

CHAPTER I

INTRODUCTION

1.1 Background of the research

Indonesia is facing a severe literacy crisis. Literacy is a key ability that students must acquire before exploring various types of knowledge (Helyanti et al., 2022). According to the English Proficiency Index 2024 (Education First, 2024) released by EF Education First, Indonesia is ranked 80th out of 116 countries and is categorized as a country with a low level of proficiency. This low level of proficiency shows that students' interest in reading is lacking. One factor that influences students' interest in reading is the media used. Rosmiati (2019) said children feel bored with monotonous learning media such as textbooks. The researcher felt that during the School Field Introduction activity, many students had difficulty in reading English and showed low interest in studying traditional textbooks. Thus, interest in reading should be cultivated from an early age. Therefore, children need English reading lessons that are engaging, interactive, and developmentally appropriate. To adjust students' development, reading texts should be created based on CEFR-level standards to suit each student's ability level. In addition, applying CEFR standards in reading texts can provide an appropriate foundation to support innovation in learning.

Interesting reading learning not only adjusts the level of text difficulty to the student's ability but also utilizes innovations relevant to technological developments and modern educational needs. In today's digital era, technology has become integral to daily life because it affects various aspects, including education. The integration of digital technology into early childhood education is also increasing. As said by Li et al. (2024), primary school kids today are adept at using technology, having grown up with access to the internet and its applications. With this rapid digital development, students need intelligence to use digital media to avoid negative things.

Based on the National Cyber Security Index (NCSI) report, Indonesia is among the five best countries in terms of cybersecurity in ASEAN in 2023. Indonesia earned 63.64 points out of a total of 100 points. Of the 176 countries listed in the report, Indonesia ranks 49th globally. Although it has entered the top 5 rankings, data leaks still occur frequently in Indonesia. Even more tragic is the fact that a lot of the leaked data comes from government departments (Rahma et al., 2023), which means that Indonesia's cyber security is not fully optimized. In research from UNICEF in Indonesia about Indonesian children's online habits shows that 99.4% of children use the internet for an average of 5.4 hours in a day. Furthermore, many children and parents do not have adequate online safety knowledge, with only 37.5% of children having received information on how to stay safe online. In addition, 42% of children feel uncomfortable or afraid because of their online experiences. Therefore, every individual must have the ability to digital intelligence that starts early. Equipping the Digital Intelligence Quotient (DQ) for early childhood is essential to ensure that children stay safe when using technology. DQ consists of a wide range of abilities necessary for managing the digital environment, including digital competence, which is the capacity to utilize technology responsibly, make intelligent online decisions, and avoid cyber dangers (Sriwisathiyakun, 2024).

Providing digital media that promotes DQ meaningfully is essential, making it suitable for young children to use as a learning tool. Shabiriani et al. (2023), state that children are often more interested in colorful items with lots of pictures, especially books to read. Thus, digital picture storybooks are an effective tool in learning for children (Al Kamil et al., 2023). Picture storybooks can enhance children's comprehension of the world, language abilities, and interest in reading (Silaban et al., 2024). Thus, digital picture storybooks are considered effective for children's learning media.

In addition, by incorporating interesting visual elements as well as educational and meaningful content, these digital picture storybooks can be a bridge to introduce important values to children. Meanwhile, according to Afriliani et al.

(2023), the problem facing the Indonesian people today is that many generations have started to appreciate other nation's cultures while forgetting their own. Therefore, one of the strategic steps that can be taken is to integrate local cultural themes into digital illustrated storybooks.

Integrating local culture into digital picture storybooks has significant benefits. Students gain a deeper understanding of their local culture, which can increase their appreciation of noble cultural values as well as global values that support the spirit of nationalism (Pratiwi & Suwandi, 2021). Thus, children not only read but also get moral values about the culture contained therein.

Local culture in Indonesia has many different types. Local cultures in Indonesia are diverse, reflecting the rich traditions, customs, and local wisdom of various regions. One of them is Cirebon culture, which is a unique blend of Javanese, Sundanese, Chinese, and Islamic cultural influences. The diversity of the Cirebon population in its development also presents the diversity of Cirebon culture (Dienaputra et al., 2021), such as traditional dances, batik crafts, specialty foods, customs, distinctive music, and historical places. Cirebon has its own characteristics. Thus, through interesting visual illustrations and narratives that are close to everyday life, digital picture storybooks can be an effective and fun educational tool, as well as developing children's digital intelligence quotient (DQ) abilities.

Several researchers have examined Digital Intelligence Quotient (DQ) with different focuses. The research of Tajuddin et al. (2024) focuses on the development and measurement of media literacy assessment instruments among digital natives in Malaysia. However, it only focuses on aspects of Digital Citizenship and Digital Creativity. Then, Stiakakis et al. (2019) focused on the importance of digital intelligence as a basis for digital competence. However, this study did not explain in detail all DQ competencies, only eight DQ areas. Meanwhile, Hidayat et al. (2024) examined the role of education in shaping digital intelligence as a foundation for social adaptation, innovation, and transformation in the digital age. This study did not include an extensive in-depth literature review to support comparisons with

previous research. Furthermore, Cai (2024) focuses on the importance of the Digital Intelligence Quotient (DQ) in promoting the digitalization of higher education. However, his research did not provide a detailed explanation of all aspects of the Digital Intelligence Quotient (DQ).

