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## **The Representation of ICT Competencies in English Language Reading Skill Modules for Open University**

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### **Abstract**

The current global and national issues require students to upgrade their level of ICT competencies in this 21st century. To meet the new standard, there is a need to upgrade the development of the learning materials. Therefore, this study is aimed to portray the ICT competencies covered in the reading skill modules as a concern in addressing the issue of ICT competencies development in education. The qualitative content analysis is used as the method of this study. The main source of data is reading skills modules which are taken from four reading courses (Reading I, II, III, and IV) in Open University English Education Study Program. The results of this study show that 90 representations of ICT competencies are found and mostly represented in the form of Hypermedia, followed by Hyperlink, Multimedia (graphs, tables, and diagrams) and Communication Media (e-mail). The analysis of the table of ISTE NETS (2016) shows that Knowledge Constructor is the most dominant standard (74%), followed by Computational Thinker (16%), and Creative Communicator (10%).

**Keywords:** *ICT Competencies, Reading Skill Modules, UNESCO ICT CFT, ISTE NETS, Open University.*

### **INTRODUCTION**

One of the essential parts of nowadays society is Information and Communication Technology (ICT) which is defined as the arrangement of informatics technology with other, associated technologies, especially the technology of communication (UNESCO, 2002). In a very short time, ICT has changed many aspects of people's life. Many countries now see the importance of understanding and mastering the concepts and basic skills of ICT as portion of the central of education, along with reading, writing and numeracy. In addition, UNESCO (2011) claims digital literacy as a life skill. Digital literacy is found to play a central role in seven out of the sixteen literacy indicators. High values in these targeted areas definitely need the improvement of digital competence. Digital literacy has to be beyond the capability to operate computers. It includes a set of such basic skills as the digital media practice and production, information processing and retrieval, social networks participation for knowledge creation and sharing, and an extensive variety of professional computing skills (UNESCO, 2011).

In line with the claim, educational theorists and practitioners believe that digital literacy should be defined and developed with respect to general educational goals. In other words, if the use of ICT is regarded as a basic skill, it must be integrated in all parts of school instruction. Currently, ICT has been the interest of educational

studies. Numerous studies have revealed that ICT integration in the learning process is able to attract students to stay longer when doing the task (Tunstall & Gipps, 1996; David et al., 1997; Moseley et al., 1999; Pacher, 1999). Moreover, it supports students with intellectual disabilities in learning a language, particularly, in developing self-confidence and communication skills (Lankshear et al., 2000). Chappelle (2003) even suggests that ICT promotes mastery of computer skills and development of students' cultural awareness as well as personality in the target culture.

In the following year, established position has been reached by national ICT policies in both developed and developing countries. Australian Department of Education, Science, and Training reveals that educational sector is the focus of most national ICT policies (Kearns, P., & Grant, J. (2002) because education offers an effective environment for transferring new knowledge and skills to younger generation so that this can help accomplish the objectives of the national ICT policies. ICT competencies have been positioned as important general skills for Indonesian students (Indonesian Qualification Framework, SN Dikti No. 03 2020). Bachelor degree holders are required to be able to utilize knowledge and technology for problem solving. "6. *Sarjana Mengaplikasikan, mengkaji, membuat desain, memanfaatkan IPTEKS dalam menyelesaikan masalah prosedural.*" (Indonesian Qualification Framework) and "mampu menerapkan pemikiran logis, kritis, sistematis, dan inovatif dalam konteks pengembangan atau implementasi ilmu pengetahuan dan teknologi yang memperhatikan dan menerapkan nilai humaniora yang sesuai dengan bidang keahliannya;" (SN Dikti No. 03 of 2020). Thus, ICT competencies have become an inseparable part of education, as proven by the existence of these policies and regulations.

There are several uses of ICT such as tools for research, problem-solving, and creative teaching learning (Akbulut et al., 2007). Course enrichment, delivery improvement, extended methods of material presenting, and new opportunities of ICT research are some potentials enhancement of ICT in teaching and learning (Alemu, B. M., 2015). British Educational Communications and Technology Agency (Becta) believes in the positive outcomes and improvement from the integration of ICT in children teaching. The students' scores from online or blended classroom are found to dominate those from the face-to-face classroom. In addition, ICT use in language classroom is claimed to be able to increase the interest and attainment of the students. Varieties of ways on designing the implementation of educational ICT policies are made with regard to the dominant rationales of the curriculum. There are four different rationales explained by Hawkrige (1990) including economic, social, educational, and catalytic rational. These findings exactly reflect the needs for integration of ICT competencies in national education.

