



## Development of Characterized Digital Comics for Junior High School Students in Social Studies Learning

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### Abstract

This study is aimed at developing the material for social science study at Junior High School by using characterized digital comics. The study uses a research and development model popularized by Borg and Gall. The types of data used in this research are qualitative and quantitative data. Qualitative data was obtained based on criticism and suggestions for improvement from validators. Quantitative data was obtained based on the results of filling out a questionnaire in the form of objective product assessment scores. The instruments used for data collection were open and closed questionnaires. Based on the results of data analysis from media experts, a feasibility value was obtained from media experts 149 a maximum value of 152 so that a percentage of 98% was obtained, from material experts a feasibility value was obtained of 112 from a maximum value of 114 so that a percentage of 98% was obtained, and the results of scale group trials limited (10 students) obtained a score of 890 out of a total of 1000 so that a percentage of 89% was obtained. This shows that the digital comic with characters being developed is classified as "very valid" and can be implemented. In brief, the results of developing digital comics with characters are appropriate and can be recommended to be used in social science studies at junior high schools.

**Keywords:** digital comics; characters for junior high school students; learning media

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## INTRODUCTION

In the digital era, science and technology developed rapidly. This development has the impact of increasingly opening up and spreading information and knowledge all over the world across the boundaries of distance, place, space and time. The reality is that human life in this digital era will always be related to technology. Technology is essentially a process to obtain added value from the products produced so that they are useful. Technology has influenced and changed humans' life, so that if you are currently "technologically illiterate" you will be late in mastering information, and will also be left behind in obtaining various opportunities for advancement. Information has an important and real role, in the era of the information society or knowledge society and it got a lot of attention from many scholars (Munir, 2017; Bro & Wallberg, 2015). This advancement of technology creates the formation of society as well (Dahlan, 1995).

The use of digital technology in educational terrain has become a trend in this digital era. One of the uses of digital technology in 21<sup>st</sup>-century Education is an educational concept that emphasizes students' abilities to face challenges and



changes in the future. Another study conducted by Mok, (2021) claims that digital technology has become an essential component of the educational process. The use of the technology can improve self-motivation (Pijnaker & Spronk, 2017).

Piirto (2011) *Creativity for the 21<sup>st</sup> Century Skills* offers the development of creativity consisting of seven elements, namely inspiration, imagery, imagination, insight, intuition and incubation to develop in social studies learning (Supriatna, 2020). Meanwhile, P, Griffin; & E, Care, (2015) added that 21<sup>st</sup>-century skills consist of creativity, critical thinking and problem-solving, collaborative skills, information technology skills, new forms of literacy, social awareness, culture, and metacognitive. Further Javed, Athar, & Saboor, (2019), communication and teamwork, leadership and responsibility, problem-solving and decision-making, and creativity and invention are the four skills needed in the 21<sup>st</sup> century.

Regarding teaching media, Buckingham, (2007) affirms that media education can add a critical dimension to the use of technology in education that goes beyond a purely instrumental approach, and it can aid in bridging the 'new digital divide' between students' experiences with technology outside of school and their experiences in the classroom. To this issue, comics can be used in a two-way learning process, namely as a teaching aid and as a learning medium that both teachers and students can use. Calafato & Gudim, (2022) define comic as a media, a "hybrid word-and-image form in which two narrative tracks, one verbal and one visual, spatially register temporality." Comics also encourage meaning-making and help teachers reduce students' cognitive load when learning vocabulary through reading activities. Moreover, Vassilikopoulou, Retalisa, Nezi, & Boloudakis, (2011) claim that comics have grown in popularity in primary, secondary, university, and adult education.

In line with the statements above, Sudjana and Rivai (2010: 64) define a comic as a form of cartoon that reveals characters and acts out a story in a sequence that is closely connected with images and is designed to provide entertainment to readers. While, Aggleton, (2019) states that a comic is a set of stories told via a series of pictures. In the teaching and learning context, the use of comics as a medium of instruction motivates students to read and be involved in concept acquisition into a valuable learning process (Mamolo, 2019). Apart from having interesting pictures, comics also have storylines that will arouse students' curiosity, thus making students continue reading without having to be ordered by the teacher. One effort to increase students' interest and motivation in learning is the use of interesting learning media, for example, digital comics. Character education is seen as a national movement to create schools that educate ethics and responsibility and teach good character through an emphasis on universal values. Character education is very important, this is because character can show self-actualization.

