INTEGRATING DIGITAL LITERACY INFUSED ENGLISH READING MATERIALS FOR SENIOR HIGH SCHOOL: A NEED ANALYSIS

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Abstract: Digital literacy is crucial for success in today's digital era, where everything is surrounded by digital technologies, tools, and services. This study aimed to evaluate the effectiveness and see the way digital literacy is infused into English reading materials. The study was conducted at senior high schools in Bekasi, Indonesia. This qualitative study employed content analyses consisting of 71 English reading materials found in an English textbook for senior high school. The findings showed that the highest levels of digital literacy—assessing information of 24 and integrating information of 14—were integrated into the digital literacy descriptors, while others were not incorporated into the digital literacy at all. Furthermore, the digital literacy in English reading materials was integrated in many ways, such as including social media content, online pictures (4), 1 infographic, and 5 video links assessed. Furthermore, the researcher suggests that future teachers and writers should prioritize digital literacy for creating effective learning materials, as it is crucial in today's digitally driven era to integrate students' digital literacy. The researcher emphasizes the importance of future teachers and writers prioritizing digital literacy for creating effective learning materials in today's digital era.

Keywords: Digital Literacy, English Reading Materials, English Textbook.

INTRODUCTION

In the digital age, UNESCO highlighted the significance of digital literacy as a critical set of competencies required to secure social inclusion and obtain employment possibilities. Digital literacy is the ability to use digital devices, networks, and communication tools to create and share information, interact with others, and solve problems (UNESCO, 2018). In addition, digital literacy is also crucial in education to prepare students for future careers because it equips them with essential skills required in modern workplaces, such as proficiency with digital tools and technologies, effective communication, critical thinking, and problem-solving abilities.

The integration of digital literacy into English reading materials is essential for senior high school students to prepare them for the demands of the 21st-century digital world. By infusing digital literacy components into English reading materials, educators can help students develop a comprehensive set of skills that enable them to navigate the digital landscape confidently, engage with online resources, and effectively communicate their ideas in the digital realm (Saunders & Gero, 2020).

Moreover, Josie et al. (2018) identified five areas of digital literacy such information literacy, computer literacy, media literacy, communication literacy, and technological literacy.

These areas help students navigate digital content, operate digital hardware and software, interact with media, and adopt various technologies. By incorporating these digital literacies into education empowers students to communicate and collaborate effectively, while also enabling them to access information across diverse digital platforms. This not only prepares them for academic success but also equips them for rewarding careers and active participation in an ever-evolving digital society.

Furthermore, digital literacy is not fully integrated into 36 English learning materials, with only 16 incorporating digital literacy indicators and others lacking it in instruction, task, text (Nadila Farah Agusprayuningtyas, 2022). However, in the digital age, English learning materials should focus on teaching digital skills alongside language skills to prepare students for an online and globally connected world. In addition, publishers and curriculum developers should also modernize content with a stronger focus on digital proficiency. So that students do not miss out on the increasingly developing world of technology. Next, Dewanti, R., Febri, B., & Solihat, D. (2022) examined digital literacy in vocational high school English learning materials. The findings indicated that all literacy skills were included in the learning materials, with the exception of citizenship and safety. The findings also highlighted a crucial area for curriculum development by integrating the digital literacy components to enhance the effectiveness of learning materials in preparing students for the complexities of the digital world.

Palupi, T. M., & Subianto, K. A. (2024) examined the incorporation of digital literacy in EFL learning materials in junior high school. The findings demonstrated the importance of digital literacy in English language learning materials. The digital literacy elements have also been incorporated into English language learning resources. Thus, the potential incorporation of digital literacy can enhance students' skills in evaluating digital information and addressing technology challenges. Based on the previous research above, the research filled the gap to investigate the development of digital literacy infused English reading materials for senior high school students. The researcher formulated the research questions such *as (1). To what extent has digital literacy been integrated into English reading material for senior high school students? (2) How is digital literacy infused into English reading materials for senior high school students?*

METHOD

Research Design

This study employed a needs analysis method (Trilling & Jonkman, 2018) to examine the integration of digital literacy in existing English reading materials for senior high school students. Through content analysis of English reading materials from senior high school textbooks published by the Indonesian Ministry of Culture and Education in 2022, this research

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investigated the alignment of these materials with digital literacy descriptors. The analysis focused on English reading materials from the tenth, eleventh, and twelfth grades, aiming to identify the integration of digital literacy-infused English reading materials. In addition, the method of utilizing digital literacy descriptors was designed to see the way digital literacy infused English reading materials by using ICT tools such as social media, infographics, and video links for the tenth, eleventh, and twelveth grades of senior high schools.