The integration of digital competence in education is closely related with the development of the learning materials. Materials reflect the aims, values, and methods of a certain teaching and learning situation (Hutchinson, 1987, p. 37) so that the material selection definitely represents language teacher's decision (Tomlinson, 2003). Predefined packages of materials provide a fully developed curriculum and a framework for interactive learning (Tomlinson, B., 2014). Materials, however, are not only what matters in the class but also what represent the whole language learning context as well as the stakeholders' philosophical and belief-systems (Maley, A., 2016). Teaching materials including modules, textbooks, instructions, and other prepared materials are essential in most language programs because they mainly provide the focus of the language input and practice for learners. In other words, the use of materials is a significant aspect of curriculum development in language program (Richards, J. C., 2001). Thus, in accordance with the policy and integration of ICT skills in education, language learning materials should be able to promote the ICT competencies needed by students.

There have been a number of investigations into the ICT competencies levels in English language learning materials from several educational institution across the world in order to depict comprehensive overview of the ICT competencies representations in English language learning materials, indicating the significance of conducting research in this area.

A study by Bouzid, H. A. in (2016) investigates how far Moroccan ELT textbooks can provide activities that help students develop their 21st century skills. It also includes an exploration and suggestion of activities and ways to promote the skills in the textbook. This study analyzes three Moroccan second year Baccalaureate ELT textbooks to find the extent to which these textbooks present activities that promote 21st Century Skills among learners. The focus of this study is on the significance of presenting facilitative activities for 21st century skills acquisition. Through a content analysis, the findings show that those textbooks only provide limited activities for learners' ICT skills development and tend to present the skills in a traditional way, inappropriate for the 21st century context.

Hidayat, H., & Silfiyana, L. in (2018) also conduct a similar study to explore the Mindset Refinement aspect of Curriculum 2013 (Kurtilas) implementation in the use of technology as a part of a new learning system. This study analyzes ICT-oriented tasks reflected in two English textbooks through qualitative study, specifically on the skill focus; software and hardware used; and types of activity included in the textbook. Such several steps as (1) Familiarizing and organizing, (2) Coding and reducing, and (3) Interpreting and representing the findings show that there is a difference between those two books in the way the skill focus is developed. One of them focuses the ICT-oriented tasks only on speaking and writing skills. Computing and communication equipment are the alignment of the hardware use. Both English textbooks set the use of office and multimedia software to assist students in doing ICT-oriented tasks as the main focus of software use. However, they apply it differently in terms of frequency and formulation of the activity types.

In addition, Rakhmawati, D. M., & Priyana, J. (2019) conduct similar document analysis study to reveal whether the 21st century skills are available in the English textbook for grade X senior high school and to find out how those skills are covered. The data are collected by means of checklists and investigated by calculating the number of occurrences of each 21st century skill and by identifying its strategies. Both researchers evaluate the textbook jointly by reviewing each task and determining which values and 21st century skills are covered in the tasks based on some related theories (Nunan's task components). The results show that ICT is one of the 11 skills covered in the textbook, along with critical thinking and problem solving, communication, collaboration, creativity and innovation, media literacy, leadership and responsibility, productivity and accountability, social and cross-cultural, initiative and self-direction, and flexibility and adaptability. This surely raises the awareness of textbook writers and publishers to design and publish textbooks that provide 21st century skills associated learning materials.

However, none of those studies focus on investigating the type and extent of the ICT competencies which are represented in ELT modules at university level by using a particular standard. Based on the frameworks, regulation, standards, and previous studies related to the integration of ICT competencies in ELT modules, and current condition of Indonesian teaching materials, the researchers are interested in analyzing the ICT competencies representation in ELT modules for Open University students. This present study focuses on portraying the ICT competencies in the reading skills modules in English skill subject, especially on the modules' components, based on The International Society for Technology in Education, National Educational Technology Standards (ISTE NETS) for Students (2016).