In addition, Darmiyati Zuchdi (2013: 77), affirms character as a set of traits that are admired as signs of a person's virtue and moral maturity. Character education is a process of internalizing or instilling positive life values in children, so that they have good character according to the values referred to, both in terms of religion, culture and national philosophy (Syarbini, 2012: 17-18). It can be said that character education aims to help students develop good characteristics, which include knowledge, concern, and acting based on the values and norms that apply in society.

Social Science is one of the school subjects that has an important role in efforts to build character and apply values for the creation of complete Indonesian people. The application and formation of this character is a cultural characteristic of Indonesian society, which of course is an accumulation of the local values of each ethnic group in Indonesia. This effort is part of the social studies learning process.

According to Maftuh (2010), if we examine the various opinions of Social Science study experts in their classic books, such as Banks, 1990; Jarolimek, 1986 and Woolever, 1988 regarding the aims of social studies, there is a parallel view that the main aim of social studies is to advance citizens' ability to participate in a democratic society. In other words, Social Science is aimed at preparing students to become good citizens who have the knowledge, values and skills needed to participate actively in society.

In the 21<sup>st</sup> century education must be able to answer the challenges of equipping students with 4 skills commonly abbreviated as the 4 Cs they are communication, collaboration, critical thinking and problem-solving, as well as creativity and innovation. Mastering information, communication and technology is not enough to compete, students must be able to develop critical thinking skills to ward off incorrect information spread through social media. According to Fadel & Trilling (2010), three skills must be possessed in the 21<sup>st</sup> century, they are life and career skills, learning and innovation skills, and information media and technology skills. Skills and creative ideas for new discoveries are needed to solve life's problems (Widodo, Indrawasti, Erfan, Mulyda, & Rahmatih, 2020). In line with that, the Ministry of Education and Culture formulated a 21<sup>st</sup>-century learning paradigm requiring students to find out, formulate problems, be analytical, and collaborate to solve problems (Ministry of Education, 1966).

In the learning process, the use of comic media helps encourage students to arouse their interest in learning. Helping them develop language skills, artistic activities and creative expressions in storytelling, dramatization, reading, writing, painting, and drawing as well as helping them interpret and remember the contents of reading material from textbooks. Therefore, comics must be developed correctly, whether the characteristics of the comic are in line with the needs of the students and what the characteristics of the students are before being used as a learning medium. Comics as teaching media must convey educational messages and attract students' interest in learning.

Previous studies concerning the use of comics in an educational context were done by some scholars, such as Ozdemi, Ertugrul, 2010; Bolton, Chynthia & Gary, 2012; Bolton, Arini, Choiri, & Sunardi, 2017; Michael Boloudakis, 2018. From those studies, the writers highlight that the use of comics can improve students' understanding, boost students' motivation, simplify the subject matters and improve students' reading interest.

Based on the previous research findings, few studies allude to the use of characterized digital comics in teaching Social Science at Junior High School. Therefore, the development of characterized digital comic-based social studies teaching materials could be a solution to increase students' sense of nationalism. By utilizing digital technology, social studies teaching materials can be presented in an interesting, interactive and entertaining manner, so that students become more

interested and motivated to study subject matter about Indonesian history, culture, politics and economics. In this way, it is hoped that students' sense of nationalism can increase and help shape students' character who have a high sense of nationalism.

## **METHODS**

This study refers to the Borg and Gall development model. According to Borg and Gall (1983:775), there are 10 steps in research and development, namely (1) research and information collecting; (2) planning, (3) developing the preliminary form of the product; (4) preliminary field testing; (5) main product revision; (6) main field testing; (7) operational product revision; (8) operational field testing; (9) final product revision; and (10) dissemination and implementation.

Based on the development steps proposed by Borg and Gall, this study has several steps that were modified by the researchers. This can be done without reducing the meaning of research and development. Each developer can choose and determine the most appropriate development steps based on the special conditions faced by the developer during the development process (Ardhana, 2002: 9). The steps taken by researchers are (1) field observation and data collection on needs information, (2) developing initial products, (3) expert validation, (4) small group trial activities, (5) product revisions, and (6) final product development results from final product revisions.

