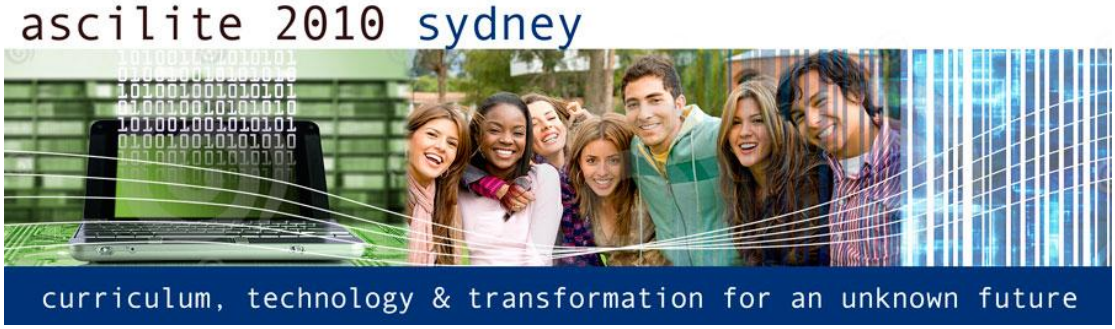

New generation of student teachers "Are they really different?" A study on student teachers in Korea and Singapore

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During the past decade, both Korean and Singaporean governments have implemented several ICT policies in schools, and the ecology of classrooms was constantly changing with such policy impetus. Therefore, it is possible that the new generation of student teachers, who are the recipients of such policy initiatives, possess personal beliefs and knowledge about teaching and learning with technology, shaped and learned from their extended period of new experiences and observations as school students. However, we question are they really different in terms of their attitude and perspective about teaching and learning with technology? Hence, the purpose of this research is to examine the profile of the first-year student teachers in terms of past experiences, beliefs and attitude. Specifically, we examined the relationships of the following six variables: (1) past ICT experiences, (2) personal computer use, (3) constructivist belief, (4) computer efficacy, (5) attitude toward computer in education, and (6) prospective computer use. Participants include student teachers in the first year of teacher education programs in Korea (N=163) and Singapore (N=55). Survey findings indicate that participants in both countries had fairly negative or neutral ICT experiences in primary schools, while their experiences were better in secondary and post-secondary schools. In Korean data, past ICT experiences were significantly related to computer efficacy, attitude toward computer in education, and prospective use of computer while no significant relationships were found between past ICT experiences and other variables in the Singaporean data. Singaporean student teachers scored higher in all compared variables than Korean student teachers, and significant differences were found in two variables: past experience and attitude toward computer in education. We discuss implications of our findings and directions for future studies.

Keywords: Information and Communication Technologies (ICT), student teachers, lived experiences

Introduction

Before the millennium, there were concerns about whether teachers were well prepared to teach effectively in a digital age. The challenges were both pedagogical and technological. Teachers were asked to learn and to implement new pedagogical methods in order to teach 21st century learning skills. At the same time, information and communications technologies (ICT) came into the picture of classroom learning in a more substantial way, with an expectation that using ICT tools would create new learning opportunities that traditional methods without technology were limited. Findings were not very encouraging, however. For instance, a large scale survey on information technology in teacher education (Moursund & Bielefeldt, 1999) concluded that while most institutions and schools have adequate IT infrastructure, their faculty and student teachers did not integrate them into teaching and learning in substantial ways. Further, the study found that formal stand-alone IT specific coursework, which most colleges of education use to teach ICT-related core competencies, do not work. Studies examining student teachers themselves were not encouraging either. A study conducted by Keating and Evans (2001) found that while student teachers were competent and comfortable with using technology in their daily lives, they hold unexpected reservations about using technology for teaching and learning in their future classroom.

