Perceived Effectiveness of Digital Learning for Esl Children and Parents

Zihan Hu

School of Education, University of Washington, Seattle, Wa 98195, United States

Email: huz34@uw.edu

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Abstract: As educational technology becomes available for children, digital learning has become a prevalent way of learning a language. However, previous studies mostly focused on the effectiveness of digital learning on the development of the first language and quantitative method. This paper used a more qualitative method (survey and interview) to examine the perceived effectiveness of digital learning on the development of the second language by children and parents. A sample of 10 groups of ESL (English as Second Language) children and parents from Lanzhou, China, reported that they think digital learning is effective for learning English. Through theme analysis, this study also reveals the perceived benefits and disadvantages of learning English through digital learning. Finally, the educational application of increasing interactive components in digital learning to further improve the effectiveness of it and policy perspective of improving educational equality for students' color in the U.S. are discussed in this work.

1. Introduction

According to previous studies, it is critical to expose children to a new language early in life because early childhood is the critical period of language development. During this period, children are best able to learn a language, and it is also the most efficient to start learning a second language [1]. Moreover, learning a second language is beneficial for children's cognitive development, such as executive functions, therefore, it is necessary to facilitate the learning of the second language for bilingual students during childhood [2]. Thus, what is the most effective way to learn a second language has become a hotly debated question. As advanced educational technologies become available for children, digital or online learning programs (including both remote synchronous courses and recorded asynchronous courses and learning activities) appear as a new option for parents [3]. Thus, an important question is raised: is digital learning an effective way to learn a second language during early childhood?

As digital devices become popularized, more and more young children start to use them for various purposes. A sampling from a pre-school in the United Kingdom, "50% of the sample had access to between 4 and 10 devices, 32% had access to 11-20 devices while 9% reported access to over 20 devices" [4]. The current generation of children uses technologies so often that they are called "digital natives" [5]. However, not only parents and teachers but also education professionals are having a debate of whether young children should use technology for learning [5]. Through assessing the language performance before and after a digital learning intervention, some studies have examined the effectiveness of digital learning on the development of the first language, and the experiments show a positive relationship between the use of digital learning and improvement in some aspects of language development, such as phonological awareness and vocabulary acquisition, and other cognitive development, such as critical thinking skills and learning autonomy [1, 5, 7, 8].

However, there are ways native speakers learn English different from how English as Second Language (ESL) children might learn English: for example, English native speakers and ESL children are exposed to the different language-speaking environment, and ESL children are influenced by their

first language such as grammar structure. Therefore, whether digital learning would have the same positive effect on learning English as a second language is not clear. Furthermore, previous studies mostly focus on testing the effectiveness through language ability assessment test, which is a more quantitative method, but children's perception of the effectiveness of digital learning has not been examined. Since if children perceive digital learning as effective and interesting, they may devote more time to learning through it and perform better on the assessment tests. Therefore, the interpretation of assessment tests might be different when considering the perception.

Furthermore, parents' attitudes towards digital learning have been interviewed by previous studies, and factors such as parental goals of successful academic outcome correlate with the increasing children's use of digital learning programs in China [9]. However, perceived benefit and disadvantage of digital learning, and whether children's way of perceiving digital learning different from or same as their parents have not been asked by researchers.

2. Proposed Study

This study examined the perceived effectiveness of digital learning on ESL children in Lanzhou, a less-developed city in northeast China. This study also studied the perceived benefit and disadvantage of digital learning by parents and children, and possible different perceptions with regards to digital learning between parents and children.

The first alternative answer, which I hypothesized, could be that both children and their parents think digital learning is effective because it is time-saving and necessary during the pandemic. The second alternative answer is that they do not perceive digital learning as effective since there is less interaction between student and educator. Moreover, children's age may be a predictive factor of whether they would have a different perspective towards digital learning compare to their parents, and parent's age might be a factor that predicts the preference for digital learning since older parents might resist digital learning. By explicitly asking participants whether they think digital learning is effective and comparing and contrasting the answers between children and parents, which alternative answer is correct will be shown.

