Investigation and analysis of digital demand for children's books

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ABSTRACT

Purpose: This study aims to examine and assess the requirements of Chinese children in relation to digital reading. It also seeks to explore the challenges that arise in the production of digital reading materials for children while proposing principles for their future development.

Design/Methodology/Approach: A sample of 600 participants was selected from mainland China for the purpose of this study. A total of 483 valid surveys were gathered and utilized to examine the elements that influence the effectiveness of digital reading in children.

Findings: The results of this study demonstrate a positive association between the level of digitalization in children's books and children's digital reading proficiency. These findings show that a greater degree of digitization is linked to a more advantageous impact on digital reading skills**.**

Conclusion: To enhance the efficacy of digital reading among children, it is imperative to strengthen the level of digitization in the design of children's books while concurrently fostering children's willingness towards digital books. In digitizing children's books, it is essential to enhance the usability of goods, simplify operation processes, and reduce the design of interfaces to foster a sense of enjoyment and satisfaction among young readers.

Research Limitations: The target user group for this study is children between the ages of 3-6. Due to the young age of the study subjects, they cannot fill out the questionnaire independently, and the questionnaire is filled out with the assistance of their parents, which cannot fully reflect the subjective intention and actual situation of the study subjects.

Keywords: *Children, Electronic picture books, E-Reading, Reading demand, Reading digitization, Reading effect.*

1. INTRODUCTION

1.1. Current Situation of Children's Reading Development

Reading is the first step in learning for most people, and it helps them advance in their education, daily lives, and careers. Unlike adult reading, children's reading cannot adopt a single form; it must mobilize children's eyes, hands, brains, and ears through various reading forms and channels to increase knowledge, accumulate experience, and develop reading skills. Currently, there are two issues pertaining to books for children. One noteworthy feature is that children's books primarily contain textual content with some visual elements. However, this format might pose challenges for children between the ages of 3 and 6, who possess a developing awareness of independent reading but still require literacy skills to comprehend the written material. Children are unable to access and experience the enchanting aspects of life depicted in children's books that explore festival customs, worldly wisdom, and knowledge about life, animals, flowers, and other expansive realms. Even if a picture alone is incapable of drawing children's attention or effectively explaining the information in the text, it will nevertheless hinder their reading response. Therefore, ordinary picture books need parents to accompany them in reading. Still, many familiar parents need teachers' teaching methods or accompanying time, making it difficult to obtain information. On the other hand, many children's books lack visual and emotional experience. Some stories, such as those involving minor animal characters, fairy and ghost characters (such as Journey to the West), or the identification of particular sounds (such as fire trucks, police cars, and ambulances), need visual materials to form children's imaginations of the story content. Therefore, children's books must accept audio, video, and interactive information simultaneously and have

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a visual experience of situational matching to establish a compelling connection between children and the unknown world (Guoqiang, 2017).

1.2. Purpose of the Study

1.2.1. Enrich the Theoretical Research Achievements of Children's Digital Reading Resources Construction

Numerous studies on digital reading materials have been compiled from the appropriate source material. However, there is a limited body of research examining the design and development of digital reading tools from the standpoint of children. This indicates that there has been very recent emergence of research focused on the design and development of reading tools specifically tailored for children. This study examines the digital evolution of children's reading materials in mainland China, drawing upon an investigation and evaluation of their specific reading demands. It puts forward strategic development principles, hoping to help improve the knowledge system in children's digital reading, provide a specific theoretical basis for constructing digital reading resources in China, and enrich the academic research results on the structure of digital reading resources for children.

1.2.2. Provide Guidance and References for the Construction Practice of Digital Reading Resources for Children

The digitalization of children's reading materials has encouraged the development of new reading requirements for kids. Early childhood is an essential period in life, and many basic abilities are formed at this age. Digitalizing children's books is conducive to improving children's thinking and skills. This research focuses on the digitalization methods of children's books in the digital age. It aims to find and solve problems in the digitalization process of children's publications by integrating people and technology. The research on the digitalization methods of children's books is focused on the multiple dimensions of the interaction between children's reading and the digital media world. The objective of this study is to identify the challenges present in children's digital reading materials by analyzing the current digital reading materials. Additionally, the study aims to analyze the underlying factors contributing to these challenges and explore strategies for enhancing and optimizing the digitization of children's publications. The ultimate goal is to ensure that digital publications effectively align with children's physical and psychological development, enabling them to utilize digital media for knowledge acquisition and construction. In close contact with the living world and the virtual world, in the harmonious interaction of exploring the self-world and the digital world, I hope that the integration and development of traditional reading resources and emerging computer technology will have significance and can bring new ideas for the development and promotion of digital reading resources. This paper will present the principles of digitalizing children's books in its third part.

