



Comic Strips Integrated with 4C Skills of the 21st Century for Syntax Learning

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Abstract: The study aims to develop integrated comic strip learning media for 4C skills in the 21st-century education era for syntax classes. The research approach used a mixed method through the R and D (Research and Development) method and the Borg and Gall model. This research was conducted in the 2023-2024 academic year at the Indonesian Language and Literature Education Study Program, at Jambi University in the even semester. The participants in this study were 2 lecturers teaching the Syntax course, 2 experts (teaching and learning material and curriculum), and 100 students. The data collection consisted of observation, documents, tests, and questionnaires. Data analysis techniques refer to qualitative and quantitative data analysis. In conclusion, the integrated comic strip learning media with 4C skills for syntax classes was considered feasible and effective in improving student learning performance. Digital comic strips had an impact on syntax learning outcomes and built quite significant reading habits. The results of this study have implications for developing a learning media framework involving digital technology.

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Introduction

The development of technology and science has brought many changes to the process of organizing education and the social civilization of society. Human life today cannot be separated from the use of digital technology applications for daily life, work, or education processes, even the use of paper as a medium for printing news, books, learning processes, and so on is decreasing and switching to electronics. Currently, educational institutions from schools to universities have utilized technological advances as a tool that makes it easier to achieve learning success (Oswald & Kleinemeier, 2016; Timotheou et al., 2023; Zain, 2021). Moreover, the demands for the quality of graduates are also very high along with the development of globalization and every student must have adequate competencies or skills according to global needs and industry needs (Fajaryati et al., 2020; Humburg et al., 2013; Li, 2022).

Thus, this condition presents quite a big challenge to educational institutions, especially for teachers. They are not only required to achieve learning goals but must also be able to produce qualified and quality graduates according to global needs. Teachers must prepare teaching and learning needs well according to the level of course requirements. So, educators are required to make changes in the daily context and innovate in the field of education (Admiraal et al., 2016; Louws et al., 2017). Along with developing curriculum changes in higher education, teachers must also pay attention to the use of learning strategies and media according to the needs of skills in the 21st-century education era, such as 4C skills. In the era of society 5.0, higher education has an important responsibility to produce competent graduates. Therefore, the teaching process carried out must be based on the



demands of 21st-century competencies. The 21st-century competencies obtained are provisions for higher education graduates to face the era of society 5.0. These 21st-century competencies are called 4C, namely creative thinking skills, critical thinking and problem-solving, communication, and collaboration. The 4C competencies can be embedded in the classroom learning process (Arsanti et al., 2021a; Purwanto, 2021; Nababan, Purba, & Siburian, 2020). This situation presents challenges to syntax learning for students in higher education.

From the results of the analysis of teaching evaluation documents for the 2022-2023 academic year and the odd semester of 2023-2024 in Indonesian Language and Literature Education, several problems were found in the syntax class, namely 1) 21st-century competencies (4C) have not been achieved optimally and from the reports of the course lecturers, it was concluded that the group discussion process and group projects have not fostered collaboration and problem-solving. 2) the use of learning media does not involve digital technology and still uses textbooks, 3) syntax learning activities in class are also felt by students to be monotonous because learning activities are oriented towards the use of group discussion activities and working on worksheets only, 4) students only do assignments to get good grades without considering the most important part of achieving learning outcomes, and 5) students who get grades D (40%) and C (30%) are more than the final grades with grades B (20%) or A (10%).

