

Computers, Children and Bilinguality: Research into a Networked Learning Community

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Abstract

For bilingual children, literacy in both languages is important to developing a deep, rich understanding of their languages and cultures. It also plays an important role in giving them choices in developing their cultural identity and academic options.

However, developing reading and writing skills in the minority language is not necessarily a straightforward process. There are several factors which appear to contribute to the difficulty involved in adding biliteracy to bilingualism. First, in many cases the teaching of reading and writing in the minority language – of necessity or by choice – falls to the parents. Second, in teaching reading and writing in the minority language, it may be difficult to find the kinds of resources and learning opportunities that are easily accessible for developing literacy in the community language. Third, learning to read and write is thought to happen best when there is a community of peers to provide collaboration and incentive. In some communities this may not be a problem but in others the issue of isolation can be much more acute.

This paper is a report of a two-year case study investigating a home-based literacy program in which email and the Internet enabled a group of young Japanese/English bilingual learners to communicate and collaborate with the aim of developing and extending their writing skills, particularly in their minority language.

The study was exploratory in nature, as is reflected in its three primary research questions:

1. How should the networked literacy program be organized so that it is most useful and interesting to the learners and their parents?
2. What types of roles might the program play in helping the learners to maintain and develop writing skills, particularly in their minority language?
3. How do the individual families approach participation in the program, and what do they do that is particularly effective?

To attempt to find answers to these questions, an eclectic, multi-faceted approach, which included elements of action research, ethnography and case study research was used. The findings suggest that a home-based program of this type may provide a focal point around which parents can support and help their child develop his or her reading and writing skills in the minority language, and that there may be other benefits to children participating in a program of this type.

Although these findings are generally promising, the research also made clear that:

- participation in a program of this type is not a panacea for developing minority language writing skills,
- the role of parents is critical to a child benefiting from participating,
- the computer is just one facet in the program.

While this research has generated some potentially useful findings, it has also generated more questions. Research focusing on these questions will be beneficial to families attempting to develop minority language literacy at home.

Introduction

Like many other parents of bicultural children, perhaps particularly those of bicultural children, Andrea Carlson, an American living in England with her Japanese husband and two children, hopes her children will feel that they belong in both of their cultures and that they have options in deciding their cultural identities. Reiko Furuya, a Japanese living in Japan with her Japanese husband and children, hopes her children will feel that they belong to not just Japanese culture after they have spent most of their school life at an international school in Japan. Being able to read and write well in both languages is a key to knowing language and culture, and to keep up academically in both places.

However, the issue of isolation for many bilingual children can be an acute one in terms of maintaining their other language. Maintaining the Japanese language has not been easy for Carlson's children in England especially because the children's father is the only native speaker of Japanese in the family, and he is constantly busy with work. Maintaining the English language has been difficult for Furuya's children after they have transferred from the international school to a local Japanese school. Therefore, in order to help the four children develop literacy in the minority language, we have decided to motivate them to read and write with a community of peers to provide collaboration and incentive.

Online Learning for Bicultural Children

We have decided to set up an English/Japanese online after-school program to investigate in what ways such a program might help children to develop and extend their reading and writing skills in the language they are not currently being schooled in. Carlson has overseen the overall project and has coordinated the English side of things while Furuya has coordinated the Japanese materials and activities. Our interest comes from our experiences with our own children. For both families there is an issue of trying to develop and maintain literacy in both languages to avoid having the children be forced to do massive amounts of catching up when or if they go back into the other school system. With these thoughts in mind, we have set up the following two aims for the online after-school program:

- to give Japanese/English bilingual children peers to write to and interesting reasons to read and write
- to give parents a focal point around which they can support and help their child to develop their reading, writing and computer skills