Overall, the literature shows that the digital intelligence significantly impacts on education, especially in improving students' skills such as creativity, competitiveness, and social adaptation. However, there are some gaps, such as not expanding the sample used to represent the population of the research object, the lack of an in-depth literature review, and the lack of a detailed explanation of the framework used. Based on some of the research issues above, the researcher will try to present research by paying attention to the existing problems in previous studies. The researcher wants to use the Digital Intelligence Quotient (DQ) framework to design the Cirebon Culture Digital Illustrated English Storybook as a learning media.

1.2 Identification of the phenomena

From the background of the research that has been explained, there are several issues that underlie this research. These issues highlight the level of literacy, learning media, the use of digital media, and local culture.

- a. lack of interest in reading in Indonesia, especially in the context of English reading, which is reflected in Indonesia's low ranking in the 2024 English Language Proficiency Index.
- b. media for reading learning which are less interesting.
- c. children's lack of safety and understanding in using digital media.
- d. students who are less familiar with local culture.

From the above issues, Students need English reading learning media that includes aspects of local culture, as well as an attractive digital-based. Therefore,

the researcher designed a book that explores local culture and analyzes it using the Digital Intelligence Quotient (DQ) framework.

1.3 Delimitation of the Research

This research focused on designing an English digital illustration storybook that integrates elements of Cirebon culture to develop a Digital Intelligence Quotient (DQ) in children. The focus of the research was limited to the development of storybooks that feature Cirebon cultural themes, such as traditional dances, customs, special foods, arts, and typical fabrics originating from Cirebon. The storybook was designed for children aged 6-12 years, as this age group is considered ideal for instilling digital literacy and cultural awareness. However, this book can be used for ages 12 and over. Then this research analyzed eight areas of Digital Intelligence Quotient (DQ), namely: digital identity, digital use, digital safety, digital security, digital emotional intelligence, digital communication, digital literacy, and digital rights. Limiting the scope of this research is expected to provide a clear picture of the development of learning tools that integrate Cirebon culture and Digital Intelligence.

1.4 Research questions

Through this study, the researcher intended to find out the process of developing a digital illustrated English storybook design in promoting the digital intelligence quotient. The researcher formulated the following research questions:

- a. What are the characteristics of the developed Digital Illustrated English Storybook?
- b. How are the design and development processes of the Digital Illustrated English Storybook?
- c. How do the experts view the achievement of Digital Intelligence Quotient (DQ) in the Digital Illustrated English Storybook developed?

1.5 Aims of the research

In accordance with the research problem, this study aimed to develop “local culture” themed English books for elementary to junior high school levels. However, to be more detailed, the research aims were made based on each of the research questions above:

- a. To identify the characteristics of the developed Digital Illustrated English Storybook.
- b. To describe the design development process of the Digital Illustrated English Storybook.
- c. To find out the expert opinion regarding the achievement of Digital Intelligence Quotient (DQ) in the developed Digital Illustrated English Storybook.

1.6 Significances of the research

This research is expected to benefit students, English teachers, and other researchers. The results of the digital illustrated storybook development can be used in the English teaching and learning process. Specifically, the benefits of this research are as follows:

6.1 Theoretically

This research can be useful in contributing to the development of literature in the fields of education, culture, and digital technology. This research supports digital literacy theory by showing how local cultural elements, such as Cirebon culture, can be integrated into learning media to improve the Digital Intelligence Quotient (DQ).

6.2 Practically

The practical significance of this study encompasses a wide variety of individuals and groups within the education sector. In particular, the results of this study are expected to benefit students, English teachers and future researchers in a meaningful way.

1) For Students

The researcher hopes that the final product of this research can be used and motivate students in learning to read English Storybook.

2) For English Teachers

The researcher hopes that English teachers can use this final product as an English learning tool in the classroom.

3) For Future Research

This research is likely to assist other researchers in providing knowledge on similar issues with a different perspective.

1.7 Theoretical foundation

The theoretical foundation of this research explores the intersection between digital literacy, cultural education, and digital intelligence quotient (DQ) by designing a digital illustrated English storybook of Cirebon culture. This research draws on theories about reading, storybooks, Intelligence, and culture, which contain other points with more detailed explanations.

1.7.1 Definitions of Reading

Reading skills are essential for all students and individuals (Puspita & Syamsi, 2019). According to Hakim and Wahyuni (2024), reading means gaining knowledge and information from written language, including words, symbols, and images. Reading activities foster a relationship between the reader and the text, allowing the reader to better understand the ideas presented in the book (Sasabone, 2023)

1.7.1.1 English Reading Learning

Reading skill is one of the skills learned in English lessons at school. Because students' capacity to progress and finish their education will be significantly impacted by their reading proficiency Hakim & Wahyuni (2024). Reading learning has other benefits, as stated by Fahmi et al (2020), students benefit significantly from

expanding their prior knowledge in order to prepare for the learning process in the classroom.