From the findings of this problem and the results of discussions with colleagues regarding the problem, it was agreed that the use of learning media must involve digital technology and it was agreed to use digital comic strips that are integrated with improving 4C skills in the 21st century education era for syntax classes. Consideration of this concept has been adjusted to the problems faced today. In addition, another consideration is that every student and teacher has a technological device that can be used to access digital learning resources. The novelty that needs to be analyzed in more depth in this study is related to the development of 4C skills applied to the process of analyzing sentences that have quite complex complexity, so it requires the values of creative thinking, critical thinking, and problem-solving, communicating, and collaborating. The need for these values is by the results of the analysis of the syntax class learning situation with colleagues in the 2022-2023 academic year. Meanwhile, the media to improve the achievement of these 4C skills is applied using digital comic strip media. The urgency of the study is to get the learning media that is appropriate to the student's condition such as students' technology facilities, their learning experience, and students' reading sources of interest. Besides that, the learning process must be positive in building the 4C skills competencies about the human qualities emphasized. So, this study is expected to produce an effective digital comic strip media model for syntax learning.

Moreover, the provision of teaching materials has now been influenced by the existence of technology (Lase, 2019). So, digital comic strips can be accessed from various website sources easily via the internet network. Previous results have also concluded that comic strips are quite effective in improving writing skills (Amrizal, 2022). Students not only understand the concept of grammatical structure in writing but also the messages in the comic stories provide an increase in understanding of the meaning of sentences (Iswari, 2021; Martages et al., 2017; Selong et al., 2021a). Even students have a positive view of the use of comics as a learning medium (Selong et al., 2021b; Zulhasmi Abasa et al., 2022). Several previous studies have also shown that the application of comic strips for syntax classes has not been widely used. This is a gap with previous research because this research is directed at developing a comic strip learning media model that has 4C skill values according to the concept of 21st-century education.

So, This study aims to develop integrated comic strip learning media with 4C skills in the 21st-century education era for syntax classes. The results of this study are expected to be an appropriate contribution to the teaching and learning process of syntax classes which are considered difficult. In addition, this study can provide benefits in the development of various digital learning media that are by the level of student needs and courses, so that graduates can have 4C skills according to the demands of global competence.

Research Method

The research approach used a mixed method through the R and D (Research and Development) method using the Borg and Gall model. The mixed method is a research process that combines two research approaches, namely qualitative and quantitative and the data presented can use descriptive narratives and quantitative data exposures that are presented simply such as descriptive statistics (Creswell & Creswell, 2018). The research was conducted in the 2023-2024 academic year in even semester at the Indonesian Language and Literature Education Study Program at the University of Jambi. The research implementation period is;

- 1) Analysis and identification of problems in September 2023
- 2) The process of collecting needs analysis data in October-December 2023.
- 3) Product trials in the period March-June 2024.

The research participants were 2 lecturers teaching the Syntax course, 2 experts, and 100 students. The data collection process consists of; 1). Observations were carried out in the preliminary research process to identify research problems and observations of the product trial process to determine the development of the student learning process. During the observation process, researchers make research data records as evidence of data for the analysis of findings. 2) The document is the syllabus. 3) A test is used to take the students' achievement in Syntax learning. It is an essay or report of a project. 4) Questionnaires are used to identify the needs analysis given to students at the beginning of the research and expert or peer assessments of the models that have been developed. The questionnaire used was open-ended with essay questions so that students had the freedom to provide answers to the needs of comic strip learning media in the Syntax class.

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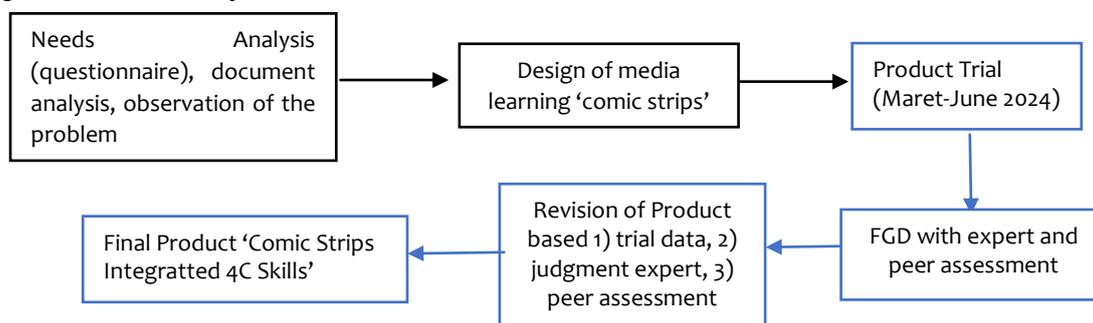


Figure 1. Procedure Study Adapted Borg and Gall Model

Qualitative data was obtained from the results of needs analysis, documents, and observations during the product trial process using descriptive analysis involving peer and expert assessment results. Meanwhile, test data obtained from the trial were analyzed quantitatively using the t-test.