Participants

In order to start the program going, we felt there was a need to set up two different programs; one for our older children and another for our younger children. Carlson's older child is 4 years and 3 months older than her younger child, and so are Furuya's children. Furthermore, Carlson's older child is about a month older than Furuya's older child, and Carlson's younger child is also a month older than Furuya's younger child. The two families have known each other when their

older children were still toddlers, and until Carlson and her family moved to England. While in Japan she had organized after-school English playgroups for these children as well as for other bilingual children. Because of the acquaintance between the two families, starting some kind of program though living in different countries did not seem unnatural, yet we wanted more participants. Thus, Carlson put up an advertisement on the website related to Bilingualism, and managed to recruit children and their parents, living in Japan, Britain, the U.S. and Africa. She named the program for the younger children "The Bilingual Juniors" which consisted of five children ages seven to eight, and the program for the older children "The Bilingual Kids" which consisted of five children ages eleven to thirteen. Most of the participants' parents were of international marriage, and most of the children were what Pollock and Van Reken (2001) call "third culture kids". Pollock and Van Reken (2001) define "third culture kids" as follows:

A Third Culture Kid (TCK) is a person who has spent a significant part of his or her developmental years outside the parents' culture. The TCK builds relationships to all of the cultures, while not having full ownership in any. Although elements from each culture are assimilated into the TCK's life experience, the sense of belongings is in relationship to others of similar background. (p. 19)

Research Questions

The research undertaken was a two-year qualitative case study with a multiple-modal approach which made use of elements of participant observation, ethnography, action research and case study. The study made use of several types of data which included the children's work, e-mail discourse, and informal email-based and face-to-face interviews with the children and their parents. As the programs were being set up, we had the following three research questions:

Research Questions #1

How should the networked literacy program be organized to be most useful and interesting to the learners and their parents?

Research Question #2

What types of roles might the program play in helping the learners to maintain and develop writing skills, particularly in their minority language?

Research Question #3

How do the individual families approach participation in the program, and what do they do that is particularly effective?

Method

In the fall of 2001, Carlson made a website (<http://www.bilingualkids.net>) and got an e-mail address for each group. Instead of having had to type all the participants' addresses in the same group when sending e-mail to all of them, one e-mail address served the purpose. Sometimes

participants took turns, and sometimes each participant did some kind of writing based on the suggestion given by a participant or a parent. When the work was completed, it was sent to the other participants using e-mail. Then Carlson put it up on the website which was divided into two sections, “The Bilingual Juniors” and “The Bilingual Kids”. This way all the participants could keep track of all the work by all the participants. Carlson, serving as a leader, set up the deadline for each assigned task although she made the deadline flexible by asking each participant for the number of days each participant needed or by suggesting several deadlines. No restriction was made as to the choice of language used, and each learner could participate in the language of his or her choice.

Carlson served as a leader not only in setting up the website and in organizing activities each time, but also in getting feedback from the participants and their parents and in ensuring that the program reflected their feedback. Throughout the period of two years when the children were participating in the program, and especially toward the latter period of the program, she often sent a questionnaire to the participants and parents asking for their impressions.

Type of Work Done by the Participants

Coming up with work that would be motivating and beneficial to all the parents was never easy. By trial and error, Carlson suggested several and started with a “virtual school” type of learning in which children would learn about topics of their choice. After the children chose a topic, Carlson found some English website articles about the topic, and Furuya some Japanese website articles. Then both made a number of questions based on the articles, and put the questions on the Bilingual website, and Carlson sent e-mail to the participants asking them to get accessed to the website articles and to answer the questions made by Carlson and Furuya found in the Bilingual website. The children found doing this type of reading comprehension questions using the Internet fascinating at first, but once the novelty wore off, they reported it was getting too “schoolish”. To take advantage of the fact that the participants could interact among themselves using a computer, Carlson suggested that the participants be given a chance to get to know each other. She wrote several English sentences with some blanks, and each participant was asked to fill out the blanks. By filling out the blanks, each participant could make a self-introduction. The same sentences were prepared in Japanese so that each participant could make a bilingual self-introduction. Then Carlson put the bilingual self-introduction with an individual or family photo on the Bilingual website.

The other types of writing the participants performed included the following: (1) quizzes, (2) games, (3) news in their lives, (4) chain stories and (5) school projects.

(1) Quizzes

Making quizzes was something some of the older participants did at the early stage of the program. Each chose a topic of his or her choice, wrote a paragraph or two about the topic in the language of his/her choice and made some questions mainly based on the writing. Then Carlson

put the writing with the questions on the Bilingual website so that the other participants could get connected to the Internet, and read and do the questions or the quizzes by the other participants. For example, one of the participants wrote in Japanese about a Japanese TV cartoon character which was his favorite at that time. Then he made ten multiple choice questions about the character. All the questions were based on the writing he had written. After reading the writing, the other participants could work on the quizzes on the Internet and could find the right answers just after they answered each question. Then they sent e-mail to each other telling their impressions about the writing and quiz.

