Touch the page and mimic me: Evaluation of a talking-pen learning tool

Abigail Odakura

International Christian University High School
abbie.odakura@gmail.com

Forum

The purpose of this paper is to evaluate the talking-pen device called the Mimic Me, an educational technology product of a large English conversation school in Japan, as an educational learning tool. The product will be reviewed in terms of its developmental appropriateness for the target audience based on current research. Although the Mimic Me uses behaviorist learning theories to teach vocabulary and short phrases, it could be further enhanced to live up to its full potential as a learning tool. The author proposes alternative ways that the product could be used, as well as possible design modifications that would improve the effectiveness of the product.

Introduction

English conversation schools are a popular and profitable business in Japan, where children as young as one year old attend classes once a week. As competition between the schools has increased, schools have raced to create unique, innovative materials and lessons that will appeal to the customer. One way that they do this is by developing (and advertising) educational products using new technologies that students can use to learn English. Recently, a popular product is the "talking pen" – an electronic, pen-shaped device which "speaks" when it touches certain items on the page of a book. One large conversation school with locations all over Japan teamed up with the Japanese toy company Takara Tomy to create the Mimic Me, a talking pen to be used with the school's original class materials.

The Mimic Me consists of a small, plastic, pencil-shaped scanner attached by a cord to a **CD**-sized device with a speaker. Each of the

school's textbooks has a corresponding cartridge which can be inserted into the Mimic Me. According to the company's website (Aeon, 2012), each page in the textbooks has been encoded with data that can be read by the scanner in the tip of the talking pen. For example, if the pen touches a picture of a piano, the Mimic Me will say, "piano". Each code in the page can be called a "hotspot" (de Jong & Bus, 2002). The textbooks contain hotspots which elicit vocabulary words, phrases, sound effects, and quizzes from the Mimic Me. In addition, some hot spots will elicit different phrases the first and second time they are touched. For example, the first time the pencil touches the piano, the Mimic Me will say "piano", but the second time it will say, "Can you play the piano?" (Aeon, 2012).

Since the Mimic Me is sold as a package along with specific courses, customers do not have the option of buying the product on its own. The school packages the device with the textbooks for three courses for students of pre-school age: the three year-old course, the four to five year-old course, and the six year-old course. Students below the age of three and above the age of six are provided only with CDs that match the lesson materials. A student who starts studying at this conversation school at the age of three can continue to use the Mimic Me for four years, since each new textbook comes with a new cartridge that can be inserted in the device. Although the target market for the school's conversation classes is Japanese children (and parents), the Mimic Me and the textbooks do not provide Japanese translations of target words and phrases, and could therefore be used by children of any language background.

Product experience

The conversation school designed and advertises the Mimic Me as a tool to be used outside of class, as homework. The following observations are based on the author's previous experience as a teacher at a branch of this school. Each week, the teacher told the students to use the Mimic Me to study the next two pages in the textbook (in preparation for the following week's lesson). At the end of every class, the teacher checked with the students, "Did you do your Mimic Me?" Students who replied in the affirmative received special stickers. Aside from this, the teacher had no involvement with the Mimic Me.

According to the school's website (Aeon, 2012), the Mimic Me was designed to encourage autonomous studying. The device has a simple on/off switch which the students can easily access when they are ready to study. Currently, there is no research available on the Mimic Me. Therefore the descriptions of typical use of the Mimic Me are solely based on the author's previous observations in an uncontrolled environment. In a typical study session, the students spent time touching the different items on the page and listening to the words and phrases. Some students repeated after the Mimic Me, although this was not required. After listening for a few minutes, the students had the option to touch an icon at the bottom of the page to start a quiz. This quiz on this device is a receptive activity in which the students have to listen and then touch the correct item or phrase. Correct answers are rewarded with a "correct" sound, while incorrect answers cause a "wrong" sound (Aeon, 2012).

The teacher did not specify how frequently the students should use the Mimic Me. Therefore, diligent students (or parents) may have used the device every day until they had mastered the target vocabulary and structures, while others would simply play with the sound effects for a few minutes before the lesson started. Either way, a student would
receive full credit for doing the homework.

Developmental appropriateness

Cognitive appropriateness

In order to evaluate the developmental appropriateness of the Mimic Me, it is essential to understand the cognitive features of its target users: pre-schoolers. The students who take the pre-school-age courses at this conversation school range from age two to age six, a range which falls in what Piaget called the "preoperational period" (Siegler & Alibali, 2005). In this stage, children begin to develop the ability to form internal representations of events. This ability is essential to the success of the Mimic Me; the students listen to an English dialog at home, and then recreate it in the classroom a few days later. In the beginning, children represent these events using symbols that are meaningful only to the child. However, as the preoperational stage progresses, children make greater use of signs, which are tools to communicate with other people (Siegler & Alibali, 2005). In other words, as children get older, they begin to rely on language to help them make internal representations. The school hopes that the Mimic Me will help children remember short conversations and role-plays in the textbooks using English signs.