Now, a decade after the new millennium, we ask the same question "whether a new generation of teachers is prepared to teach effectively with technology?" Student teachers these days may appear to be technology savvy, active in social networking sites, and easy to adopt new types of technologies. Hence, in a digital age where technologies are so pervasive and personal, it is easy to assume that a new generation of student teachers is better prepared to teach with technology than earlier generations of teachers. This assumption, however, is more complex than it appears. Using technology for personal use is different from using it for pedagogical use. Here, we argue that research on teacher learning, both pre-service and in-service teachers, need to move beyond examining the impact of teacher training program in terms of just teacher knowledge and competency, or characteristics. A more holistic view is necessary to unpack the complexity of personal history, belief systems, and lived experiences in a larger ecological context (Hollingsworth, 1989; Holt-Reynolds, 1992; Lim, Lee, & Hung, 2008) .

We expect that the larger ecological contexts have shaped the development of personal beliefs about the nature of teaching and learning with technology that a new generation of student teachers holds, in both direct and indirect ways. Our conjectures are largely drawn from studies that demonstrated the influence of technology-rich learning environments on teachers' educational beliefs (Fullan, 1991; Leung, Watters, & Ginns, 2005). These studies have found that given extended period of "new experiences" (Levin & Wadmany, 2006 p.172), beliefs systems can be shifted and restructured. Although not an easy process (Pajares, 1992) but that if teachers respond to the teaching and learning environments by continually re-examining their work and their practices, it can result in shifts in educational beliefs.

Therefore, in light of 'extended period of new experiences', we contend that student teachers in their first year of teacher training are in a unique situation of transforming their identity from an expert student to a novice teacher. Further, research has shown that student teachers come to teacher training programs with extensive experiences and tacit knowledge learned from an "apprenticeship of observation" (Lortie, 2002) as a student, and that the personal, lived experiences have shaped their lay beliefs about what are good practices and how they work in classroom situations (Holt-Reynolds, 1992). This phenomenon can be applied to the context of teaching and learning with technology. It is possible that personal beliefs and tacit knowledge about ICT integration that a new generation of student teachers holds come largely first from their lived experiences as students receiving and participating in ICT-related learning activities for the past ten years.

Our attention to a new generation of student teachers in Korea and Singapore came with a realization that their lived experiences as school students differed from previous generations. First, these student teachers had gone through schooling experiences when ICT-related policies (see Table 1) were enacted to build IT infrastructure in schools. This means, when there were students, basic ICT infrastructure such as access to computer labs, personal computers, and applications were more readily accessible than before.

Table 1: Comparison of major ICT policies in Singapore and Korea since 1997

Year	Korea	Singapore
1997	The Ministry of Education announced 7th national curriculum (The percentage of adoption of ICT in school curriculum should exceed 10%, 34 hours should spent on ICT education per year, except that 30 hours for 1st grade)	Launch of the first Master Plan for ICT in Education. Focus on laying the infrastructural foundation in schools as well as the mass training of teachers in the use of ICT. The Masterplan was implemented in a three-phase approach beginning with 22 "demonstration schools."
2000	The ICT Education Promotion Plan was formulated Guidelines for ICT Education in Elementary & Secondary Education were studied and shared	About 250 schools were on board and the training of teachers in basic ICT skills was completed.
2001/2002	The ICT Adopted Education Promotion Plan was established; The Adopting ICT into Education Master Plan II was formulated; Teachers' training was shifted from ICT basic skill to ICT adoption on each subject	Achieved increased access to computers: Primary school student-computer ratio 6:1 Secondary/Junior College student-computer ratio 5:1 Teacher-computer ratio 2:1
2003		Master Plan for ICT in Education II Focus on the use of ICT for engaged-learning; customized professional development on infusion of ICT in curriculum
2004/2005	The Adopting ICT into Education Master Plan III was formulated	Strengthen use of ICT through the setup of the Learning Sciences Lab at the National Institute of Education
2006		Initiated baseline ICT standards for schools Strengthen use of ICT through LEAD ICT@schools program
2007		Strengthen use of ICT through the FutureSchools@Singapore
2009		Master Plan for ICT in Education III Focus on the 21st century learning skills, especially self-directed learning and collaborative learning; integration of ICT in early planning stages for curriculum

Second, with such policy impetus, it was expected that the frequency and extent of ICT integration were more extensive than before. One of the common phenomena found between Korea and Singapore ICT policies was a shift in focus from technological to pedagogical issues in the early 21st century: the ICT Adopted Education Promotion Plan in 2001 in Korea and the Master Plan for ICT in Education II in 2003 in Singapore. Access to ICT was the most basic necessary condition to meet, but the essence of technology integration lies in teacher knowledge to knowing "how to use technology for what". Thus, emphasis on pedagogical training and support observed in both countries was a natural move to encourage ICT use from teaching basic skills to deeper learning.

