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# Comics As Instructional Media in Education Journals Across Indonesia: A Systematic Literature Review

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**Abstract:**
Comics with its features has the potential to increase motivations and creativity and the students' interest in understanding concepts. Educational comics is developed and utilized in classrooms. This systematic literature review analysis aims to focus on comics as instructional media in educational journals across Indonesia since 2018 to 2022. This current study has found that Research and Development is the most type of research employed to study educational comics. Relating to R and D method, ADDIE model has been most selected by researchers to develop educational comics. Elementary school students are the most chosen research subjects. Educational comics are utilized in Mathematics, natural science, Religion, Chemistry, Literacy, Thematic, Biology and English courses with particular topics. In addition, computer-based tools, web-based apps, and a combination of both are to develop educational comics in today's digital era.

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## Introduction

There may be still any common misconceptions that comics are not worth reading, especially for educational purposes. Many parents and adults assume that comics is just to entertain, even considering that comics are silly and not real literature. Ironically, many school-age children and teenagers are interested in reading either printed or digital comics. Comics have been popular in youth culture. To respond to the reading interest trends among youth and students, the comic could be considered as one of the instructional media to deliver teaching materials.

Comics is defined as juxtaposed pictorial and other images in deliberate sequences, intended to convey information and/or produce an aesthetic response in the viewer (Mc. Cloud, 1994). Comics that combines visual graphics, as well as textual information historically, develops to be educational resources. Educational comics, which are designed to entertain and educate, can engage learners in complex literacy practices that cross formal and informal experiences (Matuk, et al. 2019). Study on comics science conducted by Matuk et al. (2019) finds that comics help to increase diversity of students likely to engage with science and bridge science and students' personal experience. Many studies on comic as an

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instructional media in educational journals in Indonesia recommends that it can be used by teacher to deliver teaching materials and helpfully facilitate students to improve their learning performance and experiences (Fatimah, et.al, 2019; Wati, et.al. 2018), creative thinking skills (Praptiwi, et.al., 2021).

The studies on comics found in educational journals in Indonesia mostly focus on how to design and develop instructional comics which are then utilized in the learning process. Some of the studies utilized created comics as a material resource and they effectively were to improve student's learning outcomes (Trimurtini et al, 2021; Maryani, et al, 2018, Sari et al, 2021) because comics are interesting and produce good learning atmosphere (Fatimah, et al. 2019). Notwithstanding, among all these studies, none of which attempts to either choose existing educational comics as a resource or employ comics in the classroom to evolve students in creating as a product of project-based learning.

Comics in the early era was created in hand-drawn, and illustrated manually using a pencil or pen on a sheet of paper. Nowadays, as technology changes and develops, many web-based digital apps can be used to create comics. Creating comics in the recent digital era does not require drawing skills anymore. Anyone with no drawing talent could design comics. Recently, many comics maker applications have been developed to facilitate teachers or instructional designers in creating educational comics, and even students as learners. Content creators can access the comics maker from a website, and even smartphones via play store, from the simplest to the most complex, from free to paid access. Comics are identical to cartoon image of characters and drawn either traditional or digital stationery. Nowadays, as numerous comic maker apps built, comics can be designed by employing real photographs which is combined with cartoon image backgrounds.

Using content analysis on several education journals published in Indonesia for five last years, from 2018 to 2022, this current study aimed at collecting information about a variety of studies discussing comics as instructional media in Indonesia. In detail, this study was intended to answer the following questions: (1) how was the variety of research design employed in investigating educational comics? (2) What approach was employed in the research on comics as instructional media in Indonesia? (3) What was the research subject in comics studies in Indonesia? (4) What was the most course applying educational comics in Indonesia? And (5) What type of application was most used to create an educational comic? This current study differs from the previous one that was concerned with comics. Firstly, systemic literature review on the educational comic has been rarely found in Indonesian educational journals. Secondly, this study focuses on the whole articles that had been published from 2018 to 2022.

## Research Method

This research applied a systematic literature review. The data were collected based on an intentional and purposeful selection of data including types of information to be included in the review including educational journal articles. The research method was similar to those used by Susetyarini and Fauzi (2020). The data were collected from the results of content analysis on articles that were taken from reputational educational journals registered at

  

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Science and Technology Index (SINTA) accredited level 1 and 2. SINTA is a platform to measure science and technology development which was developed by the Ministry of Education, Culture, Research, and Technology.

Research articles were selected based on specific keywords either in Bahasa Indonesia or English, namely Komik or Comic. For purpose of obtaining the latest study, the search has been limited between June 2018 and June 2022. A total of 16 educational journals had been selected including educational technology journals and educational journals and a total of 18 articles had met the requirements.

