

# ABCMouse English, a Self-Guided Digital English Learning Program, Significantly Increases Young Japanese Children's English Skills: Replication and Extension of a Randomized Controlled Trial

—Hee Jin Bang<sup>†</sup>, Ph.D., Eric Setoguchi<sup>‡</sup>, Ph.D.

## Key Findings

- By using *ABCMouse English* for about 26 hours over four months, 7- and 8-year-old Japanese children made three times greater gains in their English skills than their control group peers on a leading English language assessment.
- Children who used *ABCMouse English* made nearly five times greater gains in their English listening and speaking skills in comparison to the control group on an assessment aligned with the program.
- Parents reported that *ABCMouse English* helped children not only improve their English language skills but also become more interested, motivated, and confident in using English.
- Evidence also suggests that *ABCMouse English* fostered self-efficacy, promoted a growth mindset in children, and encouraged them to develop a positive view of themselves as learners.

## Overview

In many countries across the world, children are beginning to learn English as a foreign language at young ages. In Japan, English instruction became mandatory for 3rd and 4th graders starting in 2020, and this introduction of English education in lower elementary grades has motivated many Japanese parents to enroll their children in English preschool or English after-school programs.<sup>1</sup>

In recent years, especially during the COVID-19 pandemic, the use of technology and digital education programs to support general learning has increased dramatically. Language learning is particularly well-suited for digital game-based learning, as it offers opportunities for learners to practice the target language in an interactive, immersive, low-anxiety environment.<sup>2</sup> To understand the impact of *ABCMouse English*, a specific digital, self-guided language learning program, available to young Japanese children, Age of Learning conducted a randomized control trial. This study is a replication and extension of a 2019 study conducted on an earlier version of the program with children in China.

<sup>†</sup> Senior Director, Efficacy Research and Evaluation, Age of Learning, Inc.

<sup>‡</sup> Efficacy Research Analyst, Efficacy Research and Evaluation, Age of Learning, Inc.

<sup>1</sup> Nakamura, J. (2021). English parenting for Japanese parents. *English Today*.

<sup>2</sup> Chiu, Y., Kao, C., & Reynolds, L. (2012). The relative effectiveness of digital game-based learning types in English as a foreign language setting: A meta-analysis. *British Journal of Educational Technology*, 43(4), 104–107.

For this study, Age of Learning partnered with ASMARQ, a market research company in Japan, and an experienced teacher educator at International Christian University in Japan. Age of Learning researchers designed the study and worked with ASMARQ to recruit and communicate with the participants. The Japanese teacher educator recruited and trained the examiners, bilingual Japanese-English graduate students preparing to become English language teachers. Age of Learning coordinated the logistics associated with language assessments, conducted the data analyses, and interpreted the results. One key goal of the study was to understand the degree to which *ABCmouse English* can help 7- and 8-year-old Japanese children develop English language skills.

## Program

*ABCMouse English* is a self-guided digital learning program, focusing primarily on developing listening and speaking skills, that incorporates empirically supported, effective practices from second-language instruction. A team of language acquisition researchers, teachers, curriculum specialists, and developers used the Common European Framework of Reference (CEFR) standards, the American Council on the Teaching of Foreign Language (ACTFL) guidelines, and second-language research to create a program that presents content in the developmental sequence that language is acquired.

The program is task- and activity-based, and it provides engaging opportunities for learners to interact with activities in authentic, meaningful contexts that include objects, events, and situations that children encounter in their everyday lives.<sup>3</sup> Learners receive scaffolded target language input,<sup>4</sup> construct knowledge through trial and error, and receive timely and developmentally appropriate implicit and explicit corrective feedback that is embedded in activities.<sup>5</sup> The self-guided Learning Path in the program leads learners through four levels of progressively more challenging interactive and receptive material and is designed to encourage children to become active, independent learners. Finally, given the great deal of research linking motivation and second language (L2) learning outcomes, the program was designed first and foremost to promote learner engagement and motivation.<sup>6</sup> The program consists of four Levels, with 260 lessons covering approximately 1,000 target words and sentence structures. The themes covered across the four Levels included animals, common objects, foods, places, colors, common adjectives, numbers 1–20, shapes, people’s feelings, body parts, clothing, pronouns, common action verbs, rooms of the house, and simple locative prepositions. Participants in this study were placed in either Level 1 or 2 of the program based on their pretest performance. A handful of participants progressed to Levels 3 and 4 as well. Figures 1–3 show screenshots of sample games and videos that students experienced in the program.