The research reported in this paper is part of a study that aims to examine the complexity of beliefs, attitude, and ability that a new generation of student teachers has about the nature of teaching and learning with technology, with a particular focus on their lived experiences as students where ICT related polices were actively enacted. In this study, we examined two groups of student teachers in their first year of teacher training in Korea and Singapore. While cultural comparison was not a main focus of this study, we wanted to examine how ICT policies and related contextual variables in both countries were enacted to influence the new generation of student teachers.

Our first step toward unpacking the complexity of epistemic beliefs, personal attitudes, and lived experiences was to better understand the profile of student teachers in their first year of teacher training. This paper reports our pilot study with the particular interest in the following research questions:

i. What is the profile of student teachers in the first year of teaching in Korea and Singapore in terms of (1) past ICT experiences as students, (2) personal computer use, (3) constructivist beliefs, (4) computer efficacy, (5) attitudes toward computer in education, and (6) prospective computer use?
ii. To what extent are the six variables related?
iii. What are significant differences and similarities between Korean and Singapore student teachers in terms of the six variables above?

Methods

Data collection and participants

Participants of this study include 218 first-year student teachers in Korea (n= 163) and Singapore (n=55). The survey intrument (expained in the next section) was administered to the first year degree students taking the introductory educational technology course in both countries. A convenience sampling method was used to recruit particpants in April and May 2010. The demographical information of participants in Korea and Singapore is shown in Table 2. In Korea, 163 student teachers completed the online survey, including 129 female (79.1%) and 34 male (20.9%), with about 1.2% missing data. The participants' ages range from 19 to 24, and average age is about 20.8. Among the 163 participants, 69 (42.3%) student teachers reported having some forms of prior teaching experiences, mostly as personal tutors and assistant teachers. In Singapore, the participants included 55 student teachers, 13 male (23.6%) and 42 female (76.4%), with about 10% missing data. The participants' ages varied from 19 to 24, and average age is about 20.4. Out of the 55 participants, 43 (78.2%) student teachers reported having some forms of teaching experiences as personal tutors and contract teachers.

Table 2: Demographical information of participants

Age	Korea	Singapore
19	16 (9.8%)	17 (31%)
20	90 (55.2%)	17 (31%)
21	11 (6.7%)	11 (20%)
22	11 (6.7%)	6 (11%)
23	22 (13.5%)	3 (5%)
24	13 (8.0%)	1 (2%)
Total n	163	55

Survey and the Constructs

The survey questionnaire consisted of six constructs as shown in Table 3. We used existing 5-point Likert scales for the following constructs: (a) constructivist belief, (b) attitudes toward computer in education, and (c) prospective computer use (van Braak, 2001; van Braak, Tondeur, & Valcke, 2004; Sang, Valcke, Braak, & Tondeur, 2010; S. L. Woolley, Benjamin, & A. W. Woolley, 2004). It should be noted that in this paper we are neither arguing for constructivism as an ideal teaching theory nor as the only pedagogical theory. Our theoretical perspective is that both teacher-directed and student-directed learning theories are needed. However, our choice of the survey items measuring constructivism belief is to be consistent with the policy focus in both countries, which emphasizes the movement from teacher-centric to student-centric engaged learning. The items for the past ICT experience were created by the authors in the current study. The 10-items scale was used for primary, secondary, and post-secondary experiences. The 10 items for the personal computer use were generated based on the framework proposed by Young (2009) on computer activities: communication, recreation, information, production, and transaction. Lastly, the items for the computer efficacy were based on the ICT Skill Standard for Teachers (ISST) in Korea and the Baseline ICT Standards in Singapore. The components of the scale included online information search, information analysis and construction, information presentation and sharing, and information ethics and security.