1.7.1.2 Ensuring Reading Material Suitability with CEFR Standards

CEFR is a framework developed by the Council of Europe. First published in 2001, the CEFR provides a comprehensive, logical, and understandable explanation of language proficiency in terms of language use (Council of Europe, 2022). The five communication skills; listening, reading, spoken interaction, spoken production, and writing are distinguished by the CEFR, which is based on worldwide global scales Krishnan & Yunus (2019). There are six levels of language proficiency, starting from A1 and A2 (basic user), B1 and B2 (independent user), C1 and C2 (proficient user).

The CEFR's common reference levels and illustrative scales can be used to construct curricula and syllabuses, textbooks and other teaching/learning materials, examinations, and other assessment forms (Council of Europe, 2022). In the context of learning, CEFR provides systematic guidance for adjusting reading texts to the learner's abilities, ensuring that the material provided is neither too difficult nor too easy. This makes CEFR an important reference in designing effective teaching materials.

Based on the CEFR standards, the difficulty level in teaching or reading materials can be adjusted to students' education level. Levels A1 and A2 are suitable for elementary school students because they focus on basic vocabulary and simple sentences; B1 is ideal for junior high school students because it covers more complex texts, while B2 is used for high school students who need a deep understanding of academic texts. Levels C1 and C2 are intended for higher education and professionals who require advanced language fluency. With this guide, CEFR help determine the difficulty level

of difficulty of learning materials that are appropriate to the abilities of students at each level of education.

1.7.2 Definition of Digital

Digital describes anything that involves or uses digital technology. Technology is increasingly connected and highly variable. Cars, airplanes, medical gadgets, payments, and power systems all rely on more computer software than ever before, making them appear more difficult to understand and, in some situations, more difficult to operate (Wolff, 2021). Everything that uses technology falls into this digital category and has great potential to affect various aspects of human life. From the way we communicate, work, learn, to the way we enjoy entertainment. The rapid development of digital technology also requires rapid and continuous adaptation so that we are not left behind. Thus, the digital world will continue to grow and significantly impact on our lives.

1.7.3 Definition of Intelligence

Intelligence is the ability to acquire and apply knowledge and skills. It plays a crucial role in almost every aspect of our everyday lives and long-term goals (Schmidt & Oh., 2023). The definition of intelligence continues to evolve as research in this field advances.

1.7.3.1 Definition of Digital Intelligence Quotient (DQ)

Digital Intelligence Quotient is a framework created by Dr. Yuhyun Park, a Korean scholar and founder of the Digital Institute. This framework was published in 2016. Digital Intelligence (DQ) encompasses technical, cognitive, meta-cognitive, and socio-emotional competencies based on universal moral principles, which enable humans to adapt to the challenges of digital life (DQ Institute, 2019). DQ entails not just an improved comprehension and utilization of technology but also the effective use of these tools to

increase our cognitive capacities and emotional intelligence performance (Li et al., 2024).

This framework was renewed in 2023, by adding maturity levels. In 2019, the DQ Framework was categorized into three levels, and in 2023, a total of four levels (digital connectivity, digital citizenship, digital creativity, and digital competitiveness) across eight areas, including digital identity, digital use, digital safety, digital security, digital emotional intelligence, digital communication, digital literacy, and digital rights. Each of these areas includes various competencies that are essential for developing digital intelligence. These competencies have been updated from twenty-four to thirty-two competencies. The thirty-two competencies contained in the DQ include: Digital User Identity, Active Use technology, Emotional Awareness, Online Communication, ICT Literacy, Digital Inclusion Rights, Content Cyber-Risk Management, Personal Device Security Management, Digital Citizen Identity, Balanced Use of Technology, Behavioral Cyber-Risk Management, Personal Cyber Security Management, Digital Empathy, Digital Footprint Management, Media and Information Literacy, Privacy Management, Digital Co-Creator Identity, Healthy Use of Technology, Content Cyber-Risk Management, Network Security Management, Self-Awareness and Management, Online Communication and Collaboration, Content Creation and Computational Literacy, Intellectual Property Rights Management, Digital Changemaker Identity, Civic Use of Technology, Commercial and Community Cyber-Risk Management, Organisational Cyber Security Management, Relationship Management, Public and Mass Communication, Data and AI Literacy, and Participatory Rights Management. These competencies cover various aspects essential to being a wise and responsible user of technology in the digital world.

a. Levels on Digital Intelligence Quotient

In the research of DQ Institute (2023), Li et al. (2024) defined four levels of DQ, namely:

1) Digital Connectivity

Connectivity focuses on digital inclusion, which ensures that all have access to digital technologies (DQ Institute, 2023).

2) Digital Citizenship

Digital citizenship refers to the capacity to use digital media and technologies in a responsible, ethical, and safe way (Li et al., 2024).

3) Digital Creativity

Digital creativity can be defined as the ability to apply digital technologies to creative endeavors, such as the adaptable capacity to employ digital tools or resources to provide novel insights, methods, and solutions to issues (Li et al., 2024).