1.3. Concept Interpretation

Children: In our daily lives, usually 0-1 year old children are collectively referred to as babies, and children who are more than one year old and have not enrolled in school are collectively referred to as children, which is relative to the concept of juvenile existence, expressing a person's immature early state. From a research perspective, this study analyzes and explores the digital reading situation of preschool children aged 2-7 years old and proposes the path to digitize reading according to the characteristics of children at this age.

Digital reading materials: Digital reading materials are publications viewed or read through mobile terminals such as computers and mobile phones. These publications produce text, graphics, images, and other resources into software or resource packages and display them on the screen for people to read. Digital reading books must have two characteristics: one is to have digital reading books, and the other is to have digital reading tools (Zhang, 2019).

The term "the digital interactive experience of reading materials" (also known as "the digital degree of children's reading materials") refers to the degree of interaction that children's digital reading materials may offer.

Digital learning ability: For 3-6-year-old children, digital learning ability more closely reflects children's ability to use digital products, i.e., whether they can skillfully use a touch screen, remote control, or game controller.

The digital reading effect refers to the accumulation of knowledge or skill acquisition that children can produce after digital reading. The impact of digital reading is more reflected in children's imitation of the language, action, behavior, and expression of the story's protagonist or in children's ability to retell the content of the reading.

Parents' support: Parents' consent includes three aspects: one is ideological support, which is whether parents can accept children's digital reading; the second is economic support, which is whether parents can help buy digital books or digital products to assist tasks; and the third is whether parents can correctly guide their children to digital reading.

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1.4. Theoretical Support

1.4.1. Stage Theory of Cognitive Development

Jean Piaget, a famous Swiss developmental psychologist, proposed that children's development be regarded as a process of biological individual self-construction, and the cognitive development of children is divided into four stages: sensorimotor intelligence stage, pre-operational stage, concrete operational stage, and logical operational stage (Lu, 2015). The preoperational set, which occurs from about age three until age 6, includes the beginnings of symbolic function and the evocation, or thinking, of imagery. The symbolic function has developed by differentiating the representations from the illustrations they represent. It has developed in language imitation and in the visual and computational aspects of thought. The youngsters examined in this research are between three and six years old and are in the pre-computer stage. Picture stories can create almost real situations through complete stories and correctly guide children's thoughts and behaviors. Digitalizing reading can create specific images and situations for children to participate in, conducive to children's deep reading.

1.4.2. Social Learning Theory

Bandura's social learning theory posits that a significant portion of human behaviours and attitudes are not acquired from direct personal experience but rather through the process of witnessing the acts of others or the behaviours of animals and afterwards deliberately mimicking them. In other words, indirect experience is acquired through imitation. This kind of learning by imitating the behaviors of others or animals is called social learning. Bandura believes that children learn social behavior by observing the behavior of people around them, such as their parents, their caretakers, or people they consider important, such as teachers, classmates, and friends, and the results of these observations are fed into their brains in various types of symbols to help them imitate. Social learning theory enlightens teaching attitude, behavior skills, and morality. Children's books can provide stories with exemplary value. After the children's observation, although the model does not appear, the demonstrator's behavior can be preserved in the children's long-term memory as a stimulus (Xinyin & Boshu, 2015).

1.4.3. The Tower of Experience Theory

After the First World War, American scholar Edgar Dale proposed the learning pyramid theory, the "tower of experience" theory. The model divides human experience in understanding the world into three categories and ten levels, from concrete to abstract (Figure 1).

