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Journal of Education Editors

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Introduction

It is my great pleasure and honour to introduce Volume 3, issue 2 of IAFOR Journal of Education. This issue is a selection of papers submitted directly to our journal as well as studies presented during:

1. The Sixth Asian Conference on Education and The Second Asian Conference on Society, Education & Technology, ACE & ACSET 2014, "Transforming and Changing Education: Individuals, Communities, Societies", held in Osaka in October-November 2014.
2. The IAFOR International Conference on Education - Dubai 2015 (March 8-10, 2015). IICE2015.

This edition focuses, like our summer special edition, on emerging technologies in education, principally online courses; it also discusses self-harming behavior at school, the issue of racism as well as the problem dysfunctional children and adolescents. Our journal is proud to introduce scholars from all over the world. Most of the studies presented in this issue discuss the application and impact of new technologies:

The first paper, co-authored by Miri Shonfeld and Ilana Ronen, is entitled "Online Learning for Students from Diverse Backgrounds: Learning Disability Students, Excellent Students and Average Students". The advantages of an online science education course to pre-service students from diverse backgrounds: students with learning disabilities (LD students), excellent students and average students are presented in this study. The assumption was that adapting the online course for these students by using information and communication technology following formative assessment will improve students' self-learning ability as well as broaden their science knowledge, their lab performance and teaching skills. The findings based on students' perceived evaluation pinpointed the advantages of the online course to the three groups of students. Yet it carefully reports a slight but explicitly marginal advantage of the LD students' perceived evaluation and achievements in comparison to the other students. Moreover, the study shows a five year gradual improvement in the online lab performance, and suggests synchronized lectures and forums for increasing effectiveness and learning.

The second paper, entitled "Online Comic in Mandarin Chinese's Vocabulary Learning: A Case Study of Budi Utama Multilingual School in Yogyakarta, Indonesia", is co-authored by Nuning Catur Sri Wilujeng and Yu-Ju Lan. In this study, a quasi-experiment was conducted to develop Mandarin Chinese learning through online comics for elementary school students and to investigate students experience in applying online and collaborative learning. As a Multi-language school, Budi Utama, Yogyakarta has been offering Mandarin Chinese as a facultative subject from Kindergarten. Three classes of grade 5 students participated in this study. Mixed methods were applied to collect and analyze the quantitative and qualitative data. The result obtained from the study showed that (1) the Mandarin Chinese of the grade 5 students developed sharply and successfully for the collaborative learning, individual comics, and the control groups and (2) comic learning satisfies the students and they feel the application is useful for them in learning Mandarin Chinese, and (3) collaborative learning shows great advantages for the students as is demonstrated by their achievement in online comic activity.

The third paper, entitled "Exploring Learner's Patterns of Using the Online Course Tool in University Classes", is co-authored by Yoshihiko Yamamoto and Akinori Usami. This article explores what extent university students actually use their online course tools throughout the semester. Although online course tools are useful for both teachers and students, some past studies such as Petrides (2002) and Ngai, Poon and Chan (2007) showed that online course tools

were not effectively used. The authors of this study encourage their students to use one of online course tools in their classes. However, the authors of this study realize that some students often use it but other students hardly ever access to it throughout the semester. There are two aims of this study. Firstly, this study investigates what extent students actually use the online course tool through the semester. Secondly, it tries to find some suggestions of how teachers can promote their students to maximize making use of the online course tool. The authors of this study coded numbers of actual access to the online course tool by their students and also questionnaires were used. The total of 380 students' access was coded and total of 335 responses of questionnaires were analyzed. The results reveal that students tend to use the online course tool when homework was given though it and when teachers posted important messages for the assignments on it. As a result, it is important for teachers to extract students' external motivation in order to encourage students to use online course tools.

The fourth paper, entitled "Taiwanese EFL learners' perceived use of online reading strategies", is written by Lisa Wen Chun Chen. Reading strategies, such as global reading strategies, problem solving strategies and support strategies, are beneficial to reading comprehension. Most previous studies investigated paper-based reading strategies while relatively few studies examined online reading strategies and their effects on reading comprehension. Online reading materials are crucial for EFL students since an increasing number of learners read texts and learn through the Internet. Taiwanese EFL learners, unfortunately, are reported to be overwhelmed with English online materials on the Internet. Therefore, this study intends to examine EFL learners' perceived use of online reading strategies and whether their perceived strategy use is different in terms of proficiency levels and gender to offer some insight pedagogically. After analyzing students' responses of Online Survey of Reading Strategies (OSORS) adapted from Anderson (2003), the researcher found that EFL online readers tend to use more global strategies, such as using contextual clues and observing tables, figures and pictures in online texts to increase understanding. High-level learners used more global and problem solving strategies than low-level learners. Additionally, there is no gender difference of strategy use. Several pedagogical implications, such as the need to raise students' awareness of strategy use, are addressed in the present study.

The fifth paper, entitled "Evaluate, Analyze, Describe (EAD): Confronting Underlying Issues of Racism and Other Prejudices for Effective Intercultural Communication", is written by Daniel Velasco. Although more countries are becoming culturally diverse, racism and other prejudices continue to hinder efforts to diversify and further many fields. Although there are many ways to confront and reduce these prejudices, intercultural communication continues to be a vital component in assisting individuals and groups with this task. This article provides an overview of pertinent research and theories related to racial identity and communicating with people of different cultural backgrounds. It also helps to shed light on underlying issues of racism and discontent by looking at two specific populations living in one country—Japanese and Nigerian populations within Japan. The article concludes with a description of a new intercultural communication exercise called the E.A.D. (Evaluate, Analyze, Describe), which has been proven to increase cultural awareness and open the lines of communication between individuals from different cultural backgrounds.

The sixth paper, entitled "A Model of Small-Group Problem-Based Learning In Pharmacy Education: Teaching in the Clinical Environment", is co-authored by Jeerisuda Khumsikiew, Sisira Donsamak, and Manit Saeteaw. A model of small group Problem-Based Teaching was implemented for 5th year pharmacy students in the clinical environment that facilitated by pharmacy instructors. Then, 15 weeks after running program. Pharmacy students' self-assessment rating scales on their competencies and satisfaction have been explored compared with baseline

by paired sample t-test. Problem-Based Learning (PBL) activities consisted of providing pharmaceutical care service, collecting patients based clinical data, evaluation therapeutic regimens, developing SOAP note, peer feedback and case wrap-up sessions. The result indicated that pharmacy student's competencies have been increased through PBL course in every clinical skill items ($P < 0.05$) such as identifying, prioritization, solving therapy-drug related problem as well as clinical communication. Moreover, most of students were satisfied with the implementation of PBL. Overall concluded that the PBL model enhances pharmacy student competencies and students were satisfied with PBL course.

The seventh paper, entitled "Healthy Children, Healthy Minds: Creating a Brighter Future", is written by Marcel Lebrun. Researchers have been overwhelmed with the amount of data that has been collected on dysfunctional children and adolescents. Failing schools have contributed to failing students. The breakdown of the family and lack of parental support has contributed to growing numbers of depressed, suicidal, anxious, confused and fundamentally troubled youth. We need an ongoing campaign for all educators, adults and citizens to take responsibility to raise healthy, mindful children of the 21st century. The goal of this article is to help all educators and any adults who work with children to use healthy and successful strategies to shape the minds of future generations, by modeling healthy behavior and encouraging and showing children how to be healthy and mindful, so that they can become positive, caring citizens of the world. Hands-on strategies such as exercise, attention, focus, mindfulness etc that can help turn the tide of problematic, ultimately self-harming behavior that is happening in our culture to create a better place for us all to live. There are many successful strategies that have proven evidence based results that are highlighted and recommended as interventions and next steps.

The eighth paper, written by Anna Toom, is entitled "Students-Enthusiasts in Online Classes: Their Contribution To the Educational Process". Students' enthusiasm was explored in a population of current and prospective school teachers. The research methodology included graphical and mathematical analysis of students' discussions as well as analysis of "Help me!" messages and responses. It was found that enthusiasts created a positive psychological atmosphere at discussion forums which allowed their classmates to develop a "sense of community". Stimulating dialogues, helping others to adjust to a new learning environment, and sharing information with less knowledgeable classmates–these were features distinguishing students-enthusiasts. Dr Toom concludes that students-enthusiasts' communication style described in the study goes on to their own classrooms where they work as instructors. It helps to appreciate teachers-enthusiasts' role in the society.

The ninth paper, written by Andrzej Sokolowski, is entitled "The Effect of Math Modeling on Student's Emerging Understanding". The paper The Effect of Math Modeling on Student's Emerging Understanding is a report of study about using modeling to eliminate students' misconceptions about the effects of optimization. A sample of 28 high school students was under a treatment of investigating different areas enclosed by a fixed length perimeter that was rooted in a scientific inquiry process. The result of the study showed that scientific modeling not only helped students understand the mathematics underpinning of the optimization process, but also that is has a potential to model other math concepts typically found in high school math curriculum.

The tenth paper, written by Paul C. Corrigan, is entitled "English For the Medium of Instruction (EFMI) at a University in Hong Kong". Owing to their aspirations to climb the ranks of the best universities, many universities are turning to English for some or all of their courses as a policy initiative. The paper points out some of the difficulties in doing so, drawing on the experience of universities in the U.S. which have relied on International Teaching Assistants for many years.

Included in the paper is a discussion of an initiative on pre-service teacher education, in English as a teaching medium, at a large university in Hong Kong. The article includes a profile of new Ph.D. students at the institution who needed to develop their skills in English before they could teach at that EMI university and the course which was developed in order to help them do so and details the feedback which they provided on that course.

Please note that we welcome original research papers in the field of education submitted by teachers, scholars, and education professionals. They may send their manuscript even though they did not participate to one of the conferences held by IAFOR.

We also welcome book reviews, reviews of the literature in the field, and contributions introducing key educational scholars. The next issue scheduled for February 15, 2016 will also be a selection of papers submitted during the above mentioned conferences. IAFOR publications are freely accessible on the website (Open Access).

Moreover, there is no publication fee for authors. Please find the guidelines at this end of this issue and follow our guide for authors before submitting your paper.

Best regards,

Bernard Montoneri

Online Learning for Students from Diverse Backgrounds: Learning Disability Students, Excellent Students and Average Students

Miri Shonfeld and Ilana Ronen

Abstract

The perceived contribution of science education online course to pre-service students (N=121) from diverse backgrounds - students with learning disabilities (25 LD students), 28 excellent students and 68 average students is presented in this five years research. During the online course students were asked to choose a scientific subject; to map it and to plan teaching activities; to carry out the proposed activities with students in a classroom experience; and to reflect the process. The assumption was that adapting the online course by using information and communication technology following formative assessment will improve students' self-learning ability as well as broaden their science knowledge, their lab performance and teaching skills.

Data were collected using quantitative and qualitative tools including: pre and post questionnaires and nine (three students from each group) depth interviews upon completion of the course. Findings, based on students` perceived evaluation, pinpointed on the advantages of the online course for students of the three groups. LD students' achievements were not inferior to those of their peers, excellent students and average students. Yet, it carefully reports on a slight but explicitly marginal perceived evaluation of the LD students in comparison to excellent students and average students regarding: forum participation, authentic task and water lab performance. The article discusses the affordance of the online course via additional features that can be grouped into two categories: knowledge construction and flexibility in time, interaction and knowledge. Further research is suggested to extend the current study by examine the effect of other courses and different contents and by considering various evaluation methods of online courses, such as: observation, the think aloud, text and tasks analysis, and reflection.

Keywords: Online learning; students with learning disability; excellent students; science education.

Introduction

The advantages of an online Science Education course to pre-service students (students in their second grade toward B.Ed degree) from diverse backgrounds are presented in this study. In light of the importance of online learning as a teaching tool, an ongoing five-year study was designed to face the challenge of adapting a course for three groups of students: students with learning disabilities, excellent students, and average students. The "Science Education" on-line course is part of the teacher-training program for K-2 pre-service teachers which focuses on constructing a science teaching unit and is based mainly on learning scientific concepts, including fostering lab skills, and practicum. Adapting a science education online course by using information and communication technology following formative assessment was a challenge for students with different needs and capabilities as well as for their lecturers. The study will describe students` evaluation of the perceived advantages of the online course and the way it dealt with the challenge.

Literature Review

Accessibility of online learning

During the last twenty years, studies focusing on the integration of Information and Communication Technology (ICT) in teaching (Chazan, 2001), shows teacher and student lack of knowledge of technology (Wegner, Holloway, & Crader, 1998), and hardware limitations (Goldstein, Shonfeld, Waldman, et al., 2011; Kreka, 1996) .During this time new technology-based teaching methods and processes have been developed and incorporated in active learning processes (Venezky & Davis, 2002). Additionally, a great number of studies on the appropriateness of the learning styles (Fuller, Norby, Pearce, & Strand, 2000), and the characteristics of students who benefit from online courses (Lockee, 2001) have also been made. Tthere are no conclusive answers to the nature and extent of the impact of online learning for students with diverse backgrounds. Researchers agree that students taking online course are required to possess self-learning abilities, maturity and high self-discipline, high motivation, the capability of expression and communication in writing, time organization skills (Leasure, Davis, & Thievon, 2000), as well as the ability to manage an online learning environment (Buchanan, 1999; Diaz & Cartnal, 1999; Trentin, 2002).

Furthermore, Cavanaugh, Barbour & Clark (2009) pointed to greater improvement in critical thinking, researching, use of computers, independent learning, problem solving, creative thinking, decision-making, and time management skills of online students compared to their counterparts in traditional classroom settings. Not surprisingly, the online learning environment poses some challenges to student learning as well as numerous benefits. The challenges most often reported in the research literature generally fall into two broad categories: challenges due to a mismatch between students' specific learning style preferences and the online learning environment and challenges in communication. With respect to these challenges, researchers suggested that in an online environment extroverted students may miss the face-to-face interaction with peers and students who do not have strong verbal/reading skills may experience a disadvantage in a text-heavy online environment. In addition, using problem solving and computer-mediated communication, such as the MindTool software (essentially any computer program the learner uses to engage and facilitate critical thinking and higher order learning, such as: databases; semantic networks -concept maps; spreadsheets; expert systems; system modelling tools; micro worlds; search engines; visualization tools; multimedia publishing tools; live conversation environments; and computer conferences), may encourage critical thinking and can help in implementing cooperative learning based on technology (Jonassen, 2005).

Diverse background students

Policies to promote widening participation, benchmarks, and incentives to recruit students from more diverse backgrounds and those with disabilities have led to a doubling of the declared number of students with disabilities entering higher education over the last 10 years (NLCLE, 2007). Counterpart to the students with learning disabilities is the excellent students who are an integral part of higher education (see Methodology).

Students with learning disabilities

Students with learning disabilities might be affected by a group of disorders that affect the ability to acquire and use listening, speaking, reading, writing, reasoning, or math skills (National Center for Education Statistics, 2000). Profiling individuals with LD is not easy because the most cited characteristic of this group is that each individual is unique. However, despite the diversity, most individuals with LD share some common patterns of behavior. They have decreased motivation to learn, are inactive in learning, need tasks to be broken into smaller units, have problems with generalizing, and are poor in problem-solving and thinking skills (Smith, 1998). The Internet has the potential to dramatically change the way students continue with their formal education (Hill & Buerger, 1996), particularly students with learning disabilities who need the convenience of Web Based Instruction (WBI). WBI allows students to be self-directed and self-paced, with the possibility of repeated reiteration, giving instructors the tools necessary to organize and deliver content in well-defined teaching systems and expand the learning process by providing activities such as discussion forums (Kesselman & Tobin, 1999).

In addition, electronic texts offer many advantages over print-based materials for students who learn in a web-based environment (O'Neil, & Fisher, 2008). However, for students with learning disabilities, these advantages were not realized (Kwesi, 2002; Skylar, Higgins, & Boone, 2007). On the other hand, Simoncelli & Hinson (2008) employed Universal Design for Learning (UDL) methods that can be used for all students, including those with learning disabilities, and how proper use of UDL can benefit these learners in the ever-changing online learning environment. The findings reflected no apparent differences between two students with learning disabilities and three without disabilities in regard to the use of instructional media.

Researchers (Brunvand & Abadeh, 2010; Skylar et al., 2007) reviewed a variety of tools and techniques that teachers can use to help make online learning more manageable for students with disabilities. Tools such as ShareTabs and TrackStar (Web sites for an interactive, online lesson), are designed to make it easier for teachers to share multiple Web sites, but for some students the task of having to work through multiple sites may still be overwhelming, even with the support and guidance provided by these resources. To accommodate these students, teachers can use a variety of tools designed to annotate and highlight individual Web sites rather than looking to share a collection of different sites.

Excellent students

The excellent students are part of a selective, demanding, and rewarding program for those seeking an intellectual challenge and who are prepared to invest the extra effort required to meet that challenge (NLCLE, 2007). Thomson (2010) states that online programming can be an effective means of meeting the needs of many gifted students, based on in-depth qualitative and quantitative investigation of the perceptions and experiences of gifted students and their teachers of courses offered through an online program designed specifically for them. Students were able to work at a pace consistent with their rate of learning, had more time to reflect, felt more in control of the learning process, and engaged in more self-directed and independent learning. The online course described here is a general course which enables learning in heterogeneous groups made up of excellent students, students with learning disabilities, and average students (Ronen & Shonfeld, 2008).

Online science education course

Science plays a key role in preparing K-2 pre-service teachers. Nonetheless, most of them are reluctant to get involved in science (Ashenhaimer, Kashtan, Gur, Zymerman, & Eldad, 2001). The question of quality and comparability of online learning naturally arises, mainly in relation to workshop courses based on labs, which are typically (Face to Face) F2F oriented. Trying to highlight the advantages of online labs for diverse background pre-service teachers, Ronen & Shonfeld (2008) designed an online course which is based on hands-on labs. The online course challenges the attempts to promote science instruction and foster student-teachers' lab skills. In addition, the online science education course provides a model to follow in the field.

The purpose of this study is to examine the extent to which an online science education course works for pre-service students of diverse backgrounds, including students with learning disabilities, excellent students, and average students.

Methodology

The purpose of this study was to examine the extent to which the online course "Science Education for K-2" is the appropriate learning environment for different student teachers ─ "LD," "Average," and "Excellent" students ─ based on learners' perceived evaluation in these aspects: (1) The contribution of the online course to learning, (2) the degree of coordination between online tools for learning, and (3) the degree of interaction between participants in the course. The findings reflected the adjustment of the course to the learners, as it was perceived by them, despite the possible bias which limits self-reporting and the trend to answer according to what is considered desirable (Paulhus, 2002). Nevertheless, researchers argue that exploring personality features (such as the emotional intelligence trait) in a study can be measured by self-reported questionnaires (Petrides & Furnham, 2001). Similarly, the present study examined the potential behavior of students, via self reported questionnaires, i.e., capabilities (such as self-learning) and behaviors (such as time organization). Data was collected through attitude questionnaires distributed to all students attending the course and through interviews with three representatives of each group. The quantitative findings allowed comparison between the three groups of students, and the interviews revealed students' attitudes and abilities, as is customary in qualitative research (Shelsky & Alpert, 2007).

The online "Science Education for K-2"

The online "Science Education for K-2" is intended to expose students to a variety of scientific topics taught in early childhood classes and focuses on constructing a science teaching unit. It was based on project-based learning (PBL), most of which took place in small groups (pairs or threes) and was involved solving authentic problems and tasks for the study of the selected topic. During the course the building of a scientific subject using the Science, Technology and Society (STS) approach is demonstrated to students while focusing on the process: collecting and organizing information, mapping the topic, and planning activities. It also emphasizes the solving of everyday life problems through research for the development of inquiry skills and the adaptation of scientific-technological changes, such as:

1. Water Lab: Laboratory dealing with water. Students were asked to perform experiments, summarize, and draw conclusions.
2. Tiltan: Science kit that includes scientific equipment which enabled performing physics experiments related to everyday life. The activities included participation in the forum, forum management, attending meetings, and learning synchronously - asynchronously via the course website. Each student was required to conduct a study discussion group on the topic chosen and participate in discussion groups managed by colleagues in the course.

The online course was based on the Highlearn platform which enabled ICT learning synchronously through InterWise. The course included peer teaching: students conducted group discussion and peer feedback; individual monitored learning.

All students were instructed by the lecturer in developing their project and self-learning: students read articles and sent comments on tasks related to them. At the end the students tried the activities in class and reflected on their experience. A variety of learning tools was provided, using an interactive site that contained the information (presentations, articles, videos, recordings of lectures and exercises, handouts, forum, chat, survey, testing, training, and announcements), which allowed learning through discussion groups (forums) and asynchronous audial discussion. The course evaluation included formative assessment, including peer review and teacher evaluation, and summative evaluation, which included scores on assignments and a final grade for the work.

The study population

The five-year study population included 121 students in their second year in the Early Childhood program: participants in the online course "Science Teaching for Early Childhood," 25 "LD students" (with learning disabilities, diagnosed as ADHD - Attention Deficit/Hyperactivity Disorder), 28 "excellent students" (enrolled in the Honors program including top 10% students` academic achievements), and 68 "average students" (not identified as LD or excellent). Every course included about 20 students, including representatives of all three groups, and was taught by the researchers.

Research tools

Pre–Questionnaire: The questionnaire included 12 closed questions and three open questions. All of the closed questions included 3 or 4 choices, most of them rated on a Likert scale. For example, when asked "how important was your relationship with the Instructors?" respondents had to choose between “to a great extent," "moderately," or" not at all.” To assess the degree of communication with the online course instructors, the students had to choose between "more\equal\less” than the relationship with regular lecturers. Questionnaire items related to the computer skills of learners, assessing their individual learning ability, the importance learners attached to communication with lecturers and students in the course, their assumptions for the online course communication they will attend, their work habits, and their degree of satisfaction with the online course in various areas.

Post-Questionnaire: The questionnaire included 15 closed questions and three open questions and was similar in its structure to the pre-questionnaire. Some of the questions of the pre-questionnaire also appeared to test if students' attitudes changed after the online course. Additional questions related to the students' evaluation of their individual learning and to communication with others in the course. Additional questions related to satisfaction with tasks and activities, the degree of participation in discussion groups, and their evaluation of unique elements of online teaching. For example, "To what extent does knowledge sharing among forum participants contribute to learning?" Possible responses included "to a great extent," "moderately," or "not at all."

Interviews: Semi-structured interviews, lasting about forty-five minutes, were conducted with nine students - three from each of the three groups - based on questions set in advance, which enabled an open dialogue with the interviewees. The interviews were conducted, recorded, and transcribed by the researchers.

The research process

The five-year study was conducted by the researchers, who were careful to be uniformed about which group the students belonged to ("LD", "average", and "excellent"). The Pre- and Post-

questionnaires were completed at the beginning and end of the course by participants via the Internet. The students' course grades were determined by evaluating the following components: (1) Student activity and tasks performance, (2) participation in forums and chat rooms, (3) student feedback in their peer forum, (4) information search in the chosen topic, (5) building learning centers, and (6) project summary. Data was collected and analyzed separately each year. After the five years of the study, the results were combined and analyzed to compare the three groups.

Analysis

Descriptive statistics were used to analyze the results of the questionnaires using SPSS software. To check if the students' responses from the three groups, "LD," "average," and "excellent," differed in various aspects of the course, an ANOVA test was conducted to examine differences among the three groups regarding their perceived contribution of the online course to their learning. In addition, a multivariate analysis was made between the three groups. Naralizer software was used for content analysis of in-depth interviews, organizing the data according to criteria defined by the researchers in advance or during analysis. In this study, four categories were defined in advance (see sections 1, 2, 4 in Findings) and two additional categories emerged from interviews with students (see sections 3, 5 in Findings).

Findings

Several aspects of the perceived contribution of the online learning course were reviewed in: (1) Students' self-learning ability and participation in the online course; (2) Students` satisfaction with the online course activities and skills; (3) Suitability of the online environment for learning; (4) Online course interaction; (5) Online course availability; and (6) Online course student achievement.

1. Students' self-learning ability and participation in the online course

Figure 1 shows the LD, Average, and Excellent students` evaluation of their self-directed learning abilities. As can be seen in the pre-questionnaires, the LD students reported lower levels of self-directed learning in comparison to the average and excellent pre-service-teachers. However, in the post-questionnaire they reported higher levels of self-directed learning in comparison to the others. The biggest improvement can be seen in the LD students' self-evaluation.

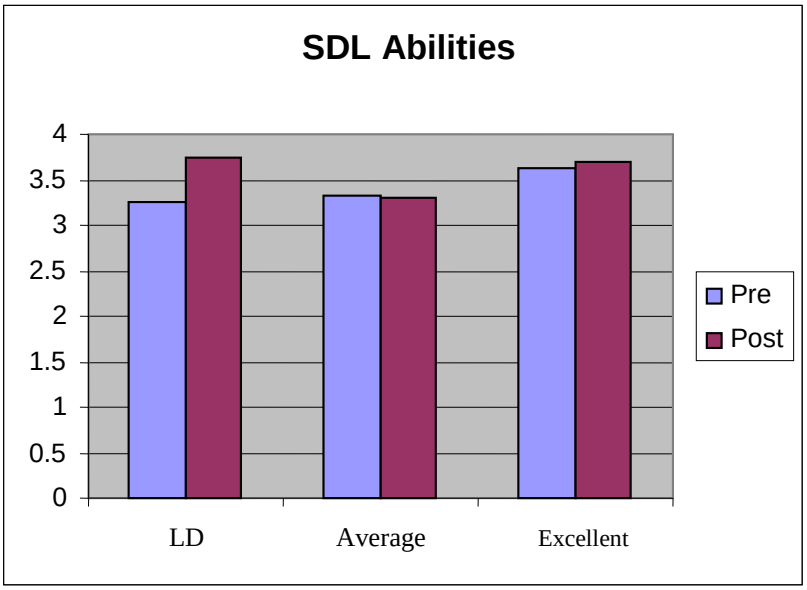

Figure 1. Students' Evaluation of their Self-directed Learning (SDL) Abilities: LD, Average, and Excellent students (N=121)

The interviews clarified the perceived contribution of the online course to the students' self-learning ability. As one LD student, N, said, "In the online course I needed to learn independently, all by myself. At first I had difficulties in information processing, but I had to manage, so I overcame. I managed in-time planning, I learned to take responsibility, and I feel much more self-disciplined."

An excellent student, A, said, "Although I am a self-learner and I know how to learn by myself, I mainly learn from my lecturer in a traditional lesson. The online course contributed to my self-learning skills, responsibility, and time planning."

And an average student, T, claimed, "Self learning is a necessary condition for online learning. Students who need to see and hear their lecturer can`t be online learners."

Figure 2 shows the differences between the three groups in lesson participation. The excellent students reported equal participation in an online course and in a traditional one. The average students reported lower participation in an online course than a traditional one, while the LD students reported higher participation in an online compared to a traditional course. LD students' self-reported participation in the online course was virtually equal to that of the excellent students and is not statistically significant.

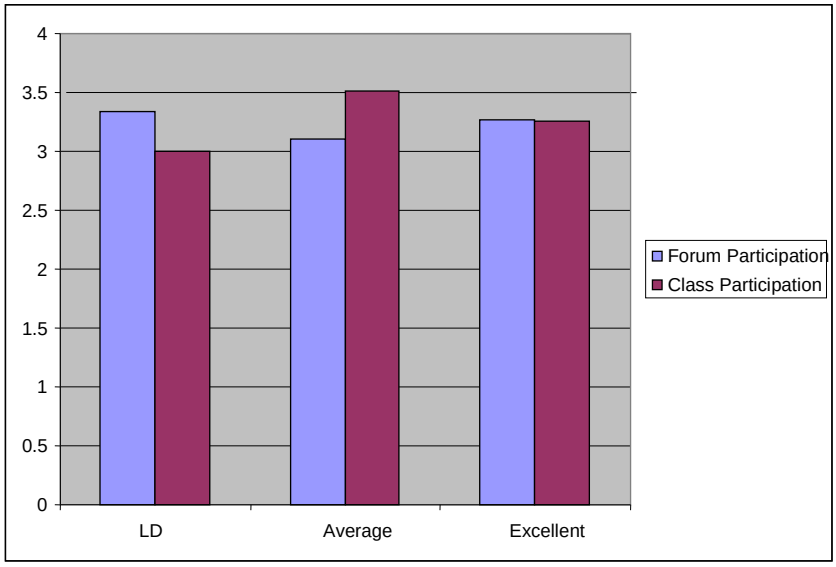

Figure 2. Students' Evaluation of Participation Level in a Traditional Course and in an Online Forum: LD, Average, and Excellent students (N=121)

2. Students' satisfaction with the online course activities and skills

The post-questionnaire required students to evaluate and rank the activities conducted in the course and the skills they acquired, including planning and execution processes and laboratory water lab, forum management and participation, and an authentic task activity.

The analysis distinguishes ($p < 0.05$) between LD student group and the other two groups on the following activities: an authentic task, water lab, and forum management (Table 1). A multivariate analysis in the form of discriminant analysis performed on the data revealed one significant function which differentiated between the LD students and the other groups. The results are presented in Table 1.

Table 1. Structural Coefficients Discriminating between LD Students and the Other Groups (N=121)

The Subjects	Structure Coefficients
Authentic task	.47***
Water Lab	.47***
Forum M	.29***
Forum P	.199
Mabat	-.137
Science kit	-.044
Eigenvalue	.69
X^2	27.72***
Wilks-lambda	.41
Centroids:	
LD	-1.43
Average	.46
Excellent	.76

***P<.005

A detailed assessment of LD, excellent, and average students' standard measures distinguished (an authentic task, water laboratory, and forum management) is shown in Figure 3.

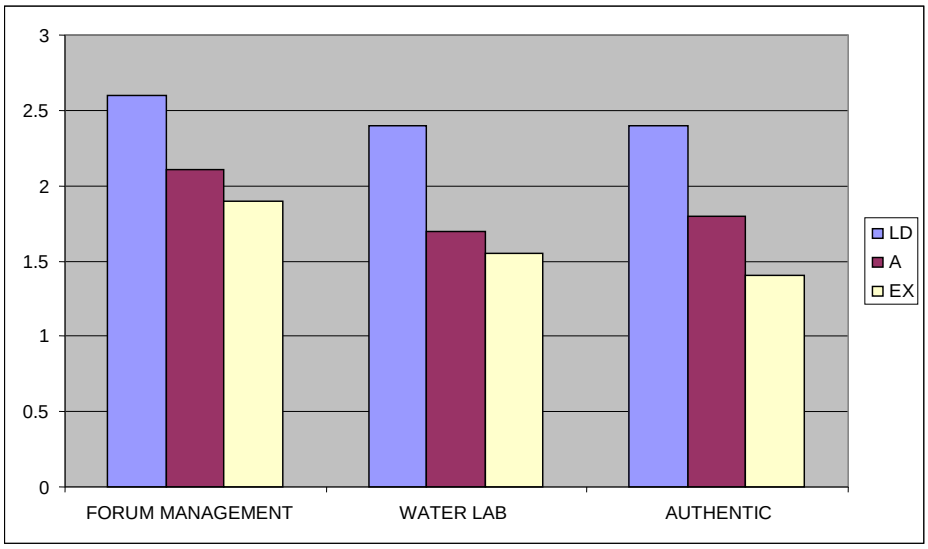

Figure 3. Students' Evaluation of Forum Management, Water Lab, and Authentic Task: LD, A-Average, and Ex-Excellent students (N=121)

Figure 3 and Table 1 show higher satisfaction expressed by the LD students compared with their peers regarding the three distinguished indices: an authentic task, water laboratory and forum management. Moreover, it can be seen that the average students' evaluation is also higher than that of the excellent students in all three indices, although the difference is not significant.

3. Suitability of online environment for learning

To study the contribution of online tools (tools for synchronously teaching, voice supported software, multimedia, forums, online practice, and messages) to the learning of students with diverse background (LD, excellent, and average students), the researchers relied on these tools: questionnaire, criteria defined in the interview, and other criteria that emerged from the content analysis of personal interviews.

(a). Synchronic lessons' adjustment for learning:

During synchronous lessons, students could determine the learning place for themselves, at home or elsewhere. They were able to see slides and exercises the professor presented and hear the voice of the instructor and other participants. Students could take part by asking questions, express opinions by voting, and participate in the discussions. The students were able to listen to recorded lectures in their spare time.

Students noted the following synchronic learning benefits:

1. Synchronous instruction allows immediate interaction with the teacher and peers:

"A synchronous lecture is important. It really helped me to have immediate response, and I like an immediate response. It is even well than a traditional lesson in which I almost do not participate and do not ask anything" (N.).

2. A synchronous learning environment allows privacy for learning, supporting learners with learning disabilities who are sensitive to environmental disturbances:

"It's like in a synchronous lecture. I was sitting in a lecture class with everyone, but it's neater and less noisy. This is important, particularly for students with attention deficit problems. Noise takes you out of focus" (S.).

3. Learners could return to recorded materials for extra training according to their needs. This advantage is particularly crucial for LD students and was noted as supportive of learning: "I could hear the whole lesson over again, just the teacher talking to me. That is as if you are again in class, if you did not understand something, if not the material was not provided, you can return to the recorded lesson" (S.).

