Information literacy profile of junior high school student

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Abstract. Information Literacy (IL) is one of the important skills in 21st century. According to Partnership-21, IL includes the ability to access, evaluate, use and process information. However, there is a presumption that this skill has not been optimally trained in the science learning process. One of the reasons is the difficulty of teachers in teaching and assessing these skills. This qualitative descriptive research is a preliminary study to get the initial IL profile of students so it will be able to provide the action plan and to assess IL in science learning in the classroom. This study was conducted in one of SMPN in West Bandung Regency, which is selected by cluster random sampling. The research instruments are structured description test and observation format of learning process. Profile Analysis is measured by presentation interpretation. The results show that most students can access information, but only a small number of students have the skill to evaluate, use, and process information. Therefore, it is necessary to develop ways on improving students IL skills related to evaluate, use and process information.

1. Introduction

The current technological developments provide convenience to everyone in obtaining and disseminating information resulting in an explosion of information. The information explosion provides new demands and challenges for individuals to adapt and solve problems in choosing the right information [1-3]. The skills individuals need to adapt towards 21st century conditions are familiarly referred to 21st century skills [1, 4]. One of the 21st century skills is also popularly called as information literacy [1]. Many researchers and institutions have necessarily defined information literacy, and currently there is no definite agreement about such definition about information literacy [5]. According to the Partnership for 21st Century Skills (now the Partnership for 21st Century Learning, or P21), information literacy includes the skills of accessing, evaluating, managing information use and using ethical and legal understandings in access and use of information technology.

Literacy information is also closely related to success of today’s people, both in real-world education and in workplace [6]. In education, students need information literacy in order to follow student-oriented learning, either through inquiry, problem-based, or critical thinking approach. As well, information literacy is also a basic skill students must possess in order to master scientific literacy skills [7].
Several studies conducted in various countries indicating that information literacy skills of students were still relatively low [5, 8-10]. To investigate the matter, the present study focuses on seeking for an illustration about the profile of information literacy skills among students in junior high-level schools in Indonesia, using the essay tests as its instrument and observation format for learning process. It is performed as a basis for designing action and accessing information literacy skills in the classroom in an effort to improve literacy information skills among students.

2. Method

The current study draws special attention to acquire a highlight accorded to profile of the information literacy of junior high-level school students in science learning especially global warming. Based on these formulated objectives, qualitative descriptive research method is chosen for implementing the present formulated research. There are 278 students within this qualitative descriptive research intended as the population in one of Junior High School in West Bandung regency (medium clusters). The selected samples of this research consist of 36 students taken by cluster random sampling. Based on the number of population and samples, the formulated sampling method is considered to represent the population [11].

In this line of research, the instrument used is a description test developed based on information literacy framework of partnership 21. The framework includes indicators in accessing, evaluating, managing using information and using ethical and legal understandings in access and use of information technology. The instrument consists of 7 item questions with reliability of 0.80 that fall into the high category. Based on such mentioned values, the instrument is deemed feasible for use [12]. Analysis of information literacy profile is essentially performed through presentation technique with the categories shown in the Table 1 [12]. This profile is analysed and the results are used as information to design actions in developing information literacy.

| Interval (%) | Category   |
|--------------|------------|
| 81-100       | Very Good  |
| 61-80        | Good       |
| 41-60        | Sufficient |
| 21-40        | Deficient  |
| 0-20         | Poor       |

3. Result and discussion

3.1. Profile of information literacy

Research on this issue revealed about the profile of students’ information literacy skills based on the P21 framework including 5 fundamental skill components. Each skill component would be displaced based on the test results. With regard to this issue, Table 2 disclosed in associated with the test results of essays data of each information literacy component.

Based on the cited Table, the information literacy with good category could clearly be viewed only in accessing information component, 66.67%. At this point, the managing information components and using information to solve the problems included in the category with the acquisition of 43.52% and 55.56% respective percentage. While the components of evaluating information and using the understanding of ethics and law around the use of information relied on bad category. These two components were the worst performing components with an average score of 18.52% and 16.67%, respective percentage.
Table 2. Information literacy score based on test.

| No | Information Literacy                                              | Score  | Category |
|----|------------------------------------------------------------------|--------|----------|
| 1  | Access information efficiently and effectively                   | 66.67  | Good     |
| 2  | Evaluate information critically and competently                  | 18.52  | Poor     |
| 3  | Manage the flow of information from a wide variety of source      | 43.52  | Sufficient |
| 4  | Use information accurately and creatively for the issue or problem at hand | 55.56  | Sufficient |
| 5  | Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information | 16.67  | Poor     |

3.2. Information literacy based on observation result

The use of information literacy profiles through observation during the learning process was essentially based on literacy skill rubs, where each component of information literacy included three integrated skills categories, below, approaching and at standards. By using the literacy literature during the learning process, the chosen data were obtained from the observation results in the percentage number of students in each category. The data of students’ percentage in each assessment category could be demonstrated in the Table 3.