4) Digital Competitiveness

The ability to use digital technologies to improve human well-being has been defined as digital competitiveness (Li et al., 2024).

b. Areas of Digital Intelligence Quotient

Table 1. 1 Areas of digital intelligence (DQ Institute, 2019).

DQ Area	Definition	Guiding Principle
Digital identity	Building a wholesome online and offline identity.	Respect for oneself
Digital use	Using technology in a balanced, healthy, and civic way.	Respect for time and the environment
Digital safety	Understand, reduce, and control different cyberthreats by using technology in a safe, responsible, and ethical manner.	Respect for life

Digital security	Detect, avoid, and manage different levels of cyber threats to protect data, devices, networks and systems.	Respect for property
Digital emotional intelligence	Recognizing, navigating, and expressing emotions in one's digital intra-and inter-personal interactions.	Respect for others
Digital communication	Communicate and collaborate with others using technology.	Respect for reputation and relationship
Digital literacy	Finding, reading, evaluating, synthesizing, creating, adapting, and sharing information, media, and technology.	Respect for knowledge
Digital rights	Understanding and upholding human rights and legal rights when using technology.	Respect for rights

From the table above, here is a more detailed explanation of the eight areas of Digital Intelligence (DQ):

1) Digital identity

Digital identity is a critical component that can ensure that the Internet infrastructure is robust enough to meet basic expectations for not only service and functionality, but also security, privacy, and reliability (Bellini et al., 2020).

Digital identity encompasses various aspects such as username, email, photos, and other personal information. It can also include things like search history, online purchases, or preferences we show through "likes" and "shares" on social media. Essentially, digital identity is a representation of ourselves spread across the online world. This can be influenced by how we want to be

perceived by others, as well as how we interact and communicate online. Therefore, it is very important to be cautious when maintaining our online identity.

2) Digital use

According to Sriwisathiyakun (2024), digital use refers to the efficient use of digital devices while maintaining a balance between online and offline activities. Healthy digital use means utilizing technology in a productive, safe, and balanced manner. This includes avoiding excessive use, protecting privacy, and ensuring that technology does not interfere with other important aspects of our lives.

3) Digital safety

Digital safety is the effort to protect oneself and personal data to ensure they remain secure when using technology and the internet. Digital Safety aims to manage internet dangers and handle harmful information (Sriwisathiyakun, 2024).

4) Digital security

Digital security refers to the series of actions and measures taken to protect digital devices, personal data, and information from threats in the online world and to avoid harmful digital risks. The term "digital security risk" refers to the risks associated with using, developing, and managing the digital environment throughout any activity (OECD, 2024). Efforts to maintain digital security include using antivirus software, data encryption, two-factor authentication, and awareness of good security practices to prevent threats such as hacking, malware, and identity theft.

5) Digital emotional intelligence

To promote healthy online interactions, digital emotional intelligence is crucial (Sriwisathiyakun, 2024). Digital Emotional Intelligence (DEQ) helps ensure wiser internet use and the ability to communicate effectively without causing conflicts.

6) Digital communication

Digital communication is the process of exchanging information, messages, and ideas through the use of digital platforms and technology. Sriwisathiyakun (2024) explain that effective digital contact and collaboration are made possible by digital communication.

7) Digital Literacy

Reddy et al. (2020) redefined digital literacy, digital literacy is defined as a person's ability to find and evaluate information, use it effectively, make new content using it, and share and communicate this new content using appropriate digital technologies. By having good digital literacy skills, every individual can be more confident and safe in accessing and using digital technology for various purposes, be it education, work, entertainment, or daily life.

8) Digital Rights

Digital rights are the rights that individuals or groups have in the context of the digital world. Understanding and defending one's legal and personal digital rights, including privacy, is part of digital rights (Sriwisathiyakun, 2024).

1.7.4 Definition of Storybook

A storybook is a colorful book that tells a story about the enjoyment of reading (Putri & Tiarina, 2021). Storybooks have various genres, such as fable, fantasy, realistic, adventure, and educational. Other genres include fairy tales, legends, humor stories, poetry or rhyming stories, and

inspirational stories. Through illustrations and interesting narratives, storybooks can be an effective tool to stimulate children's imagination and power. According to Amanambu et al. (2021), storybooks not only promote literacy but also impart values, beliefs, attitudes, and social conventions that form children's perceptions of reality. In addition, storybooks can also be a tool that introduces the local culture. Thus, storybooks have an essential role in children's intellectual and emotional development from an early age.

1.7.4.1 Digital Illustrated Storybook

Digital illustrated storybooks are storybooks that use digital images or illustrations to support the narrative, which can be accessed through electronic devices such as computers, tablets, or smartphones. It integrates multimedia elements such as animation, interactive features, and audio to enhance traditional storytelling. Young children's narrative understanding may be stimulated by digital storytelling strategies that allow dual coding and help them synchronize visual and narration (Bus et al., 2019). Therefore, the use of digital illustrated English storybook provide a good effect for children, as well as providing easy access.