NETS for Students is a standard used in every U.S. state and many other countries to define what students needed to know about and be able to do with technology. The standard was initially published by International Society for Technology in Education (ISTE) in 1998 and then reestablished as NETS for Students in 2016. It classifies students' competencies into 7 different levels, including: Empowered Learner, Digital Citizen, Knowledge Constructor, Innovative Designer, Computational Thinker, Creative Communicator, and Global Collaborator. Further details can be seen in the following figure.

## 2016 ISTE Standards for Students

**1. Empowered Learner** Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences.

- 1.a. Students articulate personal learning goals, select and manage appropriate technologies to achieve them, and reflect on their successes and areas of improvement in working toward their goals.
- 1.b. Students identify and develop online networks within school policy, and customize their learning environments in ways that support their learning, in collaboration with an educator.
- 1.c. Students actively seek performance feedback from people, including teachers, and from functionalities embedded in digital tools to improve their learning process, and they select technology to demonstrate their learning in a variety of ways.
- 1.d. Students are able to navigate a variety of technologies and transfer their knowledge and skills to learn how to use new technologies.

**2. Digital Citizen** Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act in ways that are safe, legal and ethical.

- 2.a. Students manage their digital identities and reputations within school policy, including demonstrating an understanding of how digital actions are never fully erasable.
- 2.b. Students demonstrate and advocate for positive, safe, legal and ethical habits when using technology and when interacting with others online.
- 2.c. Students demonstrate and advocate for an understanding of intellectual property with both print and digital media—including copyright, permission and fair use—by creating a variety of media products that include appropriate citation and attribution elements.
- 2.d. Students demonstrate an understanding of what personal data is and how to keep it private and secure, including the awareness of terms such as encryption, HTTPS, password, cookies and computer viruses; they also understand the limitations of data management and how data-collection

**3. Knowledge Constructor** Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.

- 3.a. Students demonstrate and practice the ability to effectively utilize research strategies to locate appropriate digital resources in support of their learning.
- 3.b. Students practice and demonstrate the ability to evaluate resources for accuracy, perspective, credibility and relevance.
- 3.c. Students locate and collect resources from a variety of sources and organize assets into collections for a wide range of projects and purposes.
- 3.d. Students explore real-world issues and problems and actively pursue an understanding of them and solutions for them.

**4. Innovative Designer** Students use a variety of technologies within a design process to solve problems by creating new, useful or imaginative solutions.

- 4.a. Students engage in a design process and employ it to generate ideas, create innovative products or solve authentic problems.
- 4.b. Students select and use digital tools to support a design process and expand their understanding to identify constraints and trade-offs and to weigh risks.
- 4.c. Students engage in a design process to develop, test and revise prototypes, embracing the cyclical process of trial and error and understanding problems or setbacks as potential opportunities for improvement.
- 4.d. Students demonstrate an ability to persevere and handle greater ambiguity as they work to solve open-ended problems.

**5. Computational Thinker** Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

- 5.a. Students practice defining problems to solve by computing for data analysis, modeling or algorithmic thinking.
- 5.b. Students find or organize data and use technology to analyze and represent it to solve problems and make decisions.
- 5.c. Students break problems into component parts, identify key pieces and use that information to problem solve.
- 5.d. Students demonstrate an understanding of how automation works and use algorithmic thinking to design and automate solutions.

**6. Creative Communicator** Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.

- 6.a. Students select appropriate platforms and tools to create, share and communicate their work effectively.
- 6.b. Students create original works or responsibly repurpose other digital resources into new creative works.
- 6.c. Students communicate complex ideas clearly using various digital tools to convey the concepts textually, visually, graphically, etc.
- 6.d. Students publish or present content designed for specific audiences and select platforms that will effectively convey their ideas to those audiences.

**7. Global Collaborator** Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.

- 7.a. Students use digital tools to interact with others to develop a richer understanding of different perspectives and cultures.
- 7.b. Students use collaborative technologies to connect with others, including peers, experts and community members, to learn about issues and problems or to gain broader perspective.
- 7.c. Students determine their role on a team to meet goals, based on their knowledge of technology and content, as well as personal preference.
- 7.d. Students select collaborative technologies and use them to work with others to investigate and develop solutions related to local and global issues.