Table 3: Survey constructs

No.	Constructs (factors)	References	Reported Reliability	Sample Items
1	Past ICT experience	Items created by the authors	N/A	• There were good hardware/software supports for ICT use in our school. • Overall, my teachers used ICT tools for teaching effectively that help me learn better. • Overall, my teachers used ICT tools to engage students in learning activities.
2	Personal computer use	Items based on the framework used in Young (2009)	N/A	• How often do you use computers to communicate asynchronously with others (e.g., email, facebook, etc.)? • How often do you use computers for entertainment purposes (i.e. movies, music, games, etc.)? • How often do you use computers to do activities for personal fulfillment (i.e. learning a new language, cooking skills, etc.)?
3	Constructivist belief	Woolley et al.(2004), Sang et al.(2010)	.81	• I believe it is important to give students time to work together in classroom when teachers are not directing them. • I believe it is necessary to involve students in evaluating their own work and setting their own goals. • I believe that expanding on students' ideas is an effective way to build curricula.
4	Computer efficacy	Items based on the ICT Skill Standard for Teacher (ISST) in Korea and the Baseline ICT Standards in Singapore	N/A	• I am good at searching and accessing information via the Internet. • I am good at creating and editing texts, tables, and graphics using presentation software (e.g., PowerPoint). • I am good at creating and editing multimedia data including pictures, sounds, videos, and animations.
5	Attitudes toward computer in education	Van Braak(2001), Sang et al.(2010)	.81	• The computer provides opportunity for improving the learning performance. • The efficiency of the learning process is increased through the use of computers. • Computers can help the teacher to apply differentiation among the students.
6	Prospective computer use	Van Braak et al.(2004), Sang et al.(2010)	.87	• I would use the computer as a tool for demonstration working with existing presentations, or those someone else has made for me. • I would ask pupils to undertake tasks or follow up classwork at home on the computer. • I would I encourage pupils to work collaboratively when using a computer.

The online survey was first carried out in Singapore in April 2010. The participants were asked to rate their level of agreement in a Likert scale (from 1 – strongly disagree to 5 – strongly agree). Upon the analysis of data collected in Singapore, the survey was further refined due to low internal reliability of two constructs: personal computer use and computer efficacy (see Table 4). Then the revised survey was translated from English into Korean and verified its accuracy by native speakers. The translated version of the revised survey was tested for face validity with a group of student teachers in Korea. The

finalized survey was administered offline in May 2010 to Korean student teachers. This time, the Cronbach's alpha of the computer efficacy has improved from .66 to .88 while the internal reliability of the personal computer use was at .58. This may indicate a need to further refine this construct in subsequent studies.

Table 4: Survey Constructs and internal reliability

No.	Constructs (factors)	Cronbach's alpha	
		Singapore	Korea
1	Past ICT experience	.94	.95
2	Personal computer use	.63	.58
3	Constructivist belief	.73	.74
4	Computer efficacy	.66	.88
5	Attitudes toward computer in education	.75	.84
6	Prospective computer use	.71	.89

Results

In this section, we present findings from the analyses of the survey responses from the Korean and Singapore samples, followed by the comparison of the two samples.

Korean sample

Table 5 shows Means and Standard Deviations for each variable. Overall, data shows that mean scores are relatively high for all the variables, except the past ICT experience. This indicates that Korean participants' perception toward their past ICT experiences is not so positive (mean = 2.71).

Table 5: Means and standard deviations for Korean Sample

Variables	Mean	SD
Past ICT experience	2.71	.69
Primary	2.62	.80
Secondary	2.70	.72
Post-secondary	2.83	.81
Personal computer use	3.34	.48
Constructivist belief	3.87	.54
Computer efficacy	3.81	.58
Attitudes toward computer in education	3.69	.57
Prospective computer use	3.82	.62

As shown in Table 5, mean values for the past ICT experience increase from primary to post-secondary. To examine whether there is any difference among primary, secondary, and post-secondary experiences, a paired sample t test was performed. Significant differences are found for primary and secondary ($t(155) = -2.02$, $p < .05$); for primary and post-secondary ($t(155) = -3.09$, $p < .01$); and for secondary and post-secondary ($t(155) = -2.85$, $p < .01$).