**Figure 1.** Instructor-Led Videos: Each lesson starts with a video that provides an interactive learning experience led by a teacher in a language learning classroom. These videos introduce new words and concepts in a meaningful context, supported by visuals, animations, and gestures.

3 Berardo, S. A. (2006). The use of authentic materials in the teaching of reading. *The Reading Matrix*, 6(2), 60–69. Retrieved from <https://pdfs.semanticscholar.org/f786/6114ebf30bb220fac1cf838553458776feed.pdf>

4 Moeller, A. & Roberts, A. (2013). Keeping it in the target language. Multitasks, multiskills, multiconnections: Selected papers from the 2013 central states conference on the teaching of foreign languages, 21–38. Retrieved from <https://digitalcommons.unl.edu/teachlearnfacpub/178/>

5 Dean, C. B., Hubbell, E. R., Pitler, H. & Stone, B. J. (2012). *Classroom instruction that works*. Alexandria, VA: ASCD; Mackey, A. (2012). *Input, interaction and corrective feedback in L2 classrooms*. Oxford: Oxford University Press.

6 Masgoret, A. & Gardner, R. C. (2003). Attitudes, Motivation, and Second Language Learning: A Meta-Analysis of Studies Conducted by Gardner and Associates. *Language Learning*, 53, 123–163. doi: 10.1111/1467-9922.00212/



**Figure 2.** Bubble Popper Game: Player hears the word *tree*. The task is to tap on the bubbles that contain a tree and ignore the bubbles that contain objects other than trees.

## Participants

A total of 148 children and their parents participated in the study between December 2021 and March 2022. They were recruited from all over Japan, using a background questionnaire to identify children between 7 and 8 years of age at the start of the study. Children were eligible to participate if they did not spend more than an hour a week outside of school learning English. Families from 25 of 47 prefectures across Japan participated in the study, and 68% of the sample (50 treatment, 51 control) were recruited from major metropolitan areas of Tokyo, Kanagawa, Saitama, Osaka, and Chiba. About 73% of the parents participating in the study (53 treatment, 54 control) had completed a bachelor's degree or other professional degrees. At the time of recruitment, most children (~57% in each group) were learning English either at school or elsewhere (e.g., juku, lessons from foreigners, English-oriented television programs), but parents were asked to refrain from having their children start any new English learning programs throughout the four months of the study. All 148 children completed individual assessments of English language skills before and after using the program.

## Design and Procedures

The research team used two complementary instruments to assess children's English language skills at the start and at the end of the four-month period. After balancing pretest scores, age, and gender, the team randomly assigned 74 children to the treatment group and 74 to the control group. There were no



**Figure 3.** Speaking Practice: Player hears the word elephant and is asked to repeat it. The player immediately receives feedback on their pronunciation through an automatic speech recognition technology.

significant differences between the two groups in the kind or amount of English language learning they were engaged in prior to the start of the study. The researchers asked the treatment group children to use the *ABCmouse English* program for at least 15–20 minutes daily for six days a week for 16 weeks. To ensure all participants met the minimum threshold for usage each week, a researcher reviewed the game usage data on a weekly basis and provided email reports to parents to inform them of their children’s program usage in the previous week. For children whose usage was substantially lower than the recommended usage goal, the team reached out to their parents through ASMARQ, the research partner in Japan who telephoned them to check if there were barriers to usage that the research team could help address. The control group children continued (as did the experimental group) with any English language learning activities that they had already been engaged in at the start of the study, which included having conversation sessions with foreigners, watching English-oriented television programs, or using other commercially available English learning materials. Additionally, all parents completed three monthly surveys; 22 treatment group parents participated in end-of-study individual interviews or focus groups; and 16 children participated in end-of-study focus groups.

