Net Generation Student Teachers' Perceptions of a CSCL-Inspired Curriculum

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Abstract: In this paper, we report the perceptions of a CSCL-inspired curriculum implemented with a cohort of net generation student teachers. The motivation behind this study is to examine the influence of CSCL pedagogy on net generation student's learning. Using convenience sampling, a total of 1081 student teachers participated in the survey consisting of factors on course content, delivery, learning environment and general experience. The findings revealed that the course in terms of all four factors has been very positively received. The CSCL-inspired instructional approach is found to have benefited net generation student teachers' learning.

Keywords: Net generation students, pre-service teachers, CSCL, Web 2.0, participatory learning

1. Introduction

This paper reports the perceptions of a CSCL-inspired curriculum implemented with a cohort of over 1000 net generation student teachers in Singapore. Following the notion of digital natives (Prensky, 2001), there has been increasing discussions in the literature concerning the validity of the construct (e.g. Oblinger & Oblinger, 2005 & Jones et. al., 2010). Arising from those claims and counter-claims, there seems a general consensus that the pedagogical design of instruction remains an important condition in determining net generation students' learning in this digital era. Therefore, the goal of this paper is to report the perceptions of net generation student teachers' learning after having experienced a CSCL-inspired curriculum.

2. Understanding Net Generation Student Teachers as Learners

The argument underpinning digital natives is based on research conducted in neurobiology and social psychology that argues brain development of net generation develops differently as a result of the digital environment they grow up in. Such differences can be observed in the digital practices of the net generation as they approach learning. For instance, Oblinger and Oblinger (2005) found that net generation students search and process information fast. Moreover, they prefer self-directed learning and self-discovery, and enjoy a high degree of autonomy. They are used to multi-tasking and task switching, and their preferred method of learning is communication and collaboration (Judd & Kennedy, 2011; Barnes, Marateo & Ferris, 2007).

On the other hand, recent evidence from research seems to question the validity of these claims. For one, the universality of digital natives is questioned as non-homogenous characteristics were found within the net generation students (Jones et al., 2010).

Moreover, net generation students may be technologically savvy who use technology frequently; they do not however exhibit the same frequency and inclination for technology-use when approaching learning (Oliver & Goerke, 2007). Yet others found that when participating in Web 2.0 learning environment, net generation students showed little higher-order thinking skills (Lim, So & Tan 2010).

Overall, research about the characteristics of net generation as learners remained mixed. Rather than be based on a simplistic generational aspect, it has been suggested that the debate about net generation students and how they learn be reframed (So, Choi, Lim & Xiong, 2012). One way to probe deeper is to study the influence of pedagogy on how net generation students learn. Specifically, in this paper, we report the results of net generation student teachers' perceptions of their learning after having experienced a CSCL-inspired curriculum.

3. The CSCL-inspired Curriculum

The curriculum that the participants in this research learn is conceptualized in the framework of *Dimensions of Meaningful Learning* (Divaharan, Lim & Tan, 2012). There are five dimensions in this framework namely: (1) Engaging prior knowledge, (2) Learn by doing, (3) Real-world context, (4) Self-directed learning, and (5) Collaborative learning. In the implementation of this curriculum, there were several ICT tools used. They range from an e-learning portal we termed as *ehub* that provided anytime, anywhere access to the content of all five dimensions, a learning management system that was used mainly for communication, and Google docs and other Web 2.0 tools as platforms for the participants to interact as they co-constructed their learning.

This curriculum was designed to have the participants adopt several key CSCL processes as they learn about these five dimensions. First, they capture their experiences as student teachers in schools through blogging. Thereafter, they draw on their blogs to discuss and make meaning of their experiences in relation to the national policies on ICT. Second, the participants explore and learn about the five dimensions as they participate in reciprocal teaching. Through this, they engage in a process of discussing and negotiating as they try to make sense of these dimensions. The role of ehub in this case is to provide the resources while Google docs and other Web 2.0 tools served as platforms to facilitate students' sense making. Obviously, throughout this process of learning, the participants have to practice self-directed learning where they employ various thinking and management strategies as they prepare for reciprocal teaching. In sum, the CSCL-inspired curriculum is designed with the intent to engage net generation student teachers in a participatory mode of learning facilitated by various ICT tools.