The instrument used in this current study was a guideline of content analysis that consisted of related aspects under observation (Table 1). The Instrument, which was adapted from Susetyorini and Fauzi (2020) and had been modified as needed, included nine main aspects to review for content analysis in this study. Those aspects were (1) type of research; (2) research approach; (3) research subjects; (4) data collection instruments; (5) *data analysis method; (6) type of media; and* (7) type of the used application. The aspect of (6) and (7) was modified to accommodate the type of media used, respectively were divided into whether digital or non-digital and what apps were used to create comics in research and development methods.

**Table 1. The aspects and categories used for content analysis**

| Aspects | Categories | |
|---|---|---|
| Types of research | A.1. R and D | A.3. Qualitative Research |
| | A.2. CAR | A.4. Quantitative Research |
| R& D Approach | B.1. ADDIE | B.3 Borg and Gall |
| | B.2. Dick & Carey | B.4. 4D |
| Research Subjects | C.1. Kindergarten students | C. 4. SHS Students |
| | C.2. ES students | C. 5. Undergraduate students |
| | C.3. JHS Students | C.6. Pre-service teacher |
| Apps Type | D.1. Adobe Flash CS 6 | D.6. Ekstensi exe. |
| | D.2. Manga Studio Ex | D.7. Pageflip Professional |
| | D.3. Graphic Tablet | D.8. Toondo |
| | D.4. Photosho CS3 | D.9. (-) |
| | D.5. Android Studio | |

Each of the articles was then classified into categories based on a certain aspect that met the defined category. The data was based on information that was shared by the researcher in the abstract, method, and discussion parts. The collected data further were presented in a form of a bar chart..

## Result and Discussion (12pt, Times New Roman)

### Types of Research

Types of research have dealt with methods and techniques which will be applied in research. Based on Figure 1, research and development constituted the most dominant design the

  

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researchers employed to investigate educational comics. R & D research is selected by most of the researchers on comics because they thought that this method was designed to produce instructional media and strategies.

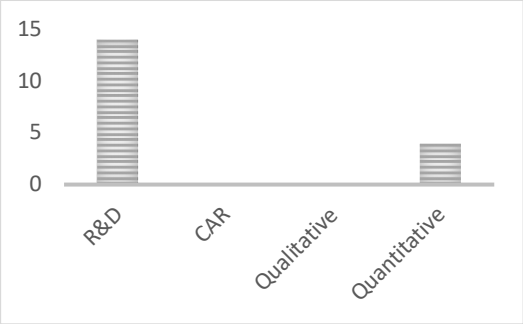


**Figure 1. The distribution of Research on Comics categorized based on the types of research**

Quantitative research has been mostly a prominent and leading one in an educational investigation as found by Susetyorini and Fauzi (2020) that quantitative research became a trend of research in education journals in Indonesia. However, in investigating instructional media as in this comic case, quantitative research was not mostly chosen.

Class action research and qualitative research are not opted among the selected articles. Class action research is a reflective process which helps teachers to explore and examine aspects of teaching and learning and to take action to change and improve. While, qualitative research is considered relatively new to educational researches (Sharma, 2013).

In addition to the type of research, this study also aimed at revealing the distribution of R and D models as will be discussed afterward.

## R&D Models

Research and Development is a process used to develop and validate educational products (Borg and Gall, 1998). Based on Figure 2, ADDIE models are mostly used among the studies to research and develop comics as educational media. ADDIE model has five components including analysis, design, development, implementation, and evaluation. This finding shows that ADDIE instructional design (ID) method is more popular than other models applied by researchers in these investigated studies.

Dick and Carey's ID model subsequently occupied the second most used by researchers to develop educational comics. Dick and Carey's model focuses on the interrelationship between elements in the design process. Those elements are context, content, learning, and instruction. There are ten components of this model which are executed iteratively and in parallel with each other. Different from ADDIE model, Dick and Carey has more phases to carry out in developing the desired outcome. The researcher conducted thorough needs identification phase, writing performance objectives, material development, formulating assessment tools, developing instructional media, evaluation and revision phases (Nurinayati, F, et al. 2018; Evriyani, Dian. et al. 2018)

  

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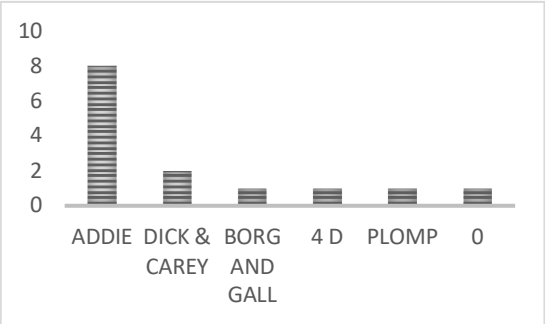


**Figure 2. The distribution of Researches on Comics categorized based on types of research**

Model Borg and Gall, 4D, Plomp, and Sugiyono are also applied by researchers to develop educational comics. Borg and Gall model has ten steps in developing instructional model and media including potential and problems, data collection, developing initial products, initial field testing, product revision, field trial, revision, operational field test, final product revision and product destination and implementation. However, the researcher of this study conducted only seven steps of the procedure (Trimurtini, et al. 2021).