(2) Games

Some older participants made online games which included a concentration game and a hangman. The words chosen for one of the bilingual concentration games, for example, were related to hospital words. For some of the Japanese words, this participant made use of a book called *1,000 Words in Japanese* to get ideas. The hangman game which was made by one of the participants came solely from his sense of humor: “Please try my funny movie Hangman game and see how many you can guess!!!”

(3) News about Their Lives

Writing news about things happening in their daily life was done on a regular basis. There was no specific format assigned for this task, and they had the freedom to share with the other participants about an incident that they thought was worth mentioning. One participant in the Bilingual Junior Group, for example, wrote in English about a stuffed toy dog her mother had bought her at a local store. She did not feel confident typing what she had written, so what she had handwritten was scanned by her parent. The scanned file was sent to Carlson with a photo file of the girl holding the dog. Then it was put in the Bilingual Web under the section for the girl. For someone who wanted to draw, his or her news or diary accompanied his or her own piece of drawing or art. Again the drawing was scanned and shown in the Bilingual Web. Adding speech bubbles to the drawing was frequently done by some participants. For example, next to a drawing of a participant, a circle was drawn, and in the circle, a phrase or a sentence the participant actually had spoken during the incident was written, and there was an arrow drawn from the circle towards the drawing of the participant or several small circles were drawn between the larger circle with words and the drawing to show that what was written in the larger circle had been actually spoken by the participant.

(4) Chain Stories

Writing a chain story involved a participant starting a story and passing what he or she wrote to the next participant who would continue the story, then would pass what had been written to the

next participant and so on. This process involved using e-mail to pass the ongoing story to the next writer, and when the story was finished, it was put up in the Bilingual Web. The children had their own freedom to keep the collaborative story going, yet Carlson suggested that the writers would not let the main character die and make the story come to an end before all the participants had a chance to write their portion.

The whole idea of compiling a chain story led to two unexpected outcomes. First, a rather heated exchange developed when one of the participants, who was to write the ending of a story, proposed killing off the main character—a cute dinosaur-like creature named Chibi. Before actually writing the ending of the story, he e-mailed the participants to ask for their advice. Some of the responses he received were the following:

“It’s your story and you can do what you want but I personally don’t want Chibi to die because I think it would be too sad!”

“Maybe you should have Chibi find his family. But do what you think is best”

“Of course, he cannot die! Turn him into a dog or something other cute creature??? ???
Whatever. まあ、がんばってね。”

Needless to say, the anchor of the story decided not to kill Chibi after reading these responses. Second, there was more heat with a chain story which started with a sentence, “One day I woke up and I was a cat.” Everyone took it for granted that each participant would make only one contribution to making the story, but somehow every participant had two rounds before the story came to an end.

(5) School Projects

Some of the participants submitted work including writing and a poster that was assigned as homework or school work at their own school. For example, one participant in the Bilingual Junior Group had to do a presentation on Japan at her own school, so she drew a map of Japan on a large sheet of paper, and also wrote and drew some facts about Japan on the paper. A picture of the poster taken with a digital camera was put up on her section of the Bilingual Website with a short description about the presentation of Japan she had done during class at school.

Results and Discussion

For all of the participants, taking part in the program appears to have provided reasons to read and write not only in their stronger language but also in their minority language. Furthermore, they appear to have made gains in developing their minority language skills in reading and writing skills, including: improved handwriting, using rich vocabulary, improved organization and using new grammatical structures. The participants whose minority language was Japanese felt that to some

degrees they managed to make gains in remembering and writing hiragana and easy kanji, and the participants whose minority language was English felt that the this project helped them remember spelling, and reading and writing English vocabulary.