Figure 1. ISTE NETS 2016 Indicators

## RESEARCH METHOD

This study implemented the qualitative content analysis method proposed by Mayring (2000, p.2), saying that qualitative content analysis is “an approach of empirical, methodological controlled analysis of texts within their context of communication, following content analytic rules and step by step models, without rash quantification”. Descriptive design is used to enable the data worked through with “a deductively formulated category system” and registered “in a nominal way or in category frequencies” (Mayring, P., 2014, p. 12).

The data of this study were ICT competencies representations available in five components of modules, they are General Instructional Objectives, Learning Materials/Contents, Exercises, Summary of the Topic, and Formative Test, which were sourced from reading skill modules taken from four English Reading courses (Reading I, II, III, and IV) of English Education Study Program (EESP) in Open University. The data were then analyzed in a table adapted from the seven standards by ISTE NETS for Students (2016), comprising such indicators as Empowered Learner, Digital Citizen, Knowledge Constructor, Innovative Designer, Computational Thinker, Creative Communicator, and Global Collaborator.

The researchers carried out the study by the following steps. First, the data were examined based on the categories: forms and module components. Then, the data were verified by classifying them into a column based on the levels of the course and the seven standards by ISTE NETS for Students. After that, the dominant ICT competencies representations were selected based on the calculation. Finally, findings were described and conclusion was drawn by writing a qualitative description on the dominant frequencies for its cognitive and knowledge dimension referring to seven standards by ISTE NETS (2016).

## RESULTS AND DISCUSSION

### A. Results

ICT Competencies Representations					
The module components	Data (Forms)				Total
	Hypermedia	Hyperlink	Multimedia	Communication Media	
General Instructional Objectives	-	-	-	-	-
Contents	-	14	2	1	17
Exercises	19	10	10	6	45
Formative Test	19	5	2	2	28
Total	38	29	14	9	<b>90</b>

Table 1. Frequencies of ICT Competency Representations in All Reading Skill Modules

Analysis of the components in all modules shows that ICT competencies in four Open University EESP Reading courses modules (Reading I, II, III, and IV) are represented in several forms, including: Hypermedia, Hyperlink, Multimedia, and Communication Media, and distributed in three components of the modules, they are: Contents (17), Exercises (45), and Formative Test (28).

The occurrence of hypermedia format in all four reading skill modules is the highest with 38 occurrences out of total 90 data. This form is distributed in Exercises (19 data) and Formative Test (19 data). The figure below is an example of the data available in Unit 12 “Reading for Specific Information” of Reading I module.

**Latihan 4**

Study this advertisement and answer some questions below.

Item	Category	Price
<b>Mindy Smith - Amos Lee</b>	Concerts & shows	\$42
Wanted to Buy: Two Reserved Floor Tickets to Mindy Smith/Amos Lee Concert on 12/10/06. <a href="#">Moore Theater</a> . Will pay premium for good seats. Please call (206) 919-6313. <a href="#">More details</a>		
<b>Mindy Smith Concert</b>	Concerts & shows	\$42
Wanted: Two good floor seats Amos Lee/Mindy Smith concert at Moore Theater 12/10/06. Will pay reasonable premium. Please call (206) 919-6316, anytime. <a href="#">More details</a>		
<b>Mindy Smith Concert 12/10/06</b>	Concerts & shows	\$40
Wanted: (2) good floor seats to Mindy Smith/Amos Lee concert 12/10/06 at Moore Theater. Will pay reasonable premium based on seating position in theater. <a href="#">More details</a>		
<b>Silvia Browne Tickets</b>	Concerts & shows	-

Figure 2. Extract of Hypermedia

The ICT competencies representation in the modules is also found in the form of Hyperlink (29 out of 90 data). It is available in three different components of the modules: Contents (14 data), Exercises (10 data), and Formative Test (5 data). This example below is taken from Unit 4 “Understanding Paragraph” of Reading I module.