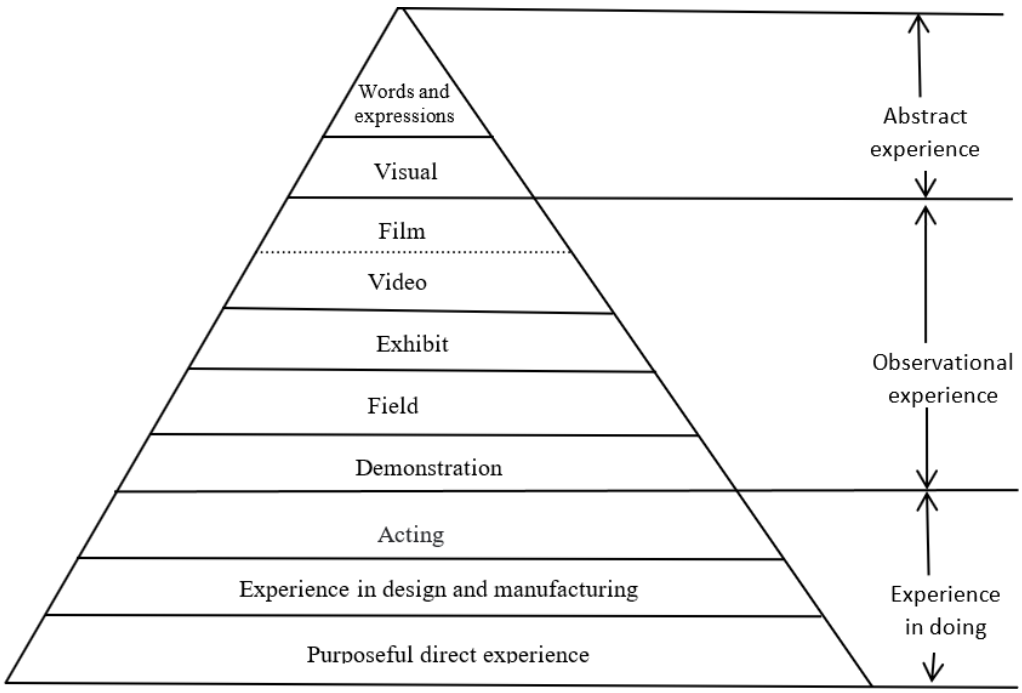

Figure 1. Dell "Tower of Experience."

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Dale, an American audiovisual educator, uses the shape of a pyramid to visualize the degree of abstraction in learning. He believes that the learning experience begins with the experience gained through direct participation, moves to the substitution and cognition of examples or images obtained through observation, and then gradually develops into acquiring experience using abstract symbols. The bottom of the "tower of experience" is the experience of doing, which belongs to the physical intuition, the direct experience that human beings can obtain, and the direct cognition of things (Zhezhe, 2021). The middle part of the "tower" is called the experience of observation. It belongs to image intuition, the cognition that human beings obtain through observing things, behaviors, or their images. The "spire" is called abstract experience, which belongs to linguistic intuition and requires the cognition obtained by human beings through the information transformation of language symbols and thinking and processing (Wang, 2011).

In children's reading cognition, digital picture books create situations with films and images, breaking the imprisonment of young children who are young and illiterate, transforming abstract symbolic language into concrete image language, guiding interaction, and adding concrete experience to children's reading as much as possible, driving their abstract thinking, and forming concepts.

2. ANALYSIS OF CHILDREN'S READING DIGITAL NEEDS

2.1. Basic Information on the Questionnaire

The research on this topic is for 3-to-6-year-old children in the early school years; most of the cognition and habits in people's lives are formed in this period. In the research of American educational psychologist Bloom, there is an essential hypothesis about the development of human intelligence (Guoqiang, 2017). Assuming that a person has an intelligence of 100 at the age of 17, 50 percent is achieved by the age of 4, 80 percent by the age of 8, and the rest is gradually acquired by the age of 17. It can be seen that the guidance of early school-age children is essential.

2.1.1. Questionnaire Structure

The questionnaire is divided primarily into two sections: the first section contains demographic details about the child and parents, such as the child's gender and age; the second section contains information on the parents' age, education, work, financial situation, etc. The second section is the main one and discusses the current state of the digital reading survey. It primarily consists of multiple-choice questions and is a closed questionnaire with four main variables: the amount of digital reading that children do, its impact, their capacity to use digital media, and their parents' support. On the one hand, in selecting measurement variables, I read much domestic and foreign literature. I appropriately cited validated items that can be used in this survey. On the other hand, the preliminary analysis of the interview situation determined that each variable contains several measurement items. The Likert five-point scale is adopted as the scoring method, and "1-5" points represent strongly disagree, disagree, uncertain, agree, and strongly agree, which is used for scale statistical analysis. Finally, SPSS 25.0 statistical software was used to conduct scientific statistics and analysis of the obtained data and related variables.

Table 1 shows the basic structure of the questionnaire. The left column is the questionnaire variable, the middle column is the title supporting the variable, and the right column is the serial number of the question.

Table 1. The basic structure of the questionnaire.

