

Attitudes Toward ICT Use in Education - Analysis of Board of Education Website Postings -

MORISHITA Takeshi

Interdisciplinary Graduate School of Science and Technology, Shinshu University, Japan
morisita@shinshu-u.ac.jp

HIGASHIBARA Yoshinori

Center for Education Research and Training, Faculty of Education, Shinshu University, Japan
higashi@shinshu-u.ac.jp

Abstract: A board of education director in Hino, Tokyo, Japan, makes daily website postings about the use of Information and Communication Technology (ICT) in education. Undergraduate students can learn teaching methods using ICT from the website by means of e-learning. We focused on their feelings regarding the use of ICT in education and analyzed them using text mining. As a result, three main aspects of undergraduate students' feelings emerged: 1) training programs, support systems and cooperation with relevant departments were important in promoting the use of ICT in education, 2) undergraduate students had a negative preconception of ICT and computers and 3) ICT was useful and effective, but using computers for education had a bad influence on children. In addition, we suggest that they thought ICT was a teaching methodology and the computer was a simple tool for education.

Introduction

A director of the Hino Board of Education, Tokyo, Japan regularly makes postings about the use of Information and Communication Technology (ICT) in education on their website (Morishita & Higashibara 2007a, Morishita & Higashibara 2007b). For example, she has introduced practices for using ICT in education, written about coordinators who help teachers to use ICT in education, reported on the use ICT in educational administration, and so on. Her posts have encouraged teachers and have served to fire up educators (Morishita & Higashibara 2008a). In addition, she has been publishing information about children's activities or teacher's efforts for parents and local residents, and she also has made the website serve as a communication system (Morishita *et al.* 2008).

In the same way that parents and local residents can browse the website, undergraduate students studying education also can browse and learn teaching methods using ICT from the daily postings by the director. So, in this paper, we focus on students' feelings about the posts by the director and we try to use them to clarify students' attitudes toward the use of ICT in education.

Methodology

Participants

For this study, fifty undergraduate students learning education at Shinshu University Faculty of Education in Nagano, Japan were asked to browse the website maintained by a director of the Hino Board of Education and to report their feelings about the use of ICT in education. However, three students did not hand in formal reports, so finally the number of subjects became forty-seven.

Method

We analyzed the reports handed in by students by using text mining, which is a form of data mining (Morishita & Higashibara 2008b). Zou *et al.* (1999) said that it could “offer powerful possibilities for creating knowledge and relevance out of the massive amounts of unstructured information” in the form of Web pages or documents. In this paper, we used text mining software, “TRUSTIA”, which was developed and sold by JustSystems Corporation, Japan, to analyze the reports. In addition, we tried valuation analyses. In this process, evaluation of the extracted impression words (affective index) is calculated by the frequency of appearance and the affect dictionary of words in modification relation, and an affective map is made. Then we can make clear what is evaluated as “good” or “bad” based on the relationship between nominal phrases and adjectives.

Next, we focused on the words: “ICT” and “computer”, and derived sentences including them from the reports. After that, we divided the sentences according to the contents of student’s feeling and considered various features of them.

Results

Table 1 is the result of quantitative analysis of all reports. Twenty-six percent of all words were nominal phrases. And the nominal phrases: “child”, “efficiency” and “study” had a modification relation with the adjective: “good” (Table 2). In addition, there were the same relations between “ICT” and “useful”, and between “computer” and “bad”.

	Minimum	Average	Maximum
Amount of words per report	54	273	567
Amount of characters per report	80	416	871

Table 1: Amount of Words and Characters per Report

Nominal phrase	Adjective	Frequency
child	good	3
efficiency	good	2
study	good	2
how to use	well	2
ready	necessary	2
security	full	2
computer	bad	2
ict	useful	2
individual information	difficult	2
time	lot	2

Table 2: Modification Relation between Nominal Phrases and Adjectives

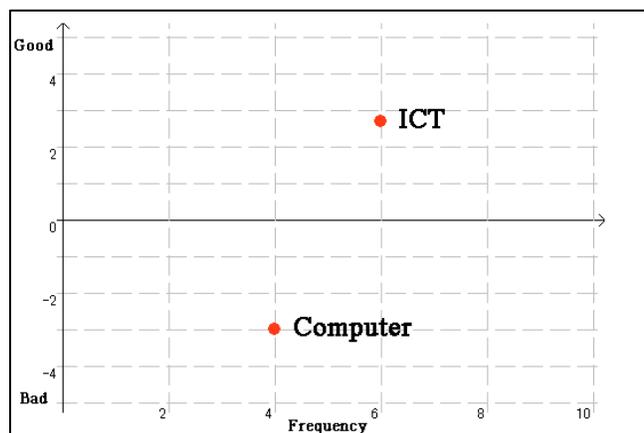


Figure 1: Affective Map of the Words: “ICT” and “computer”