Likewise, excellent students and average students noted the advantage of the recorded lessons: "I participated at home always. Sometimes a move from the computer or something interfered and I had to hear it, it bothered me. By using the recorded lesson I could listen again, even for cases where I was absent from class or if I were unable to participate synchronously…."(H.).

4. Synchronic learning defines the time frame within which a learner is required to encounter learning lesson. The possibility of designing the learning contributes mostly to LD students.

"I could read the lecture in advance, prior to the synchronic meeting, so I knew exactly what questions to ask. I was ready; it's an advantage over traditional lecture….It is the only place you get an immediate response. We need much more synchronous sessions" (T.).

Several of the excellent students noted the specific time frame as an advantage:

"I think we need more synchronous lessons… more frequently. There is a kind of framework and time frames, which helps us not get lost" (R.).

(b). Asynchronous lessons' adjustment for learning:

Students performed tasks and responded to their colleagues in an asynchronous forum. They could do it any time they chose, up to the date set for performance of the task. There was no significant difference between the three groups regarding the degree of their participation neither in the forum nor with their degree of satisfaction with participation in the forum (Table 1). However, significant differences were found between the LD students and the other two groups regarding their level of satisfaction with the task which they had to manage (see Table 1 and Figure). The LD students expressed greater satisfaction compared with their counterparts with the

discussion group management and sharing ideas with peers and lecturers. This finding was reinforced in interviews with LD students:

"Members' participation in the forum helped me run the forum and do well in my personal mission. I saw sequences of peer teaching, I learned from colleagues` ideas, and I used the materials of the members. I consulted with colleagues and lecturers, which helped me to a great extent" (T.). In contrast, average and excellent students reported that participation in the discussion group did not help them, and they were able to cope with learning individually and independently, without the participation of colleagues or professors: "I didn't participate much in the forum. Requirement to respond to five colleagues is exaggerated" (R.).

The essence of the discussion group is teamwork, designed to clarify questions and discuss concepts and content. The researchers feel that online course discussion groups can help provide the personal and social support of colleagues and thus were valuable for the majority of LD students.

4. Online course interaction

The degree of online interaction between the students themselves and with the lecturers was tested in three aspects: (1) Students' assessment of the expected interaction in the online course (pre-questionnaire), (2) The importance that students attribute to the interaction with participants in the online course (pre-questionnaire), and (3) Students' evaluation of the actual degree of interaction took place in the online course (post-questionnaire).

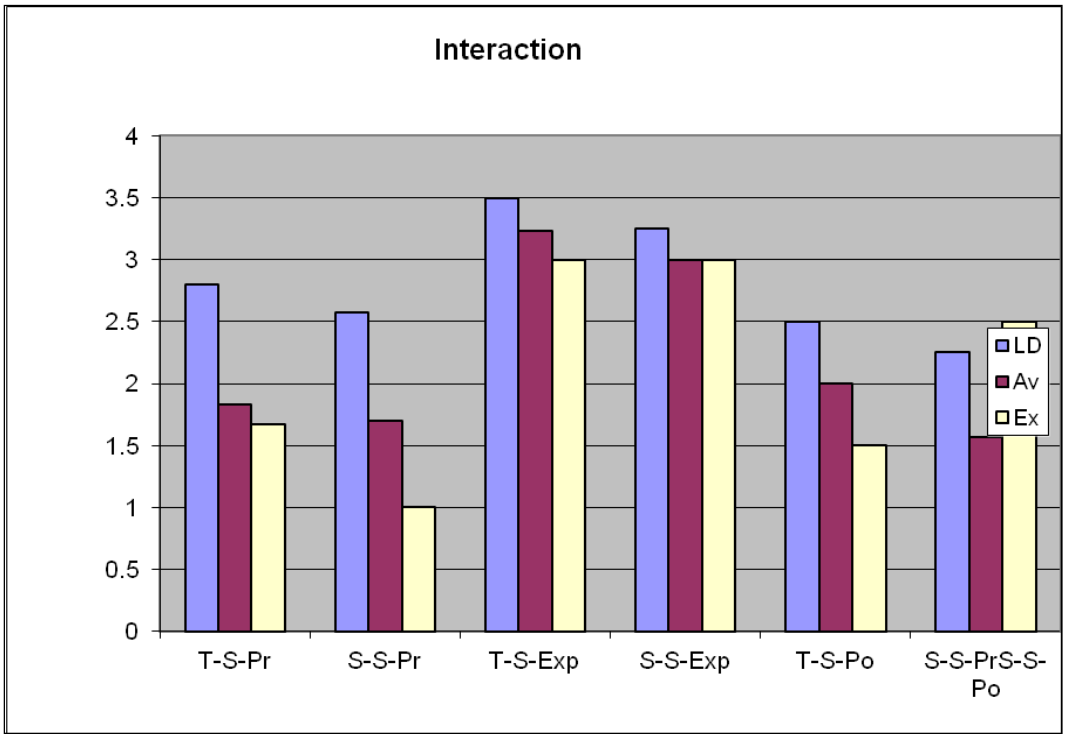

Figure 4. The degree of online interaction between the participants: before (Pr) and after (Po) the course, between students (S-S), and with the teacher (T-S), and their expected interaction (Exp) before the course started: LD, A-Average, and Ex-Excellent students (N=121)

The findings indicate no significant differences between the three groups. All students attach great importance (over 3.3) to interaction with lecturers and among peers. Everyone expected a moderate degree of interaction (less than 2) in the online course, and at the end of the course all reported a moderate degree of interaction (less than 2).

The graph also reveals that LD students ranked the importance of the degree of contact, the expected degree of contact, and the degree of actual contact higher than the excellent or regular students. From tracing the discussion groups and from interviews with students, it can be said that the LD students reacted to discussion groups more than their peers and they demanded and received a larger number of responses from colleagues and lecturers. As one of the LD students said, "…I had time to prepare my response properly and to send it in my time. I felt more confident with my answers."

Most LD students prefer more intensive interaction with the lecturer than their peers. For example: "I could contact the lecturer at any time and every time, not like a regular class teacher I see only once a week, during class. That the course contributes to the self-learning, while processing information. Initially, I had a problem and then I learned and developed. I learned to use more collaboration, more contact with professors, to ask relevant questions. These are questions that make thinking "(N.).

The online course interaction allows topic discussion while each of the students presents their opinions and reactions, without any preferential treatment or modification and without distracting irrelevant stimuli (such as looks, dominance in class, or unusual behavior). The fact that online course participants were treated equally, without discrimination among the groups, was reflected in the words of an excellent student:

"There were students who responded more or less, but since everyone has to respond there is uniformity. In a regular class there are always those who stand out" (N.).

In summary, in an online course students can choose the extent, date, and nature of the interaction with other participants. Online course interaction is personal; allowing an intimacy between the students and lecturers and among the students, and students saw it as one of the strengths of the course.

5. The online course affordances

Interviews with students revealed additional features of the online course that can be grouped into two categories: Flexibility and Knowledge Construction.

(a). Flexibility in time and knowledge: Flexibility in the online course allowed time management and was reflected in access to information and in students' selection ability. This flexibility allowed students with learning disabilities to plan learning and the availability of information at the appropriate dose for their attention spans and concentration limitations. Hypertext was another tool mentioned by the LD students as contributing to the teaching and learning, providing instant answers to questions that arise during the study and completing their knowledge gaps. Hypertext supports knowledge construction in a complex, non-linear, and changing environment based on the cognitive flexibility theory. But this flexibility in selecting the content could also lead to a lack of focus in the learning process (Brunvand & Abadeh, 2010).

The special structure of the course described here assists students to focus on the task until completion. The fact that the course is constructed of small teaching units contributed to target specific learners' attention to relevant content while simplifying the route to finding information. This structure helped all the students, especially those with learning disabilities, who prefer a long process-phase, including memorization, training, and practice (Heiman, 2006). The excellent students also emphasized that flexibility was the most successful aspect of the course, since it enabled a faster pace of learning and individual time management.

The findings showed that the online course enabled all students to take responsibility, to devote the time necessary for learning, and to develop self-discipline that led to learning. As a LD

student said, "The online course contributed to my learning. The fact that I had to sit alone with myself and process information…developed my own learning. At first I had problems, and then I learned from the questions that require thinking. I feel that I have evolved" (N.).

(b). Conditions for knowledge construction: Transfer of responsibility to the learner: Online tools have changed the place and role of the teacher by reducing dependency on the teacher as a source of knowledge and by enabling social interaction in the learning environment. These were reported in the literature as supporting construction of knowledge (Beldarian, 2006; Simpson, 2006).

Thinking and learning discourse: The LD students reported the value of a study group found in the online forum in meeting their needs. Even the excellent students, who tend to learn independently in a traditional course, enjoyed the benefits of group discussion, even though they did not choose it. Indeed, despite their differences, the various students participated in the discourse, contributed and donated, and showed responsibility for the online learning process (c.f. Rotem and Peled, 2008), which became effective, high quality, and purposeful.

Customized personal support: All of the students received personal instruction tailored to their needs. Factors identified in this study as contributing to success in learning, such as self-learning, interpersonal communication, group discussion and discourse, and flexibility in time, figure in advancing learning (Bray, Aoki, & Dlugosh, 2008), especially when they fit the manner of performance and style of thinking and learning of the learner (Brunvand & Abadeh, 2010; Dwyer& Moore, 2001).

6. Students' achievements in the online course:

Students' grades were given by lecturers at the end of the course and were based on the assessment of the following activities: participating in forums, task performance, forum management, and quality of the final project. The findings showed that the LD students' average grade was higher (89) than their counterparts, the excellent (87) and average (80) students. No comparison was made between students' grades and scores in the online course and traditional courses.

Discussion

The advantages of an online science education course to students of diverse backgrounds (LD students, excellent students, and average students) are presented in this study. The ongoing five-year findings pinpointed the advantages of the online course to all three groups of students, yet it carefully reports a slight but explicitly marginal advantage in the LD students` achievements in comparison to the excellent and average students. The unexpected LD students` achievement is not in line with previous research (Kwesi, 2002; Woodfine & Wright, 2008). The LD students' success was expressed by their final course score given by lecturers as well as the improvement in the students` evaluation of their own self-learning ability following the online course, their satisfaction level regarding content learned, participation in discussion groups, and performance on tasks. A significant difference was found between the LD students and their peers regarding the authentic task, the water lab, and their forum management. Dealing with everyday authentic subjects, as well as the opportunity to conduct an online study forum, was particularly significant for the LD students.

Moreover, the LD students reported higher participation in the online course in comparison to traditional ones and high interaction with the lecturer and their classmates. A striking result indicating the accessibility of online learning for disabled students was also pointed by Badge, Dawson, Cann & Scott (2008), regarding disabled students using significantly more "user control" features than the non-disabled group while actively seeking out information by selecting appropriate portions of the material (Badge et al., 2008).

Similar benefits of interaction and collaborative learning in online learning are also reported in the literature (O'Neil & Fisher, 2008; Shea, Pickett, & Sau Li, 2005), while the low benefits from interaction involving excellent students in this research contradicts others (Olszewski & Lee, 2004). These differences may result from various characteristics of the courses; for example, teaching methods of the online course (working in pairs, cooperative learning, peer review), course content (theoretical issues or authentic topics related to everyday life), online tools (forum, chat, practice, videos, simulations, audio lecture, learning through texts), type of task required (reading, forum participation, hands-on lab) and the assessment of learning (formative assessment, summative assessment). When online learning is used just for knowledge transfer and mainly as a communication platform, the online learning advantages that lead to the success of the learners are likely to be minimal (Means, Toyama, Murphy, Bakia, & Jones 2009). In this case, the excellent students are capable of coping with the educational content on their own and therefore rarely use discussion groups or supervisor support.

In contrast, using a variety of online tools in online courses probably contributes to the learning of students from all backgrounds, and especially LD students, as was described in this research. The online tools used in this research were synchronous classes using audio and visual means (supporting primarily the LD students), students forum management (supporting cooperative learning and peer review), computerized follow-up submission of assignments (allowing tasks to be divided into small units and helping students with time management), online documentation of the products (continuous and intensive formative assessment), forum support (for questions, guidance and assistance).

In an online discussion forum, discourse lies at the heart of knowledge construction since learning is social, collaborative, consensual and negotiated. Recognition of learning discourse as a meaningful key component in knowledge construction (Teo & Webster, 2008) is also described by the Model III theory, which refers to online tools under the term Web 2.0 (Kesselman & Tobin, 1999; Rogoff, Matsuov, & White, 1998).

Students describe unique features of the online course as flexibility and choices in utilization of the information and in time management; interaction, including the availability of cooperative learning and peer review; duration of lessons determined by the learners; and knowledge construction based on the transfer of responsibility to the learner, thinking and learning groups, and individual and customized learner support.

Adjusting instruction to students from different backgrounds is a challenge facing colleges and schools of education. The combination of excellent students with LD and average students intensifies the challenge. However, the encouraging findings of this study suggest that an online course contributes to the education of students from different backgrounds (Shonfeld, Hoter, and Ganeyam, 2013). To establish the trend apparent from this study's findings, more online courses should be examined and the sample increased. Other methods (such as observation, thinking aloud, report analysis, and report communication tasks) should be examined to deepen the assessment of online course effectiveness.

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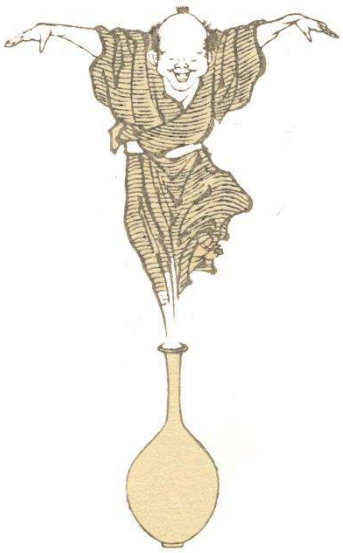


Online Comic in Mandarin Chinese's Vocabulary Learning: A Case Study of Budi Utama Multilingual School in Yogyakarta, Indonesia

Nuning Catur Sri Wilujeng and Yu-Ju Lan

Abstract

This study was aimed to investigate 1) the improvement of CFL elementary-school students' skill in learning Mandarin Chinese (hereafter referred to as Mandarin) vocabulary through creating comic without online resources, creating online comics individually and collaboratively, 2) the CFL elementary-school students' attitude towards the application of comics in learning Mandarin vocabulary, and 3) the CFL elementary-school students' attitude towards the application of collaborative activities in learning Mandarin vocabulary. The research design was based on a quasi-experiment using both qualitative and quantitative approaches. Three classes participated in this study: one class was the control group using text-based instruction without online resources; the other two classes were the experimental groups 1 and 2. In the experimental group 1, students worked individually on online comic whereas in the experimental group 2, students worked collaboratively on online comic. All participants were Grade 5 students of Budi Utama Multilingual School in Yogyakarta, Indonesia. The collected and analyzed data included performances on Mandarin vocabulary, in-class observation, questionnaires, and interview. In Mandarin vocabulary performances, the experimental group 2 outperformed the other two groups and the experimental group 1 performed better than the control group. In the students' attitude, the experimental group 2 behaved more positively than the two other groups, and the control group behaved more positively than the experimental group 1.

Keywords: Online comic; Mandarin; collaborative learning; computer supported collaborative learning (CSCL); technology enhanced language learning (TELL).

Introduction

At the present, Mandarin is an increasingly popular language to learn around the world and it has the largest number of people who speak it as their first language. Saville-troike (2006) noted that the four most commonly used languages in the world are Chinese, English, Spanish, and Hindi. In Indonesia, there were more than 620 Mandarin schools between 1965 and 1966. Due to the political problems, most of those schools were forced to close in 1967 (Wen, 1997, p.1). After reformation began in 1998 under President Abdurrahman Wahid, a new policy was implemented that would improve the status of Chinese-Indonesians by allowing them to acquire Chinese names and learn/speak Mandarin.

In early 2000, a number of private multilingual schools were established in Indonesia. Budi Utama is one of these multilingual schools where three languages (Indonesian, English, and Mandarin) are used daily as the languages of instruction. Established in 2007, this is the only multi-language school in Yogyakarta, Indonesia. Mandarin is taught in Budi Utama Multilingual School from kindergarten to secondary school. Presently, grade 7 is the highest level in that school. The school uses a Chinese Language textbook (小学华文) from Singapore for teaching primary school students. The students from Grade 5 who participate in this research have high competence in both pronunciation and speaking. According to the interview with one of the local teachers, some of the students have already achieved level 3 on the Youth Chinese Test (YCT). The school supports the students to take this Chinese proficiency test which is an internationally standardized test launched by Hanban in Mainland China. YCT is directed at examining non-native primary and secondary school students' capability in applying Chinese language in their studies, personal lives, and work. This would mean that the students already have acquired more than 300 words and characters in their vocabulary (Hanban, 2010). Yet, they still have some difficulties in dictation and writing Chinese characters, particularly because these students have been accustomed to writing in pinyin. These students may attempt to apply techniques used when they were brought up learning the Indonesian language, which is written using the Latin alphabet. Therefore, students find it difficult to write Chinese characters (Cook, 2003; Larsen-Freeman & Long, 1991; Jiang, 2008). The use of technology to enhance language learning, especially in writing Chinese characters (Zhao, 2003) can potentially improve their ability.

Based on the preliminary survey, Grade 5 students at that school stated that they have a PC computer at home, a laptop, tablet, and/or smart phone. The school also provides a computer class of two periods a week (total 80 minutes). However, the technology has not been integrated in supporting their Mandarin language learning. Therefore, many students rely on Google translate to help them complete their homework assignments.

According to New Media Consortium (NMC) Horizon Report (2012), the workplace is increasingly collaborative, which subsequently leads to changes in the way student projects are structured. Moreover, the abundance of resources and relationships made easily accessible via internet is increasingly challenging us to constantly refocus on our roles as educators. Therefore, the education paradigms are shifting to include online learning and collaborative models. As a result of these conditions above, there consequently will be a new emphasis on more challenge-based and active learning in classrooms. In regards to comics as a learning activity, a research work done by Clark (2000) shows that comics have positive effects on students. Comics engage our attention and serves as entertainment; moreover, it presents information in a non-threatening manner. Doring (2002) adds that comics can also be used as stimuli to encourage thinking and discussion skills. Other research by Rule and Auge (2005) shows that students who learn using comics achieve higher test scores and can provide examples of why they enjoy learning in this manner. By using comics, the students engage themselves in self-motivated practice.

Mandarin Teaching in Indonesia

According to the Ministry of National Education of Indonesia, Curriculum of 2013 has been applied throughout the levels of education in Indonesia. Mandarin has the similar status as those of local languages and/or foreign languages; therefore, it is integrated into the local content of the subjects of Culture and Art Crafts (Group B) provided in Table 2-1 (KPK, 2013, p.3). Schools are allowed to teach Mandarin for Grade 5 students up to 5 periods in a week. Each period lasts for roughly 35 minutes. The integrative thematic learning is implemented in this 2013 curriculum.

Table 1**.** Curriculum 2013 for Elementary School (KPK, 2013, p.3)

Subjects	Time Duration of Learning in a Week					
	I	II	III	IV	V	VI
Group A						
Religion and Moral Education	4	4	4	4	4	4
Pancasila and Citizenship Education	5	5	6	4	4	4
Indonesian Language	8	9	10	7	7	7
Mathematics	5	6	6	6	6	6
Natural Sciences	-	-	-	3	3	3
Social Sciences	-	-	-	3	3	3
Group B						
Culture and Arts Crafts	4	4	4	5	5	5
Sports Science	4	4	4	4	4	4
Total	30	32	34	36	36	36

However, the school forms the learning unit, meaning it has the right to develop its own curriculum based on the needs of the students. It precisely means that the school may reduce or add the period's number and/or the time duration of subjects belonging to Group B in Table 1.

Budi Utama School develops its curriculum and gives 7 periods of Mandarin for 5th grade students. Each period consists of 40 minutes. There are 3 Mandarin teachers, two of them being native Mandarin -speaking teachers and only one of them being a local Mandarin teacher. The component of material and/or language skills is listed in Table 2.

Table 2. Mandarin Teaching Composition for 5 Grade Students

Language Skills/ Contents	Periods per Week	Teacher
Mandarin Speaking	3	Native
Chinese Culture	2	Native
Mandarin Reading and Writing	2	Local

People in Yogyakarta are either bilingual or multilingual (Margana, 2009). Somehow, Mandarin is a foreign language to most Indonesians, as it plays no major role in the community and it is primarily learnt only in the classroom. The students are getting language exposure only during the school period. During the class break, the students soon switch into Javanese or Indonesian language in oral communication with other students. Therefore, there is a lack of writing activity using Chinese characters.

Despite this, Budi Utama is flexibly allowed to modify the periods of teaching the subject in Group B in Table1; however, the language skills listed in Table 2 does not reflect the needs of the students. Students encounter more language differences in writing skills rather than other language skills (Sutami, 2008). Furthermore, since students in Budi Utama are used to using *Hanyu Pinyin*, the experiment would consist of both Chinese characters and *Hanyu Pinyin*. This is also stated by Saville-troike (2006) about the learner characteristic and circumstances.

Collaborative Learning

Collaborative learning has been found to benefit students in various disciplines as it contributes to student learning. Liao (2014) states that the contribution can be divided into two aspects: academic and social. In regards to the academic aspect, studies find that collaborative learning benefits students in academic achievement, as well as positive attitudes toward the subject matter, commitment to learning, critical thinking, and problem solving skills (Liao, 2006; Wong & Abbruzzese, 2011; Huynh, Jacho-Chaves, & Self, 2010; McDuff, 2012; Xie, 2011). In terms of the social aspect, researchers find that collaborative learning sharpens and strengthens students' overall communication skills, such as team working skills, emotional skills, and conflict resolution skills (Jarvenoja & Jarvela, 2009; Prichard, Stratford, & Bizo, 2006; Yates, 2006). Other advantages are also shown by Liao's (2014) research towards high school collaborative learning students in public speaking. The students managed to increase speech efficacy and decrease their speech anxiety.

Another set of researchers find that collaborative learning that includes groups working together and peer assistance have been widely used in reading programs to create the necessary intensity and strong support for learning (Lan, Sung, & Chang, 2007). Collaborative learning (or peer-assisted learning) can improve their reading outcomes (Ranker, 2007; Cary, 2004; Liu, 2004). Collaborative learning does not only promote the development of positive attitudes towards other group members and learning material, but also builds social relationships and group cohesion (Kreijns, 2004). CSCL is synchronous cooperation/collaboration through shared workspaces (Baker & Lund, 1996). However, most of the empirical studies using innovative CSCL-specific tools (beyond windows sharing as part of video conferencing periods, etc.) were usually based on selective experiments that were often conducted in a laboratory (Fischer & Mandl, 2001).

Online Comics

Persha and Nawvi (2004) state that vision is the primary sensory system for most people. Vision plays an important role in all areas of development, especially the cognitive area, where intellectual function is the product of this early sensory input through the eyes. Furthermore, the simplified visual representation and the recurrent plot typical of comics help to elicit children's interest in them (Jylhä-Laide, 1994). Students have assessed comics positively as they make the course more entertaining and make learning easier. They can reduce repetition and allow teachers to run classes without the need of textbooks. They also make remembering words easy and promote creative skills and motivate students to learn. In addition, Liu (2004) states that because comics are highly visual texts, they have been shown to be especially effective for increasing reading comprehension for second and/or additional language learners. Figure 1 presents an example of an online comic.

Figure 1. Example of an Online Comics

Previous comics' research conducted by France (2010) based on the different foreign language learning style provides learners with a prototype. An experiment toward high school students shows that the approach attracts the students to learn foreign languages. The findings shows that besides the positive side, however, the online comics have some limiting aspects such as limited collection, that users cannot easily identify the best characters, the different poses, or different moods to represent their ideas.

Based on the explanation above and the literature reviews the potential of online comics in collaborative learning in improving vocabulary learning will be confirmed by answering and the following questions:

1. What are the different improvements of CFL elementary-school students' Mandarin vocabulary among the three comics creation approaches (paper-based learning, individually online comics, and collaborative learning online comics)?

2. What are the different attitudes among CFL elementary-school students towards application of three comic creation approaches (paper-based learning, individually online comics, and collaborative learning online comics) in learning Mandarin vocabulary?

3. What are the different attitudes of CFL elementary-school students towards the online comics application between individual and collaborative creation in learning Mandarin vocabulary?

Online Comic in Mandarin Vocabulary Learning

Participants

Students of Grade 5 from Budi Utama Multilingual School were the participants of the research. There were three classes participating in this study: students in the control group were taught under a text-based instruction and created comics individually without online resources; those in the experimental group 1 created online comics individually; and those in the experimental group 2 created online comics collaboratively.

Table 3. Students' Profile

Items	Criterion	Control Group (N=16)	Individual Comics (N=14)	Collaborative Learning (N=16)
Gender	M	5	7	6
	F	11	7	10
Age	(in average)	10.07 yrs.	9,79 yrs.	10,1 yrs.
Have computer, tablet, or smart phone	Yes	16	12	16
	No	0	2	0
Experience in using computer, tablet or smart phone in learning Mandarin	Yes	1	6	7
	No	15	8	9

Research Design

The research design was based on the quasi-experiment design. Qualitative and quantitative approaches have been used to collect and analyze data.

Instruments

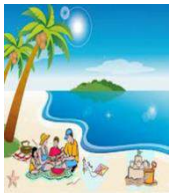
Vocabulary Performance Test

A vocabulary performance test consists of both a pretest and posttest. This parallel test between pre and posttest was developed based on the Student Book and Student Activity Book. It was also combined with the Standard test YCT and TOCFL beginner level.

Comic Lesson Plan

The lesson plan was arranged based on the school curriculum for grade 5 students (日惹崇德三語國民學校 課程活動安排表) and Mandarin writing activity for lesson 1 (學習寫字:完成活動本 1 頁到 2 頁寫字練習一課時).

Table 4. Comic Lesson Plan

Task Topic	Grammar Point	Pre-Activity	Students' Main Task
去野餐	回答這些 疑問詞；什麼時候去?， 去哪裡野餐?，怎麼去?，跟誰去?，帶了什麼東西?，看什麼?，幾點回家?	**Control group:** teacher distributes paper, and asks the students to create comics; they can create a story by answering the questions that have been prepared by the teacher; teacher uses PPT to expose some pictures that would stimulate students in creating the story.	Student manually create comics
		Example: 1) 	
		The teacher asks the students about the weather of that day,"今天天氣怎麼樣?or 今天天氣好不好? This question tends to stimulate students in creating a story.	1) Students may answer,"今天天氣很好" or ,"今天天氣好"
		2) 去哪裡野餐?	
		  	2) Students can answer "去山下野餐", "去海邊野餐"or "去公園野餐"
		Experiment Group 1: the students need to move to the computer lab; students operate the computer in the laboratory and go to www.toondoo.com to create comics individually using online resources; teacher also uses PPT to expose some pictures that would stimulate students in creating the story	The students create comics individually online on www.toondoo.com Students answer the questions by choosing character, background, and accessories provided in www.toondoo.com
		Experiment Group 2: the students work in small groups; the teacher gives an animal name to the groups such as 青蛙，貓，蛇子，狗，兔子和老虎; the student also needs to move to the computer laboratory, 1 set computer for 1 group; the teacher also uses PPT to expose some pictures that would stimulate students in creating the story	The students work in groups to create the story. In the group, students will communicate each other before deciding the story. Students also negotiate prior to making group decision.

Toondoo Online Comics

Toondoo (www.toondoo.com) is a free comic website which will be used as a media source in the learning of Mandarin during the course of this research. The website says, "Toondoo is a cool, comic-creating tool from Jambay, a fun site for kids. Jambay is devoted to creating a unique array of free and customizable online games of educational value for children of all abilities."

In-Class Observation List

The observation list was revised from the previous research proposed by Lan, Sung, and Chang (2007). The list consists of three learning-related behaviors and learning-unrelated behaviors.

Questionnaire about Students' Attitude towards Applying Comic in Learning Mandarin

The questionnaire is based on Lund (2001) Measuring Usability with the USE. Initially, the questionnaire was adapted from a document that consists of three dimensions: usefulness, satisfaction, and easiness.

Interview List

There are 6 questions about the application of online comic and collaborative learning.

PC Computers

There were 18 sets of computers in the computer lab which were connected to the internet. On the keyboard, the Simplified Chinese Language feature has been added to the language choice.

Procedure

To obtain both qualitative and quantitative data, the mixed method has been applied in this research. Figure2 shows the cycles about this mixed method in collecting data.

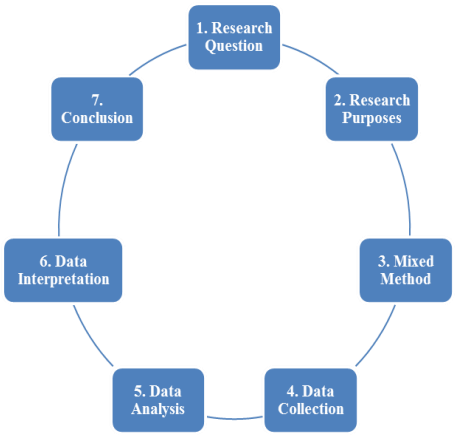


Figure 2. Mixed Research Model

Data Collection

The quantitative data was collected from scores of students' pre and posttest vocabulary performance.

The qualitative data will consist of 1) students comic creation of two teaching units, 2) a video recording to document in-class activity, 3) an in-class observation in an observation checklist, 4) questionnaire, and 5) interview.

Data Analysis

The quantitative data were students' scores from pretest and posttest on Mandarin vocabulary performance. A two-way analysis of covariance was conducted, while the covariate is the students' summative score in the previous semester. The score of comics creation will be analyzed using a one-way Anova. Qualitative data consists of an in-class observation about students' behaviors. Data were collected from the video recording, and then rated by two raters, which is noted on the in-class observation list; later, the data was analyzed by using Chi-Square analysis to investigate the comparison between three nonparametric data. Descriptive statistics were conducted to analyze the qualitative data.

Results

Pretest and Posttest of Vocabulary Performance

Table 4 lists the descriptive statistics results of both pre and posttest. Regarding the scores of pretest and posttest, the homogeneity test was significant ($F(4.790)=.001$, $p<.05$).

Table 5. The Mean and Standard Deviation (SD) of Pretest and Posttest's Score

Test	Control Group (N=16)		Individual Comics (N=14)		Collaborative Learning (N=16)	
	M	*SD*	*M*	*SD*	*M*	*SD*
Pretest	60.68	17.12	60.00	12.61	60.25	13.65
Posttest	63.43	19.57	62.21	15.64	68.18	11.37

Table 5 presents a summary of the two-way analysis of covariance on students' scores in pre and posttest of vocabulary performance, with the score of previous semester as the covariates. The table shows that the interaction effect between test and group is not significant. This means that there are no differences varied according to levels. The group factor is not significant ($F(0.88)=0.41$, $p>.05$). This means that no difference exists between the scores between pretest and posttest in the three groups. The test factor is significant ($F(9.67)=0.007$, $p<.05$), meaning that the grouping of control group, individual comics, and collaborative learning gives significantly different scores between pre and posttest.

Test within group (1) or control group is not significant ($F(0.85)=0.359$, $p>.05$); neither is the test within group (2) or individual comics group ($F(0.48)=0.489$, $p>.05$). This means that both groups still made some improvements due to the training, yet does not vary. While the test within group (3) or the collaborative learning group is significant ($F(7.10)=.009$, $p<.05$), meaning that the experiment significantly benefited students' vocabulary performance in the collaborative learning group.