Variable name	Title	Number
The digital level of children's books	Young children are willing to interact with what they are reading.	X1
	Young children are willing to share interactive content.	X2
	Young children are willing to offer interactive help to other friends.	X3
	Young children are willing to share interactive experiences.	X4
Parental support	Parents support their children's ability to read independently.	M1
	Parents can accompany their children as they read independently.	M2
	Parents can provide space or environmental support for their children.	M3
	Parents can provide financial support for their children's digital reading.	M4
	Parents are willing to encourage their children to read through their behavior.	M5
Child's ability	Children are comfortable with digital devices	MO1
	Children are better than other children.	MO2

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Variable name	Title	Number
	The child can understand everything.	MO3
	Children can learn more about technology.	MO4
	Children have strong expressive skills	MO5
Reading effect	Have good expectations for your child	Y1
	Parents think the child is a good reader	Y2
	Parents think their children have gained more knowledge	Y3
	Parents think children are better readers.	Y4
	Parents think their children understand better	Y5

Note: MO is a moderator variable.

Research hypotheses are based on theoretical research and empirical facts to put forward assumptions and predictions about the relationship between research variables, and subsequent research design, investigation, and data analysis focus on verifying the hypothesis. Based on the initial model of TAM (technology acceptance model) and the success model of D&M (D&M construction) and the analysis of SCT (social cognitive theory), this paper makes the following hypotheses to be tested about the relationship between the relevant variables of the research model on factors that affect the adoption behaviour of electronic picture books for children ages 3 to 6:

H_1: The digitization degree of children's books positively impacts the digital reading effect of children aged 3-6.

H_2: Children's digital reading ability positively influences their digital reading effects.

H_3: Parents' support positively impacts children's digital reading.

H_4: The support of parents partly mediates the digitization degree of children's books and the digital reading effect on children.

H_5: Children's digital reading ability moderates the relationship between the degree of digitalization of children's reading materials and the digital reading effect.

2.1.2. Survey Objects

As for the survey objects of the questionnaire, it is not easy to collect accurate data because the children studied are young and have a weak ability to participate in the survey. Therefore, the research objects are set as parents in the survey sampling.

2.1.3. Questionnaire Distribution and Collection

In this survey, three provinces and two municipalities were selected nationwide. Six hundred questionnaires were distributed to parents through kindergartens, and 483 were recovered. The questionnaires collected included 28 small classes in a kindergarten in Beijing, 46 middle classes and 17 small classes in a kindergarten in Tianjin Binhai New Area, 28 large classes and 22 middle classes in a kindergarten in Dezhou City, Shandong Province, 25 large classes in a kindergarten affiliated with a university in Chengdu City, Sichuan Province, and 187 small, middle, and large classes in a kindergarten in the High-Tech Zone of Hengshui City, Hebei Province. Thirt-ynine copies of a kindergarten class in Zhaoqiao Town, Wuyi County, Hengshui City, Hebei Province; 47 copies of a kindergarten class in Matun Town, Zaoqiang County, Hengshui City, Hebei Province; 23 copies of a kindergarten in Xiliangwa Township, Anping County, Hengshui City, Hebei Province; and 21 copies of a kindergarten class in Wugong Town, Raoyang County, Hengshui City, Hebei Province.

2.2. Questionnaire Model Analysis

This paper sets up a total of three latent variables: "the digitization degree of children's books," "parental support," and "the effect of digital reading. It is the key to constructing the initial model and the necessary step to constructing the structural model to study the relationship and function of each latent variable.

This paper sets up three latent variables: the digitization degree of children's books, the support of parents, and the effect of digital reading. Figure 2 shows the relationship and role of each latent variable.