No.	Content	Word	Frequency
1	Teachers need enough training to use ICT in education.	ICT	6
2	The use of ICT in education increases children's desire to learn.	ICT	4
3	A support system is important for ICT use in education.	ICT	4
4	As a result of the school administration support system, part of ICT, teachers can do school administration efficiently.	ICT	3
5	Computers are so dangerous that information education is necessary.	Computer	3
6	Teachers can monitor the level of understanding of children by using ICT in education.	ICT	2
7	Experienced teachers have a harder time using ICT in education than new teachers.	ICT	2
8	Using ICT in education would be ineffective if teachers' education ability isn't up to it.	ICT	2
9	The use of ICT in education enables computer-based instruction.	ICT	2
10	To use ICT in education leads to increase in communication.	ICT	2
11	The use of computers in education causes lack of communication.	Computer	2
12	It is necessary to cope with both studies using only computer and face-to-face studies in classroom.	Computer	2
13	Shy students can easily speak by using ICT in education.	ICT	1
14	Thanks to using ICT in education, students can study efficiently.	ICT	1
15	The support of mayors, chairs of boards of education, and principals' associations is needed to promote the use of ICT in education.	ICT	1
16	It is impossible to train the students with rich imagination by using ICT in education.	ICT	1
17	The use of ICT in education is not widespread among teachers.	ICT	1
18	The use of ICT in education will become common hot in Japanese schools.	ICT	1
19	It is difficult to introduce the use of ICT in education because preparation of its equipment requires much time.	ICT	1
20	The use of ICT in education is not needed for all education.	ICT	1
21	Students cannot get dictation ability if they study with computers.	Computer	1
22	It is bad to rely solely on computers.	Computer	1
23	Teachers and children are slaved to computers.	Computer	1
24	Computer has a bad influence upon students' character building.	Computer	1

Table 3: Category Analysis of Feeling about the Words: “ICT” and “computer”

Figure 1 is the result of valuation analysis about the words: “ICT” and “computer”. The vertical axis shows the affective index and the horizontal axis shows the frequency of words in this figure. The affective index shows that the larger value in the plus direction indicates the student’s feeling better and the smaller value in the minus direction is worse. We found the word “ICT” was considered “good” by students (affective index = +2.70, frequency = 6) and the word: “computer” was considered “bad” (affective index = -3.00, frequency = 4).

Table 3 shows how sentences including the words: “ICT” and “computer” have been divided according to what students felt about each word. Twenty-one reports included the term: “ICT”, twelve reports had the word: “computer” and six reports included both: “ICT” and “computer”. In addition, this table is sorted in order of descending frequency of sentences. Each number (No.) of contents is assigned as a matter of convenience in this paper, and meant nothing in the results.

Discussion

The importance of promoting the use of ICT in education

To promote the use of ICT in education, it is important that boards of education provide training programs and establish a support system for teachers. It was possible to identify undergraduate students’ feelings in Table 3: “Teachers need enough training to use ICT in education” (No.1) and “A support system is important for ICT use in education” (No.3). In addition, cooperation with relevant departments was also important to because we found that students felt that “The assistance of mayors, chairs of boards of education, and principals’ associations is needed to promote to the use of ICT in education” (No.15) in Table 3.

Negative preconceptions of ICT and computer

Table 3 includes the following preconceived ideas about ICT and computers: “It is necessary to cope with both studies using only computer and face-to-face studies in classroom” (No.12), “It is impossible to train the students with rich imagination by using ICT in education” (No.16) and “Computers have a bad influence upon students’ character building” (No.24). Therefore, we suggest that undergraduate students may be in the grip of certain preconceptions. Certainly, it would not be good if teachers used only ICT for all education (No.20), relied on it solely (No.22) or were slaved to computers (No.23). However, in fact, teachers don’t teach only with computers, but also face-to-face (Nakayama & Higashibara 1986). Especially, teachers teach children who cannot understand earnestly face-to-face when teachers teach with computer to “monitor the level of understanding of children” (No.6). In consequence, children can receive an education suited to their abilities, so the use of ICT in education doesn’t hurt their imagination and character at all because it allows computer-based instruction and enables teachers to speak easily to shy children as undergraduate students have said in No.9 and No.13 in Table 3.