3. Method:

Participants were recruited in Lanzhou, a less-developed city in northwest China, therefore, their first languages are all Mandarin. There were 10 groups of children (age from 5 to 12 years old) and their parents (highly educated mothers). Children all had experiences with both digital learning and real-world learning as ESLs, and the digital learning programs they participated in were all in a similar format (remote synchronous courses that allow direct interaction with educators). All of the participants are from middle-class families, therefore, the socio-economic status would not be a variable.

Participants were first asked to fill out a survey, and both parents and children were asked the same questions. The questions included were as below.

•How long you have learned English and learned it in the format of digital learning?
•Do you think digital learning is effective and why?
•Will you continuously choose digital learning as a way of learning English in the future?

Table 1 : Children's Answers to the Survey

	Age	Years of learning English	Period of Online Learning	Whether digital learning is effective	Digital and offline which do you prefer	Whether Continue Online Learning
Children 1	5 years	3 years	2 months	Not sure	Offline	Not sure
Children 2	7 years old	3 years	1 and half year	Yes	Both of them	Yes
Children 3	7 years old	5 years	2 years	Yes	Not sure	Yes

Children 4	8 years old	1 year	Half year	Yes	Online	Yes
Children 5	8 years old	1 and half year	1 year	Yes	Online	Yes
Children 6	9 years old	4 years	2 months	Not sure	Offline	Yes
Children 7	9 years	6 years	2 months	Not sure	Offline	Not sure
Children 8	11 years old	5 years	2 years	Yes	Offline	Yes
Children 9	12 years	4 years	1 year	Yes	Online	Yes
Children 10	12 years old	7 years	3 years	Yes	Both have pros and cons	Yes

Table 2 : Parents' Answers to the Survey

	Age	Whether digital learning is effective	Digital and offline which one do you prefer	Whether continue online learning
Parent 1	36 years old	Not sure	Offline	Yes
Parent 2	38 years old	Yes	Combination of the two	Yes
Parent 3	38 years old	Yes	Offline	Yes
Parent 4	47 years old	Yes	Online	Yes
Parent 5	38 years old	Yes	Online	Yes
Parent 6	43 years old	Not sure	Offline	Yes
Parent 7	37 years old	Not sure	Online	Yes
Parent 8	42 years old	Yes	Both have pros and cons	Not sure
Parent 9	43 years old	Yes	Offline	Yes
Parent 10	36 years old	Yes	Both have pros and cons	Yes

Finally, parents and children together responded to a semi-structured interview to answer more follow-up questions (such as clarification of their answers) after I reviewed their answers. Children's and parent's answers, excepting reasons for whether they think digital learning is effective, were shown in Table 1 and Table 2. Children's answer (shown in Table 1) is ranged from the youngest to oldest, and parent's answers (shown in Table 2) is ranged based on the corresponding children. Children and parent's reasons for whether they think digital learning is effective were collected, transcribed, and went through theme analysis by taking out elements that were mentioned the most.

4. Result and Discussion

According to Table 1 and Table 2, almost all ESL children and parents explicitly think digital learning of English is helpful and effective. Except children 1,6 and 7, who take digital learning courses only for 2 months due to the mandatory COVID-19 remote learning requested by schools, answered: "not sure". However, it is surprising that even children and parents who prefer offline learning reported they are willing to continue taking digital learning courses in the future. Probably because even those children who only had a short period of experience with digital learning enjoyed the promoting learning environment brought by digital learning.

Table 3 Children's and Parents' Perceived Benefit and Disadvantages of Digital Learning

	Children	Parents
Time-saving	50%	90%
More educational resource	0%	50%
More comfortable speaking English	30%	30%
Promoting autonomy	0%	10%
Less joy and chance to play with peer	60%	0%
Less interaction with educator	40%	40%

After theme analysis (shown in Table 3) of children's and parents' reasons for preferring or dis-preferring digital learning, I found out several perceived benefits and disadvantages. Firstly, most of the participants 90% parents and 50% children mentioned that digital learning is time-saving and flexible since there is no need for transportation and no assigned time and location. Secondly, some parents (50%) mentioned that digital learning has more educational resources available because they can find educators from more-developed cities, such as Beijing and Shanghai, and even native speakers from English-speaking countries. Thirdly, under the digital learning environment, some children and parents (30%) mentioned that they feel more comfortable speaking English without peer pressure and feeling safe at home. Finally, few parents (10%) mentioned that digital learning promotes learning autonomy because of the more flexible schedule. The only major disadvantage of digital learning reported by parents and children (40%) who explicitly prefer offline learning is less interaction with teachers and fewer chances to play with peers. Therefore, the hypothesis that both children and parents would perceive digital learning as effective is supported by the result.