The external measure of children's English skills was Eiken Junior, a leading assessment designed to foster English communication skills for Japanese children learning English. It is aligned to the Central European Framework of Reference for Languages (CEFR) and has three levels representing increasing levels of

difficulty: Bronze, Silver, and Gold. The vocabulary, expressions, topics, and settings of the questions are based on situations that children are familiar with. We administered the Bronze Eiken Junior to all children at baseline. Children who scored 80% or higher on Bronze were asked to take the Silver Eiken Junior, and those who scored 80% or higher on Silver were asked to take the Gold Eiken Junior. Figure 4 shows the structure of Eiken Junior and the amount of English language instruction at school that is recommended prior to taking each level of the assessment.

The internal assessment created by Age of Learning curriculum specialists targeted linguistic forms that

children were exposed to through the program over the course of the study. This assessment included 25–35 questions, divided into five subsections: Vocabulary Identification, Listening for Meaning, Pronunciation, Speech Production, and Conversation. Fourteen bilingual Japanese-English assessors, blind to the treatment or control assignments of children, administered the assessments over Zoom and provided instructions for the child to complete the Eiken Junior assessment online as soon as possible.

On average, treatment children used *ABCmouse English* for 26.3 hours (SD = 12.5) across 79 days (SD = 20.2) and completed 987.5 activities (SD = 443.3).

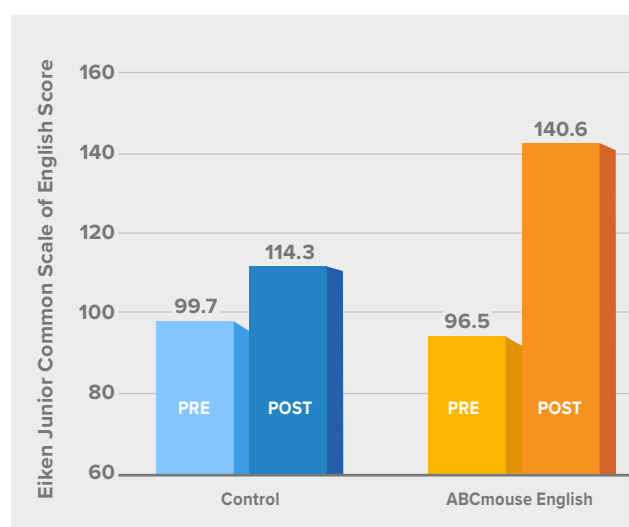
	BRONZE	SILVER	GOLD
<b>Recommended Learning Experience</b>			
<i>Eiken Junior</i>	Children who are taking <i>Eiken Junior</i> for the first time	Children who have received more than 80% of the total points possible in BRONZE	Children who have received more than 80% of the total points possible in SILVER
Elementary school	1.5 years to more than 2 years	2.5 years to more than 3.5 years	4 years to more than 5 years
<b>Test Structure</b>			
Number of questions	40	45	50
Duration	30 minutes	35 minutes	45 minutes
Main topics & settings	Everyday life (at home or school) including interaction with family, friends, and teachers; routine daily activities; topics of interest to children; etc.	Familiar social (regional) life, interactions with new people and with people from other countries, school studies, extracurricular activities, general knowledge of matters related to a child's life, etc.	Familiar topics, events, and culture of Japan and foreign countries, overseas travel, social activities, volunteer activities, dreams and future ambitions, stories, fiction, and solving problems, etc.

**Figure 4.** Recommended learning experience and test structure by level for Eiken Junior adapted from [https://www.eiken.or.jp/eiken/en/jr\\_step/](https://www.eiken.or.jp/eiken/en/jr_step/)

## Results

**Finding 1:** By using *ABCmouse English* for about 26 hours over four months, 7- and 8-year-old Japanese children made three times greater gains in their English skills than their control group peers on a leading standardized English language assessment.

Prior to the start of the study, children in the control group scored on average 99.7 (SD = 50.0); while children using *ABCmouse English* scored on average slightly lower 96.5 (SD = 40.2) on Eiken Junior, which reports scores on a Common Scale of English that allows for comparisons across all levels of the test. On the post-assessment, the control group children scored on average 114.6 points higher 114.3 (SD = 54.6); while the children using *ABCmouse English* scored on average 44.1 points higher 140.6 (SD = 38.0, effect size = 0.56,  $p < .001$ ).