Research and data collection on information needs, namely distributing questionnaires, observations, interviews and theoretical studies that can be used as material for product development planning. Initial product development is prepared as completely and perfectly as possible and is ready for validation. This step is a combination of planning and developing a preliminary form of product. Then, products that are developed before being tested in small groups must first be validated by several experts. Validation was carried out by a media expert and a junior high school learning material expert. The small group trial activity carried out involved 10 students. The selection of subjects for this small group trial was based on the level of students' achievement, namely 4 students with good achievement, 3 students with moderate achievement, and 4 students with poor achievement. This stage is the preliminary field-testing stage.

Meanwhile, product revisions are carried out based on the results of expert validation, criticism and suggestions, and small group trial activities. This stage is the main product revision. After revising the final product, a learning comic development product was produced that was valid and suitable for implementation in learning.

The participants of this study comprised media experts, teachers and students of Junior High School. The research participants were selected based on their level of knowledge based on the results of the 1<sup>st</sup>-semester exam with a composition of 3 high achieving students, 4 moderate achieving students, and 3 low achieving students. The types of data in this study are qualitative and quantitative data. The qualitative data was obtained from comments and suggestions submitted by media experts and users in the form of descriptions in the questionnaire. Moreover,

quantitative data was obtained from the scores of filling out questionnaires by media experts and users.

The data collection instrument used is a questionnaire. The questionnaire in this study consisted of two parts. The first part is a validator assessment of the media being developed. Meanwhile, the second part consists of responses, suggestions, input and criticism submitted by the validator. The questionnaire instrument is used to collect data regarding assessments or responses from media experts, material experts and audiences which was used to measure the suitability of the learning media produced. A questionnaire is a list of questions that must be filled in by respondents (Arikunto, 2005:28).

a) Expert Evaluation Questionnaire

The expert evaluation instrument in this research has content validity which is based on 2 things, namely, based on the grid that was prepared and based on expert opinion. The feasibility of the research instrument used in this research was obtained by carrying out the following steps:

- 1) Arrange the instrument grid
- 2) Consult the instrument grid with material experts and media experts
- 3) Arrange instrument items based on the instrument grid
- 4) Consulting the instrument with material experts and media experts.

The following is the questionnaire grid that will be used in collecting data:

**Table 1.** The specifications of items in the questionnaire for expert

No	ASPECT OF ASSESSMENT	INDICATOR	TOTAL
1	Suitability	The material is in accordance with curriculum demands	1
		The material is appropriate to the developmental stage think eighth grade students	1
		The material is appropriate to everyday life Student	1
		Digital comic media with appropriate characters with the characteristics of class VIII students	1
2	Completeness	Media information on the opening page	1
		Media identity information	1
		Material content information	1
3	Systematic of presentation	The order of presentation of digital comic media with characters is easy to follow	1
		The order of material in digital comic media is characterized according to the intellectual level	1
4	Effectiveness	This media helps students understand the material Spirit of nationality	1
		This media can concretize the material Spirit of nationality	1
		This media can concretize behaviour student character	1
		This media encourages students to think actively	1

		This media encourages students' curiosity	1
		Encourage interaction with learning resources	1
5	Legibility	Simple and communicative language	1
		Instructions are simple and easy to understand	1
		Text is clear	1
		Sentence length is appropriate to the level student understanding	1
		Sentence structure is appropriate for students' understanding	1
6	Technical or appearance	Attractive appearance design	1
		Images/illustrations are clear	1
		Interesting pictures/illustrations	1
		Pictures/illustrations clarify the content of the reading	1
Total			24

**Table 2.** The specifications of the items in the questionnaire for a media expert

No	Aspect of Assessment
1	Opening Appearance <ul style="list-style-type: none"> <li>• Selection of background design</li> <li>• Selection of image objects</li> <li>• Selection of animation movements</li> <li>• Font selection</li> <li>• Font size selection</li> <li>• Selection of font color</li> <li>• Match between background design, buttons and fonts.</li> <li>• Attractive appearance</li> <li>• Ease of operation</li> </ul>
2	Key function display <ul style="list-style-type: none"> <li>• Selection of background design</li> <li>• Selection of image objects</li> <li>• Button legibility</li> <li>• Font selection</li> <li>• Font size selection</li> <li>• Selection of font color</li> <li>• Match between background design, buttons and fonts.</li> <li>• Attractive of appearance</li> <li>• Ease of operation</li> </ul>
3	Material display (comic) <ul style="list-style-type: none"> <li>• Selection of background design</li> <li>• Selection of image objects</li> <li>• Image readability (comics)</li> <li>• Font selection</li> <li>• Font size selection</li> <li>• Selection of font color</li> <li>• Match between background design, images and fonts.</li> <li>• Attractive appearance</li> <li>• Ease of operation</li> </ul>
4	Menu display in Pre test and Post-test <ul style="list-style-type: none"> <li>• Selection of background design</li> <li>• Selection of button objects</li> </ul>