1.7.4.2 The Use of Digital Storybook in Education

When employed in education, digital picture storybooks have numerous benefits. According to Al Kamil et al. (2023), a digital picture storybook's design combines text with visuals, making it easier for children to absorb the materials offered. Digital Illustrated English can help boost children's imagination and creativity. Imagination and creativity are critical components of early childhood development that enhance learning in general (Silaban et al., 2024). Thus, through interaction with digital picture stories, children can engage more actively in the learning process and develop their cognitive and social skills.

The use of digital storybooks is also an innovation in English language teaching. As stated by Jayanti & Sudimantara (2023), digital storytelling allows students to practice critical listening skills in an interactive and engaging way, unlike traditional teacher-centered techniques. The use of this technology can also increase students' learning motivation, as they are more likely to engage and actively participate in learning activities. In this way, digital storybooks are not only learning aids but also a means to develop 21st century skills, such as digital literacy and critical thinking, and develop students' digital intelligence.

1.7.5 Local culture

Local culture refers to the habits, traditions, customs, values, norms, and practices that develop in a particular community and are passed down from generation to generation. Local culture has rich and distinct characteristics that should be protected and perpetuated (Suharyanto & Wiflihani, 2024). Local culture encompasses various aspects such as language, traditional dress, food, dance, music, rituals, and festivals that are unique to a particular region or community. Local cultures are often influenced by history, geography, and interactions with other cultures, but still have distinctive features that set them apart from other cultures.

1.7.5.1 The Importance of Learning Local Culture in English Learning

The adoption of English as the working language of Asia and the ASEAN region, combined with increased mobility of people and information, is putting new and significant demands on language and cultural education in English, as well as other languages, throughout the region (Lian & Sussex, 2018). Therefore, it is crucial to incorporate local culture into English language learning. Incorporating local cultures into the educational process is a key approach to promoting culturally responsive teaching (Azhy &

Fatimah, 2024). Then according to Miqawati et al. (2024), in the context of English language teaching (ELT), integrating local culture is crucial for creating engaging and effective learning experiences. Thus, the use of authentic materials that reflect local culture can help students understand and appreciate cultural diversity, and increase their motivation to learning a foreign language. It also enables students to develop cultural awareness and a sense of belonging to their own local culture, so that they do not forget their own culture when learning a foreign language.

1.7.5.2 Cirebon Culture

Cirebon is one of the cities located in the province of West Java, Indonesia. However, Cirebon is located between two provinces. Cirebon, located between the West and Central Java provinces, has a distinct cultural character that cannot be simply classified as Sundanese or Javanese (Basyari, 2017). Hence, the people of Cirebon use two languages for daily communication. However, Cirebon has its own distinctive dialect. So, it has become one of the unique aspects of Cirebon culture.

According to Dienaputra et al. (2021), the multicultural elements in Cirebon culture are characterized by not only the presence of Indian cultural elements but also Arabic, Chinese, Western, Sundanese, and Javanese elements. This blend is evident in its architecture, culinary, and local traditions. The city of Cirebon is famous for its vibrant batik industry, producing unique and interesting motifs. One of Cirebon's signature batik motifs is the “*mega mendung*” batik. Cirebon also has various historical sites, such as Kasepuhan Palace, Kanoman Palace, and Sunyaragi Cave, making it an attractive destination for tourists who want to explore Indonesia's cultural heritage. Then in terms of culinary, Cirebon has specialties including *jambulang* rice, *lengko* rice, *empal gentong*, and,

gejrot tofu. Furthermore, Cirebon has distinctive traditional dances and music, namely mask dance, *sintren* dance, and *tarling* music. Cirebon also has a famous art and is still often found, namely the art of *burok*.

1.8 Previous Research

In this research, the researcher found several related literature reviews. This review aimed to gather insights, establish the context, and highlight previous findings relevant to the current study. Here are the significant studies that have informed this research:

The first previous study by Tajuddin et al. (2024) is titled “Developing and Measuring an Assessment Instrument for Media Literacy among Digital Natives using the Digital Intelligence (DQ) Framework.” This research aimed to develop and measure an assessment instrument for media literacy that focused on knowledge, skills, and values for digital natives in Malaysia, using the Digital Intelligence Quotient (DQ) framework. The design of this research was the conventional method for developing assessment instruments. This study developed a holistic assessment instrument that includes dimensions of knowledge, values, and skills. The results of the development of this assessment instrument successfully help the researcher determine the level of media literacy among teenagers and how attached these teenagers are to new media technology.

This research shares similarities in using the Digital Intelligence (DQ) framework to develop a product. Furthermore, this research differs from the previous study in terms of the product developed. The previous study developed an assessment instrument, while the current research developed a digital illustrated English storybook of Cirebon culture.

The second previous study by Stiakakis et al. (2019) is titled “Developing an Understanding of Digital Intelligence as a Prerequisite of Digital Competence.” The aim of the research was to define and measure digital intelligence, distinguishing it from related concepts such as digital literacy and skills. The

researcher highlighted that understanding digital intelligence is essential for developing frameworks that enhance digital competence, especially among young people who are still in the learning stage. This research uses a quantitative method. The findings reveal two significant outcomes: Parental Influence, where students' average scores on the tests increased with the educational level of their parents, indicating a socio-economic factor influencing digital intelligence, and Positive Correlation, where there was a statistically significant positive relationship between students' performance in computational thinking and their digital use and behavior, suggesting that both are integral components of digital intelligence.