4. Methods

4.1 Data Collection and Participants' Profile

This study is based on data collected from the July 2011 first year student teachers in Singapore. The study adopted the convenient sampling method in which participants were recruited based on their availability and willingness to participate. A total of 1081 student teachers [(158 from Diploma, 355 from Post-graduate diploma (Primary) and 568 from Post-graduate diploma (Secondary & JC)] participated in the survey.

4.2 Survey Instrument

The survey instrument with 31 items on a 7-point likert scale (1 = strongly disagree, 2 = somewhat disagree, 3 = disagree, 4 = neutral, 5 = agree, 6 = somewhat agree, 7 = strongly agree) was developed to examine net generation student teachers' perceptions of the course after they have gone through it. The instrument includes four factors: (a) course content, (b) delivery of the course, (c) learning environment as well as, (d) general experience.

5. Findings

The mean score for factor on course content (Table 1) revealed that participants perceived their learning to be positively high. In fact, among the various topics, the core curriculum consisting of the five dimensions is the most highly rated indicating participants' sense of achievement. The low standard deviation of less than one indicated that this positive perception is consistent among the participants.

Table 1. Descriptive statistics on course content

		Mean	SD
1	I am clear about the goals identified in the Education Ministry's ICT Master Plans	5.66	.927
2	I am clear that the objectives of the ICT course are to equip me with pedagogies associated with ICT tools	5.83	.955
3	I have a good overall understanding of the Dimensions of Meaningful learning	5.94	.912
4	I have a good understanding of the Dimension: Engaging prior knowledge	5.98	.900
5	I have a good understanding of the Dimension: Learn by doing	5.95	.908
6	I have a good understanding of the Dimension: Real World context	5.97	.895
7	I have a good understanding of the Dimension: Self-directed learning	5.91	.914
8	I have a good understanding of the Dimension: Collaborative learning	5.94	.892
9	I have gained sufficient knowledge about lesson planning	5.58	.988
10	I have gained sufficient knowledge about the various instructional strategies during the session on lesson planning	5.53	.966
11	I have gained sufficient knowledge about the various cyberwellness issues	5.45	1.057

In terms of course delivery (Table 2), the positive mean indicated the effectiveness of the delivery approaches in helping participants learn. In particular, they found the hands-on approach and the discussions during tutorials beneficial. The standard deviation of about one indicated that this positive perception is fairly consistent among the participants.

Table 2. Descriptive statistics on course delivery

		Mean	SD
1	The instructions for pre-session 1 (blogging activity) was clear	5.20	1.305
2	The blogging activity was useful in making me reflect about ICT use in schools	5.02	1.359
3	The blogging activity was useful in making me reflect about the implementation of the ICT Master Plans in schools	5.07	1.334
4	The blogging activity was well connected to the dimension of engaging prior knowledge discussed in session 1	4.94	1.357
5	The resources on the dimensions of meaningful learning in the e-learning hub helped me prepare for the Reciprocal Teaching activity	5.46	1.141
6	I learnt through the sharing during Reciprocal Teaching	5.37	1.141
7	The resources on lesson planning in the e-learning hub for lesson planning are sufficient for me to critique the lesson plans	5.31	1.091

8	I find the lesson plan critique activity useful	5.38	1.115
9	The hands-on sessions during my tutorials help me to learn new ICT tools	5.68	1.098
10	The discussions during my tutorials are useful for helping me to understand how ICT is used to promote meaningful learning	5.66	1.066

The learning environment has been perceived to positively support learning (Table 3). Again, the standard deviation of about one indicated that this positive perception is fairly consistent among the participants.

