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The implementation of e-comic earth layer to enhance students' self-directed learning

The implementation of e-comic earth layer to enhance students' self-directed learning

M Taufiq[1*], A Wijayanti[2] and E Fajriah[1]

[1] Natural Science Education Study Program, Universitas Negeri Semarang, Indonesia
[2] Faculty of Science Education, Universitas PGRI Semarang, Indonesia

[*]Corresponding author: muhamadtaufiq@mail.unnes.ac.id

Abstract. This study aims to analyze the effectiveness of learning media e-comic earth layer to enhance students' self-directed learning. Method of the research refers to qualitative research approach through qualitative descriptive studies generally are characterized by simultaneous data collection and analysis. The average percentage of Students' self-directed learning values during four times observations is 86.93% which means that the category is very good. It can be concluded that learning media e-comic earth layer effective to enhance students' Self-Directed Learning (SDL).

1. Introduction

Self-directed learning (SDL) is an important term for various learning processes related to goal-directed, self-controlled learning behaviour [1, 2]. Student learning SDL is closely related to students' understanding of concepts. When going to face an exam, students will memorize the material, but few try to understand the concepts that have been taught. This results in the material being taught to be insignificant so it cannot be stored in long-lasting memory. Failures experienced by students can be avoided if students understand the concepts and knowledge can last a long time if the concept or material is meaningful to him and in accordance with the context of his life environment [3,4].

The teacher has a role as a facilitator not only in the transfer of knowledge, but also in educating the character of students. The activity of the transfer of knowledge and education is instilled through learning activities in a variety of materials, one of which is in the material layer of the earth. Innovations in learning activities can be implemented through the application of interesting and creative learning media. A learning media is all physical tools used to convey the contents of teaching material [5]. One type of media that can increase student learning independence is internet-based learning.

Data from the Indonesian Internet Service Providers Association (APJII) in 2018 shows that internet user penetration by age, ages 13-18 years is the highest internet user with a total of 78.50%. At this age level is the age of junior high school (junior high school). This fact reinforces that the learning of science, especially the material layer of the earth has a great potential for the application of a media that utilizes the internet and can attract students to have the independence of learning, one of them by using e-comics.

E-comic is a teaching material that makes it possible to use online media on the internet, intranet, or other computer network media [6]. E-comics or digital comics first appeared in the 1980s, and increasingly developed in the 1990s called web comics that can be accessed by readers easily. The internet changed the way in the production and distribution of comics [7]. The use of comics for learning can attract students. The use of fun comics can also be used to shape student characters by including character values in comics [8-10]

The internet-based e-comic of the earth layer in this research was uploaded on Edmodo application. Edmodo is a useful tool for students and teachers to interact online. Edmodo functions as a classroom collaboration tool, for teachers providing productive guidance and encouraging students to participate in online social networks in the teaching process and in achieving learning goals [11]. The ease of access of Edmodo through the Android application makes it possible for students to be able to independently learn with e-comics without being limited by time and space through their smartphone. Teachers can also monitor learning and practical assignments through smartphones. This study aims to facilitate the conditions that have been described and analyze the effectiveness of learning e-comic earth layer media to enhance students' self-directed learning.

2. Method

The research subject used in this research is e-comic learning media with earth layer material. Methods of the research refer to qualitative research approaches through qualitative descriptive studies generally are characterized by simultaneous data collection and analysis. Learning independence data obtained from observations of 3 (three) observers who observed students for 4 (four) times the learning layer of the earth by applying e-comic media. Data from observations on learning independence were analyzed using descriptive percentage analysis. This scale uses the Guttman scale and only applies "yes-no" answers. For answers "yes" given a score of 1 and do not agree given a score of 0, then the percentage value is calculated using the formula below:

$$Percentage\ value = \frac{Number\ of\ scores\ obtained}{The\ ideal\ score\ for\ all\ aspects} x100\%$$

SDL of the students is categorized according to the criteria in Table 1.

Table 1. Questionnaire result criteria

Percentage (%)	Criteria
0-19	poor
20-39	enough
40-59	middle
60-79	good
80-100	very good

3. Results and Discussions

Data on SDL of the student obtained from observations during 4 (four) meetings by 3 (three) observers based on each individual child in each meeting are presented in Table 2. The average value of the percentage of students' learning independence is 86.93% with the criteria very good.

Table 2. SDL data of the students for each meeting

Meeting	Average Score (%)	Criteria
1	84,37	very good
2	89,17	very good
3	90,63	very good
4	83,54	very good
Average	86,93	very good

Three SDL indicators [12] namely (1) cognitive, students utilize cognitive strategies in the acquisition, storage, and retrieval of information (for example, exercise, critical thinking, organization, elaboration); (2) metacognitive, students utilize metacognitive strategies to plan, monitor and regulate

their learning process to achieve goals (for example, goal setting and strategic planning, self-monitoring, and self-evaluation); and (3) resource management strategies, students utilize resource management strategies to manage the learning environment and external resources (for example, time management, help seeking, business arrangements and managing one's learning environment). In Figure 1 shown the results SDL data obtained from observations on indicator 1 (cognitive) at each meeting.