FINDING AND DISCUSSION

Through a need analysis, this study is aimed at gaining insights into the development of digital literacy integrated into the English reading materials. The results section presents the research findings, including an analysis of existing English reading materials based on digital literacy descriptors. Next, the following table 1 provides the digital literacy descriptors used to integrate the existing English reading materials found in the English textbooks of senior high school in the tenth, eleventh, and twelveth grades. Those descriptors were used as guidelines for the analysis of the existing materials.

1. *To what extent has digital literacy been integrated into English reading material for senior high school students?*

Table 1: Digital Literacy Descriptors Adopted from (Rahman, A., Al-Qasri, S., & Ofara, W. (2023)

Aspects	Indicators	Code
Assessing Information	Students are able to identify sources, retrieve and collect information.	DL1
Managing Information	Students are able to organize and classify information, assessing the validity and authenticity of the information resources.	DL2
Evaluating Information	Students are able making judgements about the information adequacy, currency, usefulness, relevance, and efficiency.	DL3
Integrating Information	Students are able to interpret and representing the information using ICT tools and requiring to summarize, compare, contrast information from multiple sources (visual and verbal information) such as text, charts, and images.	DL4
Creating Information	Students are able to generate new information digitally by adapting, applying, designing, inventing and authoring information.	DL5

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Communicating Information	Students are able to transmit information faster, more persuasive, and to wide audience using the most appropriate and relevant media in order to adapt and present information properly in a variety of digital literacy context and sociocultural context.	DL6

Table 2. The occurrence of digital literacy in the existing English reading materials

No	Digital Literacy Descriptors	Number	Percentage
1.	Assessing Information: Students are able to identify sources, retrieve and collect information.	24	34%
2.	Managing Information: Students are able to organize and classify information, assessing the validity and authenticity of the information resources.	14	20%
3.	Evaluating Information: Students are able making judgements about the information adequacy, currency, usefulness, relevance, and efficiency.	1	1,4%
4.	Integrating Information: Students are able to interpret and representing the information using ICT tools and requiring to summarize, compare, contrast information from multiple sources (visual and verbal information) such as text, charts, and images.	20	28,1%
5.	Creating Information: Students are able to generate new information digitally by adapting, applying, designing, inventing and authoring information.	3	4,22%
6.	Communicating Information: Students are able to transmit information faster, more persuasive, and to wide audience using the most appropriate and relevant media in order to adapt and present information properly in a variety of digital literacy context and sociocultural context.	9	13%
Total		**71**	**100%**

Table 2 showed the occurrences of each digital literacy indicator in the English reading material for senior high school students, which has been analyzed by the researcher. Based on the content analysis of senior high school English textbooks for X, XI, and XII grade students published by the Indonesian Ministry of Culture and Education in 2022, it was found that there

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were 15 topics in the English textbooks. The tenth grade English textbook has six topics, the eleventh grade has five topics, and the twelveth grade has four topics. Some were identified as having potential for integrating digital literacy competencies. Upon matching these findings with the digital literacy descriptors, it was found that some English reading materials consisting of assessing, managing, evaluating, integrating, creating, and communicating information as the following explanations:

Fifteen English learning materials were assessed, categorized from 1 to 6 based on digital literacy descriptors. The analysis revealed that the highest digital literacy indicators observed were in tables 1 and 4. Table 1 represents (DL1), where 24 questions with a percentage of 34% demonstrated proficiency in assessing information, indicating a strong ability to identify sources, retrieve, and collect information. The first indicator *"assessing information"* related to the picture of Maudy Ayunda in the social media platform. The evidence can be seen in the following explanations: Which one is your most preferred social media platform? *(RM11-1).* Why do you prefer that particular platform? *(RM11-1).* What's the overall purpose of her/his posts on social media? *(RM11-1),* The Blogging Algorithm Works. Read the text and then answer the question carefully. *(RM11-1).* Look at the following picture, and answer the question, "what does the statement mean?" (p.111) *(RM11-1).* After reading the text in activity 5, you can identify the purpose of the author for writing the text (p.205) (*RM*11-1). Furthermore, connect the picture with suitable phrase (p.11) *(RM12-1).* Read the text than answer the questions (p.13) *(RM12-1).* Discuss the questions in a group of 3 or 4 (p.13) *(RM 12-1).* You are going to read a text about e-money: Answer the questions below based on your experiences (p.70) *(RM 12-1). These questions are related about e-money.* You can fill the words with their proper synonyms and word class (p.114) *(RM 11-2). This exercise provides the synonyms and words class that should be filled in the blank table.* Answer the questions based on the text "Are Social Media Platform Safe?" (p.117) *(RM 12-1).* Categorize these phrases which define facts or opinions. One has been answered for you (p.126) *(RM12-1)* These statements from the text "Are Social Media Platform Safe" (p.126) *(RM12-1). This activity refers to the facts and opinion based on information of social media platform is safe or not.* What does the pictures describe? And which one has most and the least contribution to carbon footprints? (p.160). *(RM12-1) This study aimed to find and assess the information based on the picture provided.* Answer the questions based on the text "Do we need to stop eating meat? (p.166) *(RM12-1). This question refers to see the text provided to assess the indeed information.* Now, it's time to explore the communicative purpose, the schematic structures and the language features of discussion text (p.171) *(RM12-1) this question refers to the assessing information provided that is related to the schematic structures of discussion text.*