Next, one-way ANOVAs were conducted to evaluate whether there was any difference among the six variables in terms of gender and teaching experience. First, between genders there is no significant difference, except marginally significant difference for the past ICT experience ($F(1, 154) = 4.51$, $p < .05$) and the computer efficacy ($F(1, 160) = 11.22$, $p < .01$). Mean values of the past ICT experience for male and female are 2.47 and 2.76 respectively, which may indicate that in this sample female student teachers tend to have more positive past ICT experiences than their male counterparts. In addition, mean values of computer efficacy for male and female are 3.53 and 3.89 respectively, which show that in this sample female student teachers tend to have higher perception for their ability using computers than male student teachers. Secondly, between with-without teaching experience there is no significant difference, except marginally significant difference for the personal computer use ($F(1, 160) = 7.86$, $p < .01$). Mean values for with-teaching experience and without-teaching experience are 3.46

and 3.26 respectively, which indicate that student teachers with teaching experience tend to use computers more frequently than those without teaching experience.

Finally, bivariate correlation analysis was performed to assess the strength of correlations among the different variables examined in this study. As shown in Table 6, significant correlations exist among six variables. In particular, the past ICT experience variable has significant correlations with computer efficacy ($r=.25$, $p < .01$), attitudes toward computer in education ($r=.24$, $p < .01$), and prospective computer use ($r=.18$, $p < .05$). In addition, the personal computer use variable has significant correlations with constructivist belief($r=.17$, $p < .05$), computer efficacy ($r=.36$, $p < .01$), and prospective computer use ($r=.23$, $p < .01$). Significant correlations are also found among (3) constructivist belief, (4) computer efficacy, (5) attitudes toward computer in education, and (6) prospective computer use.

Table 6: Correlation coefficients

	1	1.1	1.2	1.3	2	3	4	5
1. Past ICT experience	—							
1.1 Primary	.86**	—						
1.2 Secondary	.96**	.79**	—					
1.3 Post-secondary	.85**	.49**	.77**	—				
2. Personal computer use	.13	.11	.12	.10	—			
3. Constructivist belief	.04	-.00	.03	.08	.17*	—		
4. Computer efficacy	.25**	.20*	.28**	.20*	.36**	.44**	—	
5. Attitudes toward computer in education	.24**	.17*	.23**	.23**	.15	.37**	.43**	—
6. Prospective computer use	.18*	.11	.18*	.18*	.23**	.54**	.55**	.70**

* $p < .05$, ** $p < .01$

Singapore sample

Means and Standard Deviations for each variable are shown in Table 7. Similar to the Korean sample, Singapore data show that mean scores are high for all variables, except the past ICT experience variable (mean = 3.07). Mean values for the past ICT experience increase from primary to post-secondary, which is a same pattern found in the Korean sample as well.

Table 7: Means and standard deviations for Singapore sample

Variables	Mean	SD
Past ICT experience	3.07	.57
Primary	2.43	.74
Secondary	3.21	.74
Post-secondary	3.46	.75
Personal computer use	4.16	.59
Constructivist belief	3.94	.41
Computer efficacy	4.09	.46
Attitudes toward computer in education	4.02	.39
Prospective computer use	3.93	.34

To further examine the past ICT experience, paired sample T test was performed among primary, secondary, and post-secondary experiences. Significant difference are found for primary and secondary ($t(50) = -6.90$, $p < .01$); for primary and post-secondary ($t(49) = -8.04$, $p < .01$); and for secondary and post-secondary ($t(48) = -2.47$, $p < .05$).

One-way ANOVAs were conducted to evaluate whether there was any difference among the six variables in terms of gender and teaching experience. There was no significant difference, except marginally significant difference between male (M=4.13) and female (M=3.87) for the constructivist belief ($F(1, 53) = 4.21$, $p < .05$). This may indicate that in this sample male student teachers tend to have more constructivist beliefs than their female counterparts.