You will have to present an example almost in every sentence, and to avoid repetitions, use 7 English exemplifiers (for example, for instance, namely, that is, including, such as, and like.) You can also use colons instead of them. Following the basic structure of essay you can arrange your own as you wish. Add a personal touch to bring vitality to your essay. And finally, remember that your illustration essay is as effective as its examples.  
<http://www.bestessays.com/bookreports.php> (tgl:16-04-2009)

Figure 3. Extract of Hyperlink

The next ICT competencies representation is in the form of Multimedia (graphs) with 14 occurrences out of 90 data. The still graphics (graphs, tables, and diagrams) or multimedia forms are distributed in the Contents (2), Exercises (10), and Formative Test (2) components of Reading II module. The following extract of material is available in Unit 11 “Reading Visuals” of Reading II module.

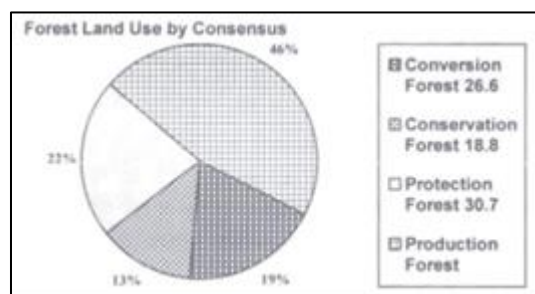


Figure 4. Extract of Multimedia

The last ICT competencies representation is in the form of Communication Media (e-mail) with 9 occurrences out of 90 data. This form is distributed in the Contents (1 data), Exercises (6 data), and Formative Test (2 data). This example is taken from Unit 12 “Applying Reading Skills” of Reading I module.

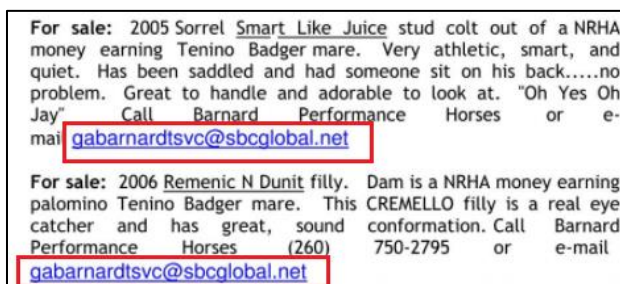


Figure 5. Extract of Communication Media

Closer look to the results of ICT competencies representation in Reading I module shows that the percentage of Hypermedia is the highest with total 89% (38 out of 43 data). Besides, the other ICT competencies are represented in the form of Hyperlink, and Communication Media with a very limited percentage of the data, 7% (3) and 5% (2) out of 43 data. Moreover, there is no representation of ICT competencies in the form of Multimedia in the module of Reading I course. See the following table.

Reading I Module					
The module components	Data (Forms)				Total
	Hypermedia	Hyperlink	Multimedia	Communication Media	
General Instructional Objectives	-	-	-	-	-
Contents	-	1	-	-	1
Exercises	19	2	-	2	23
Formative Test	19	-	-	-	19
Total	38	3	-	2	43

Table 2. Frequencies of ICT Competency Representations in Reading I Course

The analysis result on Reading II module shows that the percentage of Multimedia as the form of ICT competencies representation is the highest with total 52% (14 out of 27 data). Besides, the other ICT competencies are represented in the form of Communication Media and Hyperlink with lower percentage of 26% (7) and 22% (6) out of 27 data. Moreover, there is no representation of ICT competencies in the form of Hypermedia in the module of Reading II course. See the following table.

Reading II Module					
The module components	Data (Forms)				Total
	Hypermedia	Hyperlink	Multimedia	Communication Media	
General Instructional Objectives	-	-	-	-	-
Contents	-	2	2	1	5
Exercises	-	3	10	4	17
Formative Test	-	1	2	2	5
Total	-	6	14	7	27

Table 3. Frequencies of ICT Competency Representations in Reading II Course

Different results can be seen from the analysis of Reading III and IV modules that reveals that the ICT competencies representations are only found in the form of Hyperlink with total 100% (18 out of 18 data) in Reading III module and 100% (2 out of 2 data) in Reading IV module. See the following tables.