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The second indicator is *managing information*. (DL2) out of 14 questions, 20% were demonstrated to manage information (classify information, assessing the validity and authenticity of the information resources). Here is some evidences that shows the fulfillment of second indictor in English reading materials: Answer the questions based on information you get from the text (p.87) *(RM10-2)*. Carefully read the following materials. Then, listen to your teacher's explanation (p.17) *(RM11-2)*. Work individually. Read and comprehend the following text (p.71) *(RM11-2)*. Find information about how to reuse and recycle the domestic waste into useful things, and write it an infographic (p.73) *(RM11-2)*. Read the following procedure text "how to change your pin" (p.205) *(RM11-2)*. Match the word in column A with meaning in column B (p.12) *(RM12-1), Classify* these sentences into benefits or weaknesses of using e-money check. Check the correct column (p.75) *(RM12-1) This sentence is related to manage information by classifying the benefits and weaknesses of using e-money.*

The third indicator is *"evaluating information"*. It is the lowest percentage with only one question with 1,4%. The evaluating information indicators were to to make judgments about its adequacy, currency, usefulness, relevance, and efficiency. Here is some evidence that shows the fulfillment of the third indicator in English reading materials: Provide the picture about seven healthy habits for weight loss. Decide if the statements are true or false according to the infographics (p.63) *(RM10-3)*. Meanwhile, the fourth indicator is *"managing information",* The table 4 represents (DL4) which 20 questions with 28,1% percentages. It showed integration of information. This indicates their capability to interpret and represent information using ICT tools, summarizing, comparing, and contrasting data from various sources such as text, charts, and images. The following are the evidences: Watch the video about withdrawing money from an ATM machine properly. (Do you know?) Scan the following QR Code or visit the link to watch the video. https://www.youtube.com/watch?v=YpD1tJK9vIA&t=22s (p.206) *(RM11-4)*. Watch the video from (Do you know?). It is about how deposit money in an ATM machine. Scan the following QR Code or visit the link to watch the video. https://www.youtube.com/watch?v=gkgaMtZwNnI (p.207) *(RM11-4)*. Find a text about making M-Banking from a bank where you save your money, read it carefully and transfer the next into an infographic. You can find infographic templete from https://www.freepik.com/free-photos-vectors/infographic-template (p.208)*(RM11-4). Using picture of narrative text to manage and organize the information (RM12-4).* Now, it's time to explore the schematic structures and language features of narrative text (p.21) *(RM11-4)*. Scan the barcode to get a direct link or you may go to www.quizz.com and put the code number 111177837 to get to the quiz https://quizizz.com/join?gc=11177837 (p.114). *This activity used the picture and you can also assess the link provide it to know more about the information of Albert Einstein words*

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https://www.azquotes.com/quote/575807. Observe the picture (p.160) *(RM12-4). This activity presented the observation of picture related to diet emission by food.* Read and learn the vocabulary before you read the text. Consult your dictionary for further information (p.160) *(RM11-4). This activity refers to use the tool such a dictionary to understand and comprehend the text easily.*

The fifth indicator is "evaluating information". (DL5) showed three questions with 4,22% involved creating information digitally (generating new digital information involves adapting, applying, designing, inventing, and authoring information). Here is the details analysis from the English reading materials: Share your answer with your classmates (p.15) *(RM11-5).* Write your answer and explanation in your notebook (p.22) *(RM11-5).* Write your finding below (source information, title of video/news/post, country origin, and waste management system (p.63) *(RM11-5).* The sixth indicator of digital literacy *is "communicating information"* was found in the English reading material by looking at the pictures, table, and discussing it in pair and in group. The evidence can be seen in the explanation below *(RM10-6). Work in pairs.* Look at the picture and discuss what is meant by waste management with a friend who sits next to you. Write down the result of your discussion in the space provided *(RM11-6). Work in group of four.* Look at the people in the pictures. Guess who they are and what do to our earth (p.151) *(RM11-6). Work in pairs.* Look at the table. There is a clue on the left and you have to guess who she/he is. All of them are young Indonesian environmental activist. Discuss with your partner to get the answer (p.152) *(RM11-6). Work in a group of four.* Match the paragraph number on the left column with its main idea on the right column (p.155) *(RM11-6). Work in a group of four.* Read a narrative essay entitled Salsabila Khairunnisa. Find the main idea of each paragraph, then decide the author purpose (p.156) *(RM11-6). Work in pairs.* Do jigsaw reading. Read the following narrative text. Find the main idea and the author purpose (p.158) *(RM11-6). Work in pairs.* Look at the following pictures, and answer the questions. Do Think-Pair-Share (p.200) *(RM11-6).*