DDDD model which involves four steps including 1) define; 2) design; 3) develop; and 4) disseminate is used in this study as well (Ntobuo, et al. 2018). The 4 D is a simple instructional design model which helps the researcher to design a product (Irawan, et al. 2018).

Plomp model, in addition, was also employed by researcher to develop instructional materials. This model which was proposed in 1997 by Plomp is considered more flexible by some experts because its each step could be adjusted. There are substantively five steps including 1) investigation; 2) designing; 3) realization/construction; 4) testing, evaluation, and revision; and 5) implementation. Nevertheless, in the investigated study on educational comics, the researcher conducted the first four main steps and excluded the last implementation step.

Of the whole R and D researches, one research did not mention R and D model applied. However, it stated three steps in developing educational comic which was adapted from Sugiyono (Wijayanti, et al. 2018). The three steps are 1) potential and problem analysis; 2) development; and 3) product trial.

R and D models are varied. Beside the six models employed in these researches, there are other models which were proposed. Among of them is one proposed by Hoge, Tondora, & Marelli (Gustiani, 2019). In addition, there are Draganidis and Mentzas model, Luther's model as well (Gustiani, 2019).

**Research subjects**

Instructional media and materials are designed and developed based on learners need. Although comic is somewhile not considered as real and good literature because it combines picture and a few portions of text, comic nowdays has widely been used in classroom. It could improve learners' performance of all age phases as shown on Figure 3. In conducting research needed research subjects to examine their hypotheses. Based on Figure 3, the most selected researches were the students of elementary school, consecutively followed by

  

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students of senior high school, students of junior high school, and undergraduated students. Students of pre school and preservice teacher are least selected research subjects.

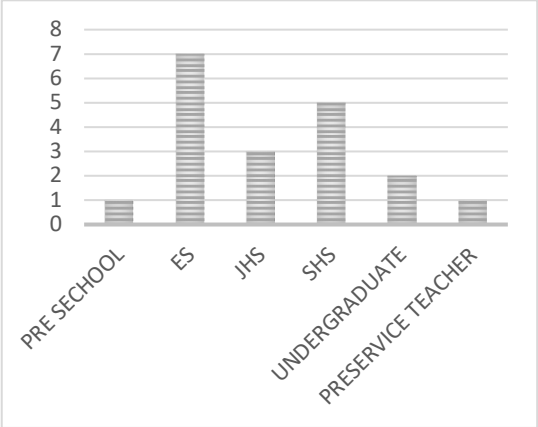


**Figure 3. The distribution of research subject in some educational research on educational comics in Indonesia**

The dominance of elementary school students was in line with a study conducted by Ntobuo et al. (2018). They found that the use of comic instructional media is very appropriate for students at the elementary school level because they are in the stage of concrete operational thinking, especially the students of higher classes. However, the study on comic conducted by Nurjannah et al (2019) which involve students of lower classes of elementary school shows that comics could increase students' learning performance in literacy because of the features of comics which have more pictures and less text. Nowadays, most children are familiar with digital technology. As technology develops and changes rapidly, comics is also available in digital form. The digital educational comic was developed to assist children in learning good character and valued attitude (Rohmanumerta & Dewi, 2020).

Students of senior high school constituted the second most selected subject which was investigated by researchers in these selected studies. According to Aeny and Yusupa (2018); Nurinayati et al (2018), research and development on the educational comic has been rarely conducted at the senior high school level. Notwithstanding, this current study enervates their argument. Comics could motivate students of senior high school to learn science, particularly those who have the least interest in reading textbooks. The unique features of comics which integrate images and text into a storyline encourage students to learn (Sari & Harahap, 2021).

The students of preschool, undergraduates, and preservice teachers are also selected to be the subjects of research on comics. The researches on comic development and usage have shown that comics could be applied to all educational levels and grades. Education comics could introduce flood disaster mitigation effectively (Artha et al. 2020) to kindergarten students. In addition, comics was used to train preservice teachers in teaching English (Fatimah, et al. 2019).