Reading III Module		
The module components	Data (Forms)	Total

	Hypermedia	Hyperlink	Multimedia	Communication Media	
General Instructional Objectives	-	-	-	-	-
Contents	-	10	-	-	10
Exercises	-	5	-	-	5
Formative Test	-	3	-	-	3
<b>Total</b>	-	<b>18</b>	-	-	<b>18</b>

Table 4. Frequencies of ICT Competency Representations in Reading III Course

<b>Reading IV Module</b>					
The module components	Data (Forms)				Total
	Hypermedia	Hyperlink	Multimedia	Communication Media	
General Instructional Objectives	-	-	-	-	-
Contents	-	1	-	-	1
Exercises	-	-	-	-	-
Formative Test	-	1	-	-	1
<b>Total</b>	-	<b>2</b>	-	-	<b>2</b>

Table 5. Frequencies of ICT Competency Representations in Reading IV Course

Analysis on seven standards of ISTE NETS for Students available in Reading I module shows that the module only represents two out of seven standards, they are Knowledge Constructor and Creative Communicator. From a total of 43 ICT competencies occurrences, Knowledge Constructor standard dominates with 95% percentage (41 data) found in three components of the module: Contents (1 data), Exercises (21 data), and Formative Test (19 data). The other standard, Creative Communicator, is only found in the Exercises component with only 5% percentage (2 data). The rest five standards are not found in any components of the module of Reading I.

<b>Reading Module I</b>					
ISTE NETS 2016	The Module Components				Total
	General Objective	Contents	Exercises	Formative Test	
Empowered Learner	-	-	-	-	-
Digital Citizen	-	-	-	-	-
Knowledge Constructor	-	1	21	19	41
Innovative Designer	-	-	-	-	-
Computational Thinker	-	-	-	-	-
Creative Communicator	-	-	2	-	2
Global Collaborator	-	-	-	-	-
<b>Total</b>	-	<b>1</b>	<b>23</b>	<b>29</b>	<b>43</b>

Table 6. Table Analysis of ISTE NETS (2016) in Reading I Module

The Reading II module has a total of 27 ICT competencies with three out of seven standards of ISTE NETS for Students identified, they are Knowledge Constructor, Computational Thinker, and Creative Communicator. Computational Thinker standard becomes the most dominant standard in this module with 52% occurrences (14 data) detailing in three components of the module: Contents (2 data), Exercises (10 data), and Formative Test (2 data). The second highest standard is the Creative Communicator with 26% occurrences (7 data) found in three components of the modules: Contents (1 data), Exercises (4 data), and Formative Test (2 data). The least number of standard is Knowledge Constructor standard with 22% occurrences (6 data) found in three components of the modules: Contents (2 data), Exercises (3 data), and Formative Test (1 data). The rest four standards are not available in any components of the module of Reading II.



Reading Module II					
ISTE NETS 2016	The Module Components				Total
	General Objective	Contents	Exercises	Formative Test	
Empowered Learner		-	-	-	-
Digital Citizen	-	-	-	-	-
Knowledge Constructor	-	2	3	1	6
Innovative Designer	-	-	-	-	-
Computational Thinker	-	2	10	2	14
Creative Communicator	-	1	4	2	7
Global Collaborator	-	-	-	-	-
<b>Total</b>	-	<b>5</b>	<b>17</b>	<b>5</b>	<b>27</b>

Table 7. Table Analysis of ISTE NETS (2016) in Reading II Module

The Reading III module shows lower number of data with a total of 18 ICT competencies with only one out of seven standards of ISTE NETS for Students available, which is Knowledge Constructor with 100% percentage (18 data). They are found in three components of the Reading III module: Contents (10 data), Exercises (5 data), and Formative Test (3 data). The other six standards are not found in any components of the module.

Reading Module III					
ISTE NETS 2016	The Module Components				Total
	General Objective	Contents	Exercises	Formative Test	
Empowered Learner	-	-	-	-	-
Digital Citizen	-	-	-	-	-
Knowledge Constructor	-	10	5	3	18
Innovative Designer	-	-	-	-	-
Computational Thinker	-	-	-	-	-
Creative Communicator	-	-	-	-	-
Global Collaborator	-	-	-	-	-
<b>Total</b>	-	<b>10</b>	<b>5</b>	<b>3</b>	<b>18</b>

Table 8. Table Analysis of ISTE NETS (2016) in Reading III Module

The lowest percentage of ICT competencies representation is on the Reading IV module with a total of 2 occurrences, represented only on one out of seven standards of ISTE NETS for Students, that is Knowledge Constructor with 100% percentage (2 data) in two module components: Contents (1 data) and Formative Test (1 data). No ICT competency is represented on the other six standards.