Moreover, according to theme analysis, there are still differences in way of parents and children thinking about digital learning. Practical perspectives are likely to impact parents' preferences, such as time-consuming, education resources, and academic performance. However, children (60%) tend to consider which way of learning can bring more joy and chance for playing with peers.

However, there are some differences between the result and the hypothesized alternative. Firstly, younger children (6 out of 10) are likely to share the same opinion with their parents towards digital learning instead of having different opinions. Only children 7 and 9 (age 9 and 12) had different preferences of the way of learning English. Therefore, younger children may largely be influenced by their parents since they are the authorities for young children; nevertheless, elder children may hold a diverse and different opinion from their parents because they have more developed decision-making and cognitive functions. Secondly, according to chart 2, parents' age is not a predictive factor of parent's preference for digital learning, since younger parents, such as parent 1, prefers offline, and elder parents, such as parent 4, prefers digital learning; and education level and experience are more influential factors.

5. Application and Conclusion

Digital learning is likely to be one of the major ways of learning in the future because of the pandemic and development of educational technology. According to the result of this study, it is clear that most parents and children are reporting that they think digital learning is effective, and even those who prefer offline learning said they are willing to try digital learning. Therefore, educational institutions should consider offering their courses and programs in form of digital learning to utilize the benefit of it, such as time-saving(no need for transportation) and better educational resources(educators from more developed cities or native speaks from other countries) available for children. However, to

further make digital learning a more formal and widely practicable method of teaching and learning in the future, there are some problems that need to be addressed. For example, since the major disadvantage parents are worried about is less interaction between children and the educator, adding more interactive components to digital learning can foster more interest in digital learning and promote better learning outcomes for children. To promote more interaction, face-to-face education with video cameras on for both teacher and students during class time is necessary; moreover, adding break-out room for small group talk, and interactive games for children to complete is also helpful.

Although digital learning is effective for language development and prevalent during the COVID-19 pandemic, there are 14% of children ages 3-18, such as those in poverty and students of color, do not have access to WiFi and digital devices, therefore, not able to keep up with school and learning, which will further enlarge the achievement gap [10]. Although another news that Washington stats will use the fund from the Coronavirus Aid, Relief, and Economic Security Act (CARES Act) to purchase 64000 computers and more for students who can not afford a digital device for remote learning during the pandemic, there are still lots of states and school districts that are not able to supply students from low-income families with WiFi and digital devices for online-learning [11]. The digital divide, the gap between those able to benefit from digital learning and those who do not, is a huge social justice problem because, under the current circumstances, not all students enjoy the same opportunity of learning.

To solve the problem of the digital divide, there is a potential solution: expanding the accessibility of the CARES Act to more students in poverty and increase the proportion of the block grant that gives to states to supports online learning by purchasing digital devices and WIFI hotspot for students and school district in need. I advocate for this potential solution, firstly, because not all students in poverty can enjoy the benefit of educational technology fund from the CARES Act; secondly, it is a federal policy that can set a national standard for all states to follow. Throughout the development of educational policy, there is not a regulation from the federal government, and educational technology is still not integrated into federal education policy. Therefore, in American, policies regarding e-learning are different from state to state [12]. If the federal government would promote using CARES Act to fund educational technology for students in poverty instead of state policies, there will be a standard and regulation for all states to follow, and finally, all states will start to address the problem of the digital divide and every school districts will get enough digital devices to distribute for poor students just like what the Washington state did.

6. Limitation

There is some limitation to this study. Firstly the insufficient sampling size can be problematic since there are only 10 groups of children and parents for which can not represent all children and parents in Lanzhou. Secondly, since all the participants are from Lanzhou, the result may not have generalization to other cities in China; and since Lanzhou is a less developed city in China, the result may be different in more developed cities. Therefore, future studies may consider having a larger sampling size and choosing participants from different cities to compare and contrast how geographical factors would influence parents' and children's perception of digital learning.

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