- Button legibility
  - Font selection
  - Font size selection
  - Selection of font color
  - Match between background design, buttons and fonts.
  - Attractive appearance
- 5 Operation product display
- The attractiveness of digital comic products with characters
  - Ease of operation of digital comic products with characters

b) The Questionnaire of Students' Response

**Table 3.** Specification of Questionnaire of Students' Response

No	Aspect of assessment	Indicator	Total
1	Appearance	The text can be read well	1
		Proportional Layout (text layout and picture)	1
		Suitability of background selection	1
		The text size and type are legible	1
2	Material content	Media appeal	1
		Suitability of image to material	1
		Material is easy to understand	1
3	Expediency	Accuracy of language use	1
		Make it easier for students to understand	1
Increase motivation in the learning process			1
Total			10

The data of this research and development is in the form of qualitative and quantitative data. Qualitative data was obtained from suggestions and input provided by experts which were described in detail by the researcher. Meanwhile, quantitative data was obtained by giving questionnaires to research subjects, namely media experts and teachers. Based on this data, it can be concluded that existing problems were identified.

The data measurement technique used to determine the feasibility of learning comics is descriptive analysis validation using the following formula (Akbar, 2011:208).

$$V = \frac{TSEV}{S-max} \times 100\%$$

Notes:

V = Validity

TSEV = Total Score of Empirical Validator

S-Max = Score - maximal

Media eligibility can be determined based on the criteria that have been made. The criteria used to determine the suitability of learning comics from validation by experts are shown in Table 4.

**Table 4.** Criteria of Validity

Criteria	Level of Validity
75,01% – 100,00%	Very valid (can be used without revision)
50,01% – 75,00%	Fairly valid (can be used with minor revisions)
25,01% – 50,00%	Invalid (cannot be used)
00,00 – 25,00%	Very invalid (forbidden to use)

Source: Akbar & Sriwiyana, 2011

## RESULTS & DISCUSSION

In the current study, the development of digital comics with characters for class VIII Junior High school students, researchers produced new media that had never been made by other researchers. The results of this media development include digital comic media with characters, instructions for use, and lesson plans.

This digital comic product with characters is dominated by bright colours. The choice of bright colours was made to suit the characteristics of junior high school students who like bright colours. The background and layout of this media are made simply but quite attractive.

Data from expert validation results were obtained from a lecturer who has expertized in ICT. From the validation results, two types of data were obtained, namely quantitative data and qualitative data. The quantitative data from validation results by lecturers is presented in Table 5.

**Table 5.** Quantitative Data on Validation Results of the Development of Character Digital Comics for Class VIII Students by Media Experts

No	Aspect of assessment	Score	
		S-max	TSEV
1	Opening view	36	35
2	Display of operating steps	36	35
3	Main menu display	36	35
4	Material display	36	36
5	Overall product view	8	8
	Total	152	149
	Percentage	98 %	Very valid

Notes:

TSEV = Total Score of Empirical Validator

S-Max = Score - maximal

There are eleven inputs provided by experts. Qualitative data resulting from input from lecturers and teachers regarding the development of digital comics with characters are presented in Table 6.

**Table 6.** Input on Digital Comic Development Characterized by Media Experts

No	Aspects	Criticism and suggestions
1	Opening view	Images that support a positive culture
2		Reduced button animations
3		Loading should be removed
4	Main menu display	Pointer animation reduced
5		Image animation should be added and adapted to the material theme of the national spirit
6	Material display	The material is delivered by keywords only
7		The use of macros for evaluation is good



8		It's best to have feedback
9		It would be better to add a video about cultural footage
10		Positive local
11	Overall	Local culture is added to the material

From the validation results of Table 5 media experts, the percentage obtained from the experts is 98%, so digital comic development products with characters are included in the very valid criteria.