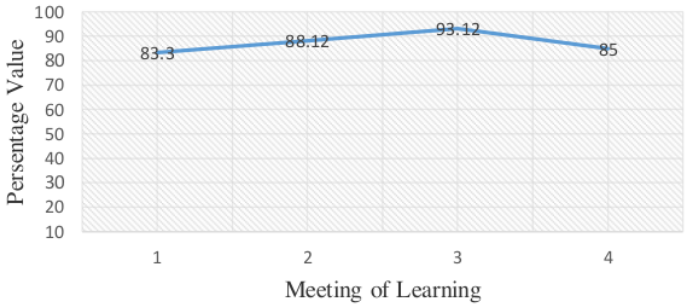

Figure 1. SDL graphic of student indicator 1 (cognitive)

In the first meeting, indicator 1 (cognitive) obtained the highest value with an average percentage value of 93.12% with the category very good at the third meeting with the material temperature in the atmosphere and the ozone layer. SDL data obtained from observations on indicator 2 (Metacognitive) at each meeting can be seen in Figure 2.

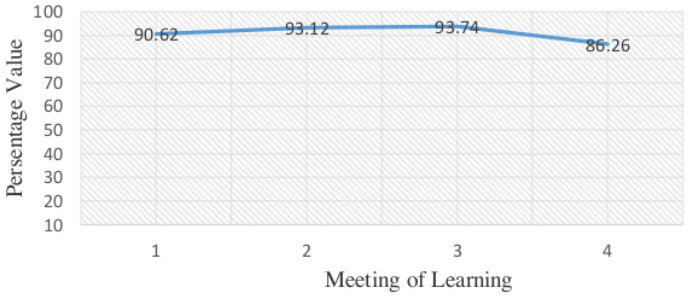

Figure 2. SDL graphic of student indicator 2 (Metacognitive)

In Figure 2 shows that at the first meeting, indicator 2 (metacognitive) obtained the highest value with an average percentage value of 93.74% with the category of very good at the third meeting with the material temperature in the atmosphere and ozone layer.

The results of observations showed that the highest learning independence occurred at the 3rd meeting (three) in the material temperature in the atmosphere and ozone layer with an average percentage value of 90.63% with a very good category. This result was obtained because students actively participated in learning enthusiastically during discussions during group work.

The lowest student learning independence occurred at the 4th (four) meeting on lithosphere material and plate tectonic theory with an average percentage value of 83.54% with a very good category. This happens because this material requires more concentration and understanding in order to understand it because the material is more difficult than the previous material.

Student learning independence data obtained from observations on indicator 3 (resource management strategies) at each meeting can be seen in Figure 3.

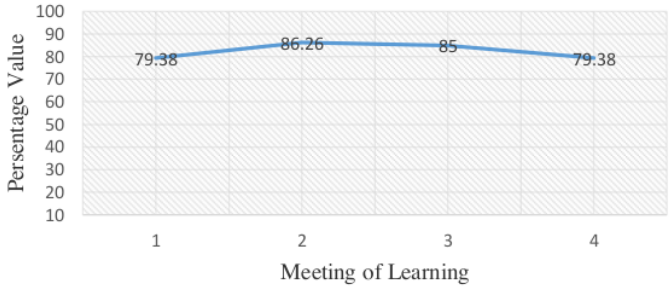

Figure 3. SDL graphic of student indicator 3 (management strategy resource)

In Figure 3 shows that at the first meeting, indicator 3 (resource management strategy) obtained the highest value with an average percentage value of 86.26% with the category of very good at the third meeting with material layers of the atmosphere and air pressure.

At each meeting learning activities for 4 (four) meetings after being analyzed in each indicator of learning independence shows that metacognitive indicators get the highest results with an average percentage value of 90.94% with a very good category. This is because students take notes on the material, researching their work by comparing with the results obtained by friends.

Indicator 1 (one), namely cognitive which includes elaboration, critical thinking, organization and training gets an average percentage value of 87.34% with a very good category. This result is obtained because students pay attention to the teacher's explanation, do the exercises and discuss well. However, the indicators of critical thinking (answering teacher questions without being appointed) still get an average percentage value that is very low, which is 38.26% with a sufficient category. This is because students are still difficult and embarrassed when answering questions that the teacher asks.

