

# A Study on the ICT Applications and Language Learning of Children of New Immigrants

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**Abstract.** In a multicultural society, special care and attention are needed to help children of immigrant parents blend into Taiwanese society and, therefore, create more future hopes for a harmonious society. Children of new female immigrants to Taiwan are the subjects of this research. This study examined the basic computer literacy of new immigrant children and their application of information communication technology in Mandarin and English learning. Results show that the frequency of Taiwanese students using computers is significantly higher than that of new immigrant students. Also, Taiwanese students can be seen as more frequent computer users in terms of language learning. Overall, all of the students show a willingness to use information technology to learn languages.

**Keywords:** New Immigrants, Language Learning, Information Communication Technology

## 1. Background

Data from the Department of Household Registration, Minister of Interior in Taiwan (2010) indicates that the ratio of babies born in Taiwan from Chinese or foreign spouses has risen from 5.12% in 1998 to 12.46% in 2002. In 2010, the percentage of babies born to foreign spouses was about 10%. In the future, the ratio of new Taiwanese children will increase in elementary schools, and thus appropriate steps much be taken to improve their chance of success. As there are about 300,000 foreign spouses in Taiwan and they each give birth to an average of two children, the issue of education for the children of foreign spouses is of great importance socially, economically, and culturally. Moreover, in a multicultural society, the cultural experiences of children of the minorities are easily neglected under the institutionalized educational structures of schools. The education of new Taiwanese children depends upon the effectiveness of future education strategies. Under the lead of advanced information technology, digital teaching has become an essential trend. Warschauer (2006), identified two general categories of how technology can benefit struggling students, namely the word and the world. He further suggests that digital technology has proven to be a powerful tool for helping learners understand and manipulate text; that is, to grasp the word. In recent years, the global education community (the “world”) has been implementing information-based education, and developing instructor training projects to promote the innovation in education. Information communication technology (ICT) has emerged as one of the fastest growing fields at the end of the 20th century. The health of a country’s ICT industry is often used to measure its progress in terms of modernization, and the utility of information technology has become a key index for countries heading into the 21st century. Therefore, most countries are actively building foundations for ICT-based education to raise their competitiveness and overall economic strength. UNESCO (2005) reports that school teachers play an integral role in bringing ICT into everyday teaching activities to nurture a basic ability to use ICT. However, Ono and Zavodny’s study (2008) examined the extent of inequalities in information technology ownership and use between natives and immigrants in the United States and found that immigrants were significantly less likely to have access to or use a computer and the Internet during the period 1997–2003. Yi (2009) also suggests that educators should re-conceptualize the teaching and learning of students who share multilingual and re-examine what it means to be good, educated students and global citizens in the 21st

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century. Children of new female immigrants to Taiwan are the subjects of this research. This study addresses the following two topics:

1. Exploring literacy learning and ICT adoptions among new immigrants
2. Analyzing students' application of ICTs in Mandarin and English learning

## **2. The Study**

### **2.1. Subjects**

Overall, 181 immigrant students and 231 Taiwanese students filled out the questionnaire. Out of the 181 immigrant students, 55.2% are boys and 44.8% are girls, with 60.8% in grade five (approximately 11 years old) and 39.2% in grade six (approximately 12 years old). For the Taiwanese students, 47.3% of them are boys and 52.7% are girls; there are 25.3% in grade five and 74.7% in grade six. The 181 immigrant students participating in this study have mothers from the following different countries: Mainland China (43.1%), Philippines (5.5%), Indonesia (7.7%), Vietnam (30.9%), Thailand (3.9%), Malaysia (0.6%), Myanmar (1.1%), Cambodia (0.6%), and other countries (6.6%).

### **2.2. Instruments**

This study employed a questionnaire designed by the researcher. It is divided into five parts. The first part concerns the subjects' background. The second part is related to the subjects' basic computer literacy (11 five Likert-type items). The third part concerns their general background with applying computers in Mandarin learning (9 five Likert-type items). The fourth part concerns the application of computers in English learning (7 five Likert-type items).