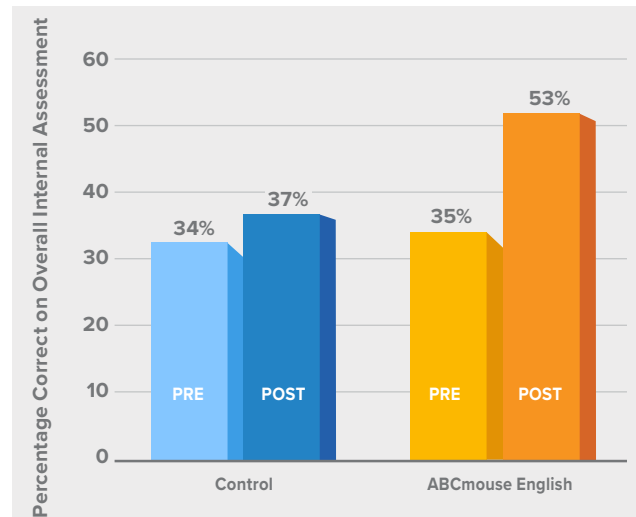


**Figure 5.** Pre- and post-assessment scores of children in the control group, showing a 14.6-point gain versus the pre- and post-assessment scores of children who used *ABCmouse English*, showing a 44.1-point gain.

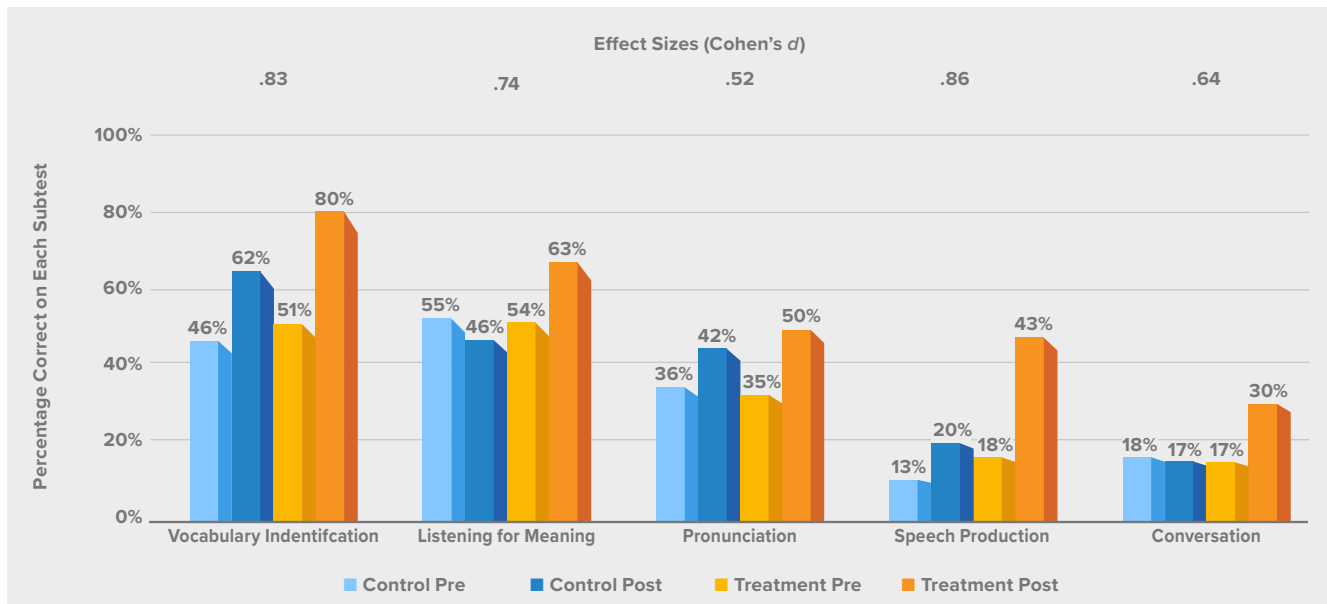
**Finding 2:** Children who used *ABCmouse English* made nearly five times greater gains in their listening and speaking skills in comparison to the children in the control group on a language assessment aligned with the program.