Finally, bivariate correlation analysis was performed to assess the strength of correlations among the different variables examined in this study. As shown in Table 8, significant correlations exist among (3) constructivist belief, (4) computer efficacy, (5) attitudes toward computer in education, and (6) prospective computer use. In particular, the constructivist belief variable has significant correlations with computer efficacy (r=.35, p < .05), attitude toward computer in education (r=.54, p < .01), and prospective computer use (r=.43, p < .01). In addition, significant correlations are found between computer efficacy and attitude toward computer in education (r=.63, p < .01), and prospective computer use and attitude toward computer in education (r=.58, p < .01). Surprisingly, there are no significant correlations between the past ICT experience and any other variable.

Table 8: Correlation coefficients

	1	**1.1**	**1.2**	**1.3**	**2**	**3**	**4**	**5**
1. Past ICT experience	—							
1.1 Primary	.71**	—						
1.2 Secondary	.85**	.42**	—					
1.3 Post-secondary	.77**	.29*	.56**	—				
2. Personal computer use	.07	.01	.06	.20	—			
3. Constructivist belief	.20	.13	.25	.21	.22	—		
4. Computer efficacy	.10	-.02	.23	.21	.29*	.35*	—	
5. Attitudes toward computer in education	.07	-.02	.10	.16	.21	.54**	.63**	—
6. Prospective computer use	.08	.03	.02	.25	.21	.43**	.27	.58**

*p < .05, **p < .01

Comparison between the Korean and Singaporean Samples

Statistical analysis was performed to examine whether there are any significant differences between Korean and Singaporean samples. Since some items in the personal computer use and computer efficacy variables were modified to increase reliability, we have included only the identical four variables (past ICT experiences, constructivist belief, attitude toward computer in education, and prospective computer use) for comparison. Table 9 below shows the mean and standard deviation values for each variable between the two samples. Overall, Singapore data show higher mean scores than Korea data for all four variables. One notable difference is the in the past ICT experiences from primary to post secondary, mean values for the Singapore sample increase more steeply (from 2.43 through 3.21 to 3.46) than the Korea sample (from 2.62 through 2.70 to 2.83), even though the mean value of primary school experiences is more or less similar.

Table 9: Comparison of descriptive statistics

Variable	**Mean**		**SD**	
	Korea	**Singapore**	**Korea**	**Singapore**
Past ICT Experience	2.71	3.07	.69	.57
Primary	2.62	2.43	.80	.74
Secondary	2.70	3.21	.72	.74
Post-Secondary	2.83	3.46	.81	.75
Constructivist Belief	3.87	3.94	.54	.41
Attitudes toward Computer in Education	3.69	4.02	.57	.39
Prospective Computer Use	3.82	3.93	.62	.34

Next, independent-sample t tests were performed to evaluate whether there are any significant differences between Korean and Singaporean participants in terms of the four variables. As shown in Table 10, there are significant differences between Korean and Singaporean student teachers for past ICT experiences ($t(202) = -3.30$, $p < .01$), and attitudes toward computer in education ($t(131) = -2.93$, $p < .01$). The differences for past ICT experiences are mainly in secondary and post-secondary schools.

Table 10: t tests results

	t	df	p
Past ICT experiences	-3.30	202	.00**
Primary	1.53	207	.13
Secondary	-4.34	207	.00**
Post-Secondary	-4.90	206	.00**
Constructivist beliefs	-0.91	121	.36
Attitudes toward computer in education	-2.93	131	.00**
Prospective computer use	-1.59	169	.11