### **2.3. Results and discussions**

In general, the immigrant students spend less time using computers than Taiwanese students; 7% of new immigrants do not use computers outside of school at all, while 20.4% and 38.7% used computers one to three hours outside of school, respectively. Only 11% of immigrant students commented that they use computers four to six hours per week, and 8.3% have 7-9 hours of computer use. Surprisingly, 14.4% of immigrant students mentioned that they use computers for more than 10 hours per week. As for the Taiwanese students, 4.2% noted that they have no chance to use a computer outside of class. Less than 17% have computer usage for less than an hour. About 30.8% of Taiwanese students use computers around one to three hours per week, and 22.4% use computers for 4-6 hours. The percentage of Taiwanese students who use computers 7-9 hours per week and over 10 hours per week comes to 9.7% and 16.5%, respectively. The household possession of e-readers or e-magazines is relatively low for both immigrant students (14%) and Taiwanese students (28%). However, the ratio of parental support for computer education is quite high for both immigrant students (73.9%) and Taiwanese students (76.4%).

In regard to "Basic Computer Literacy" (see Table 1), Taiwanese students are reported to use computers significantly more often than immigrant students in 7 out of 11 questions in the section. Taiwanese students use search engines to find information, organize information found on the Internet, and they frequently use software, such as Microsoft Word, to proofread their writing. Also, Taiwanese students show a higher frequency of using the computer to play audio or video CDs ( $t$  value 0.001), and use the printer to print out information ( $t$  value 0.000). The use of the Internet as a method of connecting to social networks (such as Facebook) and receiving emails are observed to be higher in Taiwanese students as well. However, there are no significant differences between Taiwanese students and immigrant students in terms of using the computer to browse the Internet, save and load data, select information found on the Internet, and to type up their homework.

For the section of "General Background of Applying Computers in Mandarin Learning" as shown in Table 2, Taiwanese students can be seen as more frequent computer users in 4 out of 9 questions. More often than immigrant students, Taiwanese students use the Internet to look up proper pronunciation (0.014), pen strokes (0.030), idioms (0.012), and word stems (0.016) of Mandarin vocabulary. This difference between

Taiwanese students and immigrant students is not observed in the use of computer or multimedia in terms of looking up those parts that students do not understand in Mandarin class or in their Mandarin textbook, or for using audio, video, or software to learn Mandarin. The students also do not show great differences in their willingness to use the computer to learn Mandarin.

Table 1: Basic Computer Literacy

Questions		HA	A	N	D	HD	Mean	Std.	t
	IS (Immigrant Students)						3.341	.85	-3.486 .001
	TS (Taiwanese Students)	-	-	-	-	-	3.680	.82	
1. I often browse for information on the Internet.	IS	34.3	28.2	24.3	6.1	7.2	3.76	1.19	-1.944 .053
	TS	41.2	28.6	21.8	4.2	4.2	3.98	1.08	
2. I often enter keywords on Internet search engines (such as Yahoo, Yam, Google, etc.) to search for information that I need.	IS	49.2	25.4	16.6	5.5	3.3	4.12	1.08	-3.171 .002
	TS	64.7	20.6	9.2	4.2	1.3	4.43	.91	
3. I often use the computer to save or load data.	IS	36.5	28.2	17.7	11.6	6.1	3.77	1.22	-.661 .509
	TS	36.1	28.2	24.8	6.3	4.6	3.85	1.12	
4. I often select the information that I need from the Internet.	IS	39.8	26.5	22.1	8.8	2.8	3.92	1.10	-1.230 .219
	TS	45.8	26.9	16.8	7.6	2.9	4.05	1.09	
5. I often organize the information that I find on the Internet.	IS	26.5	24.4	25.4	17.1	6.6	3.47	1.23	-1.967 .050
	TS	32.4	23.6	29.8	10.5	3.8	3.70	1.13	
6. I often use the computer to play audio or video disks, such as CD or DVD.	IS	22.7	18.2	19.9	17.1	22.1	3.02	1.46	-3.256 .001
	TS	31.9	16.8	29	10.9	11.3	3.47	1.34	
7. I often use office software, such as Word, to do vocabulary proofreading.	IS	12.7	15.5	26.0	21.5	24.3	2.71	1.33	-2.075 .039
	TS	16.4	15.5	34	17.2	16.8	2.97	1.28	
8. I often use the computer to type up my homework.	IS	11.6	14.9	27.1	17.1	29.3	2.62	1.35	-1.465 .144
	TS	13	16.8	29.8	19.3	21	2.81	1.30	
9. I often use the printer to print out information.	IS	7.2	12.2	24.9	22.7	33.1	2.37	1.25	-3.893 .000
	TS	17.6	13.9	28.2	19.7	20.6	2.88	1.36	
10. I often use the Internet to send and receive e-mail.	IS	22.7	18.2	26.5	16.6	16.0	3.15	1.37	-2.193 .029
	TS	30.3	22.7	22.7	10.5	13.9	3.45	1.37	
11. I often use social networks (such as Facebook) to interact with my friends and classmates.	IS	50.8	16	11.6	8.8	12.7	3.84	1.45	-3.523 .000
	TS	66.4	13.8	10.1	2.9	6.7	4.30	1.18	