Reading Module IV					
ISTE NETS 2016	The Module Components				Total
	General Objective	Contents	Exercises	Formative Test	
Empowered Learner	-	-	-	-	-
Digital Citizen	-	-	-	-	-
Knowledge Constructor	-	1	-	1	2
Innovative Designer	-	-	-	-	-
Computational Thinker	-	-	-	-	-
Creative Communicator	-	-	-	-	-
Global Collaborator	-	-	-	-	-
<b>Total</b>	-	<b>1</b>	<b>-</b>	<b>1</b>	<b>2</b>

Table 9. Table Analysis of ISTE NETS (2016) in Reading IV Module

## B. Discussion

Based on the finding's description above, there are several things that could be noted down. The analysis of four reading skill modules shows that ICT competencies are represented in the modules in the form of Hypermedia, Hyperlink, Multimedia, and Communication Media. This result supports the language learning materials that promote the ICT competencies needed by students. The analysis reveals that Hypermedia contributes the highest percentage in the form of ICT competencies among other forms of ICT competencies. Since hypermedia or hypertext makes links between 'bits' of information (Tomlinson, B., 2014), it makes sense that hypermedia is distributed mostly in the Exercises and Formative Test components. It is found that the link is embedded in some words, such as "More details", so that by clicking on particular words, it will take the reader to the related website for further detailed information of the material.

The second highest ICT competencies representation is in the form of Hyperlink found in all Reading modules for EESP students in Open University. The Hyperlink or link are explicitly provided in the modules as the information of the original sources of the materials on the website so that they can be accessed by clicking on the link. In performing both Hypermedia and Hyperlink related activities, students are implementing the ICT competencies, especially the one stated by Kołodziejczak & Roszak (2017, p. 16), in which they get through automatic subsequent stages between the browser and other network applications as an effort to comprehend the conveyed messages. In addition, it is also stated that the students will acquire knowledge and skills through searching, gathering, selecting, and processing information from various sources, and participation (Official Gazette of the Republic of Poland, 2009). This is in line with the statement in UNESCO (2008), which defines ICT competencies as "a set of knowledge and skills which enable someone to make an effective use of ICT in order to acquire, process, and present information to give support to activities among various groups of people for working".

The third is Multimedia form which is only found in the Reading II module, specifically in Unit 11 because it is closely related with the topic "Reading Visual". In this unit students are expected to be able to read graphs, tables, diagrams, and maps. Therefore, the Multimedia (graphs, tables, and diagrams) found are mostly in the students' activity to analyze graphs, tables, and diagrams. As stated by Tomlinson (2014) learning material can include a variety of media, such as: static text, animated text sound, voice, still graphics (photos, illustrations, diagrams, icons, maps, etc.), animated graphics, and video. Students ICT competencies is indirectly developed in that they are given the examples of how information are presented in the digital form and they are also involved in the activity of reading and analyzing the graphs, tables, and diagrams. As stated in UNESCO (2011), identifying and describing the functions and purpose of graphics are included in the ICT competencies. Unfortunately, the other three modules do not include any graphs, tables, and diagrams to facilitate better learning.

Moreover, Communication Media in the form of e-mail is also found in the modules. This is in line with Tomlinson, B. (2014) who mentions email as one of the means of communications.. E-mail format is mostly found in the reading materials related to advertisement. Students are given the examples of advertisements that mention e-mail address as the media of communication. In other words, the modules provide a context for real-world communication and authentic interaction of e-mail. Therefore, this kind of information will make students more familiar with the practical use of e-mail in the real life.

In terms of module components, the findings show that ICT competencies are mostly found in the Exercises component (55 data), followed by Formative Test (38 data) and Contents (17 data). This is because the modules provide more examples and activities with various usage of ICT in the Exercise. This surely allows students' active engagement when doing the exercise to help them understand the materials and improve their ICT competencies better.