**Courses and topics utilizing educational comics**

Courses and topics selected by researchers to research and develop educational comics in each educational stage were varied. Course and topic selection depends on course characteristics and learning objectives of topics. Some courses were considered burdensome

  

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for some students, for example, mathematics (Wijayanti, et al. 2018; Qohar et al. 2020), English (Wati et al. 2018), natural science (Maryani et al. 2018; Nurinayati et al, 2018; Wicaksono et al. 2020), chemistry (Sari et al. 2021). To achieve learning objectives of each topic of the courses, it is needed to select and develop appropriate instructional media to convey the materials. Hence, educational comic with its image and visual text features were considered effective to overcome the burdens. Table 3 indicates courses and topics which used comics to deliver the materials

**Table 2. Course and topics using educational comics**

| Stage | Course | Topic |
|---|---|---|
| Preschool | thematic | Flood disaster mitigation |
| Elementary school | 1. Natural Science | 1. a. Gravity<br>b. Skeleton<br>c. green plants |
| | 2. Literacy | 2.a. energy and change<br>3.a. speed & discharge |
| | 3. Mathematics | 4.a. nature conservation |
| | 4. Character building | |
| Junior High School | 1. Mathematics | 1.a. flat wake geometry<br>b. social arithmetic |
| | 2. Religion | 2.a. Islamic values |
| Senior High School | 1.Chemistry | 1. a. Reaction rate |
| | 2. Biology | 2. a. Immune system |
| Undergraduate | 1. English | 1.a. speaking<br>b. extensive reading |
| Preservice teacher | 1.Teaching training | 1. Short story |

**Comic maker applications**

To design and develop educational comic, instructional designers may employ traditional or digital drawing. Computers and web-based applications can assist comics maker to create educational comics. Modern digital tools facilitate instructional designers efficiently and effectively. The apps that help educational comics developers are categorized as shown in Table 2.

Research and development studies on digital comics develop educational comics using computer-based tools such as *Adobe Flash CS 6* (Aeni, et al, 2018), *Graphic Tablet-Drawing Pad Wacom Intuous Pen N Touch Small CTH 480* (Wicaksono, et al., 2020), *Photoshop CS3* (Sari, et al. 2021), *ekstensi. Exe* (Nurinayati et al., 2018), Page Flip Professional (Artha et al., 2020); web-based digital apps such as *Manga Studio Ex* (Nurjanah, et al.,2019), *Android Studio* (Sari et al., 2021), *White Board Animation* (Wijayanti et al., 2018), *Toondo* (Wati et al, 2018, Fatimah et al, 2019); and combination of both such as Coreldraw X5, Sparcol Videoscribe, Videopad, and Articulate Storyline.

  

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**Table 3. The categorization of comics maker applications**

| Computer-based tools | Web-based tools | Combination of both |
|---|---|---|
| • *Adobe Flash CS 6*<br>• *Graphic Tablet- Drawing Pad Wacom Intuous Pen N Touch Small CTH 480*<br>• *Photoshop CS3*<br>• *ekstensi. Exe*<br>• *Page Flip Professional* | •*Manga Studio Ex*<br>•*Android Studio*<br>•*White Board Animation*<br>•*Toondo* | • *Coreldraw X5, Sparcol Videoscribe, Videopad, and Articulate Storyline* |

In addition to whole apps utilized by the instructional designer above, recently many apps proposed by the developer. These apps even could be used by children to make their own educational comics. Web-based comics makers can be easily found when you are just typing the term comic maker on the search engine. On the screen will appear various websites can be visited to create educational comics such as canva, pixton, makebeliefscomix, storyboard that, smile box, etc with their own features.

## Conclusion

In this current study, articles that discussed comics as instructional media and were published in SINTA- accredited educational journals across Indonesia in 2018 – 2022 have been reviewed. The findings and discussion accordingly conclude that the most used type of research regarding comics as instructional media is research and development. ADDIE model was most widely employed by R&D researchers. Elementary school students are most subjects which are investigated and it indicates that they are the most graders utilizing educational comics. Educational comics are developed and used in Mathematics, natural science, Religion, Chemistry, Literacy, Thematic, Biology, and English. The applications employed to develop educational comics are either computer-based software or web-based comics maker tools.

## Recommendation

Based on the findings, some recommendations for further research have been set up. Firstly, educational researchers may conduct quantitative and qualitative research on educational comics. Secondly, the development of educational comics can be implemented in other courses and topics. Thirdly, R and D researchers are to inform clearly about the approach employed. Finally, further researchers may develop educational comics using other simply used applications and other format characterization.

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