Results and Discussion

Needs Analysis (Syllabus Data, and Questionnaire for Comic Strips Integrated with 4C Skills for Syntax Learning)

The results of the syllabus analysis found that the design of this syllabus did not include learning media related to digital technology. The syllabus included the use of textbooks as a reference source for teaching materials, and the learning media used were only computer devices in the classroom. Meanwhile the learning strategy used group discussions. The syllabus as one of the teaching and learning tools should be described with developments that are caused by changes in the demands of the quality of human resources. Thus, syntax learning can be taught using learning media that are appropriate for the 21st century education era and the syllabus should also provide learning resources that can lead to improving 4C skills as well (Fornaciari & Lund Dean, 2014). Meanwhile, from the results of the distribution of questionnaires to students, several important points were obtained which have been categorized according to the questions in the questionnaire in the table below:

Table 1. Teachers and Students Needs Analysis

Component	Questions	Students' Answer Finding	%
Content of Comic Strips	1 Which do you prefer, printed comics or digital comics?	1. Comic strips digital	90%
		2. Printed comic strips	10%
	2 Where will you find digital comic strips?	1. Online newspapers from within and outside the country, online magazines, or online websites	67%
		2. We also can take the comic strips from Instagram, TikTok, Facebook, and Twitter	33%
	3 What story are you looking for in comic strips?	1. Social	27%
		2. Human life	33%
		3. Politics	23%
		4. Culture	17%
		5. comic strip stories are humorous or satirical	92%
	4 Do you like comic strips from other countries or do you like those from Indonesia?	1. We like comics from within and outside the country	47%
		2. We like comics from Indonesia	28%
		3. We like comics from another country	25%
	5 Which country do you prefer to access digital comic strips?	1. Indonesia	37%
		2. Manga Japan	43%
		3. America	13%
4. Europe		7%	
Learning Strategy to Implement Comic strips in class	1 Group Discussion	Group discussion in or out of the class	52%
	2 Individual assignment	It is difficult to do the assignment as an individual	7%
	3 Project-based learning	We like making a report from the result of group discussion	21%
	4 Video-project	We think it is difficult to make a video project	8%
	5 Integrated learning	We think it can use projects and discussion group	12%
4C Skills in Learning	1 Communication	We can implement this in group discussion	77%
	2 Collaboration	We can use it for group activities and project learning	89%
	3 Critical thinking	We can find it to finish our project syntax	73%
	4 Creativity	We make innovation of project report	92%

The table above found several points that students wanted, namely;

- a) Digital comic strip media is a choice of learning media that is very popular and according to student needs. Of the 100 students who answered the question, 90% chose to like digital comic strips because they are considered easy and economical. Students do not need to spend money.



- b) Most students also want access to comic strips online via the internet network on the website (67%) and as many as 33% answered that they can access comic strips via social media.
- c) The comic strips that students like are humorous or satirical and are related to the context of social life, community life, politics, and culture.
- d) Most students like comics both from within the country and abroad. Even 28% of students like comic strips from Indonesia.
- e) Students prefer comic strips such as Manga from Japan with a percentage of 43%. Moreover, many different websites are easily accessible to read manga. While students who like digital comic strips from Indonesia are 37%. Digital comic strips from America and Europe are smaller because they are considered difficult to access and more paid.
- f) The learning strategy needed to implement digital comic strips in syntax classes is project-based learning that is done in groups. While the values of 4C skills are implemented in the process of working on projects in groups.