Table 6. Two-Way Analysis of Covariance of Vocabulary Performance

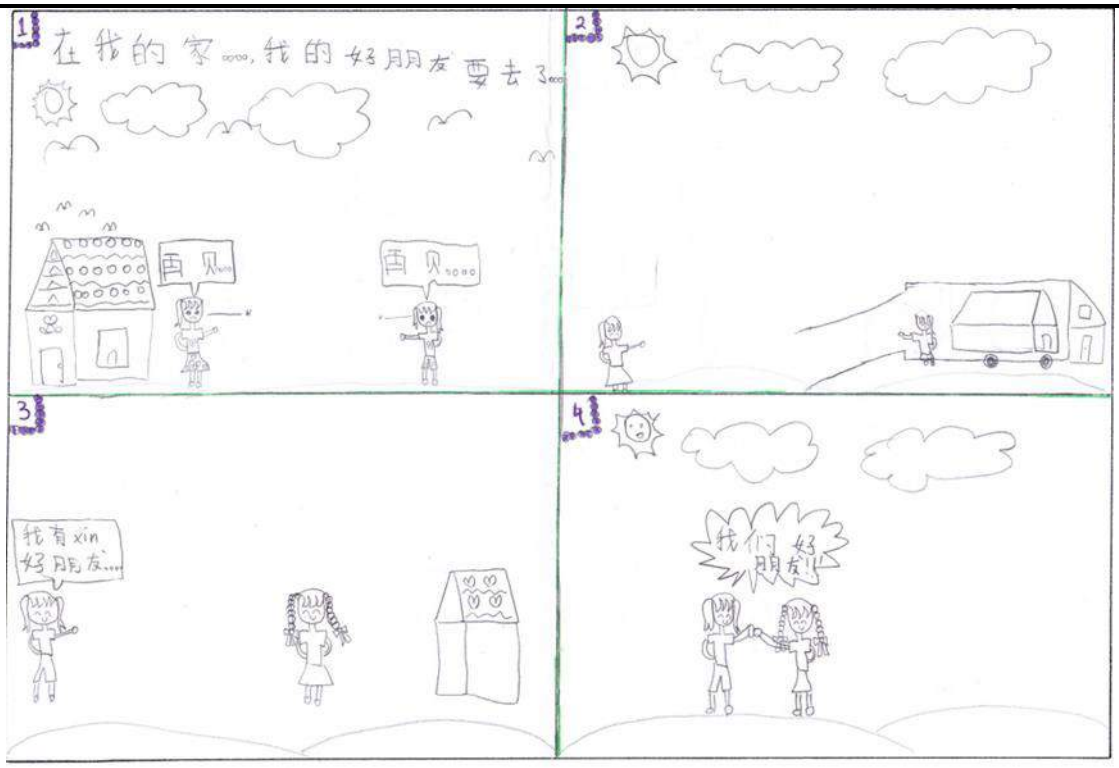
Source of Variation	Type III sum of squares	df	Mean square	F	Sig.
Within Cells	6037.84	85	71.03		
Test by Group	135.98	2	67.99	.91	.409
Group	131.97	2	65.99	.88	.419
Group within Test (1)	2.69	2	1.35	.02	.981
Group within Test (2)	304.42	2	152.21	2.14	.124
Test	458.11	1	458.11	9.67	.007**
Test within Group(1)	60.50	1	60.50	.85	.359
Test within Group(2)	34.32	1	34.32	.48	.489
Test within Group(3)	504.03	1	504.03	7.10	.009**
Error	710.79	15	47.39		

*Note *p<.05 **p<.01 ***p<.001`*

Comic Creation

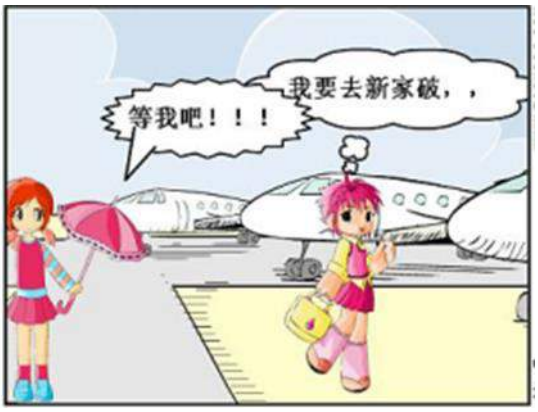
This section provides the comics creation done by control group, individual comics, and collaborative learning. First, each comics creation will be scored based on a writing rubric (Jacobs et al., 1981); then, after being scored by two teachers, the final comics score stood as the dependent variable in a one-way analysis of variance.

Comic creations done by the control group, the individual group, and the collaborative learning group are then being commented by the teachers and also scored based writing rubric. Figures 3 to 5 show some examples of students' comic creation and the teacher's comment based on the writing rubric.



Writing Rubrics	
Content/ Idea Development	The plot of the unclear scene is delivered. The female student wanted to tell that after her friend left. She met a new friend. They became close friends. They used 我的 xin* instead of 新.
Organization	Opening, development, and closing is developed, although was so limited.
Vocabulary/ Word Choice	There was no feeling of expression (難過，開心)
Language Use/ Grammar	搬到……*
Mechanics	All sentences were written using Chinese characters (except for the word xin*)

Figure 3. Example of Control Group's Comic Creation



Writing Rubrics	
Content/ Idea Development	The student is a female student. The idea is not about 搬家, but rather 旅行. 新家破* should be 新加坡.
Organization	There is no completed story.
Vocabulary/ Word Choice	The student mixed 要 and 有; mentioned 新加坡, 真的啊, but no other vocabulary words.
Language Use/ Grammar	我也有去* should be 我也要去.
Mechanics	There is no development in the story. It is also impossible for people to say goodbye when too close to the aircraft.

Figure 4. Example of Individual Comics' Creation

Writing Rubrics	
Content/ Idea Development	The main character is chosen by a male student Story can be developed a bit longer Some exclamation word was not written in Mandarin such as “yipi” or “uh”
Organization	There is an opening, development, but still needs a closing
Vocabulary/ Word Choice	There is no feeling expression (開心，難過)
Language Use/ Grammar	No related story between picture 4 and 5
Mechanics	More Chinese characters are applied in the comics

Figure 5. Example of Collaborative Learning’s Comic Creation

Table 7 presents a summary of the one-way analysis of variance on students’ scores of comics creation. This analysis is then followed by the post hoc analysis in Table 8.

Table 7. One-way Analysis of Variance of Comic Creation

Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	428.826	2	214.413	33.523	.000***
Within Groups	275.027	43	6.396		
Total	703.853	45			

*Note *p<.05 **p<.01 ***p<.001`*

Table 8. Post Hoc Analysis

(I) Students_Group	(J) Students_Group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Tukey HSD	Control Group	Individual Comics	-0.64286	0.92553	0.768	-2.8895	1.6038
		Collaborative learning	-6.68750*	0.89415	**.000*** **	-8.858	-4.517
	Individual Comics	Control Group	0.64286	0.92553	0.768	-1.6038	2.8895
		Collaborative learning	-6.04464*	0.92553	**.000*** **	-8.2913	-3.798
	Collaborative learning	Control Group	6.68750*	0.89415	**.000*** **	4.517	8.858
		Individual Comics	6.04464*	0.92553	**.000*** **	3.798	8.2913

*Note *p<.05 **p<.01 ***p<.001*

In-Class Observation

There are 2 categories of students' behaviors in the classroom: learning related and learning unrelated behavior (Lan, Sung, & Chang, 2007). In-class observation is based on their activities in the classroom that has been recorded and then decoded by 2 raters. The Pearson correlation was 0.000 and it is significant at the 0.01 level.

Table 9. Chi Square Analysis Result

Groups		Value	df	Asymp. Sig. (2-sided)
Control Group	Pearson Chi-Square	495.000	25	.000***
	Likelihood Ratio	230.067	25	.000
	Linear-by-Linear Association	72.094	1	.000
	N of Valid Cases	99		
Individual Comics	Pearson Chi-Square	500.000	25	.000***
	Likelihood Ratio	319.851	25	.000
	Linear-by-Linear Association	84.017	1	.000
	N of Valid Cases	100		
Collaborative Learning	Pearson Chi-Square	400.000	25	.000***
	Likelihood Ratio	235.901	25	.000
	Linear-by-Linear Association	76.320	1	.000
	N of Valid Cases	100		

*Note *p<.05 **p<.01 ***p<.001*

Table 10. The Frequency of the Learning Behavior (in %)

Group	Learning-Related Behavior			Learning-Unrelated Behavior		
	Create Comic	Create comic with dialogue	Create comic with dialogue in Chinese writing	Playing with others	Moving around	Playing alone
Control Group	64.89	12.33	8.47	5.08	6.28	2.94
Individual Comic	38.13	23.47	10.59	12.5	8.91	6.41
Collaborative Learning	39.06	29.50	29.41	0.94	0.47	0.63

*Note *p<.05 **p<.01 ***p<.001*

Students' Perception about Comics Learning

Students' perspective about Comics learning is presented in Table 11. Based on the mean of each group, the collaborative learning group students show the highest in every dimension. The individual comics group students show the highest mean at every dimension in comparison with the control group students. The data also notes that the satisfaction dimension was the highest mean among the three groups. The control group and individual comics group have the same preference; that is, usefulness of comics learning has the lowest mean. In regards to the collaborative learning group students, the easiness was at the lowest dimension.

Table 11. *Usability of Comic Learning*

Questionnaire Dimensions		Control Group (N=16)		Individual Comics (N=14)		Collaborative Learning (N=16)	
		M	SD	M	SD	M	SD
The whole questionnaire		3.122	0.678	3.259	0.652	3.396	0.626
Usefulness		2.990	0.692	3.208	0.649	3.426	0.606
Easiness	Ease of Using						
	Ease of Learning	3.185	0.693	3.223	0.692	3.262	0.692
Satisfaction		3.188	0.658	3.381	0.597	3.574	0.535

The questionnaire also provided the essay section. There are 12 students expressing their satisfaction in operating online comics; 2 students did not give any other comments. There are 8 students, who also said that the internet connection was too bad, and 1 student said that the computer needed to be upgraded; 3 students said they need much more time to create online comics. In the collaborative learning group, 10 students showed their satisfaction by rating online comics as being fun and interesting, and that they love working on online comics. 7 students stated that the internet connection was very unsupported, 7 students mentioned about the limited time given; 2 students said that online comics was easy, and 1 student declared that online comics is fun, but a bit difficult.

Interview

Table 12. Interview Reports

Questions	Individual Comics Group (N=14)		Collaborative Learning Group (N=16)	
	Yes	No	Yes	No
Q1. Can you create comics using Toondoo?	100	0	100	0

Q2. Do you like create comics using Toondoo?	100	0	100	0
Q3. Do you practice Toondoo at home?	71	29	75	25
Q4. Do you like the activity?	50	50	54	44
Q5. If you are interested in Toondoo, will you tell about it to your friends? How?	42	58	75	25

*Note *p<.05 **p<.01 ***p<.001`*

Conclusions, Limitation, and Recommendations

Conclusions

There is development in students' Mandarin vocabulary, the collaborative learning group shows the uppermost result, followed by the individual comics group and control group. The mean between pre and posttest for the control group is 60.68 and 63.43 respectively; individual comics group is 60.00 and 62.21 respectively; and collaborative learning group is 60.25 and 68.18 respectively. This performance was also reinforced by their comic creation performance where the collaborative learning group got the highest score based on the rubric writing score with the mean of 5.90, followed by the individual comic group with the mean of 1.14, and the control group with the mean of 1.02.

Students from three group who created comic in different approaches showed that satisfaction is the highest dimension (Mean= 3.381). Control group and individual comics students declared that the easiness dimension is better than the usefulness dimension. Students from the experimental groups stated that they are satisfied about applying online comic in learning Mandarin. The satisfaction dimension showed the highest percentage (28.26%), followed by the usefulness dimension (26.80%), and the easiness dimension (22.34%). From the essay section, students also mentioned about adding some periods of time and increasing the stability of internet connection during the experiment.

The general attitude among students about collaborative learning was strongly positive. They managed time to accomplish the task, and showed no signs of distractions such as playing around, chatting with other, etc. For most of the time, they would discuss about which character they should choose, how to deliver the story, etc. This attitude also reinforced their comics creation performance that they can do better than the other 2 groups. Based on the further interview, there were 5 students who preferred to work individually, 7 students who preferred to work collaboratively, and 4 students who can work both individually and collaboratively.

These findings mentioned above imply that 1) working collaboratively is more beneficial for the students to accomplish a project/task, 2) time duration and internet stability are inevitable in online activity, and that 3) creating story or writing activity is hard for any children of that age.

Limitations

This research does not cover the different preference about male and female students in creating

their character in comics creation, nor the different styles between male and female students in delivering dialogue. Some comic creations showed the tendency that male students prefer adding the animal character into their comic creation, while the female students prefer the female character to represent them in the story. Male students use more interjection (oh, yipi, wow, arghhghgh, etc.) than female students. In the future, it will be more sounding if both terms were included in the research area.

It was the first time for the students to practice typing Chinese characters. Therefore, it is ideal for the need of more training towards typing Chinese characters. Students were still confused when they tried to switch into typing Chinese characters, in which case they asked the teacher for assistance. After typing the Chinese character, they still chose which one was deemed the most correct. A student typed xīn 新 jiā 家 pò 破* instead of xīn 新 jiā 加 pō 坡 given the same Hanyu Pinyin. If only learning strategy was incorporated into this scope of research, the finding would be more abundant. A student opened Google Translate to know whether his typing was correct or not; other students checked their textbook to confirm the Chinese character. This phenomenon implies that even the Hanyu Pinyin system is still needed in learning Mandarin, yet when typing a character, there is always another application that they can use to support their writing. Based on the school curriculum, the higher the level of Mandarin learning, the more writing activity students will practice.

This research also neglected the learning style of the students. Some students may have visual style, audio style, or kinesthetic style. For higher level of education, the regrouping based on the different learning style in creating comics may give better impact not only in learning language, but also in developing skills in the animation business in the future.

Recommendations

It is recommended for the schools in Indonesia, especially in Yogyakarta, to integrate technology in learning language, for example apply online learning.

Collaborative learning, especially CSCL, should be applied in daily activity, as it is significantly beneficial for students to excel in a learning activity, learning behavior, and learning products.

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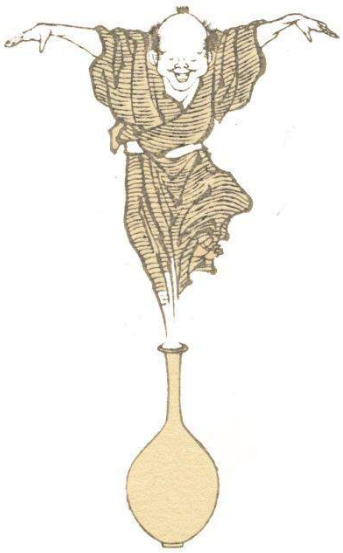


Exploring Learner's Patterns of Using the Online Course Tool in University Classes

Yoshihiko Yamamoto and Akinori Usami

Abstract

Online course tools such as WebCT or Manaba+R are popularly used in university classes and enhance learners' understanding of their course contents. In addition, teachers try to utilize these online course tools for their students such as giving their students online discussions, providing students with additional materials and so forth. However, based on the authors' observation of students, students often do not see these additional materials and messages on Manaba+R. The authors encourage their students to use it and, in fact, they put a lot of additional materials of the course or useful messages for their students on Manaba+R. The aims of this study are here. Firstly, this study investigates what extent students actually use Manaba+R through the semester. Secondly, it tries to find suggestions of how teachers can promote their students to maximize making use of Manaba+R. To collect the data, coding actual access to Manaba+R by students and questionnaires were used. The total of 335 responses of questionnaires were collected and total of 380 were coded for actual access to Manaba+R. The questionnaire results show that many students showed positive attitudes towards using Manaba+R. The results of coding numbers of access reveal that using Manaba+R was part of their assessment of their course, students tended to use it.

Keywords: Online course tools; Manaba+R; university education.

Introduction

Thanks to rapid growth of technological devices such as smart phones and tablet devices, these technological devices are widely used in university classes. Online course tools such as WebCT, Moodle or Manaba+R are often used for many courses at university. These online course tools provide both teachers and students with a better learning opportunity when they are used effectively (For example, Harris, 1999; Mende, 1999; Morss, 1999; Burgess, 2003). Although online course tools are useful for both teachers and students, several studies report problems with these tools such as lack of student's motivation (Ngai, Poon, and Chan, 2007) and technical problems which make student's access unavailable for using online course tools (Petrides, 2002).

The authors of this study encourage their students to use Manaba+R in their classes. They also post some messages and homework on Manaba+R. However, the authors of this study realize that some students often access (delete word) Manaba+R but other students hardly access to it throughout the semester. Thus, there are two aims of this study. Firstly, this study investigates to what extent students actually use Manaba+R throughout the semester. Secondly, it tries to find ways teachers can promote the use of Manaba+R to their students so they maximize its use.

Literature review

Past studies of use of online course tools for university students explains several advantages of these online course tools. For example, Ngai, Poon and Chan (2007) explains that online course tools such as WebCT allow students to access learning tools such as discussions boards, chat rooms and course content management. Hagler (2004) suggested the benefit of WebCT is like building rapport with other students through discussions and chart features. Picciano (2002) also claims the advantage of using online course tools for students. They provide students with a sense of being in and belonging in their course, and the ability to interact with their classmates and their lecturers outside a face-to-face class.

Willette (2002) points out the flexibility of using online course tools. For example, if students cannot come to the class or if they miss things in class, then they can access online course tools to check lecture notes anywhere online access is available. Also instead of using Emails or phone calls, if a lecturer thinks a question by one of students is useful for other students, then the question and answer can be posted on bulletin board at anytime. Petrides (2002) found that online discussion rooms provide students with an opportunity to discuss more details with other students than face-to-face interactions. However, online course tools sometimes do not work effectively for students. Ngai, Poon and Chan (2007) found that their student's attitude towards online course tools was important for them to use online course tools. They conclude that their students used WebCT because their lecturers told them to use it as a specific subject requirement. Therefore, if lectures do not ask students to use online course tools, then students may not show their interest in using online course tools. In addition, Ngai, Poon and Chan (2007) point out that using online course tools should be easy for students to use. If those online course tools are too difficult for students to use, then students lose their interest in using them.

Further et al. (2002) argued that unless a Web-based learning tool was professionally developed, implemented, maintained and administrated, the positive support to learning could go in a different direction. Petrides (2002) found that some students were disadvantaged due to technical problems. Some students had slow modems at home which made it difficult for them to participate in online discussions. Other students were only able to access to the Internet outside of the class at their workplace and thus it was difficult for them to use online course tools outside of the class.

Methodology

In order to collect the data for this study, the authors used questionnaires for their students and counted numbers of views of Manaba+R by participants. All questions on questionnaires are listed below.

Q1: How often did you bring your PC in class?

1: every time, 2: almost every time, 3: sometimes, 4: hardly, 5: never

Q2: How often did you use your PC in class?

1: every time, 2: almost every time, 3: sometimes, 4: hardly, 5: never

Q3: How often did you use Manaba+R?

1: every time, 2: almost every time, 3: sometimes, 4: hardly, 5: never

Q4: Did you have homework through Manaba+R?

1: every time, 2: almost every time, 3: sometimes, 4: hardly, 5: never

Q5: Did you read messages on Manaba+R?

1: every time, 2: almost every time, 3: sometimes, 4: hardly, 5: never

Q6: Reasons for Q5

Q7: Do you think that Manaba+R is useful for your classes?

1: Strongly agree, 2: agree, 3: not really, 4: never

Q8: Where do you normally look at Manaba+R?

1: in class, 2: at home, 3: outside the class but on campus, 4: on a bus or train, 5: others

Q9: Do you think that Manaba+R is useful to communicate with your teacher?

1: strongly agree, 2: agree, 3: not really, 4: never

Participants in this study are mainly both 1st and 2nd year students at a private university in Japan who are majoring sport and health science and economics. Due to repeating the same course, 3rd year students are included in Economics department classes. Each department has different programs. In the sport and health science department, two English subjects: project-based English and skills workshop are offered for students. The data is collected from all project-based English subject. In economics department, there are English classes covering the four skills, such as Listening, Reading, CALL and Communication & Writing. The data is taken from Listening and CALL classes. In addition, the data is also collected from the Introduction of Economics in English 1 (for 2nd year students).

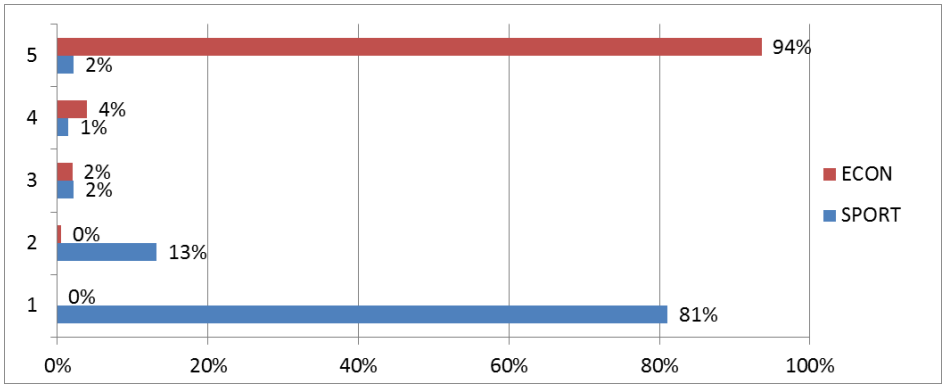
A total of 380 responses to questionnaires were collected. Questionnaires were distributed to students who belong to both the Sport and health science department, and the Economics department. The authors of this study coded numbers of the total access to Manaba+R. The total of 159 (80 first year students and 79 second year students) students of Sport and health science department and 220 (121 first year students, 61 second year students and 38 third year students) Economics department were coded. The total of 379 students from both departments was coded to show the numbers of actual access to Manaba+R.

Results

Results of questionnaires

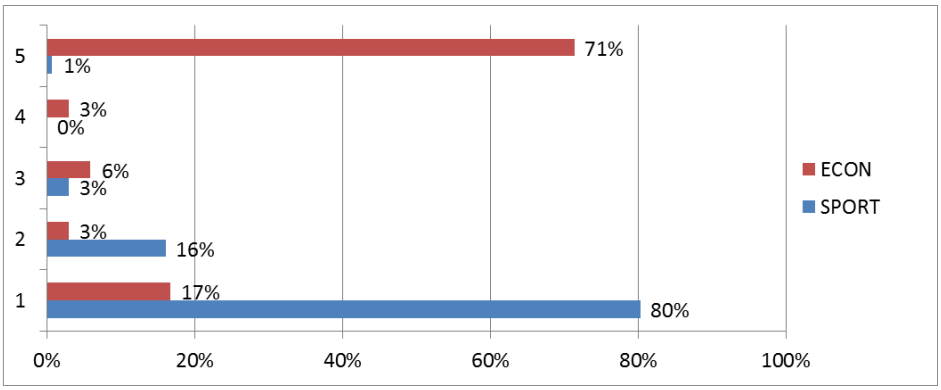
Results of all questions are put into graphs below. Here after, SPORT for Sport and health science department and ECON for the department of Economics are used.

Graph 1. Results of Q1



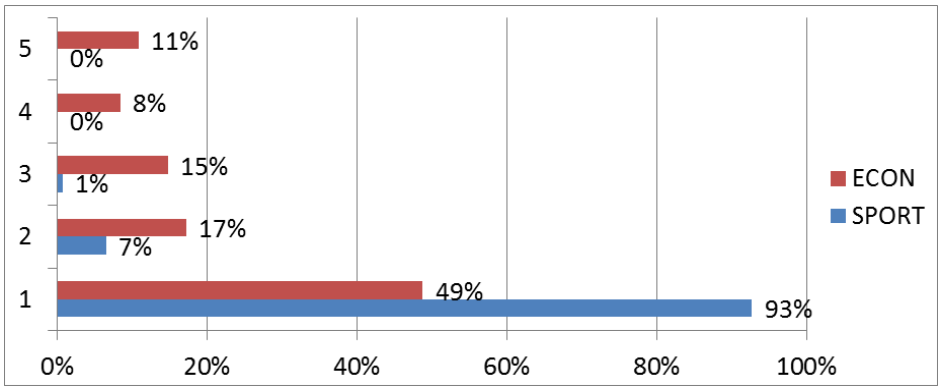
Graph 1 shows the results of Q1 (how often did you bring your PC in class?). It shows a significant difference between the two departments. Most of those who belong to SPORT brought their PC into their class. 81 % of students answered every time and 13% of students answered almost every time. On the other hand, most of those who belong to ECON did not bring their PC into their class. 94% of them answered that they never brought their PC in their class and 4 % of them answered that they hardly brought their PC.

Graph 2. Results of Q2



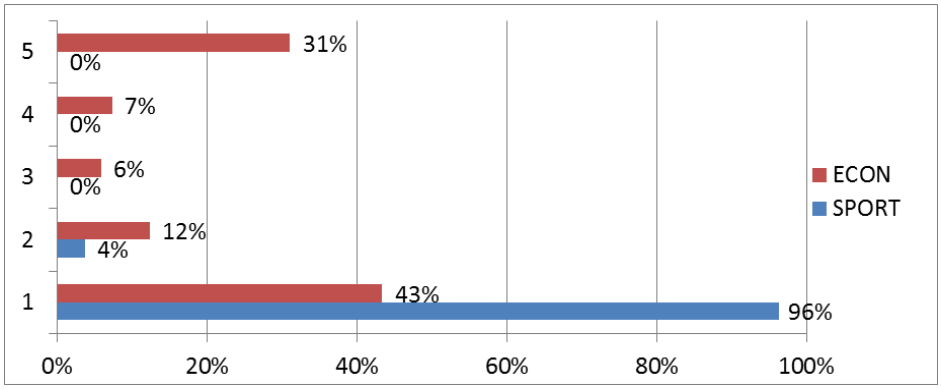
Graph 2 shows the results of Q2 (how often did you use your PC in class?). The results of this question links with the results of Q2. SPORT students used their PC a lot in their class. 80% of them answered every time and 16 % answered almost every time. Since SPORT students answered 94% brought their PC into their class in Q2, the ratio of using PC in class was very high. As opposed to ECON students, 71% of them answered they never used their PC in class which is linked with their answers in Q2. In Q2, 94% of them never brought their PC into their class which made them unable to use their PC in class. However, there is an exception for ECON students in Q2. 17% of them answered that they used PC every time. This is because these students were in CALL classes where each student accessed a PC provided by their university.

Graph 3. Results of Q3



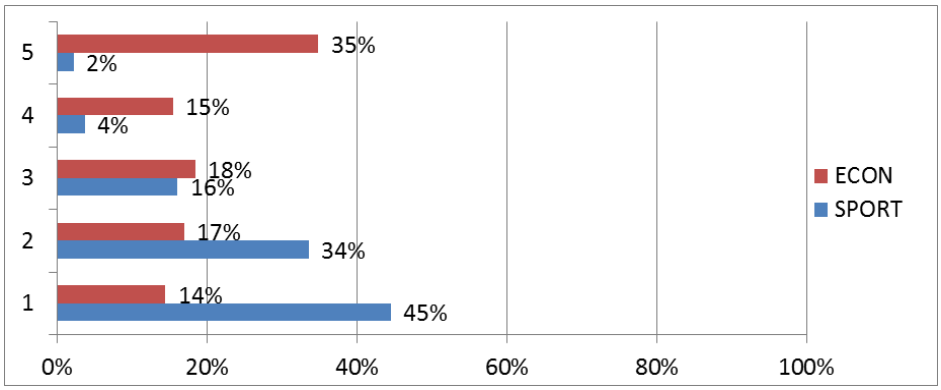
Graph 3 shows the results of Q3 (how often did you use Manaba+R?). Similarly to the results of both Q1 and Q2, SPORT students lead ECON students in Q3. 93% of SPORT students answered every week. However, positive results for ECON students are seen here. 49% of ECON students answered every week and 17% of ECON students answered almost every week. Over 66% of ECON students checked Manaba+R frequently through the semester.

Graph 4. Results of Q4



Graph 4 shows the results of Q4 (did you have homework through Manaba+R?). Once again, 94% of SPORT students answered every time and only 4 % of SPORT students answered almost every time. There is an interesting trend for ECON students. While 43% of ECON students answered every time, 31% of ECON students answered never. This depends on English classes. Some English classes for ECON did not require students to do homework and thus students did not have to do their homework on Manaba+R. As for SPORT students, homework was assigned every week on Manaba+R and thus a quite high ratio of positive answers were seen in this question.

Graph 5. Results of Q5



Graph 5 shows the results of Q5 (did you read messages on Manaba+R?). 45% of SPORT students answered every time and 34% of SPORT students answered almost every time. In total, 79% of SPORT students frequently read messages by their teachers on Manaba+R. Messages for SPORT students on Manaba+R were something important for their study, such as some tips for their assessments and feedback for their presentations and homework by their teacher. As for ECON students, 35% of ECON students answered never and 15% answered hardly. Thus 50% of ECON students negatively answered this question. This is because their teacher did not often post messages on Manaba+R as Table (shown earlier) in the section of coding actual access shows.

Table 1. Q6: Reasons for Q5- Sport

SPORT

Positive

# of comments	%	
44	42%	The teacher put useful information for this class
19	18%	It shows some important tips for assignments in this class.
9	9%	Every week, there is homework to do
9	9%	To make sure if there is any message or homework
6	6%	I didn't understand some parts in class but Manaba+R explained them
6	6%	To download lecture notes
5	5%	It shows presentations I have to do
2	2%	If I don't check it, then I'll be in trouble later

Negative

5	5%	It made me annoyed to check it, I was being lazy.
		There were too many messages for me and I was being lazy
		Explanation in class was enough for me without checking Manaba+R
		I don't really know how to use it
		I was being lazy

TOTAL 105 comments

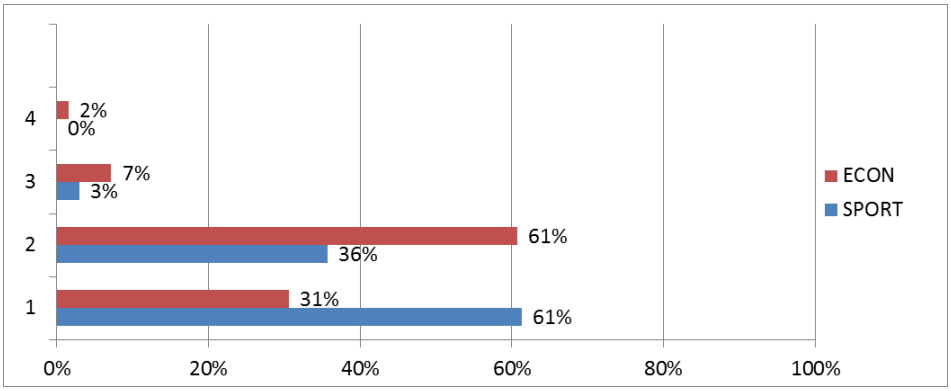
Table 1 shows that reasons for Q5. A total of 226 reasons was written (SPORT: 115 and ECON: 121 comments). SPORT students tend to answer positive reasons more than negative reasons. For instance, 42% of SPORT students said “the teacher put useful information for this class”. 18% of SPORT students said “It shows some important tips for assignments in this class”. These two reasons suggest that Manaba+R helped student’s study. 9% of SPORT students answered “every week, there is homework to do”. This reason suggests student’s external motivation to check Manaba+R. 6% if SPORT students answered “to download lecture notes”. There are also negative reasons from SPORT students. Mostly they showed their laziness on their answers. For example, “it made me annoyed to check it, I was being lazy”, “it was too many messages for me and I was being lazy”.

Table 2. Q6: Reasons for Q5- Sport

ECON		
Positive		
# of comments	%	
21	17%	To check the class information.
14	12%	To check test score.
12	10%	I must submit homework through Manaba+R
3	2%	Important information was posted on the Web.
Negative		
15	12%	I didn't know how to use it, what to do.
14	12%	No chance to use Manaba+R
14	12%	No need to check it.
11	9%	No information was posted.
Comments		
17	16%	Others
TOTAL 121comments		

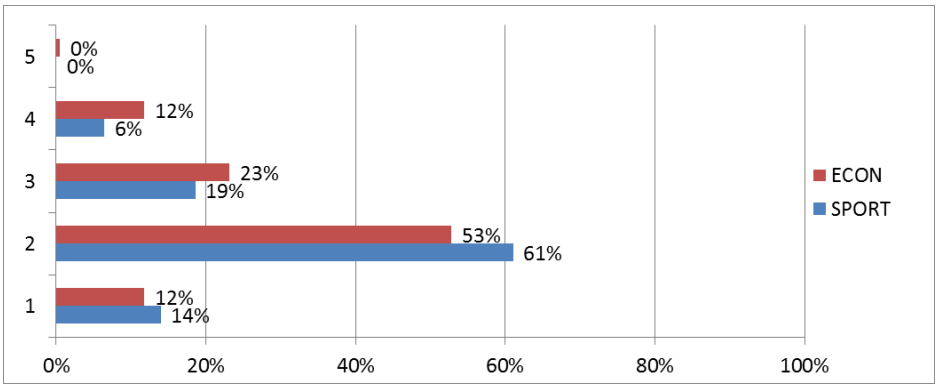
As for ECON students, there are both positive and negative reasons. Concerning positive reasons, 17% of ECON students answered "to check the class information". This is a similar answer to SPORT student's "the teacher posted useful information for this class". 10% ECON students answered "I must submit homework through Manaba+R". 12% of ECON students answered "to check test score" which was not seen among SPORT students. This is because SPORT students did not have any test type assessments through their subjects. On the other hand, there were negative reasons among ECON students. 12% of ECON students said "I didn't know how to use it, what to do". 12% answered "no chance to use Manaba+R" and 12% answered "no need to check it". 9% answered "no information was posted". There were some reasons such as "I can't use computer in class" from ECON students, "I didn't know how to use Manaba+R" from both departments.

Graph 6. Results of Q7



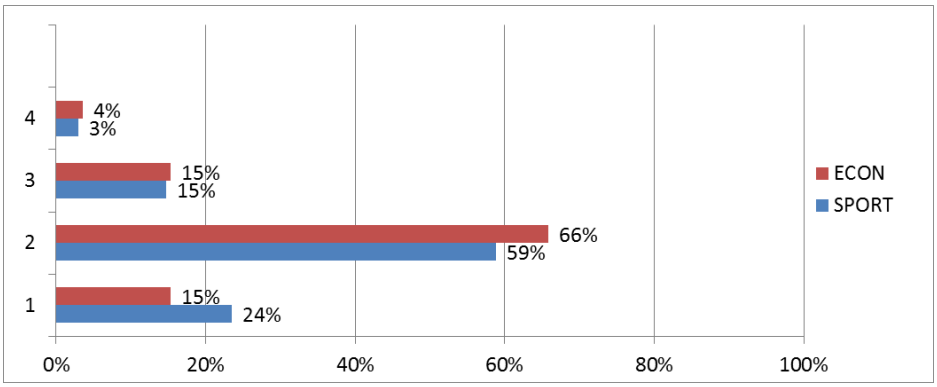
Graph 6 shows the answers for Q7 (do you think Manaba+R is useful for your class?) Both SPORT and ECON students gave positive answers. The total of 97% (61% for strongly agree and 36% for agree) of SPORT students answered this question positively. As for ECON students, 92% (31% for strongly agree and 61% for agree) answered this question positively. Thus based on the results of this question, students think online course tools are useful for their study.