Table 3. Information literacy based on observation.

| Information Literacy                                                      | Below Standard (%) | Approaching Standard (%) | At Standard (%) |
|--------------------------------------------------------------------------|--------------------|--------------------------|-----------------|
| Access information efficiently and effectively                           | 40                 | 20                       | 40              |
| Evaluate information critically and competently                           | 80                 | 20                       | -               |
| Manage the flow of information from a wide variety of source              | 20                 | 80                       | -               |
| Use information accurately and creatively for the issue or problem at hand| 60                 | 20                       | 20              |
| Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information | 80                 | 20                       | -               |

Table 3 shows that the best results were only achieved on the components of accessing information with calculated 40% number of students who have reached the standard. While the rest 20% of students were still in close to standard category and the other 40% were below standard. In the evaluation, managing, and use of ethical understanding in the use of information, there has not been students reaching the standard. Under the component using information to solve the problem, there were 20% of students who have reached the standard, however there were still 60% students in below standard.

3.3. Relation between profile LI with observation result

Accessing information component based on test results were obtained in average score 66.7 / 100 and included in good category. This was in accordance with the observation results where there were well-informed 40% of students who have the ability at standard and the rest 20% of students have been particularly approaching the standard.
During the lesson, to train such literacy component, students were assigned to look for information about the causes of global warming from numerous resources. In the classroom activity, students were able to search information needed through the scientific books, as well as from articles on the internet. The component of accessing information was referred to the best component among the other information literacy components. Not surprisingly, this was possible because this skill was considered not to require high-level skills such as synthesis and evaluation. In addition, the current available learning has been able to facilitate students to develop their skills to access information. As well, there were number of students still below the standard, possibly due to lack of students’ skills in using the right keywords during seeking information on the internet.

The component in evaluating information based on the test results was obtained in average score of only 18.5/100. Nonetheless, based on observation results, the appropriate findings were also acquired. Based on the observations it was found that 80% of students were still below the standard and only the rest 20% who have the skills approaching the standard. There were no students acquiring information literacy until reaching the integrated standard. Such findings were discovering in regard to one of the lowest results when compared to other skill components.

During the lesson, to trace the components of evaluating information, students were tasked with evaluating previously obtained information about the causes of global warming. From the findings analysis of students’ answers, students were not able to evaluate in depth and not accompanied by reasons based on science concept. This was possible because of the timeliness, the lack of focus assigned tasks and instructions in evaluating the information. Returning briefly to the premises devoted by the researchers, in examining the components of evaluating the information, teachers should focus more on one of the causes of global warming which was often misinterpreted by students and provided the necessarily essential information students could welcome the evaluation based on the concept of global warming mechanism that has been studied. Moreover, students could be given information from the article on the internet that one of the causes of global warming was caused by the number of high-rise buildings with glass walls. The purpose of such method, after all, is to convey students to evaluate the truth of life-long information with explanations based on the concept of global warming that has been studied.

The component in managing the information disclosed the test results with an average score of 43.5/100, and based on the observations, no students have reached the standard. However, some 80% of students acquired literacy information approaching the standard while the rest 20% was still below the standard. In learning, students were given several sources explaining the mechanisms of global warming and the greenhouse effect. Most importantly, students were assigned to manage the information contained in both sources to produce a logical explanation of relationship between greenhouse effect and global warming. Based on test results and standard achievements on observation results, this action was considered sufficient but still required some adjustments, thus a large number of students who have been in nearly close to reaching the standard. Nonetheless, the component in using information to solve certain problem acquired the average score of 55.56/100 from the test results, and based on the results of the observations obtained only 20% of students achieving the standard.

During the lesson, students were given problems and given a reading text containing information used to solve the problem given. From the results of observation, it was found that most students were still unable to use the information provided to solve problems effectively. Students have not been able to provide sufficient evidences that could support the selected recommended solutions based on the given sources.

The component in the use of an understanding of the ethical and legal issues surrounding access to information based on the test results acquired average score of only 16.7/100. Based on the observation results obtained similar results, where 80% of students were still at below standard and only 20% who have skills nearly close to the standard. It also displaced that no students have the skills achieving the standard. Such mentioned finding was one of the information literacy components with the lowest results when compared with other skill components. In interactive classroom activities,
students were assigned to write down the reference sources of information used in accordance with the rules used. Students were given examples in writing the source of reference information. Nevertheless, students still figured it difficult to write the source correctly. It was possibly happened because the learners were not familiar with one of the types of sources used in form of research articles. To overcome this, the source of information provided to students was limited only from articles from the internet and from textbooks.