* $p < .05$, ** $p < .01$

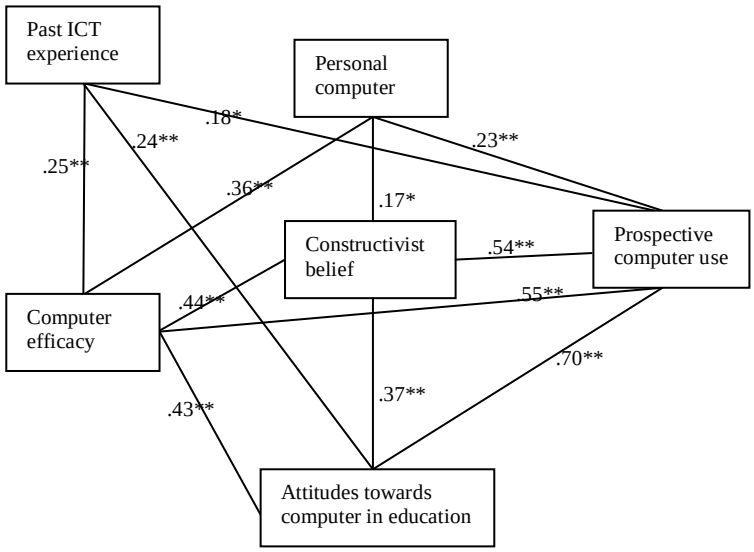
Discussion

The purpose of this research is to examine the profile of the first-year student teachers in terms of the relationships among their past ICT experiences, personal computer use, constructivist belief, computer efficacy, attitude toward computer in education, and prospective computer use. We began with the position that the new generation of student teachers has lived experiences that are different from previous generations, especially in the context of teaching and learning with technology. During the past decade, both Korean and Singaporean governments implemented several ICT policies in schools, and the ecology of classrooms was constantly changing with such policy impetus. Hence, it is possible that the new generation of student teachers, who are the recipients of such policy initiatives, possesses personal beliefs and tacit knowledge about teaching and learning with technology from their extended period of new experiences and observations as school students. As they transit from students to becoming teachers, can we expect them to be more ready to teach with technology? Are they really different from previous generations?

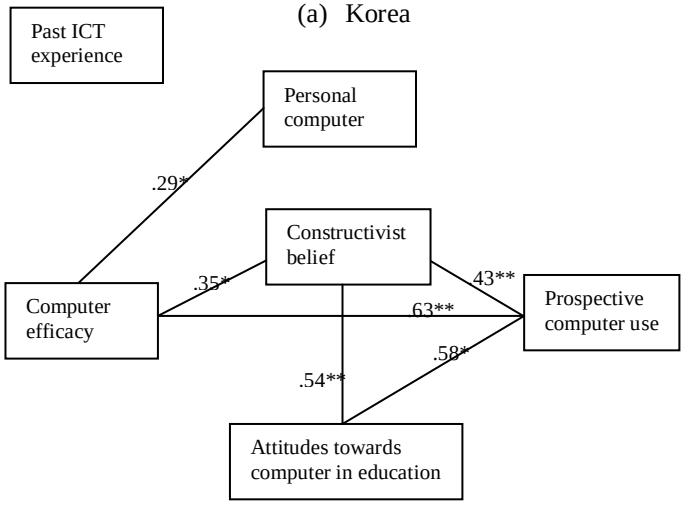
Towards unpacking the complexity of past experiences, belief systems, and perspectives about teaching and learning with technology, we examined the profile of Korean and Singaporean student teachers through survey items. First, in terms of past ICT related experiences, it was interesting to find that both Korean and Singapore participants' responses were lower than our expectations. Student teachers in both countries reported fairly negative or neutral ICT experiences in primary schools; while their experiences were better in secondary and post-secondary schools. A closer examination of item responses indicated that our participants did not experience exemplary ICT use from their teachers. Currently, we are in the process of analyzing interview data with selected students, and some of their responses indicated that their experiences with ICT were mainly show-and-tell approaches such as showing video clips and presentation slides. Innovative student-centered approaches with ICT were rarely reported. Overall, this finding suggests that despite the ICT policy initiatives in schools during the past decade, students' lived experiences overall might not be critically different from previous generations.

Second, in terms of the relationships among the six variables (past ICT experiences, personal computer use, constructivist beliefs, computer efficacy, attitudes toward computer in education, and prospective computer use), we found different patterns in Korea and Singapore (see Figure 1). In Korean data, past ICT experiences were significantly related to computer efficacy, attitude toward computer in education, and prospective use of computer while no significant relationships were found between past ICT experiences and other variables in the Singaporean data. We speculate that this difference is due to the small sample size in the Singapore sample, and further investigation with larger sample sizes is needed. Interestingly, relatively high correlations were found among computer efficacy, attitudes toward computer in education, and prospective computer use in both samples. This relationship will be further investigated to identify important variables predicting student teachers' intention to use computers for teaching and learning.