Although children in the preoperational stage increasingly use signs to communicate, their communication does not mirror that of adults. According to Piaget, children's thinking at this stage is egocentric, meaning that they assume everyone sees the world in the same way that they do (Siegler & Alibali, 2005). This could cause confusion for a child who is learning a yes/no question such as, "Can you play the piano?" with the Mimic Me. Although the textbook presents the answers, "Yes, I can" and "No, I can't", a child who cannot play any instruments may fail to see the value of the phrase "Yes, I can". Children may exclusively internalize the phrases that are relevant to their own lives. On the other hand, research has shown that, in contrast to Piaget's theory, even young children can imagine what other people are thinking (Siegler & Alibali, 2005).

Another aspect of children's thinking that can interfere with learning is that children in the preoperational stage tend to have weak metacognitive skills. According to research, most children under the age of 5 are not aware that they ever forget anything (Siegler & Alibali, 2005). For this reason, they tend to overestimate their ability to memorize things. Since the Mimic Me encourages autonomous study, the child can decide how much time to spend studying, and how frequently to study. However, since young children believe that they will remember everything, they may be satisfied after one use, and then become frustrated when they can't remember the targets in the lesson a few days later. At an age when metacognition is weak, it may be preferable for parents to get involved in monitoring study time.

Appropriateness of the type of instruction

The Mimic Me embodies this conversation school's behaviorist approach to learning a foreign language; the idea is that English has a set number of words and phrases, and that if children memorize them, they will (eventually) be able to speak the language (Dede, 2008). Although most children learn at least 10,000 words in their native language by the age of six (Siegler & Alibali, 2005), a child who is only exposed to a foreign language for one hour a week will not be able to make similar progress. Therefore, every week the instructor and the Mimic Me expose the children to the same four to six vocabulary words and **289**

one short question-answer or statement-comment exchange per week. The Mimic Me is an example of a behaviorist technology. It uses pleasant stimuli (such as a "correct!" sound) to extrinsically motivate students to study and aim for the correct answers (Dede, 2008). Although some features of language learning, such as building vocabulary, can be aided by behaviorist technologies, this type of instruction fails to teach children the more complex elements of learning a language. Another problem with behaviorist technologies like the Mimic Me is that children get tired of the extrinsic motivations and simple quizzes in the material, and they lose their motivation to study (Dede, 2008).

The appropriateness of homework

The Mimic Me is advertised as a way to give students extra exposure to English outside of the classroom. It is an alternative to the worksheets that are frequently given as homework to pre-schoolers (Barbour, 2012). However, research has failed to show a positive correlation between homework and academic achievement for students in elementary school and below (Cooper & Valentine, 2001). In an attempt to explain this finding, Cooper and Valentine (2001) found support for the hypothesis that homework serves different purposes in elementary and secondary schools: while the teachers of older students assign homework in order to improve academic success, the teachers of younger students do so in order to help students develop good time-management skills. However, since the purpose of giving homework to young students is not to learn, teachers often assign worksheets that parents view as "busywork" (Barbour, 2012). The Mimic Me is an attempt to give young students a more valuable form of homework that will lead to achievement in learning English.

However, the way that students interact with the Mimic Me does not reflect how children think at the pre-school age. According to Barbour (2012), young children are only beginning to learn how to think symbolically. Therefore, it is important to involve them in first-hand experiences in which they can interact with concrete items. For students, listening to a short-exchange from the Mimic Me while looking at cartoons in a textbook requires a significant amount of symbolic thinking. Following Barbour's (2012) advice, it would be better for the children to act out the situations with a parent using real objects in their homes. This type of interactive homework encourages positive attitudes about learning (Barbour, 2012).

The appropriateness of autonomous study

According to the promotional materials on the conversation school's website (Aeon, 2012), the Mimic Me is intended to be used as a form of autonomous study. Since the Mimic Me is easy to use, children can turn it on and study without help from an adult. In theory, the device gives children the ability to direct their own studying and focus on words and phrases that are more difficult for them. However, research does not show any advantages to autonomous learning for pre-school age students (de Jong & Bus, 2002; Moody, Justice & Cabell, 2010). De Jong and Bus (2002) found that, when children were given the freedom to interact with an e-storybook as they saw fit, they failed to read the entire book. Instead, they spent nearly half of their time playing games and did not make effective use of their time. The Mimic Me texts contain sound-effects beyond the target words and vocabulary, and pre-school age children may not have the ability to discern what the important elements of the text are.