Both previous and current studies emphasize the Digital Intelligence (DQ) framework. However, they differ in their approach. The previous study is more theoretical and conceptual, aiming to develop an understanding of Digital Intelligence as a prerequisite for Digital Competence. In contrast, the current study is more practical and specific in its approach, designing a digital illustrated storybook about Cirebon culture in English to promote DQ.

Then the third previous study written by Hidayat et al. (2024) titled “Digital Intelligence: Education as The Foundation for Digital Intelligence.” The aim of this research was to explore the role of education in shaping digital intelligence and how educational institutions can respond to the challenges arising from rapid technological development. The research used a literature review approach, analyzing various scientific publications related to educational technology and digital intelligence. The results indicate that the use of technology in education generally has a positive impact on increasing learning motivation, concept understanding, and students' problem-solving abilities.

Both the previous and current research share similarities in exploring Digital Intelligence (DQ). However, the previous research only explores the field of education in general, while the current research is more specific to English language learning.

Furthermore, the fourth previous study written by Judijanto et al. (2024) titled “The Evolution of Digital Intelligence in Education.” The aims of this research were to identify the development of digital intelligence in education, evaluate its impact on student engagement and learning outcomes, and examine barriers to technology implementation. The method used in this research was a literature review by analyzing various literature sources relevant to the theme of digital intelligence. The results show that digital technologies, such as AI, VR, and big data, increased the personalization of learning, allowing students to learn at their own pace and needs. Students with full access to technology showed increased engagement and academic achievement, while teachers shifted roles to become learning facilitators. However, challenges such as gaps in technology access, lack of teacher training, and uneven infrastructure were still the main obstacles.

The similarity between the previous research and the current research is that both highlighted the importance of using Digital Intelligence (DQ) in the field of education. Meanwhile, the difference between the two lies in the target audience. The previous study had a broad target audience, including educators, students, policymakers, and global researchers, to raise awareness of the importance of digital intelligence in general. In contrast, the current research had more specific targets, including elementary or junior high school students as users and English teachers as supporters of the implementation of the resulting product.

Lastly, the previous study by Cai (2024) titled “Digital Intelligence Quotient: A New Way to Promote the Digitization of Higher Education.” The aim of this research was to promote the digitization of higher education through the perspective of the Digital Intelligence Quotient (DQ). This research uses a literature review, comparative analysis, and network investigation. The study examines digital creativity, competitiveness, and citizenship in higher education. The results indicate that the implementation of DQ enhances students' creative abilities and competitiveness. Additionally, this research highlights the importance of digital training for educators, integrating moral education into digitization, and developing locally relevant digital education frameworks.

This previous research and the current research share similarities in promoting the Digital Intelligence Quotient through digital media. However, the difference is that the previous research focuses on higher education while the current research focuses on children.

Overall, this research had similarities with several previous studies. The previous studies both raised the topic of Digital Intelligence Quotient (DQ). However, this study had several differences with previous studies, ranging from the product developed, research approach, context of use, target audience, and educational level.



1.9 Frame of thought

In this study, the researcher wants to develop learning media in the form of digital illustrated storybook with the theme of Cirebon local culture, by promoting the Digital Intelligence Quotient (DQ) framework.

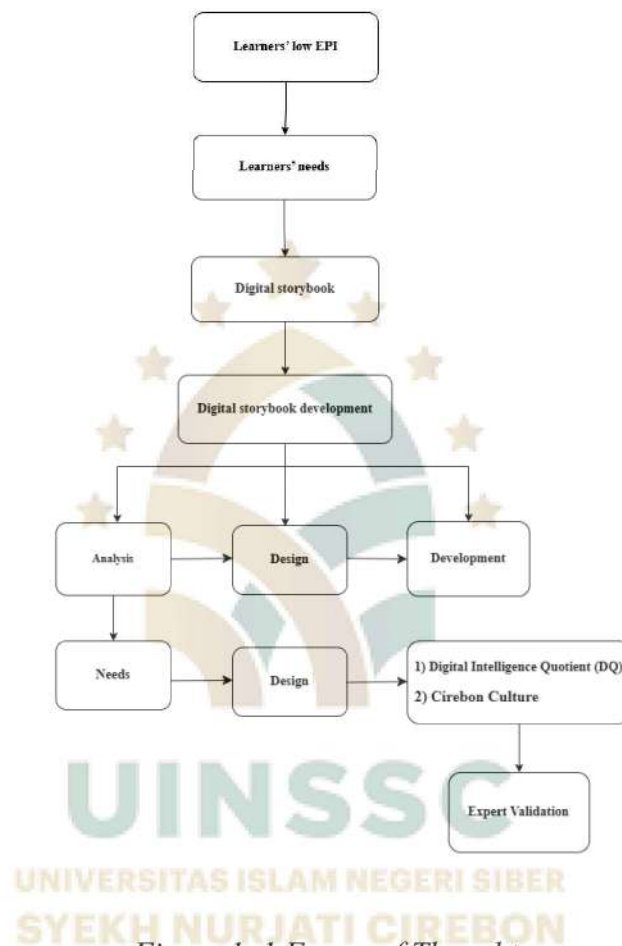


Figure 1. 1 Frame of Thought

This frame of thought described the flow of research starting from the problem of low EPI in Indonesia and the need for relevant learning media based on student needs. As a solution, a digital storybook was developed with the ADDIE model through the analysis, design, and development stages. The content integrates Digital Intelligence Quotient (DQ) and Cirebon culture, then validated by experts to ensure product suitability.