On the internal assessment aligned with the *ABCmouse English* curriculum, the children in the control group scored on average 34% correct (SD = 12) prior to the study start, while the children in the *ABCmouse English* group scored on average 35% correct (SD = 13). On the post-assessment, the children in the control group scored on average 3% higher (i.e., 37% correct, SD = 13); while the children in the *ABCmouse English* group scored on average 18% higher (i.e., 53% correct, SD = 15) (effect size = 1.11,  $p < .001$ ).

An examination of the assessment scores across the subtests showed that the children who used *ABCmouse English* significantly outperformed their control group peers on each listening and speaking skill assessed. The changes in scores for the children in the control group from pre- to post-assessment were 16%, -9%, 6%, 7%, and -1%; while the changes in scores for the children in the *ABCmouse English* group from pre- to post-assessment were 29%, 9%, 15%, 25%, and 13% on vocabulary identification, listening for meaning, pronunciation, speech production, and conversation, respectively. The effect sizes for the differences between the two groups' post-assessment scores range from 0.52 to 0.86 ( $p < .001-.002$ ).



**Figure 6.** Pre- and post-assessment scores of children in the control group, showing a 3% gain versus the pre- and post-assessment scores of children who used *ABCmouse English*, showing an 18% gain.

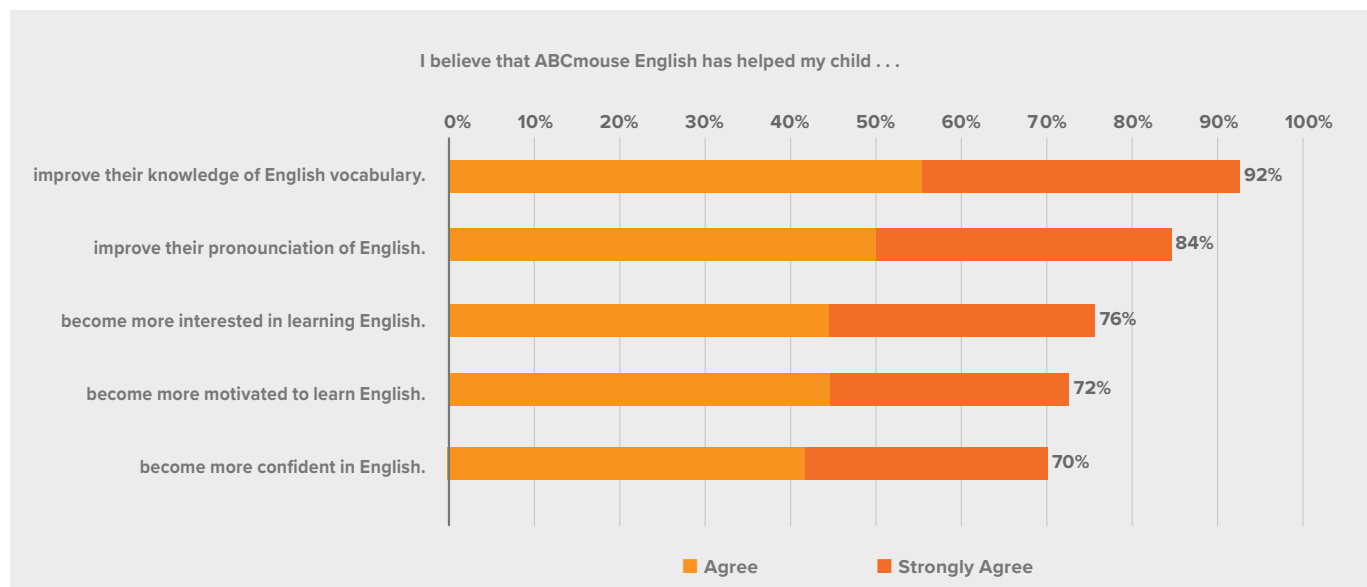


**Figure 7.** Pre- and post-assessment scores of children in the control group and in the *ABCmouse English* group on each subsection of the assessment aligned with the *ABCmouse English* curriculum.