Furthermore, in a study comparing an adult-led to a child-led e-storybook session, Moody et al. (2010) found that children were more likely to initiate communication in the adult-led condition. This is important because preschool-age children can learn effectively from interacting with adults. Parents, who are familiar with the needs and abilities of their own children, can successfully scaffold learning to make it easier or more challenging, as appropriate (Siegler & Alibali, 2005). Barbour (2012) recommends homework activities that allow for input from families and invite parents to participate. This sends a positive message to the child, which helps encourage learning in the future. For these reasons, the school's decision to market the Mimic Me as an autonomous product thwarts the benefits that could come from a parent and child studying together. To understand this marketing decision, it is necessary to understand the lack of confidence that many Japanese parents have regarding their English skills. Many parents are hesitant to help their children study English, for fear of teaching them incorrect grammar or pronunciation (Cervantes & Olson, 2011). Therefore, the conversation school is appealing to insecure parents by promising a way for their children to study independently.

Appropriateness of entertainment value

For a pre-schooler studying at an English conversation school in Japan, there is little extrinsic motivation to study outside of class. Therefore, the school's aim is to increase the entertainment value of the homework through use of the Mimic Me. Research has shown that children tend to show more engagement with e-storybooks than traditional storybooks (Moody *et al.*, 2010). In a study comparing e-storybooks to traditional storybooks, Moody *et al.* (2010) found that children were more likely to show persistence with the e-storybook. Based on these findings, the Mimic Me should be more engaging for children than simply listening to a teacher or parent read or describe the items on the textbook page.

Another effective way to increase the entertainment value of a text is the use of music, sound effects and different voices for different characters (Vorderer, Bocking, Klimmt, & Ritterfeld, 2006). They found that children are more willing to listen to audiotapes that contain these extra elements compared to those that do not. Since the school's aim is to increase the amount of time that a child is exposed to English (Aeon, 2012), it is crucial that the student be entertained and has a desire to continue using the Mimic Me. The Mimic Me recordings that go with the school's textbooks contain different voices for each character (often with children's voices) and sound effects to go with certain vocabulary words and phrases (Aeon, 2012). Therefore, the textbooks are more likely to appeal to young children compared to an unadorned recording.

However, the same features that cause the Mimic Me to be entertaining could also cause the Mimic Me to be a distraction from learning. Research has found that features such as games and sound effects adversely affect the students' ability to recall the information in the text (de Jong & Bus, 2002; Trunshell & Maitland, 2005). In a study comparing children's ability to recall a non-interactive and an interactive e-storybook, Trunshell and Maitland (2005) found that the interactive storybook adversely affected the children's ability to understand the story. The authors found that the children were distracted by the games and CASE (cued animations and sound effects) embedded in the story. The textbooks that are used with the Mimic Me also contain CASE. For example, if the pencil touches a picture of an ambulance, a siren will play (Aeon, 2012). It is possible that a student will focus on these extra sounds, and fail to learn the target words and phrases. In fact, de Jong and Bus

(2002) found that, when games were available in an e-storybook, children only read half of the pages, whereas the students in the group that read the same e-storybook without games were able to finish the text. However, the textbooks which accompany the Mimic Me are not storybooks, and the games (or quizzes) that are embedded in the pages are designed to help students acquire the target vocabulary and phrases (Aeon, 2012). Therefore, it seems that the school has avoided the problem found by de Jong and Bus (2002) by avoiding games that do not promote learning of the target.

Appropriateness as a pre-reading tool

One of the main advantages of the Mimic Me for pre-schoolers is that it gives them access to texts that would otherwise be unavailable to them. Without the ability to read, English text-books are of little use to young students without the help of an adult. With an audio-device like the Mimic Me, students gain the ability to interact with written text. In fact, many similar devices are marketed towards reluctant readers, such as Leap Frog's Tag (O'Conner, 2012). According to Siegler and Alibali (2005) children can acquire the English pre-reading skill of following text from left to right without effort. However, since Japanese can be writ-ten in multiple directions, Japanese children may not understand that the English writing system is more rigid. By playing with the Mimic Me, students become familiar with the sequence of a question-answer exchange, and can inference that English text flows from left to right. In addition, Byrom (1998) suggests that audio books give students practice with accurately tracking text, which eventually leads to word recognition. The textbooks packaged with the Mimic Me also attempt to teach children the pre-reading skills of let-ter perception and phonemic awareness on an exercise page of the textbook (Aeon, 2012). Unlike LeapFrog's Tag, the Mimic Me does not identify and read individual words - only whole phrases (O'Conner, 2012; Aeon, 2012). Therefore, the current curriculum designed to accompany the Mimic Me has the potential to teach pre-reading skills, but cannot assist reluctant readers who struggle with individual words.