Graph 7. Results of Q8



Graph 7 shows the answer for Q8 (where do you normally look at Manaba+R?). Interestingly, both SPORT and ECON students checked Manaba+R at home the most. 61% of SPORT students and 53% of ECON students answered at home. As for SPORT students, most of them brought their PC in class as seen in graph 1 they tend to check Manaba+R at home at most. In addition, 19% of them checked Manaba+R outside of their class while only 14% of them checked Manaba+R in class. This result suggests that although students were able to access to Manaba+R in class, they did not check it in class. As for ECON students, because most of them did not bring their PC in class as seen in graph 1, the result of this question makes sense.

Graph 8. Results of Q9



Graph 8 shows the results of Q9 (Do you think Manaba+R is useful to communicate with your teacher?). Both SPORT and ECON students answered this question positively. The total of 83% of SPORT students (24 % for strongly agree and 59% for agree) see Manaba+R as a useful communication tool with their teacher. Also a total of 81% of ECON students (15% for strongly agree and 66% for agree) see it as the same way as SPORT students do.

Coding numbers of actual access to Manaba+R by students

Table 3 explains names of subjects which the authors used for this study. For Sport and Health Science department, although there are only two kinds of subjects, there are seven classes in total (P1: 3 classes and P3: 4 classes). For the Economics department, three kinds of subjects were examined but the total of six classes are examined (L1:3 classes, CALL1: 1class and Economics in English: 2 classes)

Table 3. Name of the subjects used for this study

Name of the subjects	Department
P1 (Project English 1 for 1st year students)	Sport & Health Science
P3 (Project English for 2nd year students)	Sport & Health Science
L1 (Listening English 1 for 1st year students)	Economics
CALL1 (for 1st year students)	Economics
Introduction of Economics in English 1 (for 2nd year students)	Economics

Table 3 summarizes actual access to Manaba+R by students. First of all, there is a trend that when teachers posted messages on Manaba+R, students tend to access to Manaba+R more than when teachers did not post messages (seen as P1: A, B, C, P3: A, B, C, D, E (EEb and EEd)). Messages on the tables were useful for students to get higher marks on their assignments.

Secondly, when teachers posted homework which was as a part of assessments, students tended to access to Manaba+R more compared to when teachers did not post homework on Manaba+R (seen as P1: A, B, C, P3:A, B, C, D, E (EEb and EEd)).

Table 4. Rate of access to Manaba+R per student

	Total Access	Access rate of one person/ semester	The number of message posted on the web	The number of test score posted on Web	The number of homework through Web
P1A	18373	680	16	0	16
P1B	22010	847	14	0	15
P1C	18343	679	14	0	15
P3A	9367	446	16	0	15
P3B	11213	561	16	0	15
P3C	7771	409	15	0	15
P3D	9566	503	15	0	15
D(L1B)	994	36	0	22	0
E(English ECON -A)	10290	165	3	25	14
D(L1A)	994	40	0	23	0
CALL(LL)	17323	541	0	53	69
E(English ECON -B)	5761	156	3	23	12
D(L1B)	819	24	0	23	0

Table 4 shows the rate of access to Manaba+R per student through the semester. Students who access the Internet in class tend to check Manaba+R frequently. For instance, those who are in classes such as P1: A, B, C, and P3: A, B, C, D and CALL, access Manaba+R over 400 times through the semester. In these classes, teachers encouraged students to use computers in class. However, those who are in classes such as D: L1A and B, and EEd did not access Manaba+R frequently. In these classes, students did not have an opportunity to access their computer in class.

Discussions

First of all, Manaba+R tends to support student's study, as results of Q6 (reasons for whether students read messages on Manaba+R?) show. There are positive reasons such as "the teacher put useful information for this class" and "It shows some important tips for assignments in this class". These positive answers suggest that Manaba+R helps students' learning and it was effectively used by students.

On the other hand, there were negative answers such as "I didn't know how to use it" and "I can't use the computer in class". The authors of this study explained how to use Manaba+R at the beginning of the semester in class and also students should have had an opportunity to learn how to use it over orientation week. In order to make sure whether every student understands how to use online course tools, teachers need to confirm every student knows how to use it at the beginning of the semester and try to encourage them to use it through the semester. As for the reason "I can't use computer in class", it can be a problem for students to use online course tools. Fortunately, the university where the authors of this study work offers both students and staff free WIFI connection everywhere on campus. Therefore, those who have a device to go online can use Manaba+R anywhere on campus. However, some universities do not offer such an environment which discourages students to use online course tools. As a result, in order to encourage students to use online course tools, it is important for educational institutions to provide an environment for students where they can easily access online course tools.

Secondly, based on the results of the numbers of access to Manaba+R by students, there are some trends of student's access to Manaba+R. Students tend to access Manaba+R when something, which is related with their final grades, was posted on Manaba+R. For example, when homework, test results, quizzes and important messages for their assessments are posted on Manaba+R by their teachers, then students tend to check Manaba+R. This result is a similar result of Rovai's study (2003). Rovai (2003) found that when online discussion was adopted as a part of final grades, students were motivated to post their discussions. He emphasizes the importance of students' motivation to engage in online discussions. As Rovai explains, students in this study also showed their motivation to get higher scores or to pass their subjects by checking Manaba+R.

On the other hand, the results of numbers of access Manaba+R showed, when students' external motivation is lost, students tend to miss their opportunity to use these modern technology devices for their study. In addition, the results of Q7 (Do you think Manaba+R is useful for your classes?) show that students see the value of usefulness of online course tools for their study. However, once again, the numbers of access to Manaba+R showed, they only tend to use these online course tools when something which was a part of their final grades was posted by their teachers.

Thirdly, there is another trend that when Manaba+R was not effectively used as a part of course assessments, students did not tend to check it as much as they were expected. As both figure and table of actual access to Manaba+R showed, when the teacher posted more important messages, more access to Manaba+R by students was seen. More homework was posted on Manaba+R, more access to Manaba+R by students was observed. Thus, based on our results, students' external motivation to use online course tools was important for them to use online course tools. As Sánchez (2004) claimed, the teacher can be a determining factor for utilization of WebCT. In other words, it is important for teachers to use online course tools effectively and frequently. In particular, as the results of coding numbers of actual access showed, when teachers use online course tools as a part of course assessments, these online course tools tend to be used effectively by students.

Fourthly, there was a trend that when computers are available for students in class , where either, computers are provided in class or students are encouraged to bring their own computer to class by their teachers, students tend to check Manaba+R more than those who do not access computers in class. The results of Q8 on our questionnaires (Where do you normally look at Manaba+R?) show that many students in this study are able to access Manaba+R outside of the campus. This is probably because many students own their mobile phones which allow them to use internet almost anywhere as long as internet is available. However, the results of Q 8 also suggest that both SPORT and ECON students tended to miss opportunity to use online course tools in class. In particular, most of SPORT students had their own PC in class but they did not see much online course tools.

In addition, the university where the authors of this study work, offers both staff and students free Wi-Fi anywhere on campus. Therefore, students can connect to Internet on campus as long as they have access to computers. As the results showed, in the environment where free Internet connection is available, when teachers encourage students to use online course tools in class, students tend to use online course tools. Thus, it is important for teachers to utilize the environment where online course tools are available in order to encourage students to use them.

Conclusion

This study investigated the use of online course tools by Japanese university students. In order to collect data, both questionnaires and coding numbers of actual access to the online course tool were used. There were two aims of this study. Firstly, this study investigated what extent students actually used Manaba+R through the semester. Secondly, it tried to find suggestions of how teachers could promote their students to maximize making use of Manaba+R. Results of both questionnaires and coding numbers of access to Manaba+R give answers for the aims.

The results of questionnaires showed many positive answers by participants in this study. Many of students answered that Manaba+R was useful for their subjects and was a useful tool to communicate with their teachers. In particular, many of SPORT students in this study answered that messages on Manaba+R were important for their assessments and therefore they read those messages.

Coding numbers of access to Manaba+R showed some interesting results. First of all, when teachers posted messages considered useful for assessments of the course, students tended to read these messages. However, when teachers did not post those messages on the online course tool, students did not tend to check them. Secondly, when homework was part of the assessments towards the final grade, students tended to access Manaba+R. However, when homework was not posted to Manaba+R, then students did not tend to access to it. As a result, to use online course tools effectively for the class, it is important for teachers to extract students' external motivation. It is also important for educational institutions to create an environment for students where they can easily get access to online course tools.

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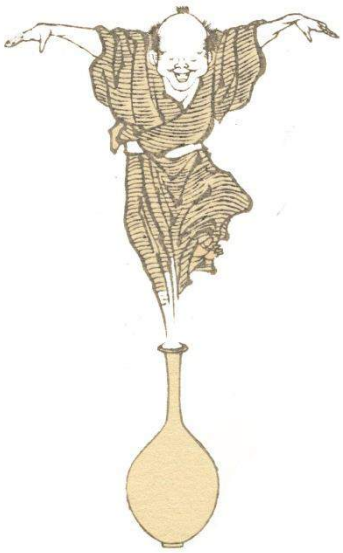

Taiwanese EFL Learners' Perceived Use of Online Reading Strategies

Lisa Wen Chun Chen

Abstract

Reading strategies are beneficial to learners' reading comprehension. The strategies can be divided into different categories, such as global reading strategies, problem solving strategies and support strategies. Most previous studies investigated the importance of reading strategies in the paper-based reading. However, relatively few studies examined online reading strategies and their effects on reading comprehension. Online reading materials are important sources for EFL students since an increasing number of learners read texts and learn through the Internet. EFL learners in Taiwan, unfortunately, are reported to be overwhelmed with English online materials on the Internet. Therefore, this study intends to examine EFL learners' perceived use of online reading strategies and whether their perceived strategy uses are different in terms of proficiency levels and gender. There are 94 Taiwanese EFL learners (43% of them are males, n=40 and 57 % of them are females, n=54), who received the Online Survey of Reading Strategies (OSORS) adapted from Anderson (2003) in the study. The result showed that EFL online readers tend to use more global strategies, such as using contextual clues and observing tables, figures, and pictures in the on-line text to increase understanding. High level learners used more global and problem solving strategies than low level learners, which corresponds to previous studies. Additionally, there is no difference of strategy use between males and females. Several pedagogical implications, such as the need to raise students' awareness of strategy use, are addressed in the present study.

Keywords: Online reading; L2 reading strategies; reading comprehension; gender differences; proficiency-level differences.

Introduction

Reading strategies are beneficial to learners' reading comprehension (Huang et al., 2009). The strategies can be divided into different categories, such as global reading strategies, problem solving strategies and support strategies. According to Sheorey and Mokhtari (2001), global reading strategies refer to intentional techniques by which learners monitor their reading, such as previewing the text for its organization. Problem solving strategies are localized techniques that readers use when problems form in understanding textual information, such as guessing the meaning of unknown words. Additionally, support strategies are seemed as using some supportive mechanisms, such as consulting an online dictionary. These reading strategies are commonly discussed in previous research. Readers utilize these strategies to help them improve their reading comprehension. Most previous studies investigated the importance of reading strategies in the paper-based reading (Bereiter and Bird, 1985; Singhal, 1999; Sporer et al., 2009; Mokhtari and Reichard, 2004; Sheorey and Mokhtari, 2001; Ikeda and Takeuchi, 2006; Spörer, Brunstein and Kieschke, 2009; Huang, 1999). However, relatively few studies examined online reading strategies and their effects on reading comprehension (Anderson, 2003; Foltz, 1993; Huang et al., 2009; Singhal, 1999).

Online reading materials are important sources for EFL students since an increasing number of learners read texts and learn through the Internet. EFL learners in Taiwan, unfortunately, are reported to be overwhelmed with English online materials on the Internet (Chen, 2003). Online materials are usually composed of hypertext which is non-linear information, differing from traditional reading and resulting in difficulties for learners. The different feature of online materials compared to paper-based reading may also lead to different online reading strategy uses, which suggest that there is a need to conduct more research to further explore this issue. Moreover, most of previous studies discussed EFL learners' strategy use between learners in different levels but relatively little research investigates gender differences in online reading strategy use. This study intends to examine EFL learners' perceived use of online reading strategies and whether their perceived strategy uses are different in terms of proficiency levels and gender.

Literature Review

In this section, previous studies of reading strategy use will be discussed in terms of electronic literacies, paper-based second language reading strategies and online second language reading strategies.

Electronic literacies

As technologies have evolved, the nature of literacy is changing rapidly. The definition of literacy has expanded from traditional reading and writing to the ability of learning, comprehending and interaction with technology meaningfully in online reading (Pianfetti, 2001). Electronic literacies referring to screen-based literacies include understanding hypertext and multimedia information as well as evaluating online resources by using computers (Park and Kim, 2011). Online reading materials are usually composed of text information, hypertext or hypermedia. Hypertext and hypermedia can provide annotations for readers to know more related information about the online text. Hypertext refers to text with links which can provide additional information and also make readers read between different sections or pages (Warschauer, 1999). These links, or annotations, can allow readers to leave the primary material temporarily and then return after finishing the annotation (Nielsen, 1995). Additionally, the term hypermedia is hypertext with multiple forms of media, which can provide extra information in the form of pictures or videos. The most prominent feature of hypertext is its nonlinear organization of presenting the text (Akyel and Ercetin, 2009). Readers can choose their own pace when reading this online text

either sequentially or non-sequentially, that is, learners' reading orders are unpredictable and unstable (Patterson, 2000). Therefore, readers should know how to integrate the text information and non-text information in online reading (Coiro, 2005; Schmar-Dobler, 2003), which is more complex and also differs from the traditional reading process. The different reading process may result in different reading strategies in online reading environments, which will be discussed in the review of studies about online reading strategies.

Paper-based second language reading strategies

Most of the previous studies exploring reading strategies have focused on readers' use of pen-paper reading strategies rather than online reading strategies in reading comprehension. These studies discussed the effects of teaching reading strategies and the different use of reading strategies between EFL learners and native speakers when they read texts. Some research has suggested that when teachers conduct the training of reading strategies for learners in EFL classrooms, it can be effective to enhance learners' reading comprehension. For instance, according to Bereiter and Bird (1985), they found that the group who received the explicit instruction of reading strategies showed a significant gain in reading comprehension than the group without explicit instruction. In addition, Singhal (1999) observed that metacognitive strategy training is effective in enhancing second language reading and the effectiveness of strategy training depends upon the way reading is measured. Similarly, the students who received the intervention of training reading strategies gained higher scores on an experimenter-developed task of reading comprehension and strategy use than the control group (Sporer, Brunstein and Kieschke, 2009).

Other studies have investigated the similarities and differences of reading strategy use between native speakers and EFL learners or discussed EFL learners' individual differences towards reading strategy use. A few researchers indicated that EFL learners may use certain reading strategies more than native speakers. Mokhtari and Reichard (2004) stated that Moroccan students reported using certain types of strategies more often than their American counterparts did while Sheorey and Mokhtari (2001) found that both native and nonnative groups applied a similar number of reading strategies. In terms of learners' individual differences in reading strategies, many studies revealed the different use of strategies among learners from various proficiency levels. Ikeda and Takeuchi (2006) noticed that the differences between students in the high and low proficiency level are attributed to: (1) understanding the purpose of strategies; (2) effectively using strategies; and (3) knowing how to combine strategies. Additionally, high proficient readers tend to use global strategies while low proficient readers appeal to local strategies (Huang, 1999).

Online second language reading strategies

Although many studies discussed paper-based reading strategies, relatively few studies discussed online reading strategies. Readers have different mental processes when reading printed texts and online texts since readers need to integrate text, visual and non-textual information, including pictures, footnotes and links in online reading. In this way, they have more active engagement of reading in online texts, which leads to deeper processing of information (Patterson, 2000). When readers are involved in online reading, they not only interpret the writers' stances and viewpoints, but also integrate abundant materials by utilizing online strategies (Coiro, 2005; Schmar-Dobler, 2003), which indicates the important role of online reading strategies to help readers understand online texts.

Previous research explored online reading strategies in terms of different perspectives, such as comparing paper and online reading strategies, examining the relationship of online reading strategies and web-based learning and discussing the individual differences in strategy use. In

terms of comparing online and paper-based reading strategies, readers may transfer their print-based reading strategies to hypertext reading but they will also need to use additional strategies in hypertext reading (Shapiro and Niederhauser, 2004; Schmar-Dobler, 2003). Similar results are also found in other studies. Foltz (1993), for example, compared the strategy use by learners when they read the text in the form of linear text and hypertext. He proved that readers use the similar numbers of strategies when reading these two types of texts but when they read the hypertext, they not only got involved in a reading process but also developed problem solving strategies when dealing with unfamiliar texts. Additionally, Park and Kim (2011) investigated ESL learners' use of online reading strategies from a sociocultural perspective and they observed that learners adopted their paper-based reading strategies in online reading, such as setting up reading purposes and previewing. At the same time, they also adjust their strategies and use new strategies for online reading materials, such as using hypermedia. Akyel and Ercetin (2009), similarly, indicated that hypertext readers applied similar reading strategies as paper-based reading but they used some other strategies, such as using navigation strategies or referring to annotations in their hypertext reading.

As for the relationship of online reading strategies and web-based learning, Singhal (1999) showed that online reading strategies have a positive effect on Web-based learning and reading comprehension. He investigated hypertext reading strategies among university students in a Web-based reading class and discovered that after Web-based reading instruction, students' reading comprehension made progress and their use of reading strategies increased as well. In Coiro's (2007) study, the finding also revealed that successful Internet reading experiences appeared to require complex applications of inferential reasoning strategies. Both studies suggested that online reading strategies play an important role in the success of web-based learning.

Some research discussed EFL learners' use of online reading strategies and whether individual differences will influence learners' strategy use. Amer, Barwani and Ibrahim (2010) examined whether there is a difference of online reading strategy use between Omani EFL university students in a high proficiency level and those in a low proficiency level. The result found that high proficient readers used more global strategies than low-proficient readers did, corresponding to Huang's study (1999). In addition, a few studies discussed the role of prior knowledge in learners' online strategy use. Coiro and Dobler (2007) suggested that skilled readers usually referred to their prior knowledge of the topic and printed informational text structures to guide their online reading. Moreover, previous research asserted that low knowledge participants benefited more by following a high coherent reading order, whereas high-knowledge participants tended to read the hypertext in a low coherent order and read based on their interests (Salmerón, Cañas, Kintsch and Fajardo, 2005; Akyel and Ercetin, 2009). These studies revealed the important role of students' prior knowledge in exploring online reading strategies.

Although previous studies discussed online reading strategies broadly from different perspectives, relatively few studies investigated Taiwanese EFL learners' perceived online reading strategies. Since EFL learners are reported to be overwhelmed with English online materials on the Internet (Chen, 2003) so their online reading strategy use would be our interest to further analyze. Additionally, a lot of previous research explored the different uses of online reading strategies between different proficiency levels but the factor of gender was seldom mentioned as well. Due to these issues, there is a need for us to further discuss EFL learners' perceived online reading strategies and the differences of strategy use between learners in different levels and genders. The following are the three research questions addressed in the present study:

1. What is the pattern of online reading strategy use by EFL learners?
2. Are there any differences of online reading strategy use between learners in the high proficiency level and low proficiency level?
3. Are there any differences of online reading strategy use between males and females?

Methodology

Participants

The subjects consisted of 94 EFL learners (43% of them are males, n=40 and 57 % of them are females, n=54) in the study. The average age was 22 years old, ranging from 19 to 26. Over half of them were undergraduate or graduate students (n=58) and the rest of them just graduated from universities (n=36). 72 learners have participated TOEIC test before and their data were analyzed to see whether there was a difference of strategy use between learners in different proficiency levels.

Instrument

The Online Survey of Reading Strategies (OSORS) adapted from Anderson's (2003) study was used in the study. The OSORS measured three dimensions of reading strategies, including global strategies, problem solving strategies and support strategies. One support strategy, which refers to whether learners click on annotations when they read online English materials, was added in the present study because learners tend to use additional strategies when reading online materials and clicking on hyperlinks or annotations would be one of these additional strategies. Anderson (2003) demonstrated the reliability of items in OSORS, proposing that the Cronbach's alpha for the overall OSORS was .92. There were 37 items in the survey, containing 16 items as global strategies, 11items as problem solving strategies and 10 items as support strategies. Each statement in OSORS could be responded by the 5-point Likert Scale, ranging from 1 (never or almost never use this strategy) to 5 (always or almost always use this strategy).

Procedure

The researcher collected data by online Google questionnaires. The link of questionnaire was posted on the college social networks and also sent through instant messages and emails. The data of participants above 26 years old would be eliminated since the focus of the participants in the present study were mainly college or graduate students. Then the mean scores of the items would be calculated and the paired t-test would be conducted to observe whether there is a significant difference of strategy use regarding proficiency differences and gender differences.

Results

The top ten and the bottom ten frequently used online reading strategies

Among the top ten most frequently used online reading strategies, half of them were global strategies, three of them were problem solving strategies and two of them were support strategies, as shown in Table 1. Although it seemed that learners seldom used support strategies compared to other two kinds of strategies, the most frequently used strategy was using an online dictionary to help readers understand online texts, which is a support strategy. It was not surprising that EFL learners most frequently looked up an online dictionary when they read online reading materials since previous L2 research showed that vocabulary is perceived to be the most difficult task among EFL learners (Cheng, 1998; Chi & Chern, 1988) so it was no wonder that EFL learners tended to look up new words when they encountered difficulties.

Table 1. Mean scores of top ten frequently used online reading strategies

	The top ten frequently used online reading strategies	Mean scores
14.	I use reference materials (e.g. an on-line dictionary) to help me understand what I read on-line. *(Support strategy)*	4.03
19.	I use context clues to help me better understand what I am reading on-line. *(Global strategy)*	3.99
10.	I try to get back on track when I lose concentration. *(Problem solving strategy)*	3.90
29.	When I read on-line, I guess the meaning of unknown words or phrases. *(Problem solving strategy)*	3.88
17.	I use tables, figures, and pictures in the on-line text to increase my understanding. *(Global strategy)*	3.80
25.	I try to guess what the content of the on-line text is about when I read. *(Global strategy)*	3.78
20.	I paraphrase (restate ideas in my own words) to better understand what I read on-line. *(Support strategy)*	3.78
26.	When on-line text becomes difficult, I re-read it to increase my understanding. *(Problem solving strategy)*	3.68
4.	I think about what I know to help me understand what I read on-line. *(Global strategy)*	3.66
31.	I scan the on-line text to get a basic idea of whether it will serve my purposes before choosing to read it. *(Global strategy)*	3.64

As for the bottom ten online reading strategies used by learners, three of them were global strategies, three of them were problem solving strategies and six of them were support strategies, as shown in Table 2. Most of the infrequently used online reading strategies were support strategies so EFL learners seldom used support strategies except for consulting an online dictionary as mentioned before. This corresponds to Anderson's (2003) study which indicated that the least frequently used online reading strategies were support strategies. The least frequently used online reading strategy was participating in live chat with other learners of English, which is a global strategy. The reason why learners seldom live chatted with other learners may be because they tended to focus on the understanding of the online English materials instead of social interaction with other readers.

Table 2. Mean scores of bottom ten online reading strategies used by learners

	The bottom ten online reading strategies	Mean scores
1.	I have a purpose in mind when I read on line. *(Global strategy)*	3.16
21.	I try to picture or visualize information to help remember what I read on-line. *(Problem solving strategy)*	3.15
33.	I critically evaluate the on-line text before choosing to use information I read on-line. *(Problem solving strategy)*	3.05
22.	I critically analyze and evaluate the information presented in the on-line text. *(Global strategy)*	2.94
35.	When reading on-line, I look for sites that cover both sides of an issue. *(Problem solving strategy)*	2.67
27.	I ask myself questions I like to have answered in the on-line text. *(Support strategy)*	2.65
36.	When reading on-line, I translate from English into my native language. *(Support strategy)*	2.63
3.	I take notes while reading on-line to help me understand what I read. *(Support strategy)*	2.44
11.	I print out a hard copy of the on-line text then underline or circle information to help me remember it. *(Support strategy)*	2.37
2.	I participate in live chat with other learners of English. *(Global strategy)*	1.96

Online reading strategy use in terms of different proficiency levels

The responses of 72 EFL learners who have participated TOEIC test were analyzed in this section. They were divided into the high and low proficiency level based on their scores of TOEIC. Learners who got over 700 scores were considered as higher level learners and those who got scores below 700 were seemed as lower proficiency learners. In this way, 55 of them were learners of the high level and 17 of them were in the low level. The result is shown in Table 3.

Table 3. Differences between high level students and low level students

	Group	N	Mean	SD	T	P
Global strategy	High level	55	3.66	.495	7.520	.000
	Low level	17	3.11	.491		
Problem solving strategy	High level	55	3.67	.418	5.479	.000
	Low level	17	3.11	.345		

Support strategy	High level	55	3.28	.666	2.010	.075
	Low level	17	3.07	.659		
Total	High level	55	3.56	.54	8.132	.000
	Low level	17	3.10	.49		

As presented in Table 3, there was a significant difference of total strategy use between high level students and low level students (p=.000). High level students tended to use more online reading strategies than low level students, which can be expected. Also, the high proficiency group employed more global strategies than the low proficiency group and there was a significant difference between their mean scores of global strategies (p=.000). This finding was also found in the previous L2 research indicating that high proficiency learners conducted more global strategies than low proficiency learners (Huang, 1999; Mokhtari & Reichard, 2002; Shen, 2003). As for problem solving strategies, the similar result as global strategies was found. The high proficiency group used more problem solving strategies than the low proficiency group and there was also a significant difference between their means of problem solving strategies (p=.000). However, there was no significant difference of support strategies between the means of support strategies in high level learners and low level learners (p=.075). Both groups used relatively fewer support strategies than global and problem solving strategies.

Online reading strategy use in terms of gender difference

There were 40 males and 54 females in the present study. The result indicated that there was no significant difference of total strategy use between the male and female group. In addition, there was no significant difference of each category of strategy use (global, problem solving and support strategies) between the male group and female group as well. This suggested that males and females used the similar online reading strategies when they read online materials. The finding corresponds to previous studies, such as Amer, Barwani & Ibrahim's (2010) study which investigated student teachers online reading strategy use and found that there was no significant difference in terms of gender.

Table 4. Differences between males and females

	Group	N	Mean	SD	T	P
Global strategy	male	40	3.36	.456	1.823	.088
	female	54	3.44	.487		
Problem solving	male	40	3.43	.360	-.245	.811
strategy	female	54	3.45	.404		
Support strategy	male	40	3.16	.538	-.187	.856
	female	54	3.17	.645		
Total	male	40	3.33	.454	-1.262	.215
	female	54	3.37	.513		

However, if we look at the individual strategy use in detail, it is suggested that females are more active strategy user than males because more strategies used by females reached high frequency. As shown in Table 5, the strategies with high frequency in females were more than those in males. For example, the mean scores of top three frequently used strategies for females reached 4 points, which means "I usually use this strategy" in the Likert scale. This indicated that females usually

used references, contextual cues and the strategy of guessing unknown words when they read English online reading materials. Nevertheless, in terms of males' strategy use, none of the strategies' mean scores reached 4 points.

Table 5. Top ten frequently used strategies by males and females

Male	Mean	Female	Mean
10. I try to get back on track when I lose concentration. *(Problem solving strategy)*	3.93	14. I use reference materials (e.g. an on-line dictionary) to help me understand what I read on-line. *(Support strategy)*	4.11
14. I use reference materials (e.g. an on-line dictionary) to help me understand what I read on-line. *(Support strategy)*	3.93	19. I use context clues to help me better understand what I am reading on-line. *(Global strategy)*	4.09
19. I use context clues to help me better understand what I am reading on-line. *(Global strategy)*	3.85	29. When I read on-line, I guess the meaning of unknown words or phrases. *(Problem solving strategy)*	4.04
25. I try to guess what the content of the on-line text is about when I read. *(Global strategy)*	3.78	10. I try to get back on track when I lose concentration. *(Problem solving strategy)*	3.89
8. I read slowly and carefully to make sure I understand what I am reading on-line.*(Problem solving strategy)*	3.73	17. I use tables, figures, and pictures in the on-line text to increase my understanding. *(Global strategy)*	3.87
24. I check my understanding when I come across new information. *(Global strategy)*	3.73	20. I paraphrase (restate ideas in my own words) to better understand what I read on-line. *(Support strategy)*	3.85
17. I use tables, figures, and pictures in the on-line text to increase my understanding. *(Global strategy)*	3.70	25. I try to guess what the content of the on-line text is about when I read.*(Global strategy)*	3.78
20. I paraphrase (restate ideas in my own words) to better understand what I read on-line. *(Support strategy)*	3.68	26. When on-line text becomes difficult, I re-read it to increase my understanding. *(Problem solving strategy)*	3.78
29. When I read on-line, I guess the meaning of unknown words or phrases. *(Problem solving strategy)*	3.68	4. I think about what I know to help me understand what I read on-line. *(Global strategy)*	3.72
31. I scan the on-line text to get a basic idea of whether it will serve my purposes before choosing to read it. *(Global strategy)*	3.63	13. When reading on-line, I decide what to read closely and what to ignore. *(Global strategy)*	3.65

Discussion

The present study shows that EFL online readers tend to use more global strategies when they read online texts, which is different from previous studies showing that EFL learners use more problem solving strategies (Amer, Barwani & Ibrahim's, 2010; Anderson, 2003). The possible explanation is that there are more high proficiency learners in this study and high level students tended to use more global strategies than low level students (Huang, 1999), which may lead to more global strategy use in the present study. Additionally, the result shows that there is a significant difference between high and low level learners, which is also found in previous research (Huang, 1999; Mokhtari & Reichard, 2002; Shen, 2003). High level learners used more global and problem solving strategies than low level learners but both groups employ the similar numbers of support strategies. The possible interpretation of why the two group using similar support strategies is that many support strategies are related to EFL learners' first language, including looking up an online English-Chinese dictionary and using L1 paraphrases. Most EFL learners are accustomed to resort to their L1 as a meaning making process when they are reading or writing (Freedman et al., 1983; Kobayashi and Rinnert, 1992), which might explain the uses of support strategies between high and low level groups do not differ. The other finding is that there is no significant difference between males and females but females seem to use certain strategies with high frequency, which is also presented in Amer, Barwani & Ibrahim's (2010) research. This study demonstrates several findings which confirm the results in previous research and also increase our understanding of Taiwanese EFL learners' online reading strategy use.

Pedagogical Implications and Future Studies

The present study raises some implications for reading instruction. First, since the result of the present study indicates that high proficiency learners tend to use more global strategies to increase their reading comprehension, it seems that global strategies are more efficient than the other two strategies. (Akyel & Erçetin, 2009). Teachers should therefore explicitly teach students global strategies in their reading processes in EFL classrooms, such as using context clues, predicting the content of the text, reading purposefully. For instance, teachers can design some activities to ask students to predict what will happen in the content of the text, ask them to skim the text to grasp the main idea of the text or ask them some questions before they begin to read so that they can scan the answers for the questions when they are reading.

Additionally, teachers should pay attention to how to help students spontaneously utilize those reading strategies when they read online English materials by raising their awareness of reading strategy use through training before they are immersed in online reading materials. However, there are some limitations of the present study. First, the numbers of high proficiency learners and low proficiency learners are not equal so future studies should have equal participants of learners in different levels so that the result will be more valid. In addition, this study only investigates learners' perceived strategies, which may differ from their actual use of online reading strategies so future researchers can compare whether there is a difference between learners' perceived strategy use and actual strategy use in order to provide more insight of EFL learners' strategy use.

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Evaluate, Analyze, Describe (EAD): Confronting Underlying Issues of Racism and Other Prejudices for Effective Intercultural Communication

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Abstract

Racism and other prejudices have hindered efforts to diversify and further many fields, including education, psychology, politics, law, and healthcare (Race for Opportunity, 2010). Although there are many ways to combat these prejudices, intercultural communication continues to be a vital component in assisting individuals and groups with valuing the past, understanding the present, and preparing for the future of communication in a global society (Sadri and Flammia, 2011, p. 19). This paper provides a brief overview of pertinent research and major theories related to communicating with people of different cultural backgrounds, as well as useful techniques and strategies to use when teaching in international or multinational classrooms, and working or consulting in international or multinational companies, organizations, and educational institutions. It also includes data collected via surveys and interviews that helps to shed light on underlying issues of racism and discontent in Japanese and Nigerian populations within Japan, and concludes with a description of a new approach to one of the most common intercultural communication exercises called the E.A.D. (Evaluate, Analyze, Describe). While this exercise has proved to increase cultural awareness and open the lines of communication between individuals from various cultural and lingual backgrounds, research also shows that other strategies may be necessary to achieve desired levels of communication.