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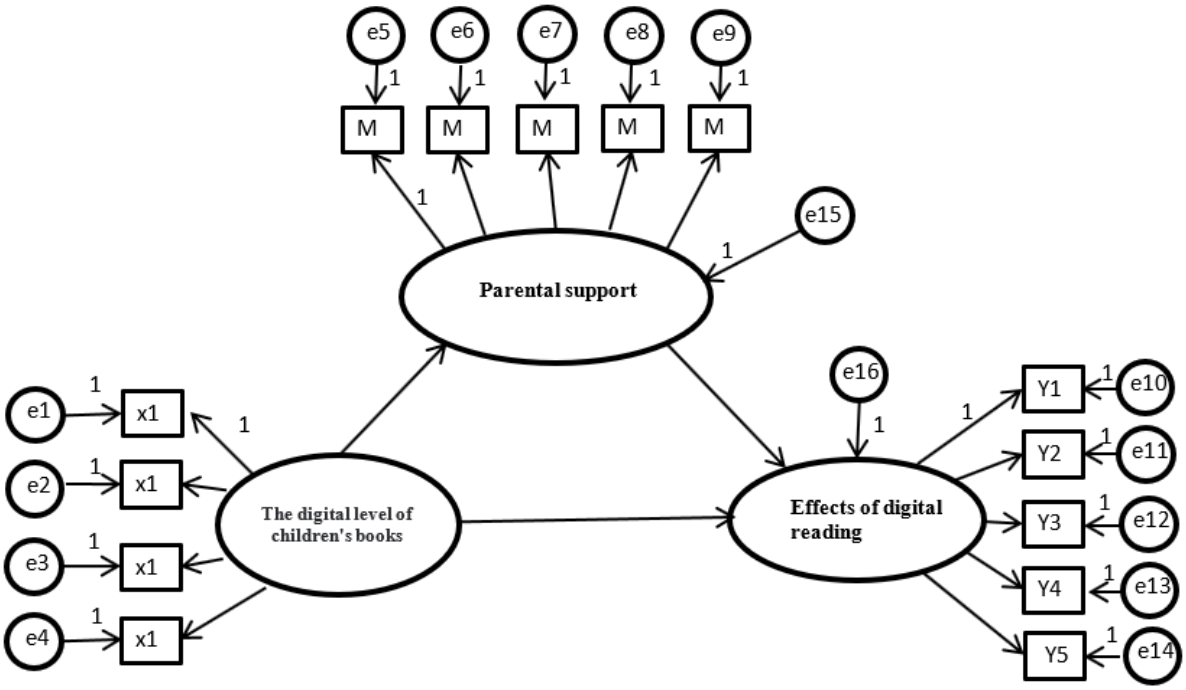

Figure 2. SEM diagrammatic figure.

Model fit test: Table 2 and Table 3 show that the Chi-square brought by the questionnaire model is 1.489, which is less than 3 of the standard values: goodness of fit index, adjusted goodness of fit index, norm fit index, relative fit index, incremental fit index, Tucker-Lewis coefficient, and comparative fit index all reach the standard above 0.9; Root mean square residual is 0.028, which is less than 0.08; Root mean square error of approximation is 0.032, which is less than 0.08; all indicators meet the general research criteria, so the applicability of this model can be determined to be good.

Table 2. Test results of the model fit degree1.

Item	Chi-square	Degree of freedom	Chi-square/Degree of freedom	Root mean square residual	The goodness of the fit index	Adjusted goodness of fit index	Normed fit index
Numerical value	110.169	74	1.489	0.028	0.969	0.956	0.977
Standard values	——	——	<3	<0.08	>0.9	>0.9	>0.9

Table 3. Test results of the model fit degree.

Item	Relative fit index	Incremental fit index	Tucker-Lewis coefficient	Comparative fit index	Root mean square error of approximation
Numerical value	0.972	0.992	0.991	0.992	0.032
Standard values	>0.9	>0.9	>0.9	>0.9	<0.08

2.3. Analysis of Questionnaire Results

2.3.1 Hypothesis Testing

As seen from Table 4, the digitization degree of children's reading material has a significant positive impact on the support of parents (β=0.585, p<0.05), and the hypothesis is valid. The degree of digitization of children's books had a significant positive effect on the effect of digital reading (β=0.187, p<0.05), and the hypothesis was valid. Parental support had a significant positive effect on the effect of digital reading (β=0.357, p<0.05), and the hypothesis was valid.

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Table 4. Path coefficient.

Path	Standardization coefficient	Nonnormalized coefficient	Standard error	Critical ratio	P	Hypothesis
Parental support <--- The digital level of children's books	0.585	0.411	0.036	11.385	***	True
Digital reading effect <--- The digital level of children's books	0.187	0.157	0.048	3.259	0.001	True
Digital reading effect <--- Parental support	0.357	0.426	0.071	6.008	***	True

Note: *** is significant at the 0.001 level.

2.3.2. Intermediate Effect Test

In the mediation test, the bootstrap feature of the statistical software AMOS 24.0 was used to sample 5000 times and check if the 95% confidence interval contained 0 to see if the effect was significant.

Table 5. Intermediate effect test.

Effect	Path-mediated	Effect value	Bias-corrected 95% confidence interval	
			Lower	Upper
Total effect	Digitization of children's books: the effect of digital reading	0.396	0.301	0.486
Direct effect	Degree of digitization of children's books: effect of digital reading	0.187	0.061	0.307
Indirect effects	Digitization of children's books: Parental support and the effects of digital reading	0.209	0.142	0.296

As can be seen from Table 5, the total effect size is 0.396 [0.301-0.486], and the 95% confidence interval does not contain 0, so the total effect is valid. The direct effect is 0.187 [0.061-0.307], and the 95% confidence interval does not contain 0, so the direct effect is valid. The indirect effect size is 0.209 [0.142-0.296], and the 95% confidence interval does not contain 0, so the indirect effect is valid. It can be concluded that, as a mediating variable, parental support has a mediating effect and is a partial mediator. The hypothesis is true.