Concerning the section of “General Background of Applying Computers in English Learning” presented in Table 3, the Taiwanese students are observed to use computers significantly more often in 3 out of 7 categories. In comparison to immigrant students, Taiwanese students more frequently look up pronunciation (0.019) and spelling (0.021) of English vocabulary terms. Unlike for Mandarin, the Taiwanese students’ frequency of using audio or video media to learn English is significantly higher than immigrant students, at a t-value of 0.008. Yet, there are no great differences among the students in terms of using the computer to

look up the parts that the students do not understand in English class or in their English textbook. There was also negligible difference in their use of software to learn English, or in their willingness to use information technology to learn English.

Table 2: General background of applying computers in Mandarin learning

Questions		HA	A	N	D	HD	Mean	Std.	t
	IS	-	-	-	-	-	2.775	1.10	-2.297 .022
	TS						3.016	1.02	
12. I often use the computer and the Internet to look up the pronunciation of Mandarin vocabularies.	IS	18.8	13.8	30.9	13.3	23.2	2.92	1.39	-2.466 .014
	TS	22.7	18.1	33.2	13.0	13.0	3.24	1.29	
13. I often use the computer and the Internet to look up the strokes of Mandarin vocabularies.	IS	13.3	11.6	26.5	18.2	30.4	2.59	1.37	-2.172 .030
	TS	17.6	11.8	32.4	17.6	20.6	2.88	1.34	
14. I often use the computer and Internet to look up the Mandarin idioms that I do not understand.	IS	21.5	17.1	28.2	8.8	24.3	3.03	1.45	-2.523 .012
	TS	26.9	19.3	29.0	13.4	11.3	3.37	1.31	
15. I often use the computer and the Internet to look up word stems of Mandarin vocabulary.	IS	14.4	14.4	28.8	11.6	30.9	2.70	1.41	-2.412 .016
	TS	18.9	13.4	34.9	16.4	16.4	3.02	1.31	
16. I often use the computer and the Internet to look up the parts that I do not understand in Mandarin lessons.	IS	16.0	16.0	24.3	14.4	29.3	2.75	1.43	-1.302 .194
	TS	15.1	14.3	36.9	15.5	18.1	2.93	1.27	
17. I often use the computer and the Internet to look up the parts that I do not understand in the Mandarin textbook.	IS	15.5	11.6	30.9	13.8	28.2	2.72	1.39	-1.791 .074
	TS	16.8	12.6	38.7	13.9	18.1	2.96	1.29	
18. I often use learning software (such as an interactive CD Rom) to learn Mandarin.	IS	8.3	12.2	26.0	21.0	32.6	2.43	1.28	-1.012 .312
	TS	12.2	7.1	32.8	29.3	28.6	2.55	1.30	
19. I often use digital audio or video (such as CD or YouTube) to learn Mandarin.	IS	9.4	11.0	28.2	20.4	30.9	2.48	1.28	-1.848 .065
	TS	15.1	10.9	29.4	19.7	24.8	2.72	1.35	
20. I am willing to continue using information technology (such as the computer and Internet) to improve my Mandarin language abilities.	IS	26.5	17.7	34.3	8.8	12.7	3.37	1.30	-.780 .436
	TS	27.3	20.6	33.6	8.4	10.1	3.47	1.25	