Figure 1: Relationship between factors



(a) Korea



(b) Singapore

Finally, given the similar paths in ICT policy initiatives in both Korea and Singapore, we compared the two samples to see whether there are any significant differences in their responses. Overall, Singaporean student teachers scored higher in all compared variables than Korean student teachers, and significant differences were found in two variables (past experience and attitude toward computer in education). This finding suggests that Singaporean student teachers entered teacher training programs with more positive past experiences and attitude for teaching and learning with technology than Korean student teachers, but we will further validate this finding with larger sample sizes.

Conclusion

In conclusion, this study provides some insights on a new generation of student teachers entering teacher education programs. While we found that their past experiences with ICT may not be radically different from prior generations, these student teachers come with fairly constructivist beliefs and positive computer efficacy and attitude; attributes that teacher educators can tap on. This study is our first step towards better understanding of a new generation of student teachers, and future research directions include (a) comparison with an earlier generation of teachers who graduated post-secondary schools in 1993-1996, (b) further validation of the instrument with larger sample sizes in both countries, and (c) collecting qualitative data on personal history, beliefs, and attitudes related to teaching and learning with technology.

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References

van Braak, J. (2001). Individual characteristics influencing teachers' class use of computers. *Journal of Educational Computing Research*, *25*(2), 141-57.

van Braak, J., Tondeur, J., & Valcke, M. (2004). Explaining different types of computer use among primary school teachers. *European Journal of Psychology of Education*, *19*(4), 407-422.

Fullan, M. (1991). *The new meaning of educational change*. New York: Teachers College Press.

Hollingsworth, S. (1989). Prior beliefs and cognitive change in learning to teach. *American Educational Research Journal*, *26*(2), 160-189.

Holt-Reynolds, D. (1992). Personal history-based beliefs as relevant prior knowledge in course work. *American Educational Research Journal*, *29*(2), 325-349.

Keating, T., & Evans, E. (2001). Three computers in the back of the classroom: Pre-service teachers' conceptions of technology integration. In Annual meeting of the American Educational Research Association.

Leung, K. P., Watters, J., & Ginns, I. S. (2005). Enhancing teachers' incorporation of ICT in classroom teaching. Presented at the 9th Annual Global Chinese Conference on Computers in Education, Brigham Young University Hawaii.

Levin, T., & Wadmany, R. (2006). Teachers' beliefs and practices in technology-based classrooms: A developmental view. *Journal of Research on Technology in Education*, *39*(2), 157.

Lim, W., Lee, Y., & Hung, D. (2008). "A prophet never accepted by their own town": a teacher's learning trajectory when using technology. *Asia-Pacific Journal of Teacher Education*, *36*(3), 215-227. https://doi.org/10.1080/13598660802232605

Lortie, D. C. (2002). *Schoolteacher: a sociological study*. University of Chicago Press.

Moursund, D., & Bielefeldt, T. (1999). *Will new teachers be prepared to teach in a digital age?: A national survey on information technology in teacher education*. Milken Exchange on Education Technology. Retrieved from internal-pdf://national survey-2863372800/national survey.pdf

Pajares, M. F. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. *Review of Educational Research*, *62*(3), 307-332. https://doi.org/10.3102/00346543062003307

Sang, G., Valcke, M., Braak, J. V., & Tondeur, J. (2010). Student teachers' thinking processes and ICT integration: Predictors of prospective teaching behaviors with educational technology. *Computers & Education*, *54*(1), 103-112. https://doi.org/10.1016/j.compedu.2009.07.010

Woolley, S. L., Benjamin, W. J., & Woolley, A. W. (2004). Construct validity of a self-report measure of teacher beliefs related to constructivist and traditional approaches to teaching and learning. *Educational and Psychological Measurement*, *64*(2), 319-331.

Young, K. (2009). The Internet in tertiary education: A survey of students' Internet activity. In *World Conference on Educational Multimedia, Hypermedia and Telecommunications* (pp. 2686-2696). Chesapeake, VA: AACE.

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https://doi.org/10.14742/apubs.2010.2000