For many of the children, participation also provided reasons to use a computer, resulting in not only improved keyboarding skills but also in learning the basic computer skills such as sending and receiving e-mail with an attached file, getting connected to the Internet, visiting the websites, and copying and pasting files. Furthermore, for some of the learners, the only time they would use a computer was when they were getting involved with the Bilingual Web. They were never forced to use a computer since they had an option of handwriting all their work for the Bilingual Web, and their parents would scan their handwritten work. As they saw more skilled learners make more use of the computer, they felt they could also casually train themselves to use their own computer by asking for help from their parents.

Roles of the Program

Some of the outcomes noted by some families were the opportunity to make new friends with children sharing a similar background and an increased ease in moving between cultures. When a child familiar with two languages and two cultures lives in a country of only one of the languages and one of the cultures, the child is most likely to have a limited opportunity to be involved with the other language and the other culture. From the questionnaire the participants and their parents answered, it was clear that the Bilingual Web Group gave this type of child opportunities to write and read in the language that is not used in the country where he or she resides. Furthermore, it helped him or her realize that he or she is not the only child living bilingually in two cultures. By realizing that there are other children who try to keep up both languages, he or she could also do his or her best to work on his or her minority language.

The Program did not force the participants to concentrate on developing their minority language. Obviously the participants felt more ease writing and reading in their stronger language, and overall, around 65% of the writing was in English, the stronger language for all the participants except for the Furuya's two children. The explanation for more use of English was made clear in the questionnaire. Especially because of the initial difficulty in word-processing, the participants found it difficult to change Romanized Japanese into Japanese in hiragana and kanji, but as the participants became more adept at Japanese keyboarding, they were encouraged to submit more writing in Japanese.

The participants had more motivation to work when they knew that their work was going to be put up in the Bilingual Website. They found it fascinating to see their work on the Internet. The fact that there was a chance someone they did not know might visit their website and have a look at their work made them feel thrilled and motivated to do a neat job. On the other hand, not every page of the Bilingual Website was made public to the whole world. Carlson made some restrictions

and let only the participants have access to a certain section of the site by setting up an ID and a password.

Many different approaches were taken in encouraging the children to work on the minority language. One of the participants good at art, for example, often used the method of speech bubbles and wrote sentences in his minority language in the speech bubbles. This way writing in his minority language was not a burden to him. Another approach a participant in the younger group took was to incorporate her school work. Instead of doing one solid work just for the Bilingual Website, her parent and she decided to show a project for her school to the Bilingual members. In other words, her school project had two groups of audience, her teacher and classmates at school, and the Bilingual members. This way she had more reasons and motivation to do the school project in her minority language.

Using the Computer

As we expected, the children were excited and motivated by learning to do simple things on the computer, such as changing font colors or typing in Internet addresses, but everything was slow at first. To get them used to using the computer and to avoid frustration, we found that the following worked well:

(1) Templates

With their writing activities, the children seemed to appreciate having some phrases or expressions that they could copy and paste into their writing as starters. This helped them with their language, and perhaps more importantly, gave them a sense that they were not starting with a blank page. In addition to language templates, we also prepared templates for the writing activities. This was easily done by putting several tables (each with one row and two columns) on an MS word document. The children then inserted a graphic into one of the columns and put their text (the entry to the tandem story) into the other.

(2) Computer-based Worksheets and Questionnaires

The children responded favorably to answering worksheets and questionnaires on the computer. In addition to giving them practice using the keyboard and the toolbar, it also meant that their work could be e-mailed to the other child (in the case of the questionnaire) or to one of us for checking and response.

(3) Instructions and Questions

While the worksheets worked well on the computer, instructions and questions on the screen did not. The children were given instructions to go to various other sites with text articles in one of the two languages and then asked questions about those articles. The children found it difficult to

move between the instructions and questions on the screen, and the articles on the screen. When it was necessary for them to read online, they preferred having the instructions and questions on a hard copy. Also, things change on the Internet all the time and what may be a featured article one week is in the archive section the next. Therefore, instructions needed to be planned around this. One way to solve this problem was to save a featured article in a PDF file in case it was no longer available on the Internet.

(4) Clipboards

In doing some of the reading, the children inevitably found other readings they wanted to print. To deal with very long readings (more than 7 pages) we had the children download the interesting parts into a table on a clipboard. The clipboard was just an MS Word document with a table on it. The table had a space for the name and address of the website, for any interesting graphics, and for the pertinent text to be copied into it. In addition to saving on paper, keeping information on the clipboard helped the children learn to be selective about finding information on the Internet and made the information available to them should they need it for a report later.