Looking at the results based on the levels of module, the highest number of ICT competencies representation is in the module of Reading I and the lowest number is in the module of Reading IV. In other words, the number of ICT competencies representations is decreasing as the complexity level of the Reading course increases. From these findings, the researchers assume that the ICT competencies are less needed in the Reading III and IV. This is because the modules in Reading III and IV focus more on developing the skill of reading itself which affect the reading materials provided in the modules.

The analysis table of ISTE NETS for Students (2016) with its seven standards is used to figure out which ICT competencies are represented in the Reading Skills modules for Open University students. Knowledge

Constructor is generally the most dominant (74% or 67 out of 90 total ICT competencies representations), occurs in all Reading modules, and is represented in the form of hypermedia and hyperlink. It means these forms initiate and enable students to do an advance searching in the learning to construct more detailed knowledge. This is in line with the indicator of the Knowledge Constructor, which requires the students to critically explore various resources using digital tools to construct knowledge. In other words, through the provided hypermedia and hyperlink in the Reading modules students could plan and make use of effective research strategies to locate information and other resources for their intellectual or creative interests. Students are also able to evaluate the accuracy, perspective, credibility, and relevance of information, media, data, or other resources.

It is also revealed that a total of 14 data with 16% of total occurrence which are only found in the Reading II are classified into the Computational Thinker. This standard is represented in the form of Multimedia (graphs, tables, and diagrams) which are mostly available in the Exercises, Contents, and Formative test where the students are involved in activities to analyze graphs, tables, and diagrams. The findings match the indicator of the Computational Thinker, where students develop and employ strategies for understanding and solving problems with technological methods. The provided media (graphs, tables, and diagrams) help the students to practice how to collect and identify or analyze certain data, become the examples of how certain data are represented in various ways, and let the students learn how to solve problems and make decisions.

Moreover, the remaining 10% (9 data) are classified in the Creative Communicator which are mainly represented in the form of Communication Media (e-mail) which are found in the Contents, Exercises, and Formative Test of the Reading I and II modules. The e-mail format is used for students to select the appropriate platforms to meet the desired communicative purposes. Students learned different uses of e-mail which will deepen their knowledge and awareness of the usage of e-mail in various context.

## CONCLUSION AND RECOMMENDATION

This study focused on portraying the ICT Competencies covered in the Reading skill modules as the representation of the concerns in addressing the issue of ICT competencies development in education. Content Analysis was used as the research method to analyze the four Reading Skill modules for Open University students based on the seven standards proposed by ISTE NETS for Students (2016).

The results of this study showed that ICT competencies were mostly represented in the form of Hypermedia, followed by Hyperlink, Multimedia, and Communication Media. In addition, Multimedia format was only found in the Reading II module which is closely related with understanding graphs, tables, and diagrams. Moreover, the highest number of ICT competencies representation was in the Reading I module and the lowest number was in the Reading IV module. Besides, the analysis using the table of ISTE NETS for Students (2016) standards showed that, Knowledge Constructor is the most dominant standard (74%) which is intended to initiate students to be critically resourceful using ICT to construct knowledge. In addition, Computational Thinker are also represented 16% in the modules to help the students practice how to collect and identify or analyze the data and also became the examples of how data was represented in numerous ways to enable problem-solving and decision-making. Meanwhile, Creative Communicator standard is also represented in the Reading modules even though it comes with a limited number of 10% occurrences. Yet, the students still get the chance to practice how to choose the appropriate platforms to meet the desired objectives in communication. Unfortunately, the results show that other standards have not been represented in the Reading skill modules.

Eventually, regarding the limitation of this study, the writers found that there are still many ICT competencies in the English learning materials to explore. Thus, future researchers might consider the following suggestions for the future research. First, since this study has presented the table analysis of ISTE NETS for Students (2016) standards, the future researchers may develop the collaboration table analysis as one of the references and considerations in designing 21st century ELT materials. Second, this study might be used as a source for further research which has topic in ICT competencies in English learning materials. Last but not least, future researchers may conduct similar research using the modules from different institutions under the same department (e.g. English Language Education).

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