2.3.3. Effect of Regulation

Model 1 in the Process programme was used to test the adjustment hypothesis. The 95% confidence interval was checked to see if it contained 0 to see if the effect was significant.

It can be seen from Table 6 that the digitization degree of children's books * children's ability has a significant favorable influence on the effect of digital reading (B=0.072, p<0.05), indicating that children's ability as a moderating variable has a moderating effect on the influence of the digitization degree of children's books on the effect of digital reading.

Table 6. Adjustment effect test.

Variate	Coeff.	Standard error	T-value	Statistical significance	Low confidence interval	High confidence interval
Constant	3.788	0.038	99.026	0	3.713	3.863
The digital level of children's books	0.140	0.040	3.491	0.001	0.061	0.219
Child's ability	0.334	0.040	8.404	0	0.256	0.412
The digital level of children's books*Child's ability	0.072	0.029	2.470	0.014	0.015	0.129

Note: * is significant at the 0.05 level.

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For specific adjustments, a simple slope chart was made as in Figure 3, with Mean±1 standard deviation to observe the adjustment effect:

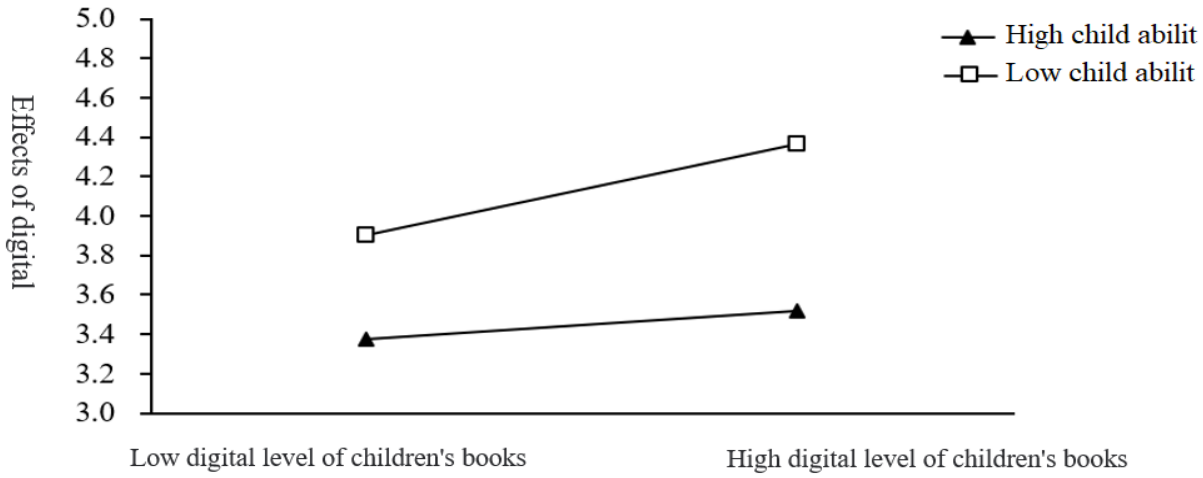

Figure 3. Regulation of digital reading ability in young children.

Observing the simple slope chart shows that children's digital reading ability moderates the relationship between the digitalization degree of children's reading materials and the digital reading effect.
In Table 7, it can be seen that the positive influence of high children's ability (Mean+1SD=0.213, $p<0.05$) and the degree of digitization of children's reading materials on the effect of digital reading is higher than that of low children's ability (mean-1SD =0.315, $p>0.05$), and the adjustment is established.

Table 7. Adjustment effect test 2.

Mo	Effect	Standard error	T-value	Statistical significance	Low confidence interval	High confidence interval
Mean-1standard deviation	0.066	0.041	1.618	0.106	-0.014	0.147
Mean	0.140	0.040	3.491	0.001	0.061	0.219
Mean+1standard deviation	0.213	0.058	3.709	0	0.1	0.327

3. CONCLUSION

3.1. Research Conclusion

Based on the results of the above studies, enhancing children's digital reading outcomes necessitates an improvement in their inclination to embrace digital books. This necessitates enhancing the user-friendliness of digital book products during the digitization process, streamlining operational procedures, and simplifying interface designs. By doing so, children can experience a sense of joy, derive pleasure from reading, and cultivate positive reading habits. Therefore, this paper puts forward five principles that should be followed in digitizing children's books: Intuition, Interaction, Interest, Immersion, and Imagination, namely the 5I principle (Yang, 2021).