(5) Extra Keyboarding Practice

At first keyboarding was painstakingly slow, and we worried that they would lose interest because of frustration. We had them practice using *Mavis Beacon Teaches Typing*. Most of the children, especially those in the older group enjoyed it, and it seemed to make keyboarding easier, faster and less frustrating.

(6) Staying Close at Hand, while Giving Them a Free Hand

The children seemed to have enjoyed the special attention they received when we piloted the materials. Particularly when they were doing activities on the computer, it was necessary to have an adult on hand for guidance and support. On the other hand, while they wanted us right there, they were also clear in wanting to try things on their own. In a few cases they actually surprised us by finding faster and easier ways of doing things on the computer.

Findings for the Three Research Questions

From approximately two years of the activities done by both groups, the answers to the three research questions were made clear as follows:

Findings for Research Question #1

Research Question #1: How should the networked literacy program be organized to be most useful and interesting to the learners and their parents?

All the families of the participants had access to the Internet, all could communicate to each

other by e-mail, yet not all the parents had the skill to fully use the computer. Websites that were simple were the most effective for all the participants and parents. Normalization and innovation also appeared to be important factors in the success of the program. The program becoming integrated and normalized made it easier to plan and develop activities for the group, and being innovative and flexible was useful to solving problems and to enhancing learning activities. Simple communication and simple writing activities were most effective.

Findings for Research Question #2

Research Question #2: What types of roles might the program play in helping the learners to maintain and develop writing skills, particularly in their minority language?

To varying degrees and in varying ways, peers, parents and publishing all appeared to play roles in providing incentive and inspiration to the learners. Simplifying the writing process into manageable chunks may be important to enhancing learning and avoiding frustration. The integration and normalization of the program into family life may be important to enhancing learning. Parents' use of innovative and flexible strategies to address potential difficulties may have been important in enhancing learning.

Findings for Research Question #3

Research Question #3: How do the individual families approach participation in the program, and what do they do that is particularly effective?

Each family took this program as a tool to communicate and to share information with each other. The children seemed to have enjoyed checking e-mail and got excited finding e-mail from other participants who lived thousands of miles away from where they lived. It was never taken as a serious and difficult assignment like extra homework but rather as a fun or even as an entertainment. It even helped them work on homework assigned at school for some of them shared their school work with the participants by putting their school work on the website. By having extra audience for their school work, they tended to do their school work more carefully and neatly, and even had more motivation and reasons to do their school work. Furthermore, the fact that most of the activities were authentic and were not a like a "schoolish" textbook seemed to have given them motivation and interest to participate in the program all the way to the end of the program.

Especially at the beginning when the children were not used to the program and computer, a help from the parents was a key to getting the program going. As they got used to the routine, they needed less help, and the parents could watch and stay behind just to make sure they were not doing something harmful to the computer. Giving a minimum amount of help to support the children seemed to have worked best, and this way the children could think on their own, and work on the activities and handle the computer as they liked.

Conclusion

Due to the nature of the tasks involved for the participants, it was possible to develop a framework for integrating computer literacy and language literacy. As the children became more skilled computer users, they were more able to use computers to develop their reading and writing. Paying greater attention initially to developing computer skills led to increased ability and autonomy on the computer, which in turn enabled the children to do more interesting and diverse reading and writing activities.

The home-based program in which the children participated, encouraged them to develop their reading and writing skills in the minority language at home with the help of parents when necessary. Participation in the program only was not enough to make their minority language become as competent as their stronger language, yet participation set a focal point for parents in supporting and helping their children develop their minority language. Parents played an important role in this program when the children needed help with their work for the program especially when the children worked in their minority language and when they needed instruction with the use of computer. In other words, to get the most benefit from the participation, parental support was indispensable. The positive outcomes from participation were the development and motivation to develop the minority language, and to acquire computer skills, yet the computer was just one facet in the program as the major focus of the program was development of the minority language. However, the participants found the acquisition of the computer skills important and tried to acquire the skills to the best of their ability.

References

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