Implementation in an educational setting

At this large conversation school's branches across Japan, the Mimic Me is currently used with all students in the three year-old course, four to five year-old course, and six year-old course. Everyone who signs up for the course is required to purchase the accompanying text and materials, including the Mimic Me (Aeon, 2012). According to the school's web-site (Aeon, 2012), the purpose of the Mimic Me is to increase the amount of exposure to English outside of the classroom. Based on the author's experience working at the school, an additional purpose is to pre-teach the target vocabulary and phrases to the students before they come to the lesson. If the students have done this, the teacher can spend less lesson time teaching the targets, and more time having the students practice them and build fluency. This way, students can make the most of their limited time with the teacher.

After the six-year-old course, students study at home with a textbook and a CD. In the author's observations, the teacher gave elementary school students the vague instructions to, "listen to the CD". There was hardly any extrinsic motivation, whether in the form of entertainment or rewards or punishment from the teacher, to study. Furthermore, students in lower elementary school have not yet learned to read in English, and might struggle to

track the text on the page while listening to the CD. A talking pen device like the Mimic

Me would be particularly helpful to this group of students who are just starting to read. Developing Mimic Me cartridges for the elementary school textbooks would make it easier for students to study at home. To appeal to a slightly older audience, some of the games and sound effects used with the pre-schoolers would have to be modified. In addition, as students begin to read, it would be helpful for the Mimic Me to be able to identify and read individual words, as LeapFrog's Tag does (O'Conner, 2012). The Mimic Me has successfully been implemented at the pre-school level, but it has the potential to help students at the elementary level as well.

Potential modifications

The Mimic Me is an effective learning tool in that it uses behaviorist instructional technology to help students learn a few vocabulary words and phrases. It gives parents an easy way to expose their children to English outside of the classroom. However, there are potential modifications to the technology that could enhance the learning experience for students. Some of these modifications include: the addition of video, a learner management system, a parent mode, and a storytelling/immersion mode.

Young children at the beginning of the preoperational stage are just beginning to make internal representations of events (Siegler & Alibali, 2005). They tend to think concretely, and have difficulty dealing with symbolic ideas (Barbour, 2012). Therefore, it might be difficult for students to imagine a situation from the static images on the pages of their textbooks. Therefore, a video screen showing a cartoon on the Mimic Me could help them understand the context in which one would use the target phrases. Verhallen and Bus (2010) found that $L2$ learners can learn vocabulary more easily through video-enhanced e-storybook than from an e-storybook with static images. In order to maintain the ease-of-use that the school advertises with the Mimic Me, the device could include a small screen which plays a short video when the pencil is touched to certain images on the textbook page.

Another hindrance to young children's independent study is their lack of metacognitive skills. Children tend to believe that they will not forget anything (Siegler & Alibali, 2005), and they may therefore stop studying the Mimic Me after one one session. For this reason, a learner management system would help parents (and children) monitor learning. For example, the students could be required to study five times, with one day's rest between sessions, before the next lesson. The Mimic Me could communicate with the children by telling them how many more study sessions they have to go. A more complex learner management system could send information to a website that parents can check. The Mimic Me could keep track of how much time each student spends studying, and how many quiz questions she or he answers correctly. This information would also be useful for developers who want to see how children are using their product. With a learner management system, children can learn time-management skills and parents can monitor their progress.

Although autonomous study can help students develop valuable study skills, research has shown that interacting with an adult enhances the learning experience (de Jong & Bus, 2002; Moody et al., 2010). However, parents in Japan are insecure about their English skills, and are hesitant to help their children with their homework (Cervantes & Olson, 2011). Therefore, a parent-mode on the Mimic Me could help parents learn the target vocabulary and phrases. The parent-mode would give additional explanations and pronunciation help so that parents feel more confident and are willing to help their children learn the same material. If parents are given a resource to improve their own English, they can be more **293**

involved in their children's education. When using the Mimic Me with their parents, children have the opportunity to practice interacting in English and ask questions, which they can't do while studying on their own.

Finally, the Mimic Me could be improved with the addition of a storytelling / immersion mode. Although the school advertises that the Mimic Me will increase a child's exposure to English, that exposure is limited to a few vocabulary words and one question-answer or statement-comment exchange per week. Although it may be unreasonable to expect a pre-school age, weekly EFL student to master more than this, there is no reason he or she shouldn't be exposed to a greater range of language. Therefore, a storytelling mode could use an English narrator and character voices to tell a short story involving the target phrases and the characters on the page. A parent's guidance or a video-screen on the Mimic Me (as mentioned above) would make the story more accessible to the students. With the storytelling mode, children would be exposed to even more English at home.

As it is currently used, the Mimic Me is a simple device with only one basic function. However, there are many opportunities to enhance the product by making various design modifications, and thereby expanding the learning opportunities for both children and adult English language learners.

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Author biodata

Abigail Odakura has spent over four years working at private language schools in the Kanto area, and is now teaching at International Christian University High School. She received her MA in TESOL from Teachers College Columbia University in 2013.