1.10 Research method

This chapter explains the methods used in this research. This chapter consists of research design, step of the research, research procedures, sources and types of data, data collection techniques and instruments, data collection technique and instrument, and data analysis techniques.

1.10.1 Research Design and Steps of The Research

This section describes in detail the research design chosen and the systematic steps taken to achieve the research objectives. The research design and research steps in this study are:

1.10.1.1 Research Design

This research was designed using Research and Development (R&D). According to Sugiyono (2013), the research and development method is a research technique used to create a product and evaluate its efficacy. In conducting the development, the researcher used the ADDIE model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation.

1.10.1.2 Steps of The Research

This research uses the ADDIE model. According to Spatioti et al. (2022), the steps are: analysis, design, development, implementation, and evaluation.

The following is a more detailed explanation of the stages above:

1) Analysis

In this stage, the researcher analyzed the needs of the students through interviews. Interviews were conducted with two English teachers at the elementary and junior high school levels to understand the needs of students, especially in learning reading. In addition, the researcher also made observations of the culture in

Cirebon to obtain in-depth and authentic information about Cirebon culture that will be included in the digital book.

2) Design

The design stage concentrated on careful planning and conceptualization of the digital storybook. This included creating storyboards, selecting culturally appropriate images, and writing text narratives using a simple language style, incorporating elements of Cirebon culture. The goal of this design process was to produce an engaging and instructive tool that fit within the Digital Intelligence Quotient (DQ) framework.

3) Development

At this stage, digital storybooks began to be developed based on the results of the compiled design. This process includes making digital illustrations that are attractive and represent the culture of Cirebon, writing stories in English with a language style that suits students, and integrating DQ elements. After the book was completed, the researcher conducted validation by involving two experts to ensure that the book was in accordance with the DQ framework.

4) Implementation

The implementation stage aimed to test the use of the digital storybook in the field. The finished book was tested on English students and teachers to determine its effectiveness in learning.

5) Evaluation

Evaluation is conducted to measure the effectiveness and success of the products that have been implemented. Feedback from the implementation process will be the basis for improving the product before it is widely used.

The ADDIE model development research conducted only reached the third stage. Due to time and situational considerations, this research was limited to the analysis, design, and development stages, Sadillah (2022). In addition, the purpose of this research was only to develop and produce a valid learning media to be implemented based on expert validation. Expert validation ensured that the book promoted the eight areas of DQ and met the research aims.

The Implementation and Evaluation stages required additional time and resources for field testing, which was beyond the scope of this research. Therefore, by completing up to the Development stage, this research achieved its main goal, which was to produce a product in the form of a digital storybook using the DQ framework, as well as quality cultural content that was ready for use.

1.10.2 Sources and Types of Data

Sources and types of research data were essential components in ensuring the validity and reliability of research. This section outlined the specific sources used to collect data and the types of data collected for analysis.

1.10.2.1 Sources of Data

This research was conducted in the second semester of the 2024/2025 school year. The research was conducted in an elementary school and junior high school located in Cirebon. The reason why elementary schools and junior high schools are the choice of this research is because the age is in accordance with the target of the product to be made. Then the researcher also chose the ninth-grade English teacher because the teacher was one of the transformational teachers and had taught at each grade level, so she knew the needs and conditions of the students in the classroom.

Qualitative data was obtained through interviews and document analysis. Interviews with teachers to get information about students' learning needs and abilities in using digital media, as well as their knowledge of their own culture.

1.10.2.2 Types of Data

The types of data needed in this research were primary data and secondary data. The two categories of data were explained in more detail below.

1) Primary Data

The main data sources in this research were interview transcripts with English teachers and validation results from experts. The results of the interview transcripts provided direct insight from English teachers regarding the learning media needed by students. Then the validation from experts ensured that this digital storybook was suitable to be used in English reading learning and promoted the DQ framework.

2) Secondary Data

The secondary sources used for this research were documents, including journal articles, papers, e-books, and website. Thus, reading sources with similar topics can contribute to the research being studied by the researcher.

1.10.3 Data Collection Techniques and Research Instruments

The research's data collection methods included interviews, documentation, and expert validation. Furthermore, the following data collection methods will be discussed:

1.10.3.1 Data Collection Techniques

In this section, the researcher describes some of the techniques used to collect data in this study. The data collection

methods used include interview, documentation, and expert validation.