Keywords: Intercultural communication; cross-cultural communication; racism; white racial models; Describe, Interpret, Evaluate (D.I.E) exercise.

Introduction

As educators, counselors, and other relevant professionals working with and managing groups of people from diverse racial and cultural backgrounds, there is an inherent, although often debated, responsibility to assuage prejudices. Discussing any type of prejudice in a learning environment, such as a classroom, an office gathering, such as an in-house workshop or retreat, or in other professional settings, such as international conferences or professional development seminars, is never an easy task, and it can be an extremely uncomfortable and painful experience for all those involved, particularly when the person leading the activity is exposing underlying prejudicial tension among the group. In settings where people of various national and cultural identities are working or learning together, underlying issues, such as racism or sexism, may reveal themselves. However, prejudices, such as racism (which "has parallel application for terms like sexism, classism, and xenophobia"), can lose their power and influence with increased cultural awareness, sensitivity, and effective intercultural communication (Baldwin et al., 2014, p. 123; pp. 128-130).

It is the goal of this paper, therefore, to support ways to increase both cultural awareness and sensitivity while enhancing communication between cultures. In order to contribute to this goal, this paper will reflect on:

- Pertinent literature that will assist in understanding prejudices, specifically racism, Acceptance (belief that all people have equal opportunities to succeed),
- Relevant literature that will also assist in understanding intercultural communication;
- Several continuing research studies that help reveal racial tension among different cultural groups; and
- The new intercultural communication exercise called the Evaluate, Analyze Describe (EAD).

It is possible that there will be individuals or small groups who choose to believe that prejudices, such as racism or sexism, could not possibly exist at their child's school, their workplace or within their very community. Michael Brown's death in Ferguson, Missouri, as well as other racially charged incidents across America, has affected not only this community, but the entire world, and has brought the issue of racism to the surface. Although, at this point in time, it is not certain if racism played a role in the shooting of Michael Brown, the comments left by readers of various MSN articles are telling of the underlying issues that permeate the world. Words to describe the police officer, who is white, ranged from "murderer" to "racist white devil"; however, the words used to describe the victim, who was black, ranged from "thug" to "criminal," and the protesters were labeled the worst—"thugs," "welfare thieves," "uncivilized brutes," and, probably the worst, "monkeys" (Salter, 2104; Zagier, 2014). These comments demonstrate that racism remains a considerable challenge to society.

It should be noted that although the E.A.D. is able to elicit a variety of underlying prejudices, including sexism, xenophobia, bigotry, stereotypes, and issues of power and privilege, by helping individuals discover harmful attitudes and derogatory beliefs and assisting with open, reflective communication, this paper will focus mainly on racism, as this issue has been most prevalent in recent news. Before delving into how to confront underlying issues of prejudice, it is important to understand some white race models that provided the foundation for this study and the development of the E.A.D. While these models all have the term "white" embedded in them, I choose not to include this term when consulting, counseling individuals, families, and groups, and teaching in educational institutions, as the models are still relevant and applicable to other non-Caucasian cultures. People of Color Racial Identity Models do exist, but the original intention of these models—to explain how members of groups of color adapted in unfair environments—other models are better applied when considering a variety of cultures and intercultural communication exercises, such as the E.A.D.

Race Models

The following three models have been classified as "white" race models, with more detail provided for Helms' model for explanatory purposes. However, for the purposes of this paper and the research surrounding the intercultural communication exercise, the E.A.D., as well as taking into account other contingencies in a culture that may lead to racial identity; the "white" has been omitted, thus making the models applicable to any culture.

Helms' (1984, 1995) (White) Racial Identity Development Model

Helms' (1984, 1990) theory details the racial identity formation of White people, and Helms and Piper (1994) describe white Americans as "those Americans who self-identify or are commonly identified as belonging exclusively to the White racial group regardless of the continental source (e.g., Europe, Asia) of that racial ancestry" (p. 126). Within this model, racial identity "develops as we move from a lack of awareness of our own racial background to an awareness and integration of our race into our sense of who we are" (Daniels, p. 258), and this happens in six phases: contact, disintegration, reintegration, pseudo-independence, immersion/emersion, and autonomy (Helms, 1995).

Hardiman's (1992) (White) Racial Identity Development Model contains stages, beginning with a naïve stage and ending with a stage that encompasses the internalizing of a nonracist identity.

- Stages: Naiveté (little or no awareness of race),
- Acceptance (belief that all people have equal opportunities to succeed),
- Resistance (denial system is destroyed, racist attitudes are acknowledged),
- Redefinition (biases and prejudices are confronted, and responsibility is accepted), and
- Internalization (nonracist identity is developed).

Rowe, et al.'s (1994) White Racial Consciousness Model consists of "types," and moves from avoidant types to integrative types.

- Avoidant Type: Does not consider his or her racial identity; does not express concern over racism
- Dependent Type: Committed a superficial attitude toward race
- Dissonant Type: Uncertainty around his/her racial consciousness and other minority concerns; questions previously held beliefs
- Dominative Type: Holds very ethnocentric beliefs
- Conflict Type: Opposed to overt racism, but is opposed to programs that reduce or eliminate racism
- Reactive Type: Aware of racism and reacts to it
- Integrative Type: Comfortable with their race; governed by "the reality of what will make a difference" (Daniels, p. 261).

These models and their stages are listed here as a reference for when the E.A.D. is incorporated into a consultation, counseling session or classroom lesson plan. Now that the race models have been outlined, it is important to gain a deeper understanding of intercultural communication, and how it is applicable to a variety of business, academic, and psychological situations.

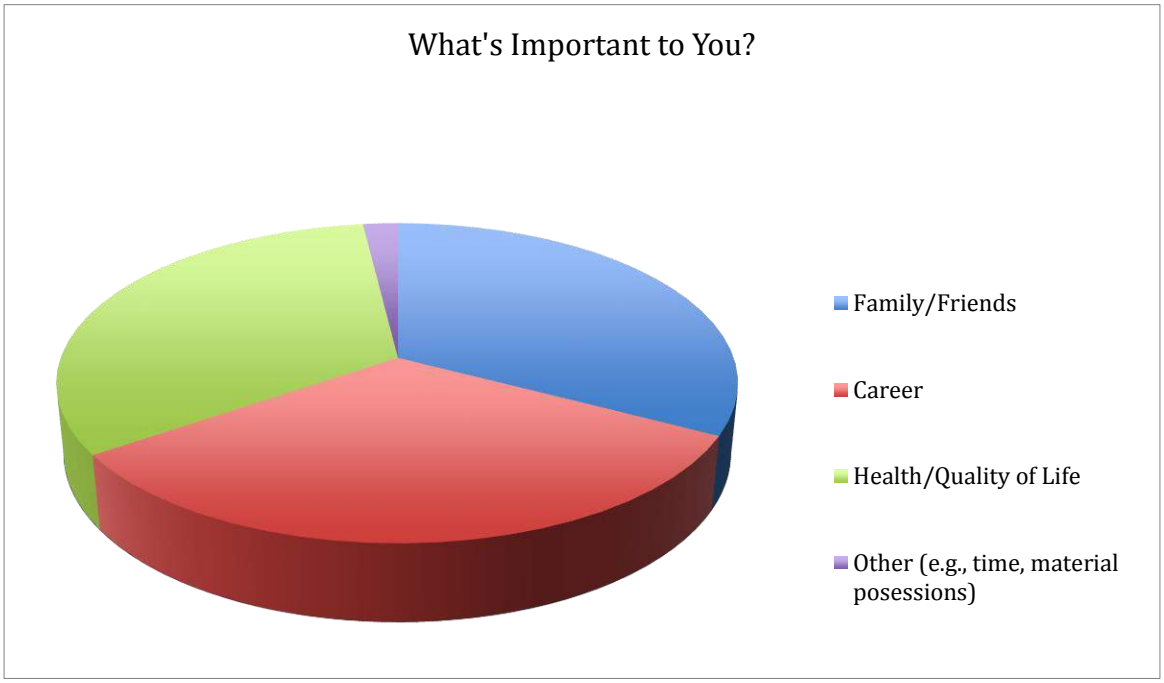
Intercultural Communication

Countless articles and books have indulged in the cliché observation regarding the world becoming smaller. The world is, in fact, becoming easier to access, both physically and virtually, thanks mostly to advancing technology, immigration, and globalization; however, it is deceiving

to believe that an accessible, multicultural world equals a diverse, accepting, and communicative one.

In an ongoing study, titled "What's Important to You?" spanning from 2010 to 2014, I surveyed 500 people from the United States, Canada, Mexico, Brazil, El Salvador, Nicaragua, Nigeria, Egypt, South Africa, Austria, Belgium, France, Germany, Denmark, Iran, Saudi Arabia, Russia, Ukraine, South Korea, Japan, Taiwan, China, Thailand, the Philippines, Australia, and New Zealand. Participants were asked to list the three things that are most important to them, with no further details given. The results continue to reveal 98% of responses fall into these three categories, as illustrated in Chart 1:

Chart 1. What's Important to You?



Because the results are generally the same no matter which country one was born in, it would be easy to hypothesize that all human beings share something fundamentally in common regardless of race, language, and cultural and religious beliefs, and while some choose to believe that every human is part of one race—the human race—human beings are much more complicated than that, and cultural differences need to be respected and celebrated.

If humans are different, and these cultural differences must be acknowledged and respected, then an understanding of *culture* is in order. In 1871, Edward B. Tyler provided the first working definition of culture: "Culture is that complex whole which includes knowledge, belief, arts, law, morals, custom, and any other habits acquired by humans who are members of a society." Another definition by Kovel (1984) defines *culture* as "an evolving system of meaningful relations deriving from the sum total of the activities and institutions of a society" (p. 25). To extend these definitions, Klopf and McCroskey (2007) present two means of viewing culture—a broad version and a narrow version: the broad version includes "artifacts" (society's manufactured items), "sociofacts" (society's norms and laws), and "mentifacts" (cognition and emotion); the narrow version includes a more personal experience that influences how one thinks and behaves within that society (p. 21). From these descriptions, an image of what culture is and why it is so important can be formed.

Before delving any further, though, a definition of culture usually leads to other commonly heard terms, and it is imperative that we separate them because they are oftentimes used interchangeably, which is one of the missteps that leads communicators further away from communicating effectively interculturally. The terms in question are multicultural, cross-cultural, and intercultural.

- Multicultural means two or more cultures living alongside one another and while this involves some levels of tolerance and superficial social interactions, communication usually does not reach deeper depths than that.
- Cross-Cultural means two or more cultures living alongside one another and while there are attempts at reaching across cultural borders, there is a level of intentionality and community building that is necessary in order to build permanent bridges between cultures.
- Intercultural means social structures and interactions are defined by understanding, acceptance, respect, freedom, equality, diversity, and celebration.

Given these definitions, intercultural communication—"a communicative exchange between persons of different cultures"—and the training involved has never been more in demand (Klopf and McCroskey, 2007, p. 58). Intercultural communities should reflect social structures and daily interactions that are defined by understanding, acceptance, respect, freedom, equality, diversity, and celebration, and yet there are challenges to intercultural communication: cultural assumptions, prejudices, stereotypes, miscommunications, misinterpretations, and racism, to name just a few. Strategies to overcome these challenges are self-awareness, avoiding stereotypes, honesty, respect, inquiry, and acceptance of differences and the difficulties that natural occur in communication.

Here is a summary of some of the notable researchers and their contributions to intercultural communication:

- Edward T. Hall (1990): Low Context Cultures (where explicit communication is important; e.g. The United States of America and Australia) and High Context Cultures (where norms are understood; e.g. France and Japan).
- Geert Hofstede (1991): studied interactions between national cultures (values in the workplace are influenced by culture) and organizational cultures (collective programming of the mind that distinguishes members of one organization from others).
- Fons Trompenaars (1997): Model of National Culture Differences, which includes individualist vs. collectivist societies.
- Milton Bennett (1977): Development Model of Intercultural Sensitivity and the Intercultural Development Inventory (IDI). The IDI measures intercultural competence, with ranges from monocultural to intercultural mindset.
- Banks (2004): Views on Multicultural Education that include multicultural content integration and prejudice reduction.

This list is hardly exhaustive, but these researchers and their significant studies related to intercultural communication, race, and education, provide a backdrop for the following research project and, ultimately, the creation of the E.A.D. This study, conducted in Japan using two groups—Japanese and Nigerians—was conducted in order to obtain insight into possible underlying issues of racism, and to see how an intercultural communication tool like the E.A.D. can be applied.

Confronting Underlying Issues of Racism

Japan

Neither a history of Japan's racial tensions with other countries, such as China and Korea, nor the current extreme right-wing views of Japan's nationalist groups will be included because such historical events, such as the Nanjing incident (Askew, 2002), or modern acts of xenophobia, such as the attack on a Chinese tour bus (Jize, 2010), would not accurately depict Japan's current stance with regards to immigration and cultural diversity.

However, in order to obtain a glimpse into this current state of mind, 27 adult Japanese male and 23 adult Japanese females currently living in Japan were randomly chosen to participate in a brief survey. All participants were approached while in public, and were asked for two pieces of information: 1) their age, and 2) their immediate and honest response to one statement: "Say the first word that comes to mind when I say *Nigerian*" (the questions were asked in Japanese, but translated into English for this publication). Twenty-five (25) participants responded without hesitation, "怖い" ("Kowai,"), which is Japanese for *scary* or *I'm afraid*). Eighteen (18) of the female participants made facial and hand gestures to indicate their fear, and while at first not officially documented, seventeen (17) of the Japanese female participants, along with one (1) Japanese male participant, followed up their initial response with the word "やだ!"("Yada!"), which has many translations, but most commonly is used to express the sentiment, "I don't want [it/to do it]"); surprisingly, a large portion of the participants referred to Nigerians in Japan as "犯罪者" ("Hanzaisha")—criminals. Table 1 shows the frequency of the words Japanese participants used to describe their perception of Nigerians in Japan.

Table 1. Frequency of the words used by Japanese participants

Frequency of the Words	Japanese Male Participants (*n*=27)	Japanese Female Participant (*n*=23)	Total
怖い ("Kowai")	6	19	25
犯罪者" ("Hanzaisha")	21	4	25
やだ ("Yada") (*used in addition to the two words above)	1	17	18

Kovel (1984) explores models of white racial identity development, and pointed to some startling research: "The less aware subjects were of their White identity, the more likely they were to exhibit increased levels of racism" (p. 265). While I am not suggesting the Japanese should be compared to white Anglo-Saxon Americans, I do think there is a connection between the racial identity models and current racial beliefs with regards to a small number of immigrants inhabiting a country like Japan where there is one dominant race. Again, the point of this survey was not to implicate the Japanese in acts of racial profiling, but rather reveal the need to further cultural awareness, sensitivity, and acceptance on a global scale. One way this can be achieved is through cultural education, and training people to communicate effectively with people from different cultures.

Nigeria

After collecting the data from the Japanese participants, nineteen (19) adult Nigerian men and eleven (11) adult Nigerian woman currently living in Japan were asked for two similar pieces of information: 1) their age, and 2) their immediate and honest response to one phrase: "Say the first word that comes to mind when I say *Japanese people*" (Note: This study took place in October 2014, in Tokyo). Table 2 shows the frequency of the words Nigerian immigrants used to describe their perception of Japanese people: ignorant, close-minded, rude, and racist.

Table 2. Frequency of the words used by Nigerian participants

Frequency of the Words	Nigerian Male Participants (*n*=29)	Nigerian Female Participant (*n*=21)	Total
Ignorant	4	1	5
Close-minded	2	0	2
Rude	6	9	15
Racist	17	11	28

There are many race models, and while the following are labeled "white race models," I do not include "white" when I apply them to my research because I believe these models can be applied to all races. The most notable race models include Hardiman's (White) Racial Identity Model (1992); Helm's (White) Racial Identity Development Model (1995); and Rowe et al.'s (1994) (White) Racial Consciousness Model (Daniels, 2011). Kovel (1984) explores models of white racial identity development, and pointed to some startling research: "The less aware subjects were of their White identity, the more likely they were to exhibit increased levels of racism" (p. 265). Again, to be clear, while the Japanese should not be compared to white Anglo-Saxon Americans, I do believe, as Kovel (1984) stresses, that there is a connection between the racial identity models' stages of awareness and current racial beliefs with regards to immigrants inhabiting a country where there is one dominant race.

Again, the point of these surveys was neither to accuse the Japanese nor the Nigerian populations of racial profiling, but reveal the need to further cultural awareness, cultural sensitivity, and cultural acceptance on a global scale, and this can be achieved, in part, through effective intercultural communication.

Discussion of EAD in Terms of Race Models

Hardiman's (White) Racial Identity Model (1992); Helm's (White) Racial Identity Development Model (1995); and Rowe et al.'s (1994) (White) Racial Consciousness Model collectively aim for individual autonomy that brings forth a deep internalization of a nonracist identity, leading to a level of comfort with one's race and culture, and thereby being more accepting of others. In the next section, there will be a closer examination of the Describe, Interpret, and Evaluate (DIE), which is meant to "become aware of value judgments [and to] show the personal and cultural relativity of interpretations and evaluation" (Bennett, Bennett, and Stillings, 1977). The approach taken by the E.A.D. is in direct congruence with the goals listed in the above race models because it attempts to facilitate open communication among individuals from diverse racial and cultural backgrounds, uncover underlying racist or other prejudicial thoughts and beliefs, and accept others by creating a bridge between the differences that exist—a bridge of acknowledgement, acceptance, respect, and celebration. With this in mind, we will conclude with a detailed look at the E.A.D. and how it can be applied in a variety of educational, psychological, and other professional settings.

The E.A.D.

As stated earlier, the Describe, Interpret, and Evaluate (DIE) is one of the most common exercises used in intercultural training. The D.I.E. exercise asks participants to "describe, interpret, and evaluate" an ambiguous object or photograph (Bennett, Bennett, & Stillings, 1977). Finding the model and its acronym problematic, Nam & Condon (2010) suggested D.A.E. (Describe, Analyze, Evaluate), with "analyze" providing clearer directions for participants, compared to the previous term "interpret" (in other words, problem solving versus judging) (p. 84). However, when I applied these models to various situations—classrooms, teacher training

sessions, business and organization consultations, and psychological counseling sessions, I found that the participants/clients always struggled with *not* judging the pictures first. While the D.A.E. is more effective in its clarity, I found that by allowing participants to first evaluate a picture, they often expressed their true opinions about certain individuals or situations that were being displayed.

The E.A.D. is administered as follows: Before presenting the E.A.D. model to participants, explain that they are going to see an object, photograph or short video, or hear a scenario (e.g., a case study), and that the goal is to first evaluate or judge it, then analyze it, and finally describe it in the simplest of terms. I then show them a picture (or play the movie or read the scenario). One of the most common photographs I use is the following:

Sources (July 10, 2015): https://www.flickr.com/photos/cybrarian77/6284697172/sizes/o/ and http://www.thesociologicalcinema.com/blog/teaching-the-presentation-of-self-in-the-classroom

Interestingly enough, when I use this photograph and conduct the D.I.E. or the D.A.E., about 98% of the time no one states the obvious—that all the students are white. When I conduct the exercise using the E.A.D., not only do participant immediately realize that all the students are white, but racially charged adjectives, such as "privileged," become attached to the comments. This type of comment has led to incredibly honest discussions on race, power and privilege, and taking steps backward to then talk about analyses and descriptions opens the doors to further discussions and exercises that help begin to build (or in some cases repair) trust, respect, and open communication.

I began using more ambiguous or potentially controversial photographs, and decided to let them judge the photos first. I conducted two more research studies using the E.A.D. in two different settings within two different fields—education and psychology. The results were remarkable: Not only were racially charged comments made without censorship, but sexist and bigoted comments were openly made, as well. What followed was even more amazing: The individuals/groups began to openly discuss the roots of these comments, and worked to dispel them.

In order to measure its efficacy, in 2014, 180 university students in Japan (Japanese, Chinese, Korean, and Brazilian, ages 18 to 21 years old) were given the E.A.D. exercise as part of an English-language course. After completing the E.A.D. exercise, the students were given a survey to measure its effectiveness. Out of 180 students, 87% responded "Strongly Agree" when asked if

the E.A.D. helped them self-reflect and critically evaluate their personal beliefs and potential biases.

The E.A.D. has also proven to be effective in the field of psychology. Between 2013 and 2014, 20 Japanese, American, Canadian, and British clients who were between the ages of 29-52, and receiving regular, weekly psychological counseling, were also given the E.A.D. exercise. Out of 20 clients, 17 responded "Strongly Agree" when asked if the E.A.D. helped them self-reflect and critically evaluate their personal beliefs and potential biases.

Conclusion

Regardless of position or context, the E.A.D. intercultural communication exercise can help foster better relationships among clients, students and employees of varying cultural identities. If you are charged with improving work relations among your students or colleagues, or trying to help someone who is, and you suspect there is underlying racial tension or other prejudicial beliefs, there are many approaches you can take to confront these issues, and strategies to implement that will diffuse the situation. The goal is to confront prejudice head-on, and the E.A.D. accomplishes this goal by not asking participants to objectively describe what they see first, but instead, evaluate what they see; in other words, immediately answer the question, "How do I feel about what I see" (Nam & Condon, 2010, p. 85). By moving backwards through the D.I.E./D.A.E. process, people are able to move forward, confronting underlying racism, sexism or other issues that may be causing undue hardship and stress in the home, classroom or workplace. The goals for each and every session you use the E.A.D. should be to help those participating improve their self-awareness, cultural sensitivity, and effective intercultural communication.

The truth is that racism and other prejudices are a part of every society, and unfortunately will be for quite some time. It should come as no surprise to anyone, for it is embedded in who we are as racial and cultural beings, as Allport (1954) notes:

> Everywhere on earth we find a condition of separateness among groups. People mate with their own kind. They eat, play, reside in homogeneous clusters. They visit with their own kind, and prefer to worship together. Much of this automatic cohesion is due to nothing more than convenience. There is no need to turn to out-groups for companionship. With plenty of people at hand to choose from, why create for ourselves the trouble of adjusting to new languages, new food, new cultures, or to the people of a different educational level? (p. 17)

Even though this observation was made over 60 years ago, this stark reality can still be applied to many cultural groups and communities today, and because of this, new research on race will continue to grow. Therefore, this new body of research, as well as new race models that may form, coupled with a focus on intercultural communication, would allow for further in-depth studies using the E.A.D. A longitudinal study would also help to solidify the efficacy of the E.A.D. in more fields, such as politics and law, but so far its use has proven to be an effective tool to assist with opening the doors of communication, and uncovering the underlying issues of racism and other prejudices that may be blocking them.

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A Model of Small-Group Problem-Based Learning In Pharmacy Education: Teaching in the Clinical Environment

Jeerisuda Khumsikiew, Sisira Donsamak, and Manit Saeteaw

Abstract

Problem-based Learning (PBL) is an alternate method of instruction that incorporates basic elements of cognitive learning theory. Colleges of pharmacy use PBL to aid anticipated learning outcomes and practice competencies for pharmacy student. The purpose of this study were to implement and evaluate a model of small group PBL for 5th year pharmacy students in the clinical environment that facilitated by pharmacy instructors. A PBL model was implemented in 1-day periods each week in total of 15 weeks at clinical practice sites. PBL activities consisted of providing pharmaceutical care service, collecting patients based clinical data, evaluation therapeutic regimens, developing SOAP note, peer feedback and case wrap-up sessions. In data collection, 36 students who had participated model completed a 17-items questionnaire using 5-point Likert scale (Cronbach's Alpha is 0.96) about their pharmacy student competencies at before and after finished course. They also completed 11-items questionnaire using 5-point Likert scale (Cronbach's Alpha is 0.87) about their satisfaction. Data of pharmacy student competencies and satisfaction were analyzed by paired sample t-test and descriptive statistics in respectively.

From the result of this study indicated that pharmacy student's competencies have been increased through PBL course and also statistical significant ($P < 0.05$) have found in every items mainly in clinical skills regarding apply didactic knowledge to direct patients care activities such as identifying, prioritization, solving therapy-drug related problem as well as clinical communication with patients or other members of interdisciplinary team. Moreover, in the part of satisfaction found that all of questions were scored range from high to highest level of mean score and most of modes were 4. Overall concluded that the PBL model enhances pharmacy student competencies and students were satisfied with PBL course.

Keywords: Pharmacy education; problem-based learning; clinical environment.

Introduction

Problem-based Learning (PBL) is an alternate method of instruction that incorporates basic elements of cognitive learning theory. The innovative instruction strategy of PBL is student-centered approach that empowers self directed learning through problem solving skill development in real world practice situations (Savery, 2006).

PBL has been increasingly and wildly used in pharmacy education since year 2000 which the standards for curriculum of ACPE (The Accreditation Council for Pharmacy Education) has been published and indicated that "the educational process should promote lifelong learning through the emphasis on active, self-directed learning and the curricula should include teaching strategies to ensure the adeptness of critical thinking and problem-solving" (American Council on Pharmaceutical Education, 2000, pp. 52-53). Moreover, The ACCP (American College of Clinical Pharmacy) also suggests that pharmacy educators need to place more emphasis on preparing students for problem solving, critical thinking, ethics, communication and self-directed learning. Because of expanding the scope of pharmacy practice, Pharmacists will be involved in expanded patient care responsibilities. The pharmacists' role in today's health care system requires greater problem-solving capabilities, effective thinking abilities, sound decision making skills, and effective communication skills (ACCP, 2000, pp. 991-1020).

To comply with these suggestions, many schools and colleges of pharmacy use PBL to aid anticipated learning outcomes and practice competencies for their pharmacy students. Students are acquired and applied knowledge while developing problem-solving, critical-thinking, and decision-making skills (Culbertson, Kale, & Jarvi, 1997, pp. 18-25).

PBL has been used in pharmaceutical education courses, and numerous published reports describe the resulting experiences with this educational method. (Culbertson, Kale & Jarvi, 1997, pp. 19–26) Several studies showed that positive impacts of PBL on the learning behavior, knowledge, skill and attitude of students. (Hamoudi, Nagavi, & Al-Azzawi, 2010, pp. 206–219) The results of the current meta-analysis indicate that the PBL curriculum seems to improve the academic performance of pharmacy students when compared to the traditional method of instruction (Galvao, Silva, Neiva, Ribeiro & Pereira, 2014, pp. 1-7).

The purpose of this study were to implement and evaluate a model of small group PBL that incorporate to the course of the special problems in pharmacy for 5th year pharmacy students in the clinical environment that facilitated by pharmacy instructor.

Literature Review

Overview: definition, characteristics, effectiveness of PBL

Problem-based learning (PBL) represents a major development and change in educational practice that continues to have a large impact across subjects and multiple disciplines worldwide. PBL has been used successfully for over 30 years and endorsed by a wide variety of national and international organizations such as the medical education/medical colleges (Muller, 1984), (Walton & Matthews, 1989: pp. 542-558.) the World Health Organization (WHO, 1993) the nurse education (English National Board, 1994) as well as the pharmacy education/pharmacy colleges (Ross, Crabtree, Theilman, Ross, Cleary, & Byrd, 2007).

In the literature, PBL has been defined and described in many ways. PBL is used to refer to many contextualized approaches to instruction sharing that much of the learning and teaching is anchored in concrete problems (Evenson & Hmelo, 2000). This focus on concrete problems initiating the learning process is central in most definitions of PBL. Barrows, a pioneer of PBL,

define the concept of PBL as "the learning that results from the process of working toward the understanding or resolution of a problem. The problem is encountered first in the learning process and serves as a focus or stimulus for the application of problem solving or reasoning skills, as well as for the search for or study of information or knowledge needed to understand the mechanisms responsible for the problem and how it might be resolved" (Barrows, 1986, pp. 481-486).

A much-quoted definition is the one given by Albanese and Mitchell (Albanese & Mitchell, 1993, pp. 52-81): "PBL at its most fundamental level is an instructional method characterized by the use of patient problems as a context for students to learn problem-solving skills and acquire knowledge about the basic and clinical sciences". Vernon en Blake (Vernon& Blake, 1993, pp. 550-563) define PBL by its instructional design components, students' cognitive processes and teacher's role: "a method of learning (or teaching) that emphasizes (1) the study of clinical cases, either real or hypothetical, (2) small discussion groups, (3) collaborative independent study, (4) hypothetico-deductive reasoning, and (5) a style of faculty direction that concentrates on group progress rather than imparting information."

In general, PBL is an instructional (and curricular) learner-centered approach that empowers learners to integrate theory and practice, apply knowledge and skills to develop a viable solution to a defined problem (Savery, 2006, pp. 9-20).

Six essential elements of PBL consisted of (Barrows, 1996, pp. 3-13):

(1) student-centered, (2) small student groups-environment, (3) tutor as a facilitator or guide, (4) authentic problems are primarily encountered in the learning sequence, before any preparation or study has occurred, (5) the problems encountered are used as a tool to knowledge acquisition and the problem-solving skills necessary to eventually solve the problem, and (6) new information needs to be acquired through self-directed learning.

Positive effects of PBL on student learning has been shown in several previous studies that associated with optimal learning performance, particularly in the area of knowledge retention; integration of basic science knowledge to the solutions of clinical problems; self-directed learning skills, and increased intrinsic interest in subject matter (Major & Palmer, 2001, pp. 4-9). Similar with one of studies in an East Asian context where is known for its reliance on traditional approaches to teaching and learning, the statistical analyses suggest that PBL can exert a positive impact on instructional effectiveness especially in 3 dimensions of student competency including action-directed learning, student engagement, assessment and feedback (Hallinger & Lu, 2011, pp. 267-285). Corresponding with the existing evidence of using PBL in pharmacy curriculum that it's seems to improve the academic performance of pharmacy students when compared to the traditional method of instruction (Galvao, Silva, Neiva, Ribeiro, & Pereira, 2014).

Design of Small-Group Problem-Based Learning model in the course of Special Problem in Pharmacy Practice

Course description

This is the professional elective course in 3 credit hours offered to 5th year pharmacy students. The course is designed to allow students to apply didactic knowledge to direct patient care activities and practice theirs pharmacy knowledge in practice sites. Students will apply their knowledge of pathophysiology, pharmacology, pharmacokinetics and pharmacotherapy to optimize patient care in a variety of specialty settings. Students will concentrate on patient specific pharmacotherapy, evidence based medicine, medication use evaluation and effective communication with patients and healthcare professionals.

Course Objectives

Upon completion of this course, students will be able to:

- Review patient profile and clinical data gathering from patients and patients medical record such as OPD card, IPD chart
- Design an appropriate treatment plan and evidence-based therapeutics regimens for individualized patients
    - Specify therapeutic goals for individualized patients incorporating the principles of evidence-based medicine that integrate patient-specific data, disease and medication-specific information, ethics, and quality of life considerations
    - Design a patient-centered regimen that meets the evidence-based therapeutic goals established for a patient; integrates patient-specific information, disease and drug information, ethical issues and quality of life issues; and considers pharmacoeconomic principles
- Design a patient-centered, evidenced-based monitoring plans
    - Specify efficacy monitoring parameters for a therapeutic regimen that effectively evaluates achievement of the patient-specific goals
    - Specify toxicity monitoring parameters for a therapeutic regimen that adverse effects may be occurred
- Recommend or communicate evidence-based therapeutic regimen and corresponding appropriated monitoring plan to other members of the interdisciplinary team and patients in a way that is systematic, logical, accurate, timely, and secures consensus from the team and patient.
- Practice communication skill through providing counseling to patients and caregivers, including information on medication therapy, adverse effects, compliance, appropriate use, handling, and medication administration
- Refer patients to an appropriate health care provider when they have health care needs that cannot be met by the pharmacist based on the patient's acuity and the presenting problem
- Devise a plan for follow-up for a referred patient.

Educational Environment

A PBL model was implemented in 1-day periods each week in total of 15 weeks for elective course of special problem in pharmacy practice in order to maintain compliance with the accreditation standard.

Strategies to promote student learning outcome consisted of lecture based teaching and problem based learning in clinical practice sites with a teacher who was a facilitator when they were practice.

In lecture based teaching, clinical topic consisted of how to data gathering; tip and trick for SOAP, introduction to medication use process and medication evaluation in oncology, psychiatric and community pharmacy.

In clinical practice sites rotations, students would have the opportunity to provide clinical pharmacy services by randomly assigned 3 practice sites per student. Clinical practice sites including acute care in internal medicine ward, oncology ward, psychiatric ward and community pharmacy care in community pharmacy. Turning rotation to other clinical practice sites has been performed every 3 weeks then student have a case presentation with teacher at the faculty.

The following is a list of activities that are representative of pharmacy student's responsibilities during the rotation including internal medicine ward and community pharmacy.

In internal medicine ward:

- Pharmacists ward rounds with preceptor and teacher
- Providing pharmaceutical care based on patients' needs by identifying and resolving problems in individualized patients
    - Review patient profile and clinical data gathering from patients and patients medical record such as OPD card, IPD chart
    - Review of laboratory data to monitor for appropriate dosing of drug therapy
    - Evaluation of all medication regimens for appropriateness and cost-effectiveness
    - Identification of and resolution of any drug related problems
    - Proactive involvement in selecting, modifying and monitoring drug therapy
    - Provision of medication information to interdisciplinary team such as physicians, nurses, and patients
    - Monitor for and report Adverse Drug Reactions
- Record and report pharmacist SOAP note for individualized patients
- Discussions with the preceptor and teacher about drug related problems and its solutions.