From the analysis data, it can be said that digital comics are one of the media or learning tools that are considered effective and feasible in improving student competence (Ahsanah & Utomo, 2020). Even previous studies have also concluded that comics are not only simple and easily accessible learning media via the internet, but comics can also improve text-based student literacy. Comics provide opportunities for students to develop multimodal literacy and face the demands of the 21st century (Issa, 2018). So, comics have a multimodal nature that is interactive in the 21st century. Comic content contained in various daily news sources can also be used as a resource for learning foreign languages. This is even more interesting because the presentation of comics is different from language textbooks. This means that the presentation of comics, both in terms of language and color and images, provides different colors. Thus, it can increase students' interest in reading (Calafato & Gudim, 2021). Therefore, the results of the data analysis in the table also illustrate that students like comics and like to read comics. They can not only access them easily via their smartphones but some students can download comics to be used as reading sources. So, digital comic strips can be said to be one of the needs of student learning media. Based on the results of the syllabus analysis and the need for integrated digital comic strip media with 4C skills for syntax learning, here is the design of the comic strip learning media model;

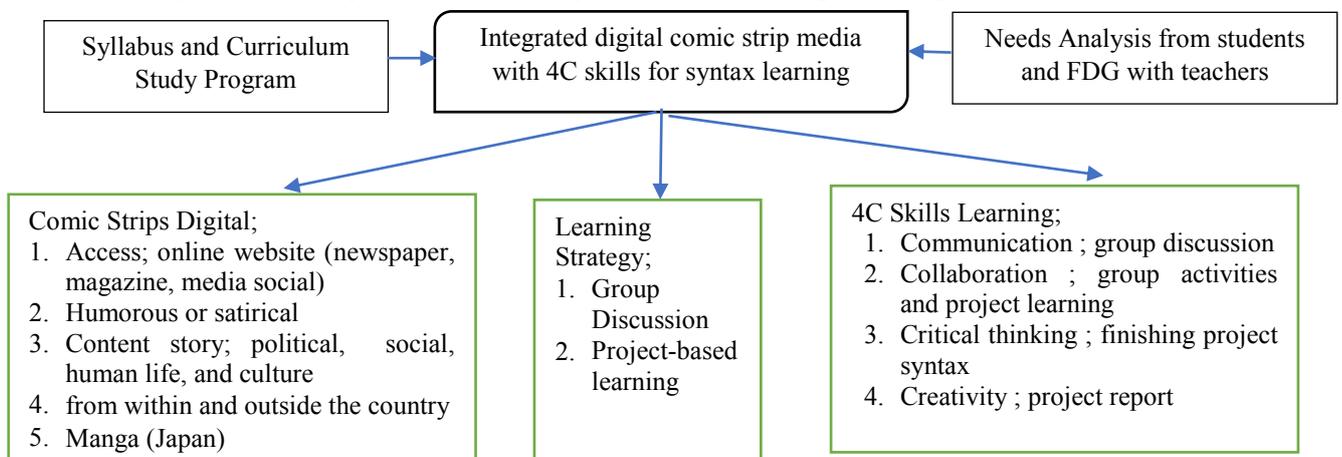


Figure 2. Initial Design of Comic Strips Integrated 4C Skills in Syntax Learning



Trial of Product and Revision

The results of observations in the trial process found several quite interesting findings and provided an overview of the effectiveness of using comic strip learning media in syntax classes.