Material validation is made by a lecturer from one of the higher education in Banten. Quantitative data from validation results by material experts are presented in Table 7.

**Table 7.** Quantitative Data from Validation Results of Digital Comic Development Characterized by Material Experts

No	Aspect of assessment	Score	
		S-max	TSEV
1	Suitability	16	14
2	Completeness	12	9
3	Systematic presentation	8	8
4	The effectiveness of digital comic media with characters	24	22
5	Legibility	20	19
6	Technical or appearance	16	16
	Total	96	88
	Percentage	91 %	very valid

Notes:

TSEV = Total Score of Empirical Validator

S-Max = Score - maximal

Qualitative data in the form of input from validation results for the development of digital comics with characters contained eight inputs. Input from lecturers regarding the validation results of developing digital comics with characters is in Table 8.

**Table 8.** Input on the Development of Digital Comics with Characters by Material Experts.

No	Suggestions/Input
1	The material is more adapted to KD related to the growth and development of living things, namely animals.
2	Instructions for use can be made clearer in the menu by providing emphasis. For questions assigned by students, please adjust them to the learning objectives.
3	There are several things in the assignment that are not in accordance with the learning objectives.
4	The comic section is interesting, but in series 1 there are no introductory illustrations/narratives, so it would be better to give context to the narrative/activities of the characters.
5	Metamorphosis material can be clarified.
6	For characters, you can emphasize what characters stand out and can be illustrated more in the "let's get used to it" section.
7	For fonts, please adjust the proportions.
8	Especially for material on the metamorphosis cycle of butterflies, please add (strengthen) it to "Infopedia" because the comic text is not in the form of a cycle so it is feared that this will create material misconceptions.

From the validation results of Table 7 of material experts' judgement, the percentage obtained from material experts is 91.67%, so digital comic development products with characters are included in the very valid criteria.

After validation has been carried out with media experts and material experts and revisions have been carried out, the next stage is a limited-scale trial. In this limited-scale trial, the effectiveness of using digital comics with characters was seen to increase students' understanding of the material presented. The trial sample used was 10 students with the following selection criteria: 3 students in the high-ranking group, 4 students in the middle-ranking group, and 3 students in the lower-ranking group. The selection of students is based on the average final test score for class VIII semester 1.

Data obtained from small group trial assessments used a results assessment rubric consisting of pre-test scores and post-test scores. The pre-test and post-test were carried out using multiple choice questions contained in the development of character digital comics with a total of 20 questions. The pre-test and post-test questions are made similar to provide valid results during the assessment. The results of the limited-scale trial assessment are in Table 9.

**Table 9.** Limited-Scale Trial Data on Digital Comic Development Character for Class VIII Students

No	Name	Xmax	Score		Notes
			X1	X2	
1	A P F	100	70	95	
2	A D P	100	65	85	
3	A H	100	65	80	
4	A L J	100	80	95	
5	H R F	100	60	80	
6	D P	100	65	85	
7	K S E	100	70	100	
8	M F	100	85	100	
9	M Q	100	60	85	
10	M R	100	85	100	
Total			705	905	
Percentage			70.5%	90.5%	Valid

Notes:

X Max: Maximal score

X1: Pre-test scores of 10 class VIII students

X2: Post-test scores of 10 class VIII students

Based on data validation and data analysis made by media experts, a score of 98% was obtained; by material experts, a score of 91.67% was obtained; and from trials on students, a score of 90.5% was obtained. This shows that the digital comics with characters developed are very valid.

## CONCLUSION

This study was conducted to develop the teaching media using characterized digital comics in teaching Social Science studies in a Junior High School context. Based on the research findings and discussion above, this study reveals that the development of characterized digital comics for teaching social science study is

properly implemented in teaching social science studies. Moreover, the assessment results of this teaching media which cover suitability, completeness, systematic presentation, and the effectiveness of digital comic media with characters, legibility, and technical or appearance are categorized as very valid.

It indicates that teaching media using characterized digital comics fulfils the standard of usage. Further research is needed to strengthen these research findings in more widely research sites and use more research participants. Finally, these research findings are expected to give contributions and insightful ideas for teachers and educational practitioners in developing teaching media.

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