Table 3. Descriptive statistics on learning environment

		Mean	SD
1.	The tutorial class size is appropriate for learning and sharing.	5.82	1.055
2.	The lab facilities support my learning.	5.91	1.010
3.	The lesson duration is appropriate.	5.77	1.094

Finally, the mean score on general experiences (Table 4) revealed that participants perceived their general experience to be positive. In particular, they felt positive about working collaboratively in an online environment and in the use of Google Sites. The standard deviation ranging from .956 to 1.125 indicated that this positive perception is fairly consistent among the participants.

Table 4. Descriptive statistics on general experiences

		Mean	SD
1	I like the e-learning hub	5.64	1.094
2	The content in the e-learning hub is useful for me as a student teacher	5.81	.995
3	I am confident in using Google Sites	5.60	1.125
4	I am confident in using Google documents	5.97	.956
5	I have experienced working collaboratively in an online environment	5.98	.961
6	I learnt how to apply my knowledge of technology to the design of ICT-based lessons.	5.79	.991
7	I have sufficient knowledge to design ICT lessons that are meaningful	5.70	1.000

4. Discussion and Conclusion

From this study, it is evident that a CSCL-inspired curriculum for the net generation student teachers has been received positively. The positive response for all four factors seems to suggest that the instructional approach adopted in the course benefited their learning. In particular, the high response for course delivery (mean ranging from 5.31 to 5.68) suggests that the CSCL pedagogy has been successful in inducting these net generational student teachers into a co-constructing participatory culture. Moreover, the high means (ranging from 5.64 to 5.98) for general experience is an affirmation of the import of curriculum design that enhances learning in contrast to the simplistic notion of the net generation.

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Workshop 14 Preface

The development of advanced information technologies has opened up new opportunities for learning in the 21st Century, especially when one-to-one learning is becoming a reality in schools, shifting the traditional paradigm of the teacher-centered practice to that of student-centered practice. Yet, there are essentially two types of student-centered learning, namely, self learning and group learning. Besides group learning issues such as computer supported collaborative learning, networked learning communities, and so forth, a wide range of self learning issues (see topics of interest below) is emerging, not to mention the long-standing, active research area: one-to-one tutoring.

Computer supported personalized learning (CSPL) speaks of, while engaging students to learn in a computer supported learning environment, how to optimize the development of individual students' capacities through accommodating their diverse personal strengths, interests, paces, needs and other personal characteristics as well as tailoring to their learning preferences. CSPL should not only establish students' personal niches or expertise, it will also ultimately shape our educational system.

This is also the purpose of this workshop. Nine papers are included in this workshop and their details are presented in the table. We hope that the implications of findings of each paper presented in this workshop can be used to improve the development of Computer-Supported Personalized Learning environments.

Authors	Aims
Fan & Liu	To investigate whether EFL readers with low tolerance of ambiguity have higher percentages of consultation immediately when they use computer-mediated dictionaries.
Chou, Lu & Chen	To propose a personalized game-based learning system based on matched competition strategies, which keep students in evenly matched competition game progress and game results in game-based learning.
Hwang, Chen & Chen	To present a personalization preference analysis model for e-learning content recommendation based on the half-life theory.
Li, Huang & Heh	To propose a concept density algorithm for personalized game-based learning, which allows the system to compute the concept density automatically for the given content.
Chen, Kang & Chou	To propose the concept of personalized competition model, which offers different competition mechanisms according to students' choice preferences.
Huang, Wang, Huang & Lin	To use affective recognition to coordinate with Digital Arts, apply to the Intelligent Tutoring System to observe learner's emotion to judge if the learning process is smoothly and give feedback promptly and timely.
Sung, Hwang, & Chang	To propose a problem-posing strategy for supporting collaborative mobile learning activities.
Wang, Chen, Yang & Mei	To investigate how gender differences affect players interact with a MMORPG, with an emphasis on game immersion and game performance.
Weerasinghe, Mitrovic, Mathews, Holland & Elmadani	To develop support for self-directed learning in Moodle by incorporating opportunities for reflection and self-assessment for learners.

Organizers

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