In community pharmacy:

- Providing pharmaceutical care based on patients' needs by identifying and resolving problems in individualized patients
    - Clinical data gathering from patients
    - Differential diagnosis based on patient's presenting signs and symptoms
    - Design medication regimens for appropriateness and cost-effectiveness
    - Providing medication information about efficacy monitoring parameter and toxicity monitoring parameter to patients
    - Advocating lifestyle changes that can improve the outcomes of medicinal therapy
    - Monitor for and report Adverse Drug Reactions
- Record and report pharmacist SOAP note for individualized patients
- Discussions with the preceptor and teacher about drug related problems and its solutions.

Method

This research was quasi-experimental study and one group pretest-posttest design aims to study effects of a model of small-group problem-based learning in elective course of special problem in pharmacy practice for 5th year pharmacy students.

A PBL model was implemented in 1-day periods each week in total of 15 weeks for elective course of special problem in pharmacy. Strategies to promote student learning outcome consisted of lecture based teaching and problem based learning in clinical practice sites with a teacher who was a facilitator when they were practice. In clinical practice sites rotations, students would have the opportunity to provide clinical pharmacy services by randomly assigned 3 practice sites per student. Students would be rotated in clinical practice sites every 3 weeks after that student have a case presentation with teacher at the faculty.

Outcome has been evaluated at before and after PBL model implementation in 2 domains including pharmacy student's competencies and satisfaction.

Sample size was 36 students who registered in elective course of special problem in pharmacy practice. Students were divided into 7 groups, consisted of 5 students per group.

In data collection, 36 students who had participated in the model completed a 17-items self-assessment questionnaire using 5-point Likert scale (Cronbach's Alpha is 0.96) about their pharmacy student competencies. In addition, they also completed 11-items questionnaire using 5-point Likert scale (Cronbach's Alpha is 0.87) about their satisfaction.

The inferential statistics (Pair t-test) was used to compare mean score between before and after finished course in the part of student's competencies. Descriptive statistic such as mean score was used to describe student's satisfaction in various aspects. Rating scales would be scaled to have equal intervals.

Table 1. Interpretation of mean score

Rang of mean score	Meaning
4.21 - 5.00	Hightest
3.41 - 4.20	High
2.61 - 3.40	Medium
1.81 - 2.60	Low
1.00 - 1.80	Lowest

Results

Table 2 was shown demographic data of sample size which consisted of 36 students who registered in elective course of special problem in pharmacy practice. There were 8 male (22.2%) and 28 female (77.8%). Mean age and Grade Point Average (GPA) of them were 22.58±1.02 and 3.18±0.48 in respectively.

Table 2. Demographic data of respondents

Characteristics	Students
Sex	
Male	8 (22.2%)
Female	28 (77.8%)
Age (years)	
Mean ± SD	22.58±1.02
Grade Point Average	
Mean ± SD	3.18±0.48

Table 2 was shown pharmacy student’s competency at before and after 15 weeks of PBL model implementation.

Table 3. Self assessment rating score in pharmacy student's competency

Items	Before		After		Mean Differences	P value
	Mean	SD	Mean	SD		
1. Provide pharmaceutical care according to Good Pharmacy Practice concept.	2.44	0.88	3.50	0.77	1.06	< 0.05
2. Review patient profile and clinical data gathering from patients and patient’s medical record such as OPD card, IPD chart.	2.22	0.64	3.42	0.69	1.20	< 0.05

Items	Before		After		Mean Differences	P value
	Mean	SD	Mean	SD		
3. Recommend individualized lifestyle modifications that can improve the outcomes of medicinal therapy.	2.22	0.48	3.47	0.56	1.25	< 0.05
4. Identify and refer patients who met referral criteria to an appropriate health care provider.	2.31	0.75	3.58	0.55	1.27	< 0.05
5. Design an appropriate pharmacologic regimens and non- pharmacologic treatment regimens for individualized patients.	2.31	0.89	3.69	0.52	1.38	< 0.05
6. Apply didactic knowledge including diseases and pharmacotherapy to direct patient care activities.	2.39	0.77	3.64	0.64	1.25	< 0.05
7. Initial assessment of disease severity in individualized patients.	2.31	0.75	3.69	0.58	1.38	< 0.05
8. Evaluation of all medication regimens in 4 domains including appropriate indication, efficacy, safety and cost in individualized patients.	2.31	0.75	3.72	0.61	1.41	< 0.05
9. Interpret and analyze medical patient's medical information for develop pharmaceutical care plan.	2.36	0.80	3.67	0.79	1.31	< 0.05
10. Identify risk factors and the underlying causes in the development of patient's diseases.	2.47	0.81	3.64	0.80	1.17	< 0.05
11. Identify patient's medical problem list.	2.28	0.85	3.44	0.61	1.16	< 0.05
12. Prioritize patient's problem list based on urgency and severity of diseases.	2.33	0.89	3.61	0.77	1.28	< 0.05
13. Identify patient's drug related problem.	2.25	0.87	3.36	0.68	1.11	< 0.05
14. Solve patient's drug related problem in individualized patients.	2.28	0.85	3.42	0.81	1.14	< 0.05
15. Communicate appropriated evidence-based therapeutic regimen through pharmacist note on medical record to other members of the interdisciplinary team such as physician and nurse.	2.14	0.83	3.50	0.77	1.36	< 0.05
16. Encourage patient's medication compliance.	2.31	0.82	3.42	0.65	1.11	< 0.05
17. Design a patient-centered, evidenced-based monitoring plan including efficacy monitoring parameters and toxicity monitoring parameters.	2.39	0.80	3.53	0.65	1.14	< 0.05

From table 3 shown that student's competencies have been increased through PBL model in all items evaluation and also statistical significant ($P < 0.05$) have found in every items including providing of pharmaceutical care according to Good Pharmacy Practice concept, recommend individualized lifestyle modifications, clinical data gathering from patients and patient's medical record, identify patients who met referral criteria to an appropriate health care provider, designing an appropriate pharmacologic regimens and non-pharmacologic treatment regimens, application

of didactic knowledge to direct patient care activities, initial assessment of disease severity, evaluation of all medication regimens, interpretation and analyze medical patient's medical information for develop pharmaceutical care plan, identify risk factors for diseases progression, identify patient's medical problem list, prioritization of patient's problem list based on urgency and severity of diseases, identify patient's drug related problem, solve patient's drug related problem in individualized patients, communicate appropriated evidence-based therapeutic regimen through pharmacist note, encourage patient's medication compliance, designing a patient-centered, evidenced-based monitoring plan for individualized patients.

Table 4 showed student's satisfaction on various aspects after 15 weeks of PBL model implementation.

Table 4. Student's satisfaction

Issues	Mean	SD	Mode
1. Satisfied with the role of teacher who works as their facilitators.	4.22	0.54	4
2. Satisfied with student's role that must be self direct learning.	3.64	0.68	3
3. Satisfied with student's activities in PBL model.	4.00	0.79	4
4. Satisfied with an interesting PBL case which teacher selected.	4.03	0.70	4
5. Satisfied with PBL case which led to knowledge application in vertical and horizontal.	3.94	0.71	4
6. Satisfied with time course.	3.53	0.70	4
7. Satisfied with chance to independently pharmaceutical practice.	3.89	0.82	4
8. Satisfied with practice site.	3.67	0.83	3
9. Satisfied with the evaluation of this course.	3.75	0.84	4
10. Satisfied with overall quality of teaching and learning.	4.08	0.60	4

From table 4 shown thatthe most of students were satisfied with PBL model in various aspects. All of questions were scored range from high to highest level of mean score (3.41 - 5.00) and most of modes were 4.Students satisfied with the role of teacher who works as their facilitators in highest level of mean score followed by high level of mean score including satisfied with overall quality of teaching and learning, an interesting PBL case which teacher selected, activities in PBL model, chance to independently pharmaceutical practice and the evaluation of this course in respectively. However, there were 2 issues that modes were 3 including satisfaction with student's role that must be self direct learning and appropriate of practice site.

Discussion

Pharmacy educators will play a significant role in developing the knowledge, skills, and abilities needed to practice pharmaceutical care. Curriculum modifications and various instructional strategies will have to be considered to facilitate the learning outcomes of pharmacy students needed to practice pharmaceutical care. One such instructional strategy and/or curriculum model is Problem-based Learning (PBL) (Fisher, 1994, pp. 183-189).

The purpose of this study were to implement and evaluate a model of small group PBL that incorporate to the course of the special problems in pharmacy for 5th year pharmacy students in the clinical environment that facilitated by pharmacy instructor.PBL is an important part of the curriculum that integrates content and prepares students to provide patient-centered care, as indicated in the Blueprint for Pharmacy, and addressed by WHO patient safety curriculum guide. Moreover, PBL in the clinical environment give students the opportunity to apply their knowledge and skills with problem and case based in real world practice. Learning environment is one in which the students feel they are freely able to express their thoughts and ideas (WHO, 2011; Blueprint for Pharmacy, 2008).

The small group instructional method has multiple benefits. Active small group discussion encourages application, analysis, synthesis, and evaluation of facts and concepts. This process is essential for developing competence in clinical reasoning and critical thinking. Working in small groups allows students to take an active role in their own education. Students learn facts and concepts best when they use them to solve problems. Small group teaching with mixed levels of learners also offers the opportunity to set expectations of learners at all levels and demonstrate expectations for progressive competence in the continuum of medical education (Dennick, Exley, 1998, pp. 111-115).

PBL small group sessions in clinical environment can also complement the information presented in lectures by allowing students time to ask questions in a non-threatening environment and to think critically. This allows the students to detect and correct errors (their own, and sometimes those of the facilitator) and also offers students opportunities to problem solve, make clinical decisions, and practice clinical skills, especially communication skills. These are also useful in promoting student reflection, independence, and life-long learning (White & Manfred, 2010).

As pharmacy practice incorporates a greater patient care component, pharmacists will be held responsible for identifying and solving higher order clinical problems or encounter patient care problems that will require critical thinking skills and precise decision making abilities. Pharmacists will be involved in the clinical treatment of patients (pharmaceutical care) that requires more detailed communication with patients and health care providers. This expanded professional interaction will require pharmacists to utilize effective problem solving skills.

From this study indicated that pharmacy student's competencies have been increased through PBL course mainly in clinical skills regarding apply didactic knowledge to direct patients care activities such as identifying, prioritization, solving therapy-drug related problem as well as clinical communication with patients or other members of interdisciplinary team. Consistent with the study of the potential for problem-based learning in pharmacy education, found that practice competencies of pharmacy students can be increased via PBL course.(Fisher, 1994) As same as the result from meta-analysis of problem-based learning in pharmaceutical education which found that pharmacy student’s knowledge was improved by the PBL method. PBL students performed better on midterm examinations (odds ratio [OR]=1.46;95%CI : 1.16,1.89) and final examinations (OR =1.60; 95%CI:1.06,2.43) compared with students in the traditional learning groups. However, no difference was found between the groups in the subjective evaluations. (Galvao, Silva, Neiva, Ribeiro, & Pereira, 2014).

Moreover, the recent of meta-analyses comparing PBL to conventional classrooms indicated that PBL was superior when it comes to long-term retention, skill development and satisfaction of students and teachers, while traditional approaches were more effective for short-term retention as measured by standardized board exams.(Strobel & van Barneveld, 2009, pp. 44-58) In pharmacy and medical education of Thailand context, the one group pretest-posttest design which study on PBL effectiveness found that PBL method can also increase student's competencies,

practical skills, self direct learning skill as well as lifelong learning skills. (Chuangchum, Pholchan, Nopkesorn, & Pannarunothai, 2011, pp. 34-40).

Another advantage of this PBL model is that teacher works as facilitators of discussion rather than an instructor. The facilitator's primary function is to allowing students to struggle with a problem, providing guidance, reinforcing what is right, correcting errors and give individualized feedback on student's performance (White, & Manfred, 2010). Students who are challenged by the teacher who works as facilitators are likely to progress their learning more rapidly (WHO, 2011).

In the part of satisfaction, althoughthe most of students were satisfied with PBL model in high to highest level of mean score (3.41 - 5.00) and most of modes were 4. But there were 2 issues that modes were 3 including satisfaction with their role that must be self direct learning and appropriate of practice site. From this result consistent with the study of Chuangchum, found that some students (35%) of the class were satisfied with traditional passive learning more than self direct learning in PBL method (Chuangchum, Pholchan, Nopkesorn, & Pannarunothai, 2011, pp. 34-40). Moreover, peer feedback process between teacher and students may be limited by limitation of area space in clinical practice sites.

Conclusion

From the result shown that pharmacy student's competencies have been increased through PBL model in all items evaluation and also statistical significant ($P < 0.05$) have found in every items including providing of pharmaceutical care according to Good Pharmacy Practice concept, recommend individualized lifestyle modifications, clinical data gathering from patients and patient's medical record, identify patients who met referral criteria to an appropriate health care provider, designing an appropriate pharmacologic regimens and non-pharmacologic treatment regimens, application of didactic knowledge to direct patient care activities, initial assessment of disease severity, evaluation of all medication regimens, interpretation and analyze medical patient's medical information for develop pharmaceutical care plan, identify risk factors for diseases progression, identify patient's medical problem list, prioritization of patient's problem list based on urgency and severity of diseases, identify patient's drug related problem, solve patient's drug related problem in individualized patients, communicate appropriated evidence-based therapeutic regimen through pharmacist note, encourage patient's medication compliance, designing a patient-centered, evidenced-based monitoring plan for individualized patients.

The most of students were satisfied with PBL model in various aspects. All of questions were scored range from high to highest level of mean score (3.41 - 5.00) and most of modes were 4. Students satisfied with the role of the teacher who works as their facilitators in highest level of mean score followed by high level of mean score including satisfied with overall quality of teaching and learning, an interesting PBL case which teacher selected, activities in PBL model, chance to independently pharmaceutical practice and the evaluation of this course in respectively.

The implications of integrate problem-based learning in pharmacy education have 2 aspects such as students and pharmacy educator who works as facilitators. It was implied that the implementation of PBL can enhanced the pharmacy students' competencies and that generally the students were satisfied with the PBL course. These positive outcomes occurred when the teacher works as a facilitator of discussion in clinical environment.

However, interpretation and generalization of the result should be done with the concern of some limitations. First, main data in this studywas "Subjective data" from student's self assessment rating scale which difficult to verify. However, the questionaire has passed reliability test already before used. Second, outcome assessment of this study has based on perceived skill or perceived

knowledge not based on actual knowledge which measure by score on examination. Third, this study was one group pretest-posttest design which have not had control group (such as traditional teaching group) for true comparison.

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Healthy Children, Healthy Minds: Creating a Brighter Future

Marcel Lebrun

Abstract

Children struggle with life today. Being children in the 21st century is both taxing and exciting and yet trying to cope with all of the technology and media that surrounds them. How do we as adults provide good models? Mindfulness, exercise, focus and attention, healthy living strategies need to play a role in shaping healthy children. Educators need to become well versed in strategies that both teach short and long term behaviors that will sustain healthy living and healthy minds. Children are the future and what kind of adult do we want running our countries and the world. The article provides many strategies for educators and parents to guide children in making choices that are both empowering and allow them the flexibility to be children.

Keywords: Exercise; children; mindfulness; media; focus; attention; healthy living.

Introduction

"Education makes better minds, and knowledge of the mind can make better education."

-Daniel Willingham

What can be more important to the future of humanity than helping our next generation develop their minds in healthy ways? This article provides a wakeup call for adults to focus our attention on what really matters—creating healthy children with healthy minds. We must cultivate healthy minds that are thoughtful, focused on their own and others' mental, physical and spiritual health, as well as the health of other living creatures and of the environment locally and around the world. We must purposefully cultivate minds that work to improve the welfare of all citizens of the world. At the same time, we all want to see children happily playing outdoors, making friends, eating healthy food, and having purpose, drive, motivation and exuding the qualities of honesty and integrity.

Instead we are currently bombarded with images of children who are dishonest and lack integrity—who are self-absorbed, who abuse their bodies. Somewhere during the past several decades there has been a complete shift in the moral, physical, intellectual and emotional capabilities of American children—or at least the ones portrayed in the popular culture.

The 21st century generation of children and adolescents is riddled with psychological, behavioral and socio-emotional problems and challenges. The Centers for Disease Control and Prevention reported that prescription drug use among our nation's children has risen steadily since 1999 and continues to rise. The amount of children and adolescents who are on medication, failing at school, and in our juvenile prison system is staggering. The increase in youth violence and incarceration has increased tenfold from the 1950-60's.

Researchers have been overwhelmed with the amount of data that has been collected on dysfunctional children and adolescents. Failing schools have contributed to failing students. The breakdown of the family and lack of parental support has contributed to growing numbers of depressed, suicidal, anxious, confused and fundamentally troubled youth. The educational and family systems have failed to keep up with the societal changes and failed to make accommodations to this ever-growing population of disenfranchised and disillusioned youth.

The purpose of this article is to regain the energy that is needed to meet the needs of all children -- in America and around the world. We need an ongoing campaign for all educators, adults and citizens to take responsibility to raise healthy, mindful children of the 21st century. The roles and responsibilities of the present adult generation are to provide safe and healthy environments for all children to develop healthy bodies and healthy minds, so they can contribute in positive ways to the global community. The models adults present to children make lasting impressions during the formative years. Children watch adult role models in the media, at home, in their communities and at school, and try to emulate them, thus influencing their own adult later behaviors.

What are adults showing children by their behaviors? Are adults inadvertently creating a generation of dysfunctional and egotistical youth that will only care about their own immediate needs and not an iota about anyone else? Will American adults create a generation of self-absorbed monsters who are focused only on their own survival, thus reverting back to the days of the cave man where only the strongest of the species survived? If this does occur in the next generation, America will be a place where its citizens attempt to survive in any way they can, and our environment may not survive.

People need to be motivated to stop that wave of dysfunction and future destruction. We adults can and must purposefully work with children to help them develop in healthy and mindful ways.

There are solutions and interventions available to direct children and youth in the right direction. The situation is not hopeless. The goal of this article is to help all educators and other adults who work with children to use these strategies to shape the minds of future generations, by modeling healthy behavior and encouraging and showing children how to be healthy and mindful, so that they can become positive, caring citizens of the world. The goal is to provide hands-on strategies that can help turn the tide of problematic, ultimately self-harming behavior that is happening in our culture to create a better place for us all to live.

Exercise: The Mind on the Move

One of the most important life lessons for children to learn for the health of their bodies and minds is the necessity of regular exercise. The evidence is consistent and powerful—Exercise is essential and one of the most important things all people can do for a healthy body and healthy brain and mind. How much and what kind of exercise is enough? How do we know? How can we encourage children to exercise enough for their body and brain development?

Nature of the issue and how it affects children

According to a report in *Medical News Today* "Less than 50% of primary school-aged boys and under 28% of girls reach the minimum levels of exercise necessary to maintain proper health" (Fitzgerald, 2013, paragraph 1). Child and adult obesity in the U.S. is reaching epidemic proportions. Our health care costs are rising as a result of the major physical illnesses that result.

In today's video and computer game and television and media culture, children have become more sedentary in their free time. Even in school, the amount of time devoted to physical activity in physical education classes or recess has declined as greater accountability measures in the form of state testing and local, state and federal mandates have increased. In an effort to increase instructional time, children have far less time for physical play.

In addition, sports budgets have been dismantled in schools. So what happens to children? They spend most of their days sitting down. They get almost no exercise each day. Their bodies are not strong. Their hearts are not strong. Their brains are not as strong as they could be. They are out of shape and at much greater risk of childhood obesity and other health problems such as diabetes, heart disease, and so on. Studies have found that type two diabetes in children increases their risk for heart and kidney disease and hypertension.

Alarming rates of memory issues and Attention Deficit Hyper Activity diagnoses have lead researchers to examine non-drug options to treatment. In a study conducted by Bucci and his colleagues and published in *Neuroscience* found that "Observations of ADHD children in Vermont summer camps revealed that athletes or team sports players tended to display a better response to behavioral interventions than children who were more sedentary" (Rattue, 2013).

Bucci stated in an interview in "Medical News Today" that:

"The implication is that exercising during development, as your brain is growing, is changing the brain in concert with normal developmental changes, resulting in your having more permanent wiring of the brain in support of things like learning and memory. It seems important to [exercise] early in life" (Rattue, 2013).

Exercise can help with stabilizing moods and may be useful for adolescents as they go through puberty to help with the mood swings they experience. Exercise has been shown to improve memory, improve mood, reduce stress, improve cognitive functioning, and improve overall health. It seems preposterous that something so crucial to our health and well-being and could be

so helpful in improving learning and memory is being shut out of our schools—ironically for the sake of learning.

Ongoing strategies to improve the issue/problem—How can we make this better?

The US Department of Agriculture recommends that children and adolescents between the ages of 6 and 17 every day should get an hour or more of "moderate or vigorous intensity aerobic physical activity…and as a part of their 60 or more minutes children and adolescents should include muscle-strengthening activities like climbing…at least 3 days a week." Also three days a week should include very vigorous activity for 60 minutes –like running (How much physical activity is needed, paragraph 3). The Centers for Disease Control and Prevention have the same guidelines and suggestions. They break down the nature of the activity into the following categories:

1. Aerobic activity (60 minutes each day)—they suggest that 3 days should be high intensity aerobic activity
2. Muscle strengthening (at least 3 days/week and can be part of the 60 minutes per week)—they suggest activities like push-ups, but weightlifting with weights, lunges, squats, sit ups, etc. are also helpful
3. Bone strengthening for 3 days a week as part of the 60 minutes per day. The CDC recommends activities like running or jump rope. Any jumping activities like trampoline play (be careful there are many accidents on trampolines, but children if careful enjoy and can get great exercise on them).

Children and adolescents may think they are working hard, but using a 10-point scale of "perceived exertion" may help. The goal is to try to get them to get their heart rates up to the point where they feel like they are working moderately hard (5-6 on a scale of 1-10 where 10 is the absolute maximum physical exertion a child can do) to very hard 8-9 for part of the time. That is, children need to learn to push themselves sometimes not only for good health of their brains and minds, but also to help them learn that they can work hard and feel a sense of accomplishment from hard work. This persistence and hard work will hopefully carry through to learning and challenging tasks of their minds.

In a rare example of a clinical trial involving exercise and its impact on children and their learning and development, Davis and her colleagues (2011) found that their "experimental data offer evidence that a vigorous after school aerobic exercise program improved executive function…among overweight children." They also found "changes in corresponding brain activation patterns [that provided] partial support of a benefit to mathematics performance." They, like many other neuroscientists support the notion that "executive function develops in childhood and is crucial for adaptive behavior and development" and exercise seems to improve this development.

Our ability to control our behavior and make decisions and problem solve is based on the development of our executive function areas of the cortex. This evidence supporting the key role of exercise in building executive function is incredibly important. We can make exercise fun and even build it into activities such as video-gaming that they really like to do. A study in the *Journal of Pediatrics* reported that there are some kinds of active video games that "may provide an alternative type of exercise to prevent stationary behavior in children" (Fitzgerald, 2013).

In this study on active video-gaming ("exer-gaming"), participants used an active video console and found that participants who engaged in this activity had an "increased energy expenditure equal to moderate intensity exercise" when playing "high intensity games like the 200m hurdles on Kinect Sports." Fitzgerald references an earlier study in Archives of Pediatrics and Adolescent

Medicine that showed that "children who played active video games burned over four times as many calories as when they were playing an inactive game." They also suggested that these high intensity games may end up encouraging children to be more active and receive the health benefits from moderate exercise.

What can you do right now?

Demand regular physical activity and *high quality physical education* in school. As many school districts are cutting physical education (PE) time and recess/play time, children are getting far less of the activity they need in a given week. As parents and teachers or other concerned community members, lobby for more time spent in PE courses and after-school intramural activities and organized athletics. Children should strive toward sixty minutes of physical activity per day. As most of their waking time is spent in schools, this is the logical place for this to happen.

Families that play together, stay together. Encourage families to exercise together during their time together. Schools can organize family fun times that are active hikes, walks, times to use the gym facilities. Just MOVE—often!

Top Tips for Teachers:

1. Be a good role model and exercise yourself and share with your students what you do. Exercise with them!
2. Encourage students to be active and get 60 minutes of cardiovascular activity every day—ask them to report back to you what they did and how hard they worked.
3. Build in some kind of movement into the classroom—either stretching breaks, jogging in place, opportunities to walk—even walk around the halls together or outside for even 5-10 minute breaks. Students will come back more energized and their minds more focused (especially if this becomes a regular part of the school day).

Attention: The Problem of Focus

The children growing up in the media generation believe they can multi-task effectively. They truly believe that they can listen to music, play video games while reading, talking on the phone, and doing other homework and watching television. Perhaps this is extreme, but the truth is, the brain cannot do two complex cognitive tasks at once. It can switch in such a way that it may seem like it can, but alas, it cannot. And in that time that it takes to switch attention from one cognitive task (fractions of a second) to another, accidents happen and problems occur and learning is disrupted.

As John Medina, author of "Brain Rules" wrote: "multitasking, when it comes to paying attention, is a myth. The brain naturally focuses on concepts sequentially, one at a time. At first that might sound confusing; at one level the brain does multitask. You can walk and talk at the same time. Your brain controls your heartbeat while you read a book. Pianists can play a piece with left hand and right hand simultaneously. Surely this is multitasking. But I am talking about the brain's ability to pay attention. It is the resource you forcibly deploy while trying to listen to a boring lecture at school. It is the activity that collapses as your brain wanders during a tedious presentation at work. This attentional ability is not capable of multitasking." Why is the myth of multi-tasking so problematic for children (and adults)? What are some of the learning issues associated with the myth of multi-tasking?

Nature of the Problem

Texting and even talking on the phone especially for the novice driver is so dangerous. The brain simply cannot refocus attention that quickly and completely, and for as those "expert drivers" problems happen in a fraction of a second. And because the novice driver's brain is not organized like the more "expert" driver (whose brain has automated many aspects of driving so these are not conscious), the novice driver must think through nearly every aspect of what he or she is doing consciously. Medina wrote:

A good example [of dangerous multi-tasking] is driving while talking on a cell phone. Until researchers started measuring the effects of cell-phone distractions under controlled conditions, nobody had any idea how profoundly they can impair a driver. It's like driving drunk. Recall that large fractions of a second are consumed every time the brain switches tasks. Cell-phone talkers are a half-second slower to hit the brakes in emergencies, slower to return to normal speed after an emergency, and more wild in their "following distance" behind the vehicle in front of them. In a half-second, a driver going 70 mph travels 51 feet. Given that 80 percent of crashes happen within three seconds of some kind of driver distraction, increasing your amount of task-switching increases your risk of an accident. More than 50 percent of the visual cues spotted by attentive drivers are missed by cell-phone talkers. Not surprisingly, they get in more wrecks than anyone except very drunk drivers.

The same is true for school and schoolwork—although not as immediately life threatening. Children and adolescents (and adults for that matter) who are learning new ideas, skills, concepts, and content must think carefully and consciously about these—that is, they must devote a great deal of cognitive effort to these. Any interference is problematic and disrupts attention on the process.

Turn off the competition. We've had many students say "but I MUST have the television on when I study…or music…it's just background noise." Here's the problem with this statement. If you need background noise get a sound machine or play white noise or a fan. You can also play music that does not have words—or music that you do not know well. However, once you know the music or have television with dialog, your brain will flip flop back and forth between the different verbal information—that which you are supposed to be "reading" and the words of the song or dialog on the television or the texts coming through or the emails. The brain will retain virtually nothing from the task that is cognitively more demanding (reading, writing, mathematics, problem solving or other school work) when multi-tasking with something that is less cognitively demanding (listening to music, watching television, texting, talking on the phone).

For effective and efficient work, the brain needs to eliminate opportunities for distraction. Can the brain handle any distraction? How much is too much? What about those with attention problems? How can we improve our attention? At what point are attention problems truly problems?

Brain Function: Selective Attention

To interact effectively with the people around you, your brain must constantly process large amounts of more or less complex information. However, it can only carry out a limited number of tasks at a time, so it needs to select the most relevant information, based on your needs at any given moment.(Brain Center America, 2013). Certain functions governed by the brain are fairly automatic and unconscious -- for example vital functions like breathing or highly developed skills such as competitive running. As a result, you don't have to specifically focus on the level of oxygen in your blood in order to activate your diaphragm and fill your lungs.

Other functions require constant supervision. When you are reading a text or sign it means a more or less conscious and sustained mental effort and attention. Your attention span varies depending on the type of information you're looking for, and it relies on the proper function of much of your brain. Exercising your attention span by performing a variety of specifically designed exercises promotes the proper functioning of many areas of the brain. (Brain Center America, 2013).

Your prefrontal cortex, located at the front of your brain, governs attention span and provides additional supervision; in other words, it determines what information is to be given priority and which cognitive resources are needed to analyze this information and eliminate any distractions. It does a wonderful automatic job of sorting and categorizing for you as to where you will need to focus your attention. Human beings are not natural multi-taskers; the brain functions at optimal level when it only does one thing at a time. Male and female alike, if you ask it to do two somewhat complicated tasks at the same time, your performance levels for each will be reduced by half. People whom we admire for their multitasking ability are actually high-performance individuals who can quickly and efficiently complete each of the tasks one after the other. (Brain Center America, 2013). Generally they have very efficient and high-speed brains. Often they are experts in one of the areas in which they are multi-tasking.

The ability to focus on some things at the expense of others is crucial for functioning in a complicated world. But studies show there can be a downside to this focus — too much attention to one thing may make us seemingly "blind" or "deaf" to other stimuli in the environment. We are curious and want to try to understand and hear everything that is happening at once. The brain tries very hard to take in what it can .Our brains recreate an internal map of the world we see through our eyes, mapping our visual field onto specific brain cells.

Humans and our primate relatives have the ability to pay attention to objects in the visual scene without looking at them directly (Farran et al., 2013). "Essentially, we 'see out of the corner of our eyes,' as the old saying goes. This ability helps us detect threats, and react quickly to avoid them, as when a car running a red light at high speed is approach from our side, (Mangun, 2013). Even though we can see from the corner of our eye we are not able to attend to all of the stimuli that are present within our personal bubble space, which is about 3-5 feet around us.

The problem of consciousness continues to be a subject of great debate in cognitive science. Synthesizing decades of research, The Conscious Brain written by Jesse Prinz advances a new theory of the psychological and neurophysiological correlates of conscious experience. Prinz's account of consciousness makes two main claims: first consciousness always arises at a particular stage of perceptual processing the intermediate level, and, second, consciousness depends on attention. Attention changes the flow of information allowing perceptual information to access memory systems. Neurobiologically this change in flow depends on synchronized neural firing. Neural synchrony is also implicated in the unity of consciousness and in the temporal duration of experience.

Prinz also explores the limits of consciousness. We have no direct experience of our thoughts, no experience of motor commands, and no experience of a conscious self. All consciousness is perceptual, and it functions to make perceptual information available to systems that allows for flexible behavior.

Do Television and Video Games Affect Attention?

Some experts have argued that watching too many fast-paced television programs and video games may actually increase the likelihood of attention problems. If the brain becomes accustomed to constant stimulation by rapidly changing visual effects, it may easily become impatient with tasks that require closer attention. Television also makes fewer demands on

attention than do reading, studying, or playing a game. Without enough of these more challenging activities, the brain may "get out of shape" (Human Diseases and Conditions, 2013). The brain will typically choose the path of least resistance or cognitive strain, and if given a steady diet of tasks that require little to no cognitive strain, it will be difficult to make the brain work hard on a more cognitively challenging task.

However, the reverse may be true. Children and adults with limited attention resources may be attracted to intense stimulation and therefore may be captured by television or video games. Less intense activities may not hold the focus of individuals with attention deficits. More research is needed to better understand this issue.

We don't pay attention to boring things. What we pay attention to is profoundly influenced by memory. Our previous experience predicts where we should pay attention. Culture matters too. Whether in school or in business, these differences can greatly affect how an audience perceives a given presentation.

We pay attention to things like emotions, threats and sex. Regardless of who you are, the brain pays a great deal of attention to these questions: Can I eat it? Will it eat me? Can I mate with it? Will it mate with me? Have I seen it before? The brain is not capable of multi-tasking. We can talk and breathe, but when it comes to higher level tasks, we just can't do it.

Driving while talking on a cell phone is like driving drunk. The brain is a sequential processor and large fractions of a second are consumed every time the brain switches tasks. This is why cell-phone talkers are a half-second slower to hit the brakes and get in more wrecks (Medina, 2012).

Workplaces and schools actually encourage this type of multi-tasking. Walk into any office and you'll see people sending e-mail, answering their phones, Instant Messaging, and on MySpace—all at the same time. Research shows your error rate goes up 50% and it takes you twice as long to do things (Medina, 2012). When you're always online you're always distracted. So the always online organization is the always unproductive organization.

Ongoing Strategies

There are a variety of strategies that can be used with students, employees and family members when it comes to attention and focus. Below you will find some suggestions. The list is not exhaustive and it is recommended that the correct strategy be chosen for the right individual.

There are nine types of adaptations for anyone who is experiencing attention problems. These adaptations can work in a school or professional work environment.