**Finding 3:** Parents reported that *ABCmouse English* helped children not only improve their English language skills but also become more interested, motivated, and confident in using English.

On a survey administered at the end of the study, parents of children who used *ABCmouse English* indicated that the program helped their children improve their vocabulary knowledge and pronunciation of English words. They also reported that their children became more interested, motivated, and confident in using English thanks to the *ABCmouse English* program.



**Figure 8.** Percent of treatment group parents reporting “agree” or “strongly agree” on a 5-point scale (1 = “strongly disagree” to 5 = “strongly agree”) to statements about the impact that *ABCmouse English* has had on their child’s learning outcomes (n = 74)

In interviews and focus groups conducted at the end of the study, parents also shared examples of their children voluntarily using English outside of the *ABCmouse English* app, suggesting a willingness to use English more and an interest in using English as a tool for communication.

*“I noticed that he’s been trying to use the sentences that he learned in the app a bit more often. That’s how he tries to put into practice what he’s learned from the app in his daily life. He’s also more accustomed to the language and can understand English sentences spoken slowly.”*  
—Parent of 1st grade boy

*“He would ask me if I knew how to say something in English. For example, he would say stuff like, ‘this animal is called a monkey’ in English. Also, I would ask things in Japanese like, ‘Hitoshi, did you give me this?’ And then, he would answer me in English, ‘Yes, I did.’ So . . . he’s been using the English words in our daily conversations. Even if I didn’t speak any English to him, he was testing his English knowledge.”*  
—Parent of 2nd grade boy

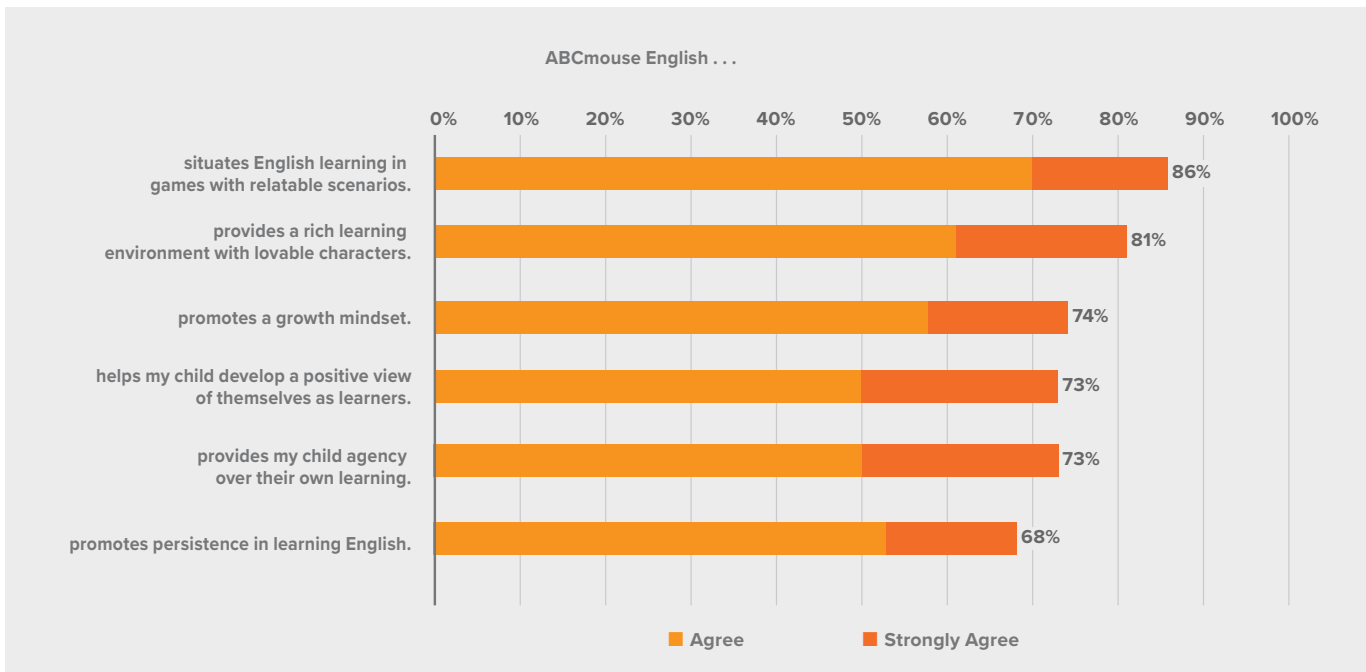
*“We walk home together, and on our way home, she would ask me, ‘what’s this’ or ‘that.’ And together with the words memorized from ABCmouse, she would construct phrases, using ‘this is’ or ‘that is,’ and continue in that way for around 30 minutes until we reached home. This happens every day.”*  
—Parent of 2nd grade girl