- a) Students conduct group discussion activities independently
- b) Students provide feedback on the results of other group discussions
- c) Students' reading habits have increased significantly Students actively ask their peers
- d) Students have a fairly good sense of competitiveness in making syntax project report results
- e) Each student actively collaborates in developing syntax project ideas
- f) The use of technological devices owned by students is very good
- g) The peer learning process is built in a structured manner and shows creative discussion activities

From the results of observations on student learning activities during the product trial, significant innovations were found related to the development of 4C skills, namely communication, collaboration, creativity and critical thinking, students were seen during the discussion process. It starts from determining the theme of the comic strip story, which country's comics they will use, analyzing the sentence tree analysis project and determining the meaning of the comic story, making project reports and presenting the results of the project report in front of the class. Peer learning activities are not only seen in their respective groups, but other students can provide quite good feedback in assessing the results of the group project report that presents the results of their discussions. Therefore, digital comics can be considered an effective media or tool to improve students' language competence (Ahsanah & Utomo, 2020). Another finding is the significant reading habits of students and the interest in reading books other than comic strips carried out by students during the process of completing group projects. Another study concluded that reading online manga comics provides a fun activity in online classes or at home (Khoii & Forouzesh, 2010; Khusniyah, 2021). Meanwhile, the test results obtained before and after using digital comic strips learning media for syntax classes also showed quite significant changes. The learning outcomes of 100% of students experienced an increase.

Table 2. The result of Statistic Descriptive

	Pre-test	Post-test
Mean	57.94	87.08
Standard Error	0.581676	0.4635
Median	58.5	87.5
Mode	55	90
Standard Deviation	5.816764	4.6356
Sample Variance	33.83475	21.4885
Minimum	40	75
Maximum	70	95
Dari Confidence Level(95.0%)	1.154172	0.9198

Table 2 shows a significant development in student learning outcomes before and after using digital comic strips learning media integrated with 4C skills. The average class score increased by 29.14 from 57.94 to 87.08. The lowest score in the pre-test was 40 and in the post-test was 75. The lowest score in the post-test was already at grade B. The highest score in the pre-test was 70 and in the post-test was 95. The distribution of test score data also



shows that in the pre-test, the scores that appeared were dominated by 55 and in the post-test, the most frequently appearing score was 90. The results of the t-test in Table 3 show that $t_{\text{Stat}} < t_{\text{table}}$ ($-36.4248 < 1.9842$), meaning that there is a positive influence of the use of digital comic strips integrated with 4C skills on syntax learning outcomes.

Table 3. The result of t-Test

Mean	57.94
Variance	33.8347
Observations	100
Pearson Correlation	-0.1609
Hypothesized Mean Difference	0
df	99
t Stat	-36.4248
P(T<=t) one-tail	1.8869
t Critical one-tail	1.6603
P(T<=t) two-tail	3.7739
t Critical two-tail	1.9842

Meanwhile, the results of discussions and assessments from experts with colleagues, overall concluded that the digital comic strip learning media that has been developed and tested in syntax classes is good enough and can be met by syntax learning needs. The input for the final model framework for digital comic strip learning media combined with 4C skills is:

- a) The 4C skill values must be applied to all learning activities through digital comic strip media
- b) Each 4C skill value that is applied remains associated with character education values and local wisdom.
- c) Lecturers must provide clear learning instructions for each learning activity and direct the use of digital comic strips in a structured manner.
- d) Determine the assessment for each student's learning activity
- e) Develop individual learning outcome assessments so that student learning outcomes have a comprehensive assessment
- f) Students are also directed to use comic strips from various countries so that they have knowledge of culture or a fairly broad context of linguistic understanding.

Thus, the final model of digital comic strip learning media integrated with 4C skills in syntax classes is:

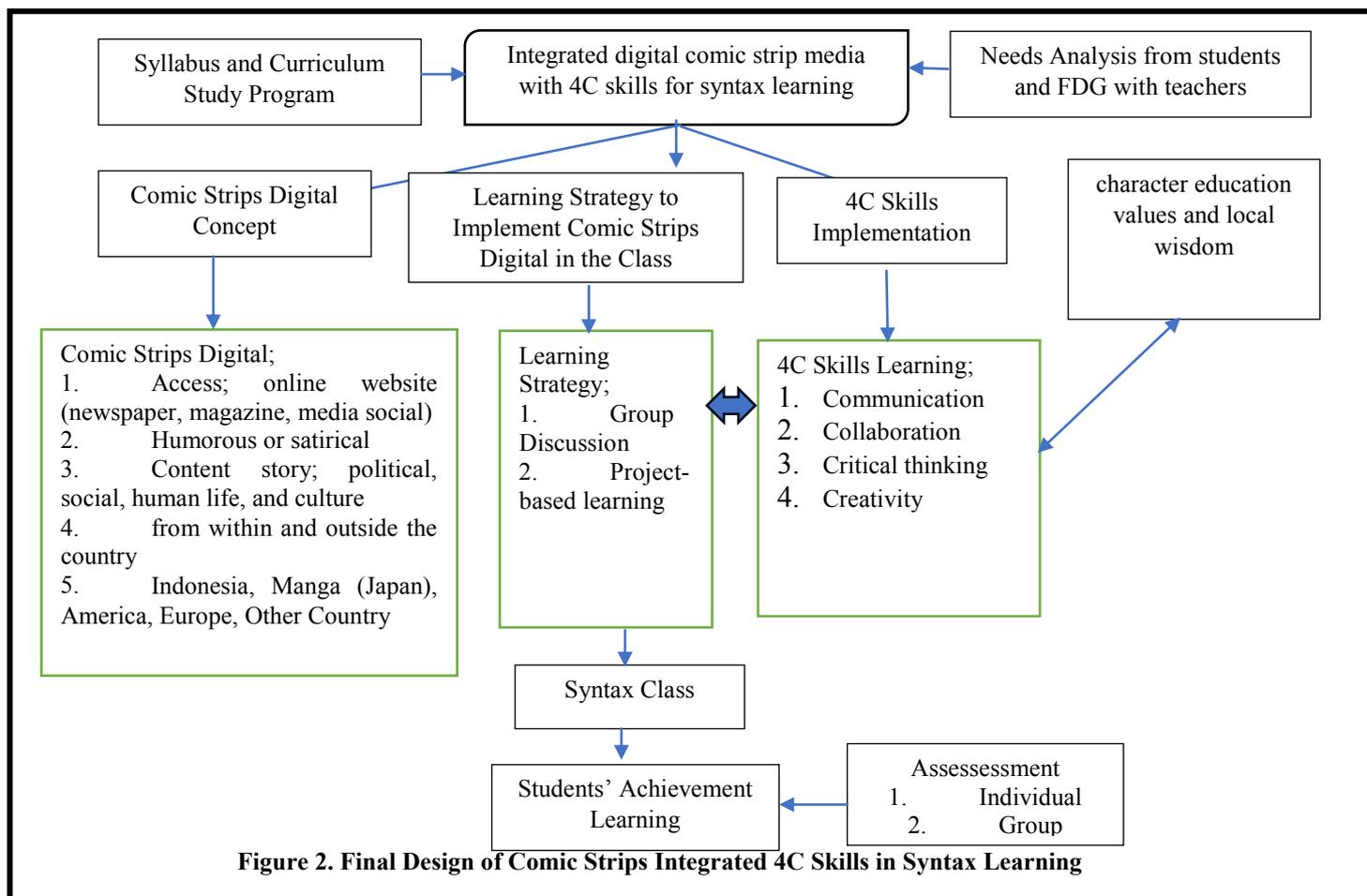


Figure 2. Final Design of Comic Strips Integrated 4C Skills in Syntax Learning

The results of the study showed that the use of learning media today should already use open digital learning resources or what is called OER (Open Educational Resources). This means that the use of electronic learning media in the classroom has a significant impact on improving students' technological competence (Meisani, 2021). The results of discussions between experts and colleagues concluded that the development of digital comic strips is the right learning media in the current era of technological advancement. Students can even build their motivation in class by accessing wider learning resources. Students not only save the cost of accessing digital learning resources, but the time they have is more efficient for activities so that learning outcomes are maximized (Hilton, 2016; Wiley & Hilton, 2018). The results of this study provide a deep understanding that technology is the right media for creative learning processes and easily accessible learning resources (Farani & Winarni, 2018). In addition, educators also contribute to student performance in mastering 21st-century skills consisting of 4C: i) creativity, ii) communication, iii) collaboration and v) critical thinking skills (Rusdin, 2018).