1. Size: Adapt the number of items that the learner/ worker is expected to learn or complete.
2. Input: Adapt the way the instruction or training is delivered to the learner.
3. Participation: Adapt the extent to which the learner/worker is actively involved in the task.
4. Time: Adapt the time allotted and allowed for learning, task completion and/or testing.
5. Difficulty: Adapt the skill level, problem type, or the rules on how the learner/worker may approach the work.
6. Alternate Goals: Adapt the goals or outcome expectations while using the same materials.
7. Level of Support: Increase the amount of personal assistance with a specific learner/ worker.
8. Output: Adapt how the learner/ worker can respond to instruction or training.
9. Substitute Curriculum-Content: Provide different instruction and materials to meet a learner/worker's individual goals (Indiana University, 2010).

There are a variety of general accommodations for students with attention/behavior problems. It is important to remember that not all of these accommodations or strategies will work for all students. The individual needs of each student need to be taken into consideration before the application of these strategies. This is but a short list of possibilities:

Literacy:

1. Second Set of books at home
2. Books on tape
3. Interactive CD reading programs
4. Hand held spell checker.

Writing:

1. Computers
2. Graph paper
3. Dictate responses
4. Pencil or pens with rubber grip
5. Form filling software
6. Key guards
7. Color coded notebooks
8. Give photocopied notes
9. Have student use highlighter
10. Outline of key points of presentation or lesson.

Groups:

1. Work in cooperative mixed ability groups
2. Peer Assistance pairings
3. Clear rules and expectations for group behavior
4. Assign job or specific responsibility
5. Headphones for privacy
6. Taped instructions
7. Buddy system
8. Five minute warning for transitions.

Presentations/ discussions/ Questioning:

1. Alternative methods of presentation (visual, videotape, graphs, maps, pictures)
2. Provide visual aids
3. Provide model of previous work or examples
4. Detail descriptions or checklist of project components
5. Place student near or in front of teacher or audience
6. Provide stimuli –reduced environments
7. Repeat question before answering
8. Provide time to process before answering questions.

When making accommodations for a child with attention issues it is imperative that the strategy matches the age level and learning level of the student. Being aware of these simple factors can accelerate behavior problems and power struggles. As a teacher one must use a variety of visual and auditory teaching techniques to stimulate interest and maintain focus. Teachers and parents must use close proximity control to assist the student in focusing on the directions and understanding the task that is being asked of them. If the adult wants to modify the child's

behavior one needs to catch the student being good and/or doing the right thing. Giving immediate praise or rewards will often shape behavior in way that allows the child to meet the expectations.

Sometimes children and young adults have attention challenges that go beyond those that are based on the environment. However, sometimes children have attention disorders that are not helped by basic interventions such as increasing mindfulness and meditation. Attention Disorders fall into 3 types: Attention Deficit Disorder, Attention Deficit Hyperactivity Disorder, and Not Otherwise Specified Attention Disorder. Students can exhibit Predominantly Inattentive Type, Predominantly Hyperactivity/Impulsive Type, and the combined type.

Effects of the disorder within the classroom can be seen in behavioral problems, becoming frustrated and aggressive, experiencing failure on tests and assignments. A very large impact of having an attention challenges is that it impairs social relations whereas the student struggles with social interactions because of the lack of social skills. These students are often disorganized and lose their materials frequently.

The effects of this disorder at home can be manifested by children not listening to their parents and waging in battles over the smallest detail. Both parties become argumentative over daily chores, roles and responsibilities. Often time there is frustration on both adult and child because the child is unable to complete even the simple tasks without supervision or support. Teachers and parents alike should be on the look-out for pervasive patterns of attention problems that cannot seem to be managed well by typical levels of support.

Three Tips for Teachers:

1. Remember that students don't pay attention to boring things—keep students engaged with interesting lessons and help them see the relevance of what they are learning and make connections as much as possible.
2. Encourage parents to set limits on children's interactions with television and other video games/screens and spend more time on cognitive tasks that are challenging without these distractions.
3. Make sure that drivers of all ages realize how dangerous it is to text, talk on the phone or engage in other cognitive tasks competing for attention and encourage them to avoid distracted driving.

Mindfulness, meditation, and sleep

One of the best strategies we can teach our children to improve their brains and minds as well as their safety, happiness, mental health and overall healthy development is the art of mindfulness. One strategy that can improve mindfulness is meditation, but mindfulness goes beyond just purposeful meditation. During meditation, the brain is still active, but quieted (at least for our consciousness) during sleep, and sleep is so important for brain and mind health.

The question is—how do mindfulness, meditation and sleep help children in their development? How important are they? How might building more mindfulness and meditation into a child's life help their developing brains and minds? How can we create healthy sleep patterns for children?

Nature of the issue and how it affects children

When children are young, they naturally function "in the moment." They tend not to focus on the past (partly because they do not have much of a past) or the future (perhaps because their abstract thinking, language and executive functioning centers are not as well developed). It is not until these areas of the brain become well-developed that our minds pull us out of the present moment

and focus our attention on the running language-laden monolog in our heads. This voice pulls us into thinking about the past or the future— neither of which we can change or control. We often dwell on the past or worry about the future—but we can do nothing to change the past and we cannot predict the future.

Mindfulness is paying close attention to what is happening and what one is experiencing in the present moment. Taking time to focus on what one is doing, eating, reading, saying, hearing, and so on. In mindfulness we are fully present in the present moment. The present moment is where we live and exist, yet our older adult (and even older child) brains are rarely focused there. When in the present moment, children can be naturally more mindful. A keen attention to the present is an essential part of mindfulness that can contribute to success in school and at home or on the playground or playing field. Children who are more mindful have an easier time in these spaces.

Flow is a concept that has been described and written extensively about by Mihály Csíkszentmihályi. When in a state of "flow" we are completely single-minded in focus with our positive energy focused on a particular task or experience. People experience a sense of joy and peace when in this state. Athletes discuss being in a state of flow when they lose track of time and are singularly focused on the sport they are playing. They are fully present in the moment without any distractions of anxieties or worries. People sometimes call this experience in athletics as "being in the zone." But the truth is, this experience can happen reading a book, doing a school project, giving a talk, eating a great meal, spending time with friends, meditating, etc.

For flow to be achieved, Csíkszentmihályi argues that there are generally two conditions:

1. Involvement in an activity with clearly set goals and progress and structure
2. Those doing the task receive clear and immediate feedback about their performance a good balance between one's perception of his/her skills/abilities and the task at hand—one must have confidence about his/her abilities (Csikszentmihalyi, Abuhamdeh, & Nakamura, 2005).

We can create opportunities for children to experience flow in their lives by helping them balance their abilities, confidence levels with activities they enjoy, are good at and for which they can get immediate feedback to improve their skills and performance. We hope that students can have these kinds of experiences in school and in school-related activities. And if they cannot experience flow in school, we hope that parents can find ways to help them achieve their flow experience in healthy ways through arts/music /dance or other experiences outside.

As Daniel Willingham argues in his book Why Don't Students Like School? "contrary to popular belief, the brain is not designed for thinking. It's designed to save you from having to think, because the brain is actually not very good at thinking." (p. 3). As we teach children to become more mindful, they can become more purposeful in their thinking—that is, they can become better able to direct and control their thinking.

The notion of mindfulness is the idea that we focus on our experience of reality as it exists in the present moment. That we pay close attention to our experiences and what is going on around us. We become keen observers of our emotional states and what our minds are doing. If you watch a very young child, he or she will tend to be very focused on what is going on at the present moment. This is why they will often ask questions about what is happening to them or what they notice "I'm hungry" or "What makes the car go?" or "Why do dogs pant?" or "This ice cream is delicious."

When they start to get older and more aware of past and future and their role in it, they start to focus more on what happened in the past or what might happen in the future. Children may start to become upset about events in the past or anxious or worried or excited about the future.

As adults we are guilty of this past and future focus too. Our brains are so busy thinking about what has happened or what might happen that they are seldom focused on what is currently happening. We all know those times when we are in a "zone" and so focused on the present moment (usually doing what we love, or times of high emotion, or intense pain).

As children age, we spend so much time encouraging them to focus on the future. With all this time focused on the past and future, it is no wonder that as children get older, they have greater difficulty paying full attention to what is happening now. If children are not paying full attention to what they are doing in the moment, they are at greater risk of accidents. They are also more likely to have difficulty paying attention to what is happening (or what they are supposed to be learning) in the classroom.

They have greater difficulty controlling their emotions and making good decisions. They may have sleep difficulties as well because they cannot shut their brains down enough to sleep. A tired mind has great difficulty focusing on the present moment. It is easily distracted. Sleep is essential for the brain and mind to function properly.

Tips for Healthy & Happy Mind

1. Meditation/Mindfulness

Research has shown the profound effects that meditation has on the mind, but how many people actually do it on a daily basis? When you meditate, you are giving your mind time to clear, reformat itself for all the new information that is going to be taken in the following day, or day ahead.

2. Media

The media is very centered on pain and negativity. This fuels pessimism, and ideally it's best to avoid subjecting the mind to it regularly. There is no point in being stressed or worried about something you have limited control over; it's a pointless waste of energy. Beware of brainwashing; all is not necessarily as it seems, and the media are great at exaggerating and bending the truth.

3. Surround yourself with people who give you opportunities to grow.

Friendships and relationships are based on love, and love is energy. When the frequencies change, you will find that particular friends and relationships may drop away, or you don't feel you have anything in common with them any longer. If you continue to hold on to relationships which no longer serve you, they sap your energy resources or distract you from focusing your mind. Don't be afraid to let go if you feel the time is right; you will find that new opportunities will arise as a result. You never know who that next amazing person/teacher/friend/lover/mentor is going to be!

4. Eat healthy

Eating healthy and staying hydrated are really important for brain function.

5. Spend your time doing something you LOVE! (And find some physical, cardio-vascular activity that you LOVE and do it regularly)

The most important thing of all is to ensure you spend time doing a hobby or activity you love. When we participate in doing something we love, we radiate so many positive emotions, all magnetizing out into the universe to bring you back more joy and happiness. So many people get stuck in a rut and lose focus on what is important and brings them pleasure. Find something you

love to do, and do it daily. Make time for it, and even better, make a career out of it! Life is supposed to be an enjoyable experience (Rushforth, 2012).

Healthy and mindful children will create a healthier society that will become more involved in the welfare, supervision and care of their neighbors locally and globally and the environment in which we all live. Presently the track we are on will result in future generations that are physically unhealthy with large portions of society fighting obesity, mentally unbalanced individuals who are unable to connect and develop social relationships and an increase in violence and aggression where the amount of murders and physical attacks upon others will become the norm. Gun violence will be the solution rather than negotiation, communication and problem solving. Is this what we really want for our children and grandchildren? Every adult who interacts with children must become a role model for healthy patterns or actions.

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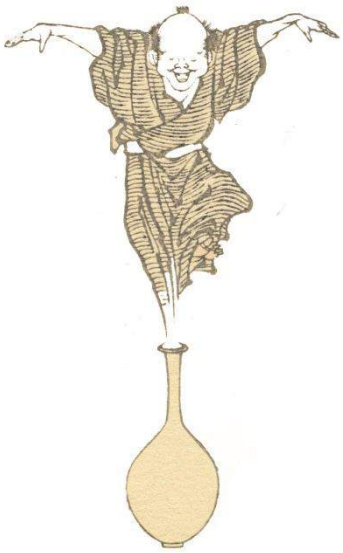

Students-Enthusiasts in Online Classes: Their Contribution To the Educational Process

Anna Toom

Abstract

In this work, the phenomenon of student enthusiasm was explored in a population of 47 students of Touro Graduate School of Education who took the author's online psychology course. The purpose of the study was to find how students-enthusiasts differ from classmates in their communication style(s) reflected in group discussions on the Discussion Board (DB). The research methodology included graphical and statistical analysis of students' discussions. It was found that, although the enthusiasts constituted a small part (6%) of the investigated population, their contribution to the virtual learning environment was the greatest – they were catalyzers of the educational process. Students-enthusiasts a) consolidated their group, transforming it from a disorganized mass without common interests to a team capable of collaboration; b) stimulated discussions by helping their classmates to develop "a sense of community"; c) unlike others, also competent as learners and computer users, the enthusiasts shared information with their less knowledgeable classmates concerning various aspects of the online study. Students-enthusiasts served as a model and support for their fellow learners and the instructor. The author concludes that such a contribution must be appreciated and maximally used in the virtual classroom (VC) with its specifics and communicational limitations.

Keywords:teaching/learning psychology online; virtual classroom; student enthusiasm; learning motivation; teaching motivation; communication styles.

Introduction

Students specializing in education today are the workers of tomorrow. What kind of teachers will the society receive? The question is not rhetorical. That professionalism and enthusiasm, which some instructors bring to school settings, may be observed already in their students' years. That's why the study of enthusiasm in students who are current or prospective school teachers is an important task for educational psychology.

This line of research received a new incentive in the present epoch of intensive development of information technologies and the web-based distance education programs. The investigations of enthusiasm in a classroom expanded to a virtual learning environment. In this work an attempt is made to study student enthusiasm in online asynchronous classes.

Literature review: Enthusiasm in the Classroom

The word *enthusiasm* comes from Greek *entousiasmos*, Late Latin *enthusiasmus,* and Middle Age French *enthusiasms* (Online Etymology Dictionary). It "originally referred to inspiration or possession by the presence of God"; in modern time, however, the word actually lost its original meaning, and is now understood rather as intense enjoyment and interest (Wikipedia).

In psychology, there is no unanimous understanding of enthusiasm. Some researchers consider it in the framework of motivational paradigm and define it as a strong motivation for achievement (Toom, 2013). Some others interpret it as an emotional condition (Frenzel, 2009). Still others see it also as expressive behavior (Rosenshine, 1970; Kunter et al., 2008). It is likely that we are dealing with a complicated phenomenon in which all major components of psychological functioning interact: motivational, emotional, cognitive, and behavioral. The physiological component is also involved – it is not by chance that the term "energy" appears in the descriptions of enthusiasm (Metcalfe & Game, 2006). In pedagogical practice, enthusiasm is typically associated with "a motivating, energetic, passionate, and dynamic teaching style" that "engages students to participate and stimulates them to explore" (Zhang, 2014). Enthusiasm is seen as a key ingredient of effective teaching.

Exploration of enthusiasm in the classroom began in the middle of the last century, if not earlier. By today, it has been validated that teacher enthusiasm promotes students' development and learning (Sanders & Gosenpud, 1986; Patrick at al., 2000; Wood, 2013, Zhang, 2014; Orosz et al., 2015). Students, who learned from enthusiastic teachers, had elevated cognitive functioning such as attention, memory, thinking, imagination, problem solving, a better comprehension of knowledge, and higher intrinsic learning motivation and vitality. Students of enthusiastic teachers get a chance to also become enthusiasts, so that, if they eventually pursue their careers in education, they will become highly desirable and valuable specialists in any school setting.

In the last two decades, the following research findings have been made about enthusiasm in the classroom. Two aspects of enthusiasm were found: enthusiasm for the subject/topic and enthusiasm for activity/teaching (Kunter et al., 2011). Enthusiasm as a mechanism for mediating relationships with students and stimulating positive learning outcomes was explored (Frenzel et al., 2009). An influence of student enthusiasm on teacher enthusiasm was detected: as in many other interactions, effects are reciprocal (Stenlund, 1995). Nonverbal expressiveness as the manifestation of an underlying teacher enthusiasm was explored (Kunter et al., 2008).Furthermore, programs were developed to train teachers to purposely express enthusiasm to attract the students' attention and facilitate their learning (Tauber et al., 2007). In the studies of instructional methodology, it was found that one of the important abilities of enthusiastic teachers

is their "descriptive and prescriptive feedback" to students' work in online classes (Parson, 2001). These are only some of representative and substantial findings.

Web-based distance education programs provided advanced and objective instruments for collecting empirical data and thus created great opportunities for various studies of the virtual learning environment. Asynchronous discussion forums in online classes became the special focus of attention. A series of experiments for investigating the role that the online professors might play in their students' learning was conducted by Australian scientists.

On large statistical samples, they showed how the quantity, timing, and nature of instructor's posts influenced students' participation in online discussions; the correlates of teacher enthusiasm in students' perceptions were identified (Mazzolini, 2002; Mazzolini & Madison, 2003; 2005). Other researchers found that the perceived presence of an instructor is even more important than the perceived presence of peers in students' satisfaction of online courses (Swan & Shih, 2005). The critical role of an online teacher as cheerleader or motivator as well as important issues of assessing a variety of teachers' and students' activities online has been discussed in the review of the literature regarding asynchronous discussion forums (Andersen, 2009).

Research Methodology

In this work, the student enthusiasm was explored in online psychology classes. The research was based on the assumption that enthusiasm is a stable characteristic of an individual which manifests itself in various social roles and activities that one has to perform. In an online classroom, the student enthusiasm can be identified in all aspects of the course work: in individual as well as collective studies done collaboratively with classmates. Our purpose was to explore how students-enthusiasts differed from the classmates in their manner of leading discussions on the DB. The author hypothesized that enthusiasm may influence students' communication style(s).

The Blackboard, a software platform for our virtual classroom, was used as an instrument of collecting data about discussions and discussants: all the students' posts submitted to the DB with their arrival time were recorded and archived in the system. The research methodology included a) statistical analysis of the students' posts on the discussion forums, b) topological (graphical) representation of the students' conversations on the topics of the course subject, c) analysis of the structure of group communications, and d) analysis of "Help me!" messages and responses.

Group discussions: content and requirements

Participation in the group discussions was one of the major activities required for the course. Five forums for asynchronous discussions were created on the DB. Each of them was devoted to a psychological or educational issue related to the course topic. The students were expected to respond to a question posted by the professor and exchange opinions about it with classmates. This activity was mandatory.

A typical question for the group discussion consisted of the following. The students were offered the game "Name me!" and asked to identify "*Which psychological functions this game can be helpful in developing?*" In this game, which is usually played at home, players sit in a circle and roll a ball to each other. Two-three year old kids, if necessary, may sit between an adult's legs. Before rolling the ball, each player looks at and says the name of the person to whom the ball is being rolled. If the name is said incorrectly, the player to whom the ball is being rolled should roll it back to one who made a mistake. If the name is said correctly, the game continues.

Requirements for each out of five course discussions included: 1. Timely submission: responses should be posted by a due date; 2. Sufficient quality: responses were expected to be substantial, supported by the student's personal educational experiences and/or the references found in e-libraries or e-data bases; 3. Sufficient quantity: at least two responses ought to be posted for each discussion by every student – one response to the professor and the other to any classmate; at least two references should be provided for each discussion forum by every student.

Participants and context

Participants were students of Touro Graduate School of Education (GSE) enrolled in the Education and Special Education degree and certificate program. Some of them had not previously taught, and some were already teaching and wished to increase their expertise. The students were assigned by the college registrar's office at random to groups of 20-25 people in which they learned together throughout the semester.

The study involved *47 graduate students*. All of them took the author's online psychology course *EdPs620-Child Development and Learning in Cultural Context*: 20 students – in the fall semester of 2012, and 30 students – in the fall semester of 2013. The author was the only course designer, developer, and instructor for her groups. 36 students from the investigated population had already taken online courses before at Touro College or other educational institutions and were well familiar with the Black Board platform. 11 online beginners went through a preliminary training to receive some technology skills necessary to study online. All students of the EdPs620 online course had the skills to use basic functions of a word processor such as Word.

Prior to this research, all participants' data were used for the author's other study – of learning motivation – in which highly motivated individuals or enthusiasts were identified and their distinguishing characteristics were found. According to the results, there were three enthusiasts in the A-group and no enthusiasts in the B-group (Toom, 2013). The students-enthusiasts differed from others in their *learning style*: they were usually ahead of the due dates for their course work and exceed all requirements of the course. Specifically, their homework was always complete, correct, and supported by references; the discussions led by them were the most informative and interesting in the group; their final research paper and bibliography were very rich in content, so that, no revision was needed. The students-enthusiasts differed from classmates in quantity (intensity) of their *learning motivation*. In addition, they performed optional activities as well as mandatory, that is, they differed from classmates in quality of their *learning motivation* as well. The students-enthusiasts had the highest motivation in the group and, unlike others, tended to give a higher priority to knowledge and curiosity than to grades.

Data Representation and Analysis

Since the Discussion Board was the only place in our online course where students could communicate, the analysis of group discussions appeared to be especially important for identification and understanding the distinguishing features of students-enthusiasts. Statistical analysis was done for quantitative evaluation of discussions, and the graphical representation of data was devised as the most meaningful visualized form of students' communication styles.

Statistical analysis of group discussions

In Table 1, main data covering discussions in both groups is provided, which allows for an easier comparison.

From the information offered in the Table 1 follows that, firstly, in the A-group, on average, each student submitted twice as many posts (4.7) than in the B-group (2.6). Secondly, in the A group the number of participants remained constant within the semester, which means that nobody dropped the course. While in the B-group three students stopped attending before the course completion. This data indicates that the A-group that had enthusiasts among participants, functioned differently; it had peculiar dynamics. (At least, it is one of the most natural explanations.)

Table 1. Post Statistics per Student and per Group Basis

	The A-group			The B-group		
Forum # *(f)*	Number of posts	Number of students	(x_f)	Number of posts	Number of students	(y_f)
1	94	20	4.7	71	25	2.8
2	102	20	5.1	62	25	2.5
3	87	20	4.4	63	24	2.6
4	91	20	4.6	54	22	2.5.
5	93	20	4.7	55	22	2.5
Average			$\bar{x}$= 4.7			$\bar{y}$ = 2.6

Note: x_f= average number of posts per student in the A-group; y_f= such value in the B-group; $\bar{x}$= average number of posts per student per forum in the A-group; $\bar{y}$ = such value in the B-group; x_f= average number of posts per student; y_f = average number of posts per student per forum; f = ID of the forum.

In order to better understand how the A-group was different, we analyzed its discussion forums in more detail. Discussions on the branches[1] of the forums with enthusiasts were analyzed in comparison with discussions on the branches where students-enthusiasts did not participate. This data is provided in the Table 2.

Table 2. A-group: Comparative Analysis of Discussions on the Branches of the Forums, with and without Enthusiasts

Forum # *(f)*	The average number of posts in the branches of the forum		The average number of participants in the branches of the forum	
	With enthusiasts (a_f)	Without enthusiasts (b_f)	With enthusiasts (c_f)	Without enthusiasts (d_f)
1	11.3	3.1	4.5	2.3
2	12.2	3.3	5.6	2.7
3	9.0	1.9	3.3	1.9
4	10.4	2.4	4.2	2.6
5	11.1	2.2	4.2	2.0
Average	$\overline{a}$=10.8	$\overline{b}$=2.6	$\overline{c}$=4.4	$\overline{d}$=2.3

Note: a_f= average number of posts per branch where enthusiasts participated; b_f = such value for branches where enthusiasts did not participate; c_f = average number of students per branch where enthusiasts participated; d_f = such value for branches where enthusiasts did not participate; $\overline{a}$ = average number of posts per branch per forum with enthusiasts; $\overline{b}$= such value per branch per

[1] In this work, a discussion forum is present as a tree; it is natural to call its parts *branches.* Officially, in the Blackboard system, they are called *threads.*

forum without enthusiasts; $\overline{c}$ = average number of students per branch per forum with enthusiasts;$\overline{d}$= such value per branch per forum without enthusiasts; f = ID of the forum.

It is shown that, firstly, on average, the number of posts submitted in the branches in which students-enthusiasts participated, was 4.2 times higher than in other branches of the same forum. Secondly, on average, the number of participants involved in discussions on branches with classmates-enthusiasts was almost twice higher than number of participants in other branches of the forum. This data indicates that students-enthusiasts definitely played a significant role in all discussions with their classmates.

Graphical representation of group discussions

The statistical analysis showed in general terms how differently the students of the A- and B-groups participated in discussions. In addition, for the A-group, a difference was shown between discussions in which students-enthusiasts were involved, as well as those where they were not involved. The graphical analysis allowed discovering the group dynamics, specifically, to find a distinction between group communications where enthusiasts did or did not participate. If the first approach gives quantitative insight, the second approach yields some qualitative insight.

Each discussion started with the question offered by the professor (the author). According to the requirements, each student of the group responded to the question by posting his message on the forum, that is initiated a branch of the discussion for the classmates and also participated in discussions initiated by others.

The Figure 1 shows the discussion on the forum 1 that is very typical for the A-group. It includes twenty branches corresponding to the number of students in the class. The branches are numbered; the numbering reflects a sequence of students' appearance on the branch. Each branch is represented as a chain of disks connected by the lines. The disks are students' posts. They are light if posts belong to students-enthusiasts; other students' posts are represented by filled dark disks.

Length of the branches corresponds to the duration of the discussion which is measured in the number of posts. The longer the branch, the lengthier the discussion, and the more probable that it contains a conversation that is for some reason attractive for the participants. Remarkably, the branches where enthusiasts participate are usually the longest on the forum; exceptions are rare (branch 4).

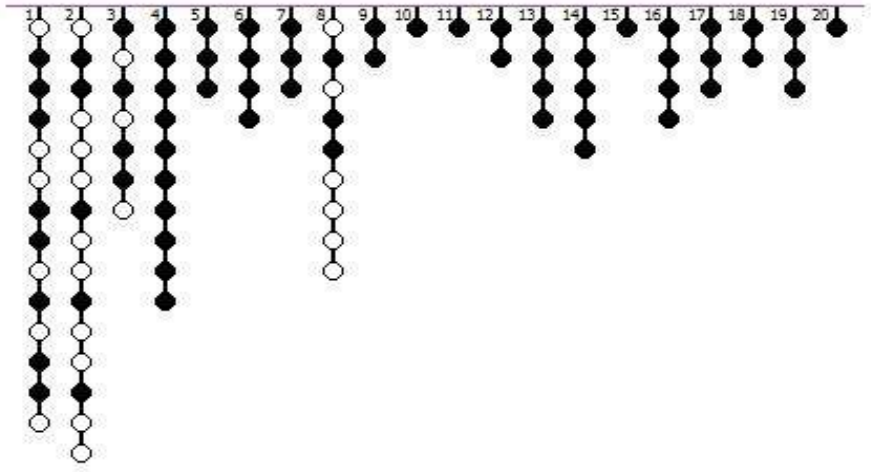

Figure 1. A representation of the group discussion on the forum 1 in the A-group

Then, a structure of communication was drawn for every branch of the forum. One of them, #16, is represented below in Figure 2. On the top, in a horizontal line, the sequence of the disks (that should be read from left to right) reflects the order in which the students' posts appeared. Letters in the disks mean students' encoded names. The graph represents how students who visited this branch interacted and exchanged their opinions.

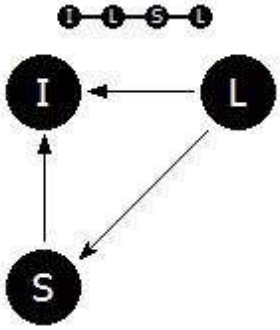

Figure 2. A representation of the discussion on the forum 1, the branch 16

The vertices of the graph shown as disks represent the students who participated in this discussion. The lines connecting the vertices are the edges of the graph and represent students' communication. The edge may have arrows on one or both sides which mean that communication between students was uni- or bidirectional. The number of edges between any two vertices indicates the number of instances of the opinion exchange. One edge shows the single opinion exchange, while two and more edges show the multiple opinion exchange which may point to the intensity of communication between the students.

Results and Discussion

Structure of group communications with and without enthusiasts

Figure 3 represents the discussion on the branch 1 initiated by a student-enthusiast code-named ***A***. It is a typical course discussion in which enthusiast(s) is/are involved. Here, the structure of communication has two distinctive properties. Firstly, it is centered on the student-enthusiast ***A***. This student attracted all the attention to her ideas as if she was a magnet. Everyone on the branch decided to exchange messages with her. In addition, she had an even lengthier conversation with the student code-named ***D***. Secondly, communication on this branch was mostly bidirectional, again due to the student ***A***, who responded to five posts out of six that she received.

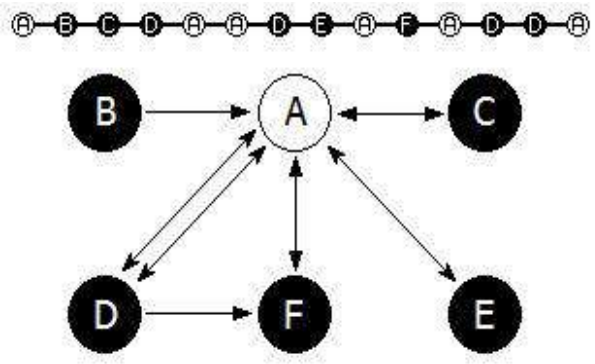

Figure 3. A representation of the discussion with an enthusiast on forum 1, branch 1

Figure 4 represents the discussion on the branch 4 which was not visited by enthusiasts. It is a typical discussion in which students-enthusiasts did not participate. There is no individual

capable and/or desiring to lead a conversation here, so communication is not centered. The fraction of the cases of unidirectional communication is relatively high here: half of the participants received responses from classmates other than those to whom they were writing. It appears that sometimes students declared their opinions and did not care much about what other classmates had thought.

Comparing these different structures of group communications, we conclude that at least in the first case students discussed the issue with great interest. It seems that they did not feel isolated, although some authors point to possible feelings of isolation in online classes (Rovai, 2002; Liu et al., 2007). In our study, students rather experienced a feeling of belonging. The author of the course (and the current study) did not make it a goal to facilitate community building in the online environment. No team interactions for community building purposes were intentionally arranged; it happened naturally. When working on the DB, students developed a sense of community due to the presence of enthusiasts in their virtual classroom. Influence of enthusiasm in the virtual classroom on development of students' sense of community was also discovered by Korean researchers (Koh& Kim, 2003). The phenomenon appears to be culture-independent.

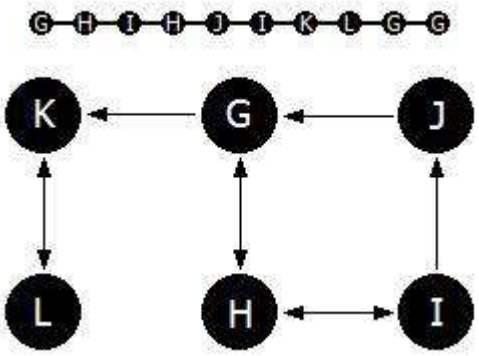

Figure 4. A representation of the discussion without enthusiasts on forum 1, branch 4

Characteristics of group discussions with and without enthusiasts

A-group

The branches where students-enthusiasts were present (regardless of whether they initiated the discussion or just participated in it) were the most attended. On average, the branches where at least one enthusiast was present attracted twice as many students than other branches: $\overline{c} \approx 2\overline{d}$ (see Table 2). The *number of participants* on the branch of the forum is an important criterion of students' involvement into the discussion. However, the number of participants does not necessarily determine the quality of the discussion.

The other important criterion of the productivity of the discussion is *the intensity of message exchange*. In the branches 1 and 4 (see Figures 3 and 4) – one included and the other did not include enthusiasts – the number of participants was the same. However, the number of posts in branches is different. In this case, the difference is not so large because the branch 4 is fairly atypical for the discussions without enthusiasts; usually the branches without enthusiasts have significantly fewer posts (see Figure 2). As we showed above, the intensity of the message exchange was, on average, more than 4 times higher on the branches with enthusiasts because their participants were more eager to converse:$\overline{a} \approx 4\overline{b}$ (see Table 2).

The structure of group communication is yet another important formal criterion of the productivity of the discussion, and it may explain why discussions in which enthusiasts participate are so attractive for their classmates. In the communication on the branch 1 (see

Figure 3), an enthusiast united the other discussants and set a productive style of conversation – almost all messages were responded to. It was a centered, organized, and mostly bidirectional communication. Let's compare it with the structure of communication on the branches 4 and 16 in which enthusiasts did not participate. Although different in the number of participants, they were very similar in their essence. They did not have a leading figure and were guided by a formal course requirement ("one response should go to the professor and at least one to any classmate") rather than the actual interest in discussing the subject. This communication was not centered, mostly unidirectional, and spontaneous.

B-group

This group lacked enthusiasts. Here discussions were identical in their characteristics to those of the A-group discussions in which enthusiasts did not participate. That is, they were not centered, less organized, more spontaneous, and mainly unidirectional. They were also less intensive in the average number of posts and the average number of students involved than discussions led by enthusiasts (See Table 1).

"Help me!" messages and helping responses

In the virtual classroom, where there is no face-to-face contact, the difficulties that arise during the educational process may be perceived more acutely than in the traditional classroom. We analyzed the content of "Help me!" messages and helping responses submitted by other students to those who were in need in the A-group. It was determined that 3 students-enthusiasts had sent three times more helping responses to their classmates than all the remaining 17 students of the A-group did. In the B-group "Help Me!" messages did not appear on the DB. Students in need sent their questions via e-mail to the instructor.

It was determined that "Help me" messages related to the following three aspects of the online study: a) the subject under the study; b) the Blackboard, the instrument by means of which the subject is taught/learned; c) the online course's organization, that is, the framework within which the education process takes place. These three aspects – academic, technological, and administrative – are major aspects of students' orientation in the virtual learning environment. Such function as orientation is usually provided by the teacher in the traditional classroom. In the online classes, it may be voluntarily assumed by the students-enthusiasts who have willingness to provide guidance to their less knowledgeable online classmates.