*“My child didn’t know any English before using the app. But after using it, he was able to improve his English skills a bit by learning some words and listening to their pronunciation. And he seems to be interested in continuing to use the app as well. He’s also become interested in learning different subject[s].”*

—Parent of 2nd grade boy

**Finding 4:** Evidence also suggests that *ABCmouse English* fostered self-efficacy, promoted a growth mindset in children, and encouraged them develop a positive view of themselves as learners.

Given the important relationship between learners’ self-concept, self-efficacy beliefs, and achievement, we asked parents about the extent to which *ABCmouse English* fosters a positive learner identity and provides an environment that encourages children to persist in learning. On the end-of-study surveys, parents not only reported that the program provides a rich learning environment with developmentally appropriate scenarios to which children can relate, but they also indicated that the program has helped their children understand failure and effort as useful for learning.



**Figure 9.** Percent of treatment group parents reporting “agree” or “strongly agree” on a 5-point scale (1 = “strongly disagree” to 5 = “strongly agree”) to statements about the extent to which *ABCmouse English* has helped their child develop a positive learner identity (n = 74)

In interviews and focus groups, parents further elaborated on the impact of *ABCmouse English* on their children’s behaviors and attitudes as learners:

*“There was a voice recording feature to check his pronunciation, and he would get some good scores. Sometimes, he wouldn’t get a good score, but that gave him more motivation to keep working on it as well. So, instead of getting demotivated, that gave him another reason to keep recording.”*

—Parent of 2nd grade boy

*“The results were so much better than I had expected. At first, she had no interest in English. She was anxious because she was not very good at English, but then she started ABCmouse, and she went from feeling she was poor at it to not feeling that way at all. She says things like, ‘I know this. I’ve heard this before,’ while watching TV, for example. I could see the growth in her daily life. . . . And she also says she likes her schoolwork now. She is able to have fun while learning.”*

*—Parent of 2nd grade girl*

*“His vocabulary has grown, and his speaking has improved dramatically, as well as his intonation. . . . And his personal reluctance to learn English has vanished. It was superb, in my opinion. . . . I can see the progress in the scores, and another thing is that the . . . English teacher at his primary school . . . complimented him on his pronunciation. It gave him confidence.”*

*—Parent of 2nd grade boy*

In focus group discussions, children also alluded to their increased interest and dedication to learning English, even pointing to their vision of themselves as English speakers in the future.

*“It is really fun, and we don’t always have English classes at school, so we learn at a very slow pace. I felt like it’s faster to learn with ABCmouse, which makes it very useful if I want to go overseas.”*

*—2nd grade boy*

*“At first, I didn’t understand, but as I got more and more into it, you know, I started to want to do it more and more. Like, I think I can learn a lot from it.”*

*—1st grade boy*

*“I think that it can be of some use to me in the future when I’m in [3rd] grade and an English teacher comes.”*

*—2nd grade boy*

*“I started to think I want to become an English teacher and teach English.”*

*—1st grade girl*

## Conclusion

The findings from this efficacy study of *ABCMouse English* conducted in Japan align with and extend the results of an earlier efficacy study of the program conducted in China. By using the self-guided English learning app consistently for four months, 7- and 8-year-old children in Japan made significant improvements in their English language skills. Parents especially noted the benefit of the program in their child’s motivation and confidence in learning English as well as behaviors suggesting the development of a positive learner identity. Over the course of the four-month study,

children enjoyed using and were highly engaged with *ABCMouse English*, providing strong evidence that the program is a convenient, user-friendly learning resource for young children in Japan seeking to have an early start in developing their English language skills.