These 4C skill values provide students with a fairly good critical thinking process and they are not only able to solve problems from each project they work on, but can also build good teamwork. So, this learning activity can develop critical thinking competencies, solve real-world problems, communicate, elaborate, appreciate culture, develop creativity, and utilize connectivity (Anugerahwati, 2019; Inganah et al., 2023). The 4C skills that must be mastered by students as one of the goals of the end of this learning process are relevant to the demands of today's quality of education. Other studies also show digital innovation from



mastering 6C competencies and learning becomes more meaningful (Shah & Kamaruddin, 2022). However, achieving these skills is certainly a challenge that educators must meet through effective media and learning methods according to the needs of the course and the needs of students or the achievement of graduate competencies (Nur, Septiyanti, Yustika, & Fajriah, 2021) (Khawarizmi et al., 2021).

The right learning media can create fun and comfortable learning. Previous research using ToonDoo as a new technology media for creating digital comics has increased the creativity and innovation of teachers in creating a language learning environment in the classroom. This application facilitates students' imagination, improves their speaking skills, produces a better learning experience, and creates a good classroom atmosphere (Fatimah et al., 2019). The use of appropriate comic strips in the teaching and learning process will increase the enrichment of vocabulary, grammatical structure, and language use of students (Sarada, 2016). It means that digital comic strips provide an easy way for students to understand grammar concepts (Rakhmawati, 2018).

The results of this study have implications for developing a learning media framework that involves digital technology. Students and teachers must also continue to improve their competencies in the current technology field through global developments. Moreover, changes in the curriculum that have been set by the government are a major consideration for teachers to update learning media, teaching strategies, or teaching material resources that can be relevant to the demands of achieving teaching and learning objectives. The results of this study also provide a new concept related to students' reading habits. Students can improve their reading habits if the media or reading sources are appropriate and by what students want. Thus, it can be said that digital comic strips are one of the right choices for project-based learning in syntax classes and developing 4C skill values in the era of 21st-century education and the development of globalization that continues to change human civilization.

Conclusion

The study showed that integrated comic strip learning media with 4C skills for syntax classes were considered feasible and effective in improving student learning performance. Moreover, the digital comic strip learning media model not only has an impact on syntax learning outcomes but also builds quite significant reading habits. The 4C skill values applied to these digital comic strips appear in every learning activity in class during the discussion process and completion of the research project. Students also showed good teamwork and helped each other. In addition, the results of group work on project reports can also be assessed by students according to the learning context they want to achieve.

Recommendation

The results of the study are still limited to the development of a digital comic strip learning media model combined with 4C skills for syntax classes, but there has been no in-depth study related to the relationship between learning strategies and learning media. However, in this development, the need for learning strategies for the development of digital comic strip learning media has also been studied. So, further researchers can develop the results of this study again in the direction of the relationship between digital comic strip media and learning strategies and the impact on student learning outcomes for both syntax courses or developed in other courses. For students, the results of this study can be used as one of their learning resources in understanding syntax teaching materials and can improve 4C skills to solve various problems related to the development of syntax knowledge. Meanwhile, for lecturers, the results of this study can be used as one of the learning media that can be used in teaching



syntax and can be developed or combined with the application of teaching strategies so that they can teach character values related to 4C skills. The results of this study also recommend that educational institutions pay attention to teachers related to supporting the improvement of lecturers' teaching competencies. Universities can provide various training activities to develop teaching materials, learning media or teaching strategies related to the use of digital technology.

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