### 3. Conclusions

This study examined the basic computer literacy of new immigrants and their application of ICTs in Mandarin and English learning. The findings are as follows. First, the frequency of Taiwanese students using computers is significantly higher than that of new immigrant students. Taiwanese students use search engines

to find information, organize information found on the Internet, and use software such as Microsoft Word to proofread their writing. Also, Taiwanese students show a higher frequency of using the computer to play audio or video CDs, using the printer to print out information, connecting to social networks, and receiving email. However, there are no significant differences between Taiwanese students and immigrant students for using the computer to browse the Internet, save and load data, select information found on the Internet, and type up their homework. Second, Taiwanese students can be seen as more frequent computer users to use the Internet to look up pronunciation, pen strokes, idioms, and word stems of Mandarin vocabulary. However, the two groups of students do not show great differences in their willingness to use computers to learn Mandarin. Finally, the Taiwanese students are observed to use computers significantly more often than immigrant students when it comes to language learning. In comparison to immigrant students, Taiwanese students look up the pronunciation and spelling of English vocabulary more often. The Taiwanese students' frequency of using audio or video media to learn English is significantly higher than immigrant students. Overall, all of the students show a willingness to use information technology to learn English.

Table 3: General background of applying computers in English learning

Questions		HA	A	N	D	HD	Mean	Std.	t
	IS	-	-	-	-	-	2.889	1.12	-2.214 .027
	TS						3.137	1.14	
21. I often use the computer and the Internet to look up the pronunciation of English vocabulary words.	IS	15.5	21.5	28.8	12.2	22.1	2.96	1.36	-2.348 .019
	TS	23.9	21.0	26.1	16.4	12.6	3.27	1.33	
22. I often use the computer and the Internet to look up the spelling of English vocabulary words.	IS	16.6	22.7	23.8	15.5	21.5	2.97	1.38	-2.317 .021
	TS	23.5	22.7	24.8	16.4	12.6	3.28	1.32	
23. I often use the computer and the Internet to look up the parts that I do not understand in English lessons.	IS	12.2	16.6	32.6	11.0	27.6	2.75	1.34	-1.448 .148
	TS	18.1	12.6	32.8	18.1	18.5	2.94	1.33	
24. I often use the computer and the Internet to look up the parts that I do not understand in the English textbook.	IS	12.7	17.7	28.8	13.3	27.6	2.75	1.36	-1.908 .057
	TS	19.7	16.4	28.2	16.0	19.7	3.00	1.38	
25. I often use learning software (such as interactive CD Rom) to learn English.	IS	13.8	18.2	22.6	16.6	28.7	2.72	1.40	-1.683 .093
	TS	20.2	13.9	27.7	17.2	21.0	2.95	1.40	
26. I often use digital audio or video (such as CD or YouTube) to learn English.	IS	12.7	13.3	25.4	18.8	29.8	2.60	1.36	-2.667 .008
	TS	20.6	13.4	28.2	17.6	20.2	2.97	1.39	
27. I am willing to continue using information technology (such as the computer and Internet) to improve my English language abilities.	IS	29.3	21.0	29.3	8.8	11.6	3.47	1.31	-.548 .584
	TS	35.3	17.2	25.6	10.5	11.3	3.54	1.36	

HA= highly agree, A =Agree, N=Neutral, D=Disagree, HD=highly disagree

Similar to the Ono and Zavodny's study (2008), the immigrant-native gap in ICT usage exists in Taiwan. Moreover, significant differences emerge for computer-assisted language learning for the two groups of

students although they all show a willingness to employ ICT to learn languages. Educational innovations in the past might not have considered the differences in cultural experiences of foreign cultural groups, and educational problems related to cultural differences have not been adequately addressed in the main structure of educational policies or innovations. The findings of this study suggest that more support should be provided for new immigrant students in terms of ICT application and computer-assisted language learning. The government is suggested to outline some projects and set it as a priority to integrate resources to effectively improve the education problems facing foreign spouses and their children.

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