This study is in line with the previous research in which Josie et al. (2018) identified five areas of digital literacy: information literacy, computer literacy, media literacy, communication literacy, and technological literacy. The second previous research, Palupi and Subianto's (2024), explored the integration of digital literacy in English as a Foreign Language (EFL) learning materials for junior high school students, also in line with the present study. This study highlighted the need to infuse digital literacy into education. The findings of this study revealed that 71 questions were analyzed in the existing English reading materials. The most important digital literacy indicators were the first, which assessed information. Assessing information (DL1) showed the result of 24 questions, of which 34% were infused into English reading

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materials. The second one is integrating information (DL4), which has 20 questions with 28.1% Next, managing information (DL2) showed 14 questions with 20%. However, the lowest percentage (1.4% out of 1) was in evaluating information (DL3). The creation of information as the fifth indicator of digital literacy (DL5) showed that out of 3 questions, 4.2%. The last is communicating information (DL6). Out of 9 questions, 13% were infused into the existing English reading materials. These findings underscore the importance of assessing and integrating digital literacy indicators, particularly assessing and managing information, while suggesting areas for potential improvement, such as evaluating information and creating information, in English reading materials.

2. ***How is digital literacy infused into English reading materials for senior high school students?***

Based on the findings, integrating digital literacy indicators into English reading materials represents a significant advancement in education. While traditional English textbooks for senior high school have been valuable resources, supplementing them with digital elements such as internet-assessed pictures, social media content, infographic, and video links enriches learning experiences immensely. First, assessing the pictures of Maudy Ayunda can be seen into the first digital literacy indicator "assessing information" (DL1). The activity found in English reading materials asked to find the picture of Maudy Ayunda on social media platform such as Instagram. Next, connect the picture with suitable phrase (RM11), assessing the picture of solid waste management (RM11), provide the picture about seven healthy habits for weight loss. Decide if the statements are true or false according to the infographics (p.63) *(RM10-3)*, using picture of narrative text to manage uand organize the information *(RM12-4).* Second, infographic. The evidence of this is find the meaning of the following vocabularies in dictionary (p.113) *(RM11-4).* The last provided five video links found in the integration of information (DL4) by using ICT tools to find the information by assessing the links. Here are the following explanations: Watch the video about withdrawing money from an ATM machine properly. (Do you know?) Scan the following QR Code or visit the link to watch the video. https://www.youtube.com/watch?v=YpD1tJK9vIA&t=22s (p.206) *(RM11-4).* Watch the video from (Do you know?). It is about how deposit money in an ATM machine. Scan the following QR Code or visit the link to watch the video. https://www.youtube.com/watch?v=gkgaMtZwNnI (p.207) *(RM11-4).* Find a text about making M-Banking from a bank where you save your money, read it carefully and transfer the next into an infographic. You can find infographic templete from https://www.freepik.com/free-photos-vectors/infographic-template (p.208)*(RM11-4).* Scan the barcode to get a direct link or you may go to www.quizz.com and put the code number 111177837 to get to the quiz
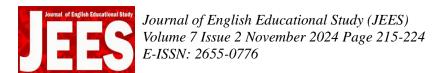
https://quizizz.com/join?gc=11177837 (p.114) *(RM11-4).* Do you agree with the statement below? "I don't like to state an opinion on a matter unless I know the precise facts (p.126) *(RM11-4). This activity used the picture and you can also assess the link provide it to know more about the information of Albert Einstein words* https://www.azquotes.com/quote/575807. Next, the findings above are in line with previous research by Dewanti et al. (2022), which found that vocational high school English learning materials include all literacy skills except citizenship and safety. They suggest curriculum development should integrate digital literacy components. However, the present study shows that not all the indicators are integrated into the existing English reading materials, and the ways in which digital literacy is integrated into the existing English reading materials are varied, such as social media contents, assessing online pictures, infographics, and video links.

CONCLUSION

This study aimed to investigate the development of digital literacy-infused English reading materials for senior high school students. This study shows that the existing English reading materials have been integrated into digital literacy for seniors in high school. However, not all of the digital literacy indicators were incorporated into the existing English reading materials. Evaluating and creating information were two of the lowest indicators found in this study. The integration of existing English reading materials into digital literacy, including social media content, 4 online pictures, 1 infographic, and 5 video links, was assessed. Furthermore, the researcher suggests that future teachers and writers should prioritize digital literacy for creating effective learning materials, as it is crucial in today's digitally driven era to integrate students' digital literacy.

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