Indicator 2 (two), namely metacognitive includes strategic planning, self-monitoring, self-evaluation, and self-monitoring get an average percentage value of 90.94% with a very good battery. This result is obtained because students make notes on lessons, observe the results of learning activities, compare their work with friends, and not copy the work of peers. The awareness of one's own thoughts to direct, compare, and share learning strategies shows that students are involved in learning how learning will develop their metacognitive [13, 14]. However, in the aspect of self-monitoring, that is, not joking before completing assignments is still difficult for students to do because when in groups, students will joke and talk to each other. The aspect of self-control (not joking before completing a task) gets an average value of the lowest percentage of 71.88% with a good category.

Indicator 3 (three), namely resource management strategies including setting the learning environment, business arrangements, time management, seeking help, and learning management get an average percentage score of 82.52% with very good grades. This is because students enter class according to class time without waiting for the teacher, completing assignments on time, and asking for help from friends when they have difficulty answering questions. However, students often have not prepared textbooks and do not take advantage of free time to learn so that in the aspect of learning management (utilizing free time to study) students are still low at 38.28% with enough categories.

At all meetings, the 4th meeting (fourth) is the meeting with the lowest independence, both in cognitive indicators, metacognitive, and resource management strategies. This is because lithosphere material and plate tectonic theory are difficult materials because they explain abstract things so students must imagine and understand this material more difficult. The 4th (four) meeting is held on the 2nd day (month) of fasting at the last hour of study. Fasting can reduce sugar, cholesterol and control blood pressure [15]. Blood sugar is the main source of energy for the brain, lack of blood sugar will have an

impact on central nervous system imbalances followed by dizziness, trembling or fatigue. This situation will make it difficult for children to receive lessons well and enthusiasm for learning and reaction speed will decrease [16].

By the time the science lesson was carried out, the students were already exhausted and had lost a lot of fluids because the lesson was done at the last hour of the lesson. Fluid that is lost through sweat and is not replaced causes the plasma volume to decrease and there is a decrease in the physical and cognitive abilities of students [17-19]. In a state of fasting, the need for fluids cannot be immediately replaced so that the physical abilities of students decrease like weakness and it is difficult to concentrate when teaching and learning activities are carried out.

4. Conclusion

It was concluded that learning media e-comic earth layer effective to enhance students' Self-Directed Learning (SLD). E-comic learning media can be extended to other natural science materials as an alternative effort to improve SDL of the student.

References

[1] Fisher M J and King J 2010 *Nurse Educ Today* **30**(1) 44-48
[2] Beckers J, Dolmans D, Merriënboer J V 2016 *Australasian J. Educ of Tech* **32**(2) 32-35
[3] Taufiq M, Savitri E N, Dewi N R and Nadia I 2019 *J. Phys.: Conf. Ser.* **1321** 032105 1
[4] Abrami P C, Venkatesh V, Meyer E J and Wade C A 2013 *J. Educ Psychol.* **105**(4) 1188-1209
[5] Taufiq M, Dewi N R and Widiyatmoko A 2014 *J. Pendidik. IPA Indones.* **3**(2) 123
[6] Buchori A & R D Setyawati 2015 *Int. J. Educ and Res* **3**(9) 369
[7] Goodbrey D M 2013 *Stud. Comics* **4**(1) 185
[8] Decker AC and Castro M 2012 *Hist. Teach.* **45**(2) 169-187.
[9] Duncan R, Smith M J and Levitz P 2015 *The power of comics: History, form, and culture* (London: Bloomsbury Publishing)
[10] Azizi M and Prasetyo S 2017 *Al-Bidayah* **9**(2) 75-83
[11] Thongmak M 2013 *J. of e-learning and Higher Educ* **1**(1) 1-15
[12] Kizilcec R F, Sanagustin M P and Maldonado J J 2017 *Comput. Educ.* **104** 18-33
[13] Mariati P S 2012 *J. Pendidik. Fis. Indones.* **8**(2) 152-160
[14] Weil L G, Fleming S M, Dumontheil I, Kilford E J, Weil R S, Rees G, Dolan R J and Blakemore S J 2013 *Conscious. cogn.* **22**(1) 264-71
[15] Fatmaningrum F and Suprayitno E 2017 Doctoral dissertation Universitas 'Aisyiyah Yogyakarta
[16] Sandri S. Candrawati E. and Ragil C. A.W. 2015 *Care: J. Ilm. Ilmu Kesehat.* **3**(3) 1-11
[17] Casa D J, DeMartini J K, Bergeron M F, Csillan D, Eichner E R, Lopez R M, Ferrara M S, Miller K C, O'Connor F, Sawka M N and Yeargin S W 2015 *J. Athl. Train.* **50**(9) 986-1000.
[18] McDermott BP, Anderson SA, Armstrong LE, Casa DJ, Cheuvront SN, Cooper L, Kenney WL, O'Connor FG and Roberts WO 2017 *J. Athl. Train.* **52**(9) 877-895
[19] Ariyanti S M Y, Setyaningsih and Prasetio D B 2018 *HIGEIA* **2**(4) 635-644

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