3.1.1. The Digitization of Children's Books Should Be Based on a More Intuitive Interface and Easy Operation

Children who lack the ability to read and write often acquire knowledge about the world primarily via visual representations. Children's thinking development is in the most elementary stage; they are suitable for reading visual images and picture materials. The characters, actions, and environment shown in the pictures of multimedia children's books are very vivid, realistic, or exaggerated, making children feel realistic, vivid, and engaging, thus arousing their interest in reading. Therefore, in the design process of the device and interface, it is necessary to ensure that the overall design style aligns with children's aesthetic taste. With an intuitive and direct design mode, it can realize the mutual integration of real and virtual elements, present excellent content to children in artistic and visual forms of expression, improve the interaction frequency of children in the reading process, and enable children

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to improve their practical operation ability while acquiring knowledge through reading, which is conducive to their healthy growth (Yang, 2021).

3.1.2. Digital Reading Materials need to be aimed at Stimulating Children's Interest in Learning

As the saying goes, "Interest is the best teacher for children." For 3-to-6-year-old children, inattentive and active become their pronouns, so fun is essential for young children. The concept of happy education believes that the cognitive effect of children in a happy emotional state is the best. In a relaxed and happy game and entertainment environment, children's cognition, memory, thinking, attention, and other conditions are at their best, and it is easier to stimulate imagination and creative desire. The concept of game entertainment is introduced into the design of children's books. Children's cognition and practice are induced by stimulating children's sensory experiences of sight, hearing, smell, touch, and taste in an all-round way so that children can experience the happiness of reading in games and realize the functions of happy education and aesthetic education of books (Pei, 2013).

3.1.3. Interaction is required in the Process of Digital Reading

In traditional art, a work's information almost always travels in a one-way direction; the creator transmits the information to the outside world through the work, and the audience can only accept the understanding of the information the work conveys in two ways. Only when a work can receive and transmit information can it communicate with the outside world. Because the information conveyed by the outside world changes its state, we can say that this work has interactive characteristics. In the digital era of the mobile Internet, traditional art information has transformed from one-way and passive acceptance to two-way communication. The change in transmission mode is due to the rise of interactive media art. Advanced science and technology are the primary conditions for supporting transmission, connecting computer vision graphics and Internet technology, combining film animation, language, and sound, exploring new ways of new media communication, and expanding the flexibility of information transmission (Jia, 2020). The interactivity of children's digital books is the direction in which major publishing institutions are vigorously developing. In digital books, many choices can be designed to broaden children's ideas. Many novel ideas can be adopted in the story clues to let children participate; for example, a beautiful butterfly will fly out when they touch a flower on the screen with their fingers. When you sweep a quiet meadow, little squirrels will run out. When a canary is tapped, there will be a gentle song. This kind of participation and interaction can enable children to find the fun of the game; the design of these random and repetitive characteristics gives them more autonomy; they can start and stop at any time and no longer rely on adults reading aloud so that they feel that the story is their own; this is their world.

3.1.4. The Digital Reading Process Can Enable Children to Get Immersion Reading Experience

The immersive experience is a virtual interactive experience realized under virtual reality technology, and the feelings brought by it are multi-dimensional. On the one hand, through virtual reality technology, the content of reading materials is transformed into something tangible and visible. On the other hand, the new career also brings new feelings so that children and the reading works have more direct contact, enhance the sensory experience, and provide more direct feedback to children and creators (Congrui, 2022). At the same time, the immersive experience also promotes the continuous innovation of technology, and the technological update of Virtual Reality glasses brings more real audio-visual experiences, making the immersive experience more realizable (Zhang, 2019).