Students' contradictory feelings of the use of ICT and computer in education

We find that undergraduate students studying education think that the use of ICT is useful and effective and feel the use of ICT in education is good because nominal phrases such as “child”, “efficiency”, “study” and “ICT” are related to the adjectives: “good” and “useful” in Table 2 and the affective index of the word “ICT” shows positively in Figure 1. However, in contrast to their feeling about ICT, they think that computers have a bad influence on children and feel the use of computers in education is bad because the nominal phrase “computer” is related to the adjective “bad” in Table 2 and the affective index of the word “computer” shows negatively in Figure 1. They make a contradictory statement because computers are part of ICT. The most prominent example in Table 3 that some students said “Using ICT in education leads to increase in communication” (No.10) and other students said “The use of computers in education causes lack of communication” (No.11).

We think that the difference of student's feeling between ICT and computers caused these contradictory statements. And we suggest that they think ICT is a methodology to teach, communicate and streamline teacher's workflow in education but computers are simple tools. In Table 3, the former is considered from “The use of ICT in education increases children's desire to learn” (No.2), “As a result of the school administration support system which is part of ICT, teachers can do school administration efficiently” (No.4) and “Thanks to using ICT in education, students can study efficiently” (No.14), and the latter is considered from “Computers are so dangerous that information education is necessary” (No.5) and “Students cannot get dictation ability if they study with computers” (No.21).

Conclusion

We analyzed undergraduate student's reports about the use of ICT in education through the website published by a director of the Hino Board of Education. As a result, the following findings were made clear.

- Training programs, support systems and cooperation with relevant departments are important to promote the use of ICT in education.
- Undergraduate students have a negative preconception that the use of ICT in education hinders child development because teachers teach only with ICT.
- Undergraduate students think that the use of ICT encourages children's desire to learn and streamlines teacher's workflow, so it is useful and effective in education. In contrast, undergraduate students also think that the use of computer in education is bad for the development of children, and they make contradictory statement, in spite of computers being part of ICT.

From all of these features, we suggest that the cause was their thoughts of ICT as a methodology and computers as simple tools in education. However, there were too few candidates for analysis with only forty-seven reports in this research. So, in the future we would like to analyze more candidates' responses and confirm our impressions and conclusions.

Acknowledgments

We gratefully acknowledge the Board of Education in Hino, Tokyo, ADACHI Hitomi and undergraduate students at the Faculty of Education, Shinshu University, Nagano, Japan.

Relevant URLs

JustSystems Corporation, Valuation Analyses System “TRUSTIA/R.2”, <http://www.justsystems.com/jp/trustia/> (in Japanese)

Official site of Hino Board of Education, Tokyo, Japan, <http://www.hino-ky.ed.jp/ict-edu/> (in Japanese)

References

Morishita, T., & Higashibara, Y. (2007a). Feature of Dispatching Information by Administrators in School Website with Content Management System. *Japan Journal of Educational Technology*, 31(Suppl.), 181-184 (in Japanese).

Morishita, T., & Higashibara, Y. (2007b). Development and Practice of Support Model to Create School Website with Content Management System. *Studies on Educational Practices*, 8, 173-182 (in Japanese).

Morishita, T., & Higashibara, Y. (2008a). The Secret of HINO ICT Education Advancement Considering from Website. *Proceedings of the 24th Annual Conference of Japan Society for Educational Technology, 2008*, Japan Society for Educational Technology, Joetsu, Niigata, Japan. 665-666 (in Japanese).

Morishita, T., & Higashibara, Y. (2008b). A Study of School Website Information Published by Kindergarten and Elementary School Principals Using Content Management System. *Studies on Educational Practices*, 9, 11-20 (in Japanese).

Morishita, T., Higashibara, Y., & Yatsuka M. (2008). School Principals' Belief in Daily Publishing of Web-based Communities with Content Management System. *IADIS Multi Conference on Computer Science and Information System, 2008*, International Association for Development of Information Society, Amsterdam, The Netherlands. *Proceedings of Web Based Communities 2008*, 269-272.

Nakayama, K., & Higashibara, Y. (1986). *Future Classroom*. Ibaraki, Japan: Tsukuba Press (in Japanese).

Zorn, P., Emanoil, M., Marshall, L., & Panek, M. (1999). Finding Needles in the Haystack: Mining Meets the Web. *Online*, 23(5), 16-18, 20, 22-24, 26, 28.