In addition, it is also necessary to provide examples in writing the source correctly, so thus students have a formulated idea in writing the source information correctly. Students’ skills to evaluate, manage, use information to solve problems, use information and use ethical understanding of information access were still very low. This was possibly happened because the term education in schools still did not facilitate students to learn these skills. In addition, the skills to evaluate, manage and use information required high-level skills that were more difficult for teaching and learning. These attempted results were similar to another study where the skills of information synthesis and evaluation relied on the lowest scores among the other information literacy components [5, 9]. In the learning process, there were other findings that most students in the class still had difficulty following the learning activities. Learning activities are designed to trace information literacy through assignments.

During the course of work, the students take a very long time than they should. This is because most students are still unable to express their opinions through writing. Students find difficulty in making sentences and composing them into scattered explanations. In addition, students are still often difficult to understand the terms in a reading. Skills in understanding the term and composing sentences are basic skills that students must have in practicing information literacy because in such activities students will be exposed to a lot of information and students are required to deliver the literacy results through writing. The low skills of students to understand the term in the reading is possible because of the poor reading habits of students. In other words, the low skills of students in preparing sentences because of lack of learning facilitating students to exercise in composing the sentences.

4. Conclusion
The findings show that the information literacy of Junior High School students was still poor. Based on the results of the essay tests provided, the category for indicator to access information was good. However, the indicator in managing and using information to solve problems were still in sufficient category. Nonetheless, the indicator in evaluating information and using ethical understanding around access information was still poor. The results obtained through such observations were also not much different from the results obtained from the tests. The information access indicator achieved the highest value of all indicators, however the lowest achievement existed on the indicators evaluating and using the ethical understanding of information access.

Based on the above results of analysis, it was found that the action in trained indicators to access the information is good. Besides, the action considered fair relied on the action in trained indicators to evaluate, manage, use information to solve problems and used the ethical understanding of information access. As already figured out in the findings above, it was also found out that the skills of students to understand the terms in reading and expressing ideas or opinions were still poor. The obvious emerged evidence also indirectly affected the skills of students in information literacy. And therefore, returning briefly to the formulated report, it is emerging necessary to design lesson plans used in this particular educational setting as further efforts in order to train or teach lessons to meet the needs of students especially in reading and disclosing ideas to improve their information literacy skills.

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References

[1] Griffin P, McGaw B and Care E 2012 *Assessment and Teaching of 21st Century Skills* (Melbourne: Springer)

[2] Sudarisman S 2015 Memahami Hakikat dan Karakteristik Pembelajaran Biologi dalam Upaya Menjuwab Tantangan Abad 21 serta Optimalisasi Implementasi Kurikulum J. Flor. 2 p 29-35

[3] Shum S and Crick R 2016 Learning Analytics for 21st Century Competencies J. Learn. Analys. 3 p 6-12

[4] Carlgren T 2013 Communication, Critical Thinking, Problem Solving a Suggested Course for All High Schools Students in the 21st Century J. Inter. 44 p 64-81

[5] Majid S 2002 Developing 21st Century School Media Resource Library for Singapore Proc. Conf. of the Intr. Assoc. of School Librarianship (Petaling Jaya)

[6] Majid S 2011 Adopting Evidence-based Practice in Clinical Decision-making: Perceptions, Knowledge nd Barriers J. Med. Librar. Assoc. 99 p 229-236

[7] Kluccevsek K M and Brungard A B 2016 Information Literacy in Science Writing: How Student Find, Identify, and Use Scientific Literature int. J. Sci. Edu.

[8] Godbey S 2017 *Testing Future Teachers: A Quantitative Exploration of Factors Impacting the Information Literacy of Teacher Education Students* (Las Vegas: Las Vegas Libraries)

[9] Chang Y, Zhang X, Mokhtar I A, Foo S, Majid S, Luyt B, and Theng Y 2012 J. Inform. Literacy 6 p 19-34

[10] Chu S K 2012 Assessing Information Literacy: A case Study of Primary 5 Students in Hong Kong Res. J. Americ. Assos. Sch. Librar. 15

[11] Sugiyono 2012 *Metode Penelitian pendidikan* (Bandung: Alfabeta)

[12] Arikunto S 2005 *Metode Penelitian Kualitatif* (Jakarta: Seagung Seto)