3.1.5. Digital Reading Needs to Enrich Children's Imagination

The concept of imagination involves the cognitive process of altering an existing mental image and constructing a novel mental representation. According to the novelty of the content of imagination and how it is formed, it can be divided into two kinds: reinvention of imagination and creative imagination. Recreating imagination refers to forming a new image in the human brain based on a verbal description or a pictorial representation. Creative imagination creates a new image independently in the human brain according to a particular purpose and task. Imagination is the central aspect of creative thinking. For children, the core of creative thinking is imagination; almost all creative activities lack creative imagination. Psychological research has found that the creation of children in small kindergarten classes or more minor classes is a combination of unintentional imagination, and children above the middle class are mainly a kind of intentional imagination. There is a purposeful and themed imagination in late childhood, and the theme of imagination is gradually stable. From eggs to pebbles, from the sun to sunflowers, from

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white clouds to marshmallows, all kinds of metaphors and associations require the whole imagination of young children. Early reading education is the key to realizing children's imaginations (Yueqin, 2021). In the early reading education of children, special attention should be paid to cultivating their imagination. Under the guidance of imagination, attention should be paid to linking the reading content with things in real life and finding common ground between them so that children can generate more associations and activate their knowledge of picture books.

3.2. Insufficient Research

This study focuses on the target user group of 3-to-6-year-old children, and the research results are derived from the data obtained through the questionnaire distributed by kindergarten teachers among parents. Although the number of research samples met the survey requirements, the sampling scope was not extensive enough. Secondly, due to the young age of the study subjects, they could not fill out the questionnaire independently, and the questionnaire was issued to their parents, which could not fully reflect the study subjects' subjective will and actual situation. This paper builds an integrated model for studying the adoption behavior of e-picture books based on existing research and theoretical results. Most of the variables extracted refer to classical models and verified studies and are now applied to the research on the adoption behavior of e-picture books, which may ignore the influence of other factors. In future research, I will continue to make efforts to make more in-depth investigations and make up for the shortcomings of the research.

3.3. Research Prospects

3.3.1. Technology is the Basic Condition for the Digital Development of Children's Books

The rapid development and leap of technology have determined that children's digital books have undergone earth-shattering changes in form and law, and the editing and planning, interface design, and communication of digital books are all based on technical support. However, not all digital technologies will be quickly adopted by the children's book industry following their introduction, and only when the technology can advance to a point where it can attain industrialization would it be able to have a new influence on the children's book publishing sector.

3.3.2. The Form of Digital Reading for Young Children Ultimately Depends on the Content

No matter how the development of digital technology changes people's lives, some objective things will not change with the change of external technical conditions. For example, given the physical and psychological development characteristics of children, the digitization of children's books must take these objective conditions as the specific object of consideration, adhere to the needs of children as the fundamental, unthinkingly carry out formal innovation while ignoring the content of picture books, and ultimately bring products that are not suitable for the characteristics of children at this age stage to be able to achieve long-term development.

3.3.3. The Digitization of Children's Books is Closely Related to the Support of Parents

Parents play a vital role in children's reading consumption; they decide what kind of reading materials their children will eventually be exposed to. Everything has two sides: parents should carefully consider the impact of digital reading on children; they cannot unthinkingly rely on digital products and ignore the company of children; they cannot give up eating for fear of choking; and they cannot completely negate the value of digital books for children (Ting, 2022). In light of the fact that digital devices are becoming more and more lightweight, cheaper, and connected, children's reading in the future will take mobile phones and other light devices as the leading carriers and touch interaction as the primary way. Book application selection has become a new form of reading, and digital reading has begun to extend to graphic design, web design, animation movies, virtual reality, etc. Digital talent employment channels have also been expanded to various fields, and the development prospects of digital reading are considerable. For this particular group of children, digital books need more attention to make them light, flexible, and enjoyable. In digital reading, children are easily distracted by the forms of interactive animation and virtual games, which may be the original intention of confusing digital reading, so it is necessary to provide a rich sensory experience combined with pictures, audio, and even hyperlink interaction in order to better transfer children's love for traditional picture books to digital picture books. With powerful hardware support, the interaction of children's books can achieve better listening, speaking, reading, and writing experiences. However, innovation in functional design is not enough to design products suitable for modern children. It is necessary to combine theory and practice,

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emphasize unique age positioning, and better start with psychology, game habits, thinking mode, early education mode, etc. Combined with an interaction design conducive to parents' guidance and interaction and strengthening the emotional communication between the two sides, this can improve the readability of the reading material and bring the dual experience of entertainment and learning to children.

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INSTITUTIONAL REVIEW BOARD STATEMENT
The Ethical Committee of the Krirk University, Thailand has granted approval for this study on 10 October 2022 (Ref. No. 2022-1011).

TRANSPARENCY
The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

COMPETING INTERESTS
The authors declare that they have no competing interests.

AUTHORS' CONTRIBUTIONS
The ideas, concepts, and design of the research; the concepts, instrument development, and data analysis, W.Z.; the data analysis and formatting of the article, Q.L. Both authors have read and agreed to the published version of the manuscript.

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