1) Interview

The researcher chose to collect data through interviews. This interview is included in the analysis stage to determine the needs of students. The interview strategy used in this research is semi-structured because the researcher only brings a general overview of the issues to be elaborated on while in the field. In semi-structured interviews, the researcher controls the topics to be discussed while allowing participants to steer the discourse in new but related directions (Aurini et al., 2021). In this interview there were two participants. The interviews were conducted with two English teachers from different school levels, those from an elementary school and a junior high school.

2) Documents

Books, articles, and other documents may be considered the textual equivalent of the information the researcher obtained during the interviews (Morgan, 2022). In this research, the researcher obtained documentation of interview activities.

3) Expert validation

The researcher needs to validate the product after the researcher developed a product. It is very important to conduct because the researcher can find out what the weaknesses of the product that have been developed. Wardhani et al. (2017) argued that validation is an important step that can reduce the ineffectiveness of the product being developed. In this study, expert validation is carried out by providing a scale validation related to the content, language, design, and general evaluation of the textbooks that have been developed. Then the results of product development will be

validated by two experts, who are English Language Education lecturers. Two lecturers validated the product. The first lecturer is a media expert. Then the second lecturer is a reading course lecturer.

1.10.3.2 Research Instruments

In this research there were several instruments used to collect data. The instruments are interview guidelines and guidelines, document analysis, and validation sheets.

1) Interview Guideline

The interview guideline helped the researcher collect data about students' needs in learning English by interviewing teachers. The guide includes specific questions designed to understand the challenges students face, the resources they needed, and the strategies teachers used to facilitate English language learning. This instrument is essential in obtaining primary qualitative data from teachers that will to basis of the digital illustrated English storybook.

2) Documentation

Documentation is a tool used to collect data. In this research, various documents were needed by the researcher, including interview transcripts and photos of interviews with teachers as attached in the appendices.

3) Validation Sheets

The validation sheet was used to ensure the accuracy and credibility of the research findings. It was completed by two experts in the field, who evaluated the content, design, and DQ framework of the digital illustrated storybook. The validation process involved assessing the alignment of the storybook with the Digital Intelligence Quotient (DQ) framework and its suitability for English lessons, especially reading learning. Feedback obtained from the validation sheets helped to refine the final product, ensuring it met educational standards and effectively met students' learning needs.

1.10.4 Data Analysis Techniques

The data analysis technique in this study used qualitative methods by following the concept of Miles, Huberman, and Saldana (2014). The activities included data condensation, data display, and conclusion drawing or verification. The following were the stages of data analysis according to Miles et al. (2014):

1) Data Condensation

Data condensation is the process of selecting, focusing, simplifying, abstracting, and/or transforming the data in the whole corpus (body) of written-up field notes, interview transcripts, documents, and other empirical resources (Miles and et al., 2014). The purpose of this stage was to filter out relevant information and eliminate unnecessary data. During this process, the researcher selected the most significant data for further analysis, ensuring that the focus of the research remained clear and directed. This process involved coding the data, creating categories, and summarizing the information to make it more manageable and interpretable.

2) Data Display

Displaying data is the process of presenting summarized data so that it is easier to understand and analyze. Viewing displays enables us to comprehend what is occurring and to act upon that understanding by conducting more analysis or taking action (Miles et al., 2014). In this study, the data were presented in text form by summarizing the main findings and including the interview transcript.

3) Drawing and Verifying Conclusions

This stage is the process of drawing conclusions based on patterns, themes, or relationships that emerge from the data that has been analyzed. Then conclusions are tested or verified to ensure their validity. It is necessary to assess the validity of the interpretations that emerge from the

data in order to determine their plausibility, sturdiness, and confirmability (Miles et al., 2014). In this study, conclusions were made about how the developed digital storybook could promote Digital Intelligence Quotient (DQ) and support reading learning. The verification process was conducted by two experts using a validation sheet created by the researcher.

At the validation stage, the data was analyzed using a Likert scale. Each statement submitted to the validator was given four options with a scale range of 1-4: 4 indicates very good, 3 indicates good, 2 indicates less good, and 1 indicates very less good. The final result of validation was calculated using the following formula:

$$\text{Final validation score} = \frac{\text{Total score of each statement}}{\text{Total maximum score}} \times 100\%$$

Then the calculation results are categorized into 4 rating categories adapted from Ridwan (Ikawati, 2023). A score of 76-100 is considered very good, a score of 51-75 is considered good, a score of 26-50 is considered less good, and less than 25 is considered very less good.

10.5 Research Timeline

The research schedule was made by researchers for a research project entitled “Designing A Digital Illustrated English Storybook of Cirebon Culture to Promote Digital Intelligence Quotient (DQ)” to provide a target time for activities that must be carried out so that the research can be completed within a predetermined period of time.

No.	Activity	November				December				January				February				March				April			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1.	Preparation and submission of thesis titles																								
2.	Submission of proposal																								
3.	Research Proposal Presentation																								
4.	Research instrument preparation																								
5.	Research permission																								
6.	Interview with Teacher																								
7.	Analyzing data from interview																								
8.	Design and Developing the product (digital storybook)																								
9.	Validate the product																								
10.	Writing and finishing the research																								