therefore, it is hoped that it can be continued in other studies by developing understanding-based, sense-based, and cognitive-based assessments that can measure per indicator aspects of life skills.

CONCLUSION

This research concludes that tringo-based digital worksheets are appropriate to be used in science III lectures. The indicators of quality can be seen as follows: (1) The validity of the tringo-based Digital worksheet that was developed meets the content and construct validity, (2) The validity results of tringo-based Digital worksheets are declared to meet valid criteria by the validator with an average total validity of 4.0 so that it can be concluded that the tringo-based Digital worksheets that are developed meet the validity aspect (validity), (3) The practicality of tringo-based Digital worksheets that are developed easily for lecturers and students to carry out and by the objectives, (4) The feasibility of a tringo-based Digital worksheet is achieved. It is seen that all subjects of limited trials gave positive responses of 80.4% and IPA III Lecturers gave positive responses of 84.4%.

Tringo-based digital worksheets that have been developed are good worksheets, so that lecturers can use them as alternative worksheets in teaching Natural Sciences III material by internalizing Tringo Teachings on Ki Hajar Tamansiswa and also life skills on students so students can actively learn both minds on and hands on. This worksheet also has some weaknesses so that it can be developed further in other studies so that critical thinking aspects can be measured in the use of the worksheet.

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