A psychological portrait of the student-enthusiast

Although the students-enthusiasts constituted the small part (6%) of investigated population, their contribution to the learning environment was the greatest. They had an inclination to lead group discussions and skillfully stimulated them even online. They demonstrated helping behavior, which is quite unusual in today's competitive society. They oriented the classmates in their virtual classroom clarifying various aspects of the online study, although not even all instructors, especially those belonging to older generations, so-called digital immigrants[2], fully understand what a virtual classroom is. Each of these three qualities listed above occurs infrequently. Their combination is truly unique. Maybe, this is precisely what identifies a pedagogical talent?

[2] The term *digital immigrant* was originated by Mark Prensky in his article "Digital Natives, Digital Immigrants" published in 2001. The term may apply to generations that were born before the spread of and/or were not exposed in their young years to digital technology, such as computers, videogames, video cams, tablets, I-phones, Internet, and other toys and tools of the digital age. College students of today, according to this point of view, are "digital natives"; many of them easily adjust to new virtual learning environments.

In their book *The Virtual Student: A Profile and Guide to Working with Online Learners,* R. Palloff and K. Pratt call an ability "to share personal details about their life, work, and other educational experiences" a necessary characteristics of successful online learner (2003, p. 6). According to academic achievement, most of our students appeared to be successful online learners. However, a tendency to trust and share information with the class was contributed primarily by students-enthusiasts. Their style to lead conversations was accepted by other discussants. To a large degree, online discussions became attractive and productive for the group due to enthusiasts' special style of communication.

Lack of both computer skills and face-to-face communication might "expose online learners to a risk of feeling isolated and disconnected" (Liu et al., 2007). Many researchers believe that active and dynamic discussions between students may serve as significant support for building an online community (Swan et al., 2000; Blanchard & Markus, 2002; Zhao et. al., 2012). Students-enthusiasts actually acted as the support network. When enthusiasts were stimulating online group discussions as well as orienting classmates in the virtual classroom, they helped others to develop a sense of belonging, emotional connection, and wellbeing in the VC.

Learning motivation of students-enthusiasts quantitatively and qualitatively differed from other students' learning motivation (see Participants and Context). Their interest and desire to achieve learning goals was the highest in the group. What is even more important is that, unlike others, they gave a higher priority to knowledge and curiosity than to grades.

A current study showed one more distinguishing feature of their motivation. It turned out that they could not learn productively without teaching at the same time. Teaching was their distinct method of learning. The less knowledgeable and less experienced classmates became the object of their pedagogical intentions. It seemed that learning motivation and teaching motivation were unbreakably connected in their activity. Notably, their teaching was not a formal instructing. They initiated an active exchange of opinions and stimulated dialogues with other students. Discussions led by enthusiasts usually turned into a collaborative search for answers to the questions stated by their professor on the DB.

From the point of view of the motivational paradigm, students-enthusiasts are over-motivated individuals exceeding all the course requirements and desiring to perform more and better, even if, according to the course policy, this "more and better" is not rewarded. Enthusiasm as a motivational phenomenon is a selfless love for knowledge and chosen profession. From the point of view of the communicational paradigm, a student-enthusiast is an informal leader uniting, consolidating classmates, and transforming the group from a disorganized mass without common interests to a team capable of collaboration. Enthusiasm as a communicational phenomenon is a selfless tendency to share one's expertise and help less experienced learners to explore knowledge and chosen profession.

Reliability and Validity of the Results

It was shown that the average number of participants and posts in the branches of the B-group discussion forums not having enthusiasts were as low as in those branches of the A-group forums in which enthusiasts did not participate. Similarity of the results confirms their reliability.

Upon completion of the course, the students of the A-group were invited to help their professor (the author) with the creation of a video orientation session for the future students of the same online course. The goal of this project was to help learners, especially online beginners, orient themselves in the course site more quickly and effectively. For all of us it was a form of volunteer work. Eight out of 20 students of the A-group responded to professor's e-mail message. However, only three of them really helped – they were the same individuals who showed great enthusiasm during the semester. It confirms the validity of the results.

Since the data was collected on the relatively small population, the general applicability of the findings is still limited. Similar studies in the author's courses in consecutive semesters as well as other disciplines are needed. The research is continuing.

Conclusions

The number of participants in a branch of the discussion forum, the intensity of their message exchange, and the structure of group communication can be used as formal criteria for identifying productivity of discussions on the DB in asynchronous online courses. Presence of students-enthusiasts improved these indicators.

The hypothesis of a difference in communication styles between students-enthusiasts and their classmates has been confirmed. Students-enthusiasts became the center of each discussion where they participated, and they involved other students in dialogues not leaving without a response any incoming posts. They tended to orient less knowledgeable classmates in the VC, that is, responded to every "Help me!" message and clarified various aspects of the online study. Students-enthusiasts created a positive psychological atmosphere on the discussion forums in which their classmates developed a "sense of community" and avoided feeling of isolation. Thus the students-enthusiasts may be called catalyzers of the educational process.

Students-enthusiasts served as models for others. They provided support for their classmates and the professor. In fact, they voluntarily became the professor's informal assistants in instructing the class. Formally being students, they actually performed some of the teacher's functions. However, in spite of their competence, they still looked at the learning environment through the students' eyes and might understand other students' difficulties better than instructors. So, we conclude that such a contribution can and must be appreciated and maximally used in a virtual classroom with its specifics and communicational limitations.

Thus, we see reasons to expect that the features of students-enthusiasts, which were discovered in our study, manifest themselves in their own classrooms where they officially work as instructors. It gives us a better insight into how they influence their pupils' development, learning, and lives. It helps to recognize teachers-enthusiasts' exceptional role in the society.

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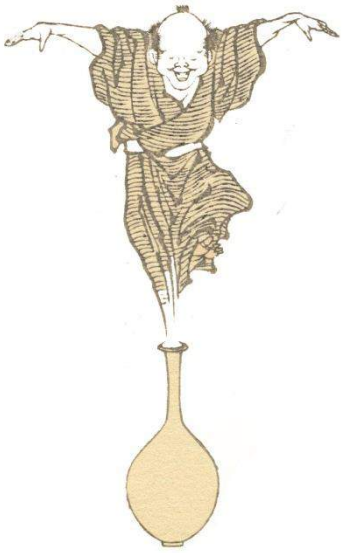

The Effect of Math Modeling on Student's Emerging Understanding

Andrzej Sokolowski

Abstract

This study investigated the effects of applying mathematical modeling on revising students' preconception of the process of optimizing area enclosed by a string of a fixed length. A group of 28 high school pre-calculus students were immersed in modeling activity that included direct measurements, data collecting, and formulating algebraic representation for the data. The lab conduct was enriched by scientific inquiry elements such as hypothesis stating and its verification. While 86% of the students (N=24) falsely hypothesized that the rectangular areas enclosed by a string of a fixed length will remain constant before engaging in the lab, the subsequent tasks of the modeling activity prompted the students to correct their ways of thinking. The study showed that the modeling processes provide ample means of revising students' perception to establish firm conceptual background for inducing a more rigorous algebraic approach to solving problems in math classes. Suggestions for further studies follow.

Keywords: Mathematical modeling; optimization; problem solving; high school.

Introduction

Misconceptions are defined as strongly held, stable cognitive structures that must be overcome or eliminated for students to achieve expert understanding (Hammer, 1996). Many researchers object the term misconception because from the student's viewpoint, the ideas are logical and instead the terms preconception, naïve theories, and alternative framework have been proposed (Sneider & Ohadi, 1998). Since the emphasis of this study is to help students uncover, by themselves, the mathematical underpinning of the optimization process and its correct interpretation, the author prefers to use the term *preconception* whose correctness will be attempted during the process of modeling.

Mathematical modeling (MM) has been described in many ways; for instance, Lesh and Harel (2003) defined MM as finding quantifiable patterns of a phenomenon and its generalization, while Blum, Galbraith, Henn, and Niss (2007) defined mathematical modeling as a process of "learning mathematics so as to develop competency in applying mathematics and building mathematical models for areas and purposes that are basically extra-mathematical" (p. 5). Although initiated several decades ago, MM recently gained substantial popularity in math research and education; in fact, in the Common Core Curriculum, MM is recognized as one of the eight fundamental standards (Porter, McMaken, Hwang, & Yang, 2011).

MM activities can be organized in many ways: by asking open-ended questions, by mathematizing given situations, by using simulations as a means of supporting context, or by solving word problems (Haines & Crouch, 2007). Thus MM serves as an embodiment of problem solving, and the learning methods are interwoven. A problem in mathematics is defined as a situation carrying open questions (Blum & Niss, 1991). As such, it usually follows four steps: understanding the problem, devising a plan, carrying out the plan, and looking back (Polya, 1957). MM offers a different perspective; it focuses learners on the process of transferring given information presented in a real-world situation by data gathering and model formulating and then requires the learner to use the model to develop new knowledge or solve context-related real-world problems (Crouch & Haines, 2004). By converting problems into the process of taking quantifiable data and modeling formulation, MM activities can "meet the individual abilities of (many) more students" than traditional teaching methods (Kaiser, 2007, p. 104). MM can be guided by different types of inquiries, ranging from deductively situated, authentic problem-modeling activities (English & Sriraman, 2010) to inductively organized inquiries that have students make plausible arguments that take into account the context (Lesh & Zawojewski, 2007).

Prior Research Findings

Optimization is a field of applied mathematics whose principles and methods are used to solve quantitative problems in mathematics and other disciplines including biology, engineering, physics, and economics (Rardin, 1997). Optimizing is a process of making the best possible choice from a set of candidate choices (Boyd & Vandenberghe, 2009). It consists of maximizing or minimizing a real function by systematically choosing input values from within an allowed set of computed values of the function. Optimization problems are very common in high school and undergraduate mathematics curricula, and they are an essential component of problem solving in calculus courses (National Council of Teachers of Mathematics [NCTM], 2000). Despite the wide applicability range, the process of optimization is not often investigated in mathematics education; in fact, a search for prior research findings using university search engines such as ProQuest Educational Journals, Science Direct, and Google Scholar returned only several such studies, whose summaries follow.

Troxell (2002) pointed out certain pitfalls in using technology while teaching optimization and suggested relying more on analysis and validation. Poon and Wong (2011) proposed an adoption of Polya's (1957) problem-solving model to investigate and solve optimization problems in geometry. They highlighted benefits of inter-disciplinary learning and investigation of multiple solutions while working on such problems. Schuster (2004) discussed the role of combinatorial optimization activities to solve optimization problems in high school mathematics and concluded that such activities provide opportunities not only for mathematical modeling of real world problems, but also for discovering, constructing, and investigating algorithms. The process of optimizing areas enclosed by a string of a fixed length was investigated by Brijlall and Ndlovu (2013), who found out that when taught by traditional methods, students used "isolated facts and procedures" (p. 16) while solving these problems, which showed their lack of understanding of underlying principles. They further suggested that "teachers needed to be aware of learners learning conflicts so as to reinforce the new concepts they encounter" (p. 17). Ledesma (2011) investigated how to identify a solid with a maximum volume built by cutting squares of various side lengths from a cardboard and folding the shape. She concluded that calculus students faced difficulties understanding the optimization process, which she considered a main obstacle in solving these problems. As a means of improving, she suggested strengthening the visualizing process by using simulations. A similar optimization problem was investigated by Lowther (1999). Although she intended the students to find the maximum value algebraically, the students chose to determine the answer using a method of trial and error. Lowther noted, "I was sure that someone would use an algebraic approach, but no one did" (p. 764). By not formulating algebraic function, this investigation did not help the students solve text problems, as was initially intended.

Although all of the above scholars provided valuable suggestions to improve understanding of the optimization processes, the idea of verifying students' preconceptions on these processes and applying MM to provide learners with tangible experiences was not proposed within this domain. While optimization problems can be classified as typical math problems, the process of transferring one dimensional geometrical object (length) into two dimensional geometrical object (area) is not that apparent. This study proposes an activity where this process is made more transparent to students.

Research Questions

While typical problems of optimization focus students' attention on finding unique solutions due to formulated algebraic representation that maximizes the scenario (e.g., see Demana, Waits, Foley & Kennedy, 2008; Stewart, 2007; Sullivan & Sullivan III, 2009), an MM activity seeks to diversify the process by having students investigate possible outputs and identify a pattern before formulating an algebraic representation. The purpose of the study reported herein was to determine if immersing students in an MM activity would help them with understanding the algebraic underpinning of optimization. In this line, the following research questions were formulated:

- What are the students' preconceptions on the output of area enclosed by a string of a fixed length?
- Will modeling environment help learners understand the process of optimization?
- Which of the MM stages—data collecting, table generating, graph plotting, or model formulating—have the most significant effect on understanding optimization?

Theoretical Framework of the Treatment Design

The theoretical framework of the study was supported by constructivist learning theory that suggests learner's construction of their own knowledge based on received impulses (von Glasersfeld, 1995). This theory has been selected because constructivism is suited for activities that focus on meaning – making, concept construction, or elucidation of alternative concepts (Fergusen, 2007) which encompass the process of finding an optimum of a quantity due to given constrains. Minstrell and Smith (1983) have recommended several teaching methods and learning settings for eliminating student's misconceptions.

Experiment or experience that will allow students testing their thinking is one of learning setting. While typical problems on optimization focus students' attention on finding unique solutions due to formulated algebraic representation that maximizes the scenario (e.g., see Demana, Waits, Foley & Kennedy, 2008; Stewart, 2007; Sullivan & Sullivan III, 2009), an MM activity seeks to diversify the process; have students investigate possible outputs, identify a pattern before formulating an algebraic representation and finding its optimum value. Considering research recommendations and MM learning outputs, modeling was selected as framework for the activity design.

Development of the Modeling Process

MM usually follows a cycle (e.g., see Blum & Leiss, 2007; Geiger, 2011; Lesh & Lehrer, 2003; Yoon, Dreyfus, & Thomas, 2010). Although the MM activity in this study intended to follow a general modeling process in which a real-world problem was abstracted, mathematized, solved, and evaluated, special attention was given to having students hypothesize the problem's output before attempting to solve it and then revise or confirm their hypotheses after eliciting and validating the mathematical model. It was anticipated that inserting this element of scientific inquiry (Hestens, 2013) would not only help assess the research questions but also allow the students to realize the importance of mathematical processes in modifying or confirming their prior thinking. Since the activity involved quantification, the hypothesis had a twofold nature: qualitative and quantitative.

The quantitative part, called a prediction (see Figure 1), involved having students predict a numerical output of their investigations, and the qualitative part involved having them hypothesize a general property or output of their investigations. While a typical modeling activity is initiated by asking learners to write a problem statement (Lesh & Zawojewski, 2007), in this study's activity, the problem was formulated and the students' initial task was to hypothesize possible outputs. Another element of the activity design was to decide about the type of inquiry.

There were two main options to consider, deductive and inductive, which are the main reasoning inquiries used in science, mathematics, and engineering (Prince & Felder, 2006). As deductive inquiry characterizes the process of reasoning from a set of general premises to reach a logically valid conclusion, inductive inquiry is a process of reasoning from specific observations to reach a general conclusion (Christou & Papageorgiou, 2007). In this activity, students were given a string of a fixed length and asked to formulate various rectangles and search for patterns; thus, an inductive inquiry was adopted. All of the design constraints were guided through the scheme depicted in Figure 1.

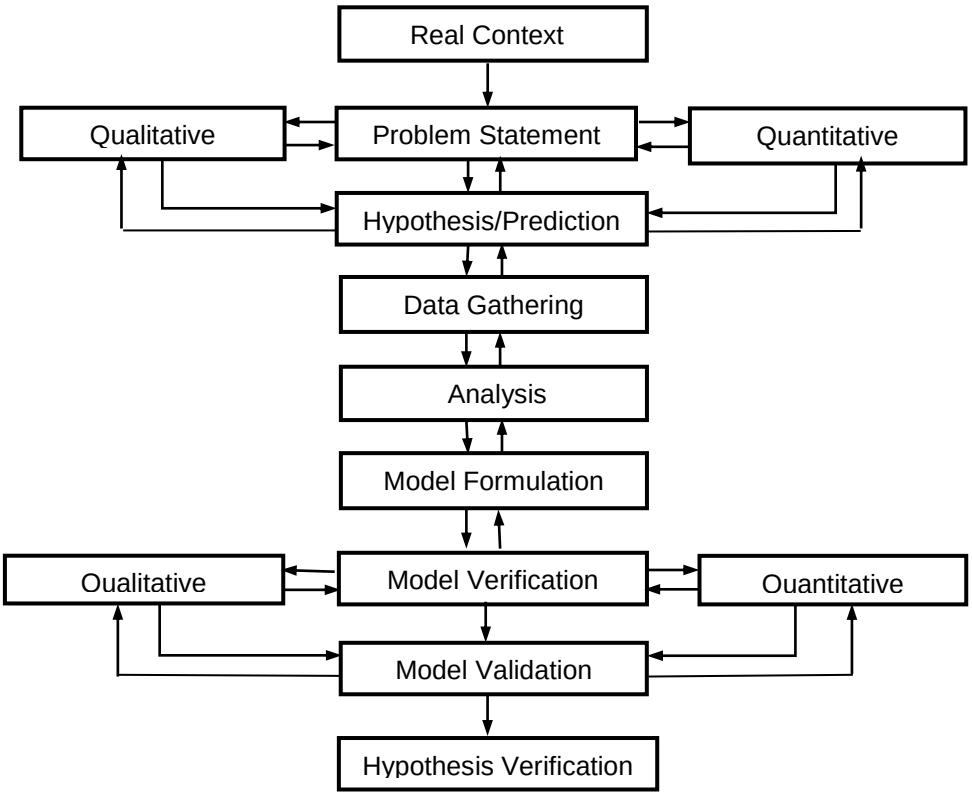

Figure 1. Adopted modeling process based on Sokolowski (2015)

The real context, in this activity, will be provided by material and described scenario that will be followed by a problem statement. Note that the multiple arrows indicate stages when students can decide to modify or revise concluded patter on algebraic model. Such established theoretical framework satisfied also the six principles for problem-solving activities developed by Lesh and Kelly (2000).

Context Development

The following problem was used as a contextual basis for converting into a modeling activity: "Among all the rectangles, whose perimeters are 100 ft, find the dimensions of the one with a maximum area" (Demana, Waits Foley, & Kennedy, 2007, p. 184). Converting the problem into a modeling activity required inducing all of the elements of the modeling cycle described in Figure 1 as well as considering research recommendations concerning inducing metacognitive changes in students' minds. For instance, Bonotto (2007) suggested that well designed MM activity (a) emphasizes the strong interactivity of the instructional techniques, and (b) eliminates ready-made solution processes. Bearing the adopted modeling process and the recommendations, an outline of instructional support was developed.

Methods

This study can be classified as an empirical one-group quasi-experimental (Shadish, Cook, & Campbell, 2002). Randomization of participants was not possible due to a low school population where the study was conducted. Quasi –experimental study shares though many similarities with experimental design.

Participants

A group of 28 students (12 females, 16 males, M_{age} = 16.5 years, age range: 16-17 years) enrolled in a pre-calculus course in a suburban high school was assigned as a treatment group. The group of students was selected due to availability. 25% of the group constituted minorities.

Evaluation Instruments

Analysis of students' hypotheses, assigned prior the lab conduct, along with verification of the hypotheses, reflections, and survey were used to evaluate learners' prior thinking and the effects of the treatment. A content analysis (Hsieh & Shannon, 2005) that characterized a systematic classification process of coding and identifying themes and patterns was used to evaluate students' free responses.

Treatment, Setup, Materials, and Procedure

A physics lab was the designated site for the activity because the students could be seated in groups, which allowed for collaboration and discussions. There were seven groups of four students. The treatment lasted for one class period (55 minutes). Each group was given a 74 cm long string, a Styrofoam board of 40 cm by 60 cm, four pins, a metric ruler, and a set of French curves to sketch a smooth curve for generated data. Each student was given instructional support in the form of a lab outline. The instructor initiated the activity by explaining that the students would investigate the area enclosed by a string of a fixed length and pointing out the importance of reading the problem statement and hypothesize the answer. The students were asked to state their hypothesis individually, without discussing the context with group partners. As suggested by previous research (Lesh & Lehrer, 2003), the instructor then took on the role of a guider, providing suggestions when questions arose rather than offering direct solutions. Although the students took data in groups, each student was responsible for completing the lab analysis individually. Students then began collecting data by formulating various rectangles due to prearranged lengths (see Figure 2).

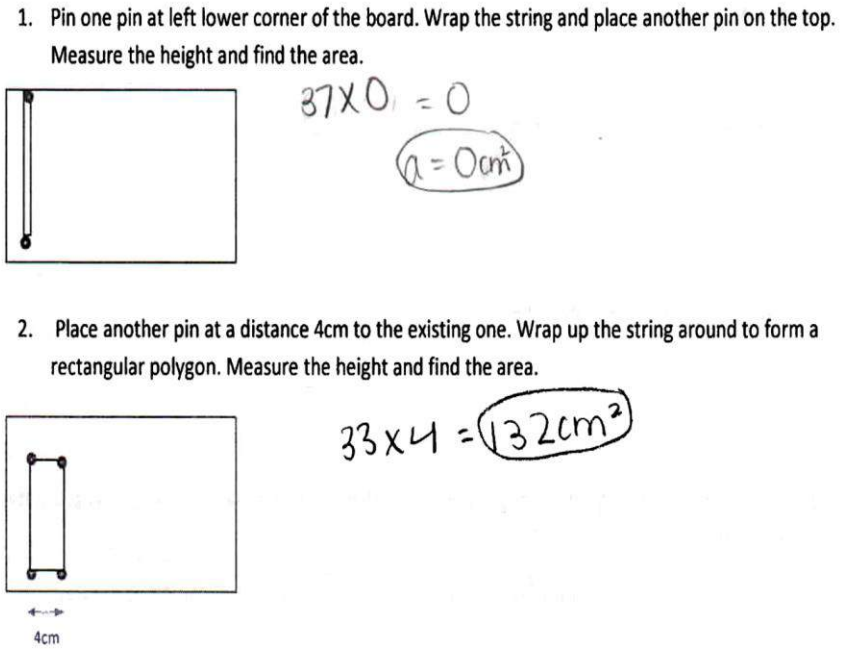

Figure 2. The process of data taking

In order to systematize the process, the participants recorded their data in a table (see Figure 3):

Length of the base	Height of the Rectangle	Area of the Rectangle
0 cm	37cm	$0cm^2$
4 cm	33cm	$132cm^2$
10 cm	27cm	$270cm^2$
16 cm	21cm	$336cm^2$
20 cm	17cm	$340cm^2$
25 cm	12cm	$300\ cm^2$
30 cm	7cm	$210\ cm^2$
35 cm	3cm	$105cm^2$

Figure 3. Generated table of values

The lengths of the bases of the rectangles were prearranged. The students measured resulting heights and computed area for each variation. The analysis of the data was initiated by generating the area of the rectangular polygons versus height graph (see Figure 4).

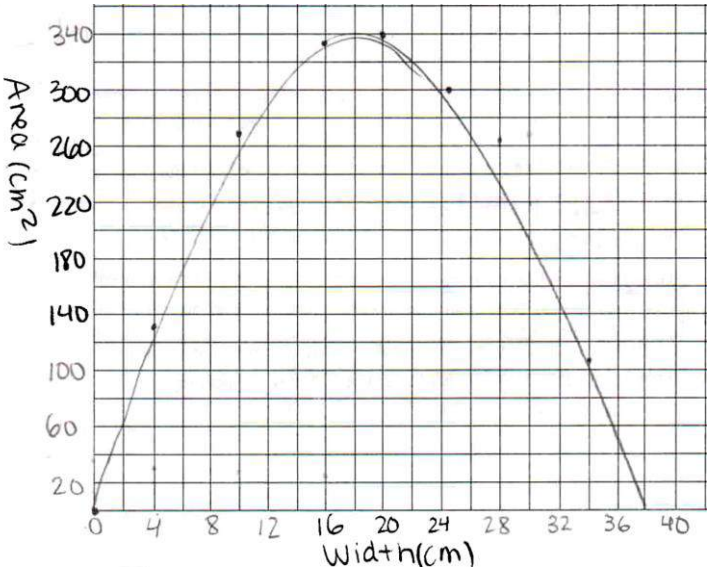

Figure 4. Area versus height graph

Note, in the Figure 4, the students called the height width which did not change the data interpretation. Having the points plotted and the graph sketched, the students identified its general algebraic structure. There pre-calculus students did not have difficulties with identifying underpinning function as quadratic. The next stage referred to formulating the function equation for the graph and discussing the graph properties such as the extreme value, its coordinates and interpretation (see Figure 5).

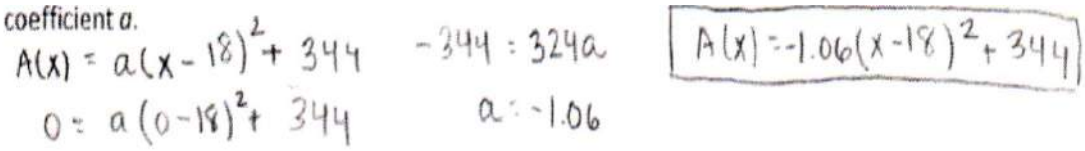

Figure 5. The process of formulating the area function

This student identified the height of 17 cm for which the area was a maximum and equal to 344 cm^2. She further used this coordinate to compute the leading coefficient, *a*, of the parabola.

Once the model was developed, it underwent a twofold validation process—firstly by using the elicited function to further identify and confirm the maximum area, and secondly by using graphing technology to generate the graph and calculate the maximum value. After the validation process was finalized, the students were asked to reflect on their hypotheses. Lab reflections and survey completions concluded the activity.

Results and Discussion

The analysis of students' hypotheses revealed that the majority (N=24, 86%) claimed that the magnitudes of the areas enclosed by a string of a fixed perimeter would remain unchanged. Following are examples of students' hypotheses:

- The area will not change because the total length of the string is the same.
- The area will not change because it is enclosed by a length that cannot change.
- The area will not change because the length of the string as a whole never changes.

Representative responses of students who claimed that the area would change were as follows:

- The area will change because if you have a perimeter of 30 cm, then, for example, 5 cm x 10 cm = 50 cm^2, 8 cm x 7 cm = 56 cm^2, etc.
- The area will change because it is dependent on its dimensions, which will change.

After the lab was completed and the model confirmed, the above-mentioned majority group of students agreed that the area enclosed was changing and that it reached a maximum value when the formulated polygon was a square of about 17 cm by 17 cm, and the remaining students (N=4, 14%) confirmed their hypotheses.

Students were asked to answer the following reflection question after the experiment: "Describe your learning experience while working on the lab. What did you learn?" In their responses, 54% of the students (N=15) referred to their falsely stated hypotheses and commented on revision of this preconception that was prompted by the lab outcomes. Specific verbal responses were clustered and quantified into three categories, as illustrated in Table 1. Sample student responses are provided following the table.

Table 1. Summary of Students' Verbal Reflections

Category	Frequency of Response /Percent
Commented on revising their hypothesis	15 (54%)
Commented on properties of heights and formulation of the maximum area	11 (39%)
Made general comments	2 (7%)

The majority of the students reflected on their incorrect hypotheses, indicating that the lab helped them discover the correct process. Responses included the following:

- The lab taught me that even though something is of a fixed length, it can be made into different shapes that will result in different areas.
- On the lab my original hypothesis was wrong so I learned that even with the same size of the string there are certain shapes and dimensions that will have a larger area.
- While working on the lab, I learned that a fixed string can have various areas depending on its length and width.
- I learned that even though the perimeter between two rectangles is the same, the areas do not have to be the same. They can be different.
- I proved my hypothesis about the string correct. I learned that the area of the string changes when the base length is changed.
- I learned that if you have a fixed perimeter, then it does not mean you have a fixed area. I never truly thought about it.

The majority of the students pointed out the interface of transitioning from one-dimensional geometrical object (length of the string) to a two-dimensional geometrical object (area). They noted that the product of the lengths can take different values despite a constant perimeter.

Eleven of the students (39%) described the behavior of the elicited function, focusing on the maximum area and on the properties of the dimensions that produced the maximum area. Responses included:

- We learned that changing bases and heights changes the area but in a pattern creating a parabola. The area increase reaches the max and then the area begins to decrease.
- I learned that a perfect square will have the greatest amount of area. I also learned how functions apply to the real world.
- It was fun and interesting working with classmates. I learned that to get the maximum area, the length and width of the rectangle should be as close in measurement as possible.
- I learned that the area increases as the width and height become more similar.
- I learned that as the width got bigger, the area would increase then reach its peak, then slowly decrease, making a parabola.

General comments describing the learning experience were provided by two students (7%), as follows:

- I learned how to apply the equations in real-world situations. This helped me understand some of the purposes for these equations and rules.

Since mathematical modeling is organized by sequentially organized phases, the question of interest was what phase of the MM process had the most significant impact on changing students' perception on the optimization process. The following multiple choice survey questions sought to provide insight on this inquiry: "What phase of the lab convinced you the most that the areas enclosed by a fixed length perimeter were not constant? Circle the phase that applies to you: sketching the area vs. length graph, measuring the lengths of rectangles and calculating the areas, or finding the function equation and its maximum value and generating a table of values." The order of the written phases did not follow the actual order of the activity during the lab in order to reduce the chance of bias. The question was addressed to all students, even to those whose hypotheses were correct. Their responses are summarized in Table 2.

Table 2. Summary of Modeling Phases That Affected Students' Change of Thinking

Phase Description	Frequency of Response/Percent
Sketching area vs. length graph	3 (11%)
Measuring the lengths of the rectangles and calculating the areas	8 (28%)
Finding the function equations and the maximum area	2 (7%)
Generating a table of values	15 (54%)

The table shows that most of the students concluded the pattern and revised how the area changed during systematizing their data in a table of values, followed by the phase of sketching area versus length graph. It is to note, that all of the processes are part of scientific modeling (Schwarz & White, 2005). This finding further supports the process of blending scientific modeling with mathematical modeling advocated by Sokolowski (2015).

Conclusions

The results support the research hypothesis that immersing students in MM activities can help revise their preconceptions and help them understand the underlying principle of mathematics. The study also revealed that the tangible experiences of taking measurements and generating a table of values were the phases that altered the students' thinking the most. Thus, the systematic way of gathering data and subsequent analysis led the students to discover an embedded principle of optimization. One can conclude that inducing elements of measurement that are typical of the scientific inquiry process (Hestenes, 2013) benefits learners in mathematics classes as well. This finding further supports integrating scientific modeling with mathematical modeling in one coherent structure advocated by Sokolowski (2015).

This study also supports the conclusion reached by other scholars (e.g., see Brijlall & Ndlovu, 2013; Ledesma, 2011) that the source of difficulties with optimization problems might not necessarily be rooted in the mathematization of the processes but in the difficulty of understanding the underlying mathematical principle. The ultimate extension of this study would be to investigate whether the lab experience helped students with formulating the solution processes to solve textbook problems on optimization. More specifically, another study might

explore how to use reached conclusions to induce more rigorous mathematical apparatus to solve typical textbook problems on optimization, or might try to determine if removing the students' misconception is sufficient to have them succeed with problem solving. It seems that both of the venues are worthy undertaking.

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English For the Medium of Instruction (EFMI) at a University in Hong Kong

Paul C. Corrigan

Abstract

English as the Medium of Instruction (EMI) is gaining ground as an internationalizing policy at universities in countries where English is normally used as a second language. However, EMI as developed pedagogy in support of such a policy is yet to establish itself at many such institutions. In a country such as the United States, on the other hand, there is already extensive experience covering several decades on the challenges faced by International Teaching Assistants who use English as a Second Language for their teaching. Many of the challenges they face, and the strategies which institutions have devised to assist faculty instructors who use ESL, have relevance for institutions which are now moving to EMI. As those institutions move towards EMI, they may also need to develop their own language and pedagogy training for their new instructors who use ESL. For universities which aspire to rise in the international league tables, such pre-service teacher education may be essential for the fulfillment of their aspiration

As part of their pre-service teacher education, new instructors at a rising young university in Hong Kong received basic training in English For the Medium of Instruction (EFMI), an original term to articulate this novel reification of a subgenre of English for Specific Purposes (ESP). New instructors found the training helpful but insufficient and expressed a strong interest for additional training in EFMI.

Keywords: English; medium of instruction; pedagogy; teaching assistants.

Introduction

As China rises in the East, publically-funded universities in its Special Administrative Region (SAR) of Hong Kong are ascending in the international league tables. Four out of seven such institutions are currently listed in the top 100 or so institutions in the QS World University Rankings 2013-14 (Quacquarelli Symonds, 2013) while three of those four are also listed in the top 100 universities of the Times Higher Education World University Rankings 2013-14 (Times Higher Education, 2013). The ascent signifies education changes initiated in the final years of Hong Kong's colonial period which have made research at its universities more prominent, an interest in global rankings more pronounced, and higher education opportunities among its youth more egalitarian. These three factors as well as the 2012 launch of the American-style, four-year undergraduate degree with a high component of General Education courses imply that Hong Kong has taken elements of the American system for its higher education model as its universities rise in the global rankings. To sustain this trend, Hong Kong's publically-funded universities can be expected to escalate their efforts to compound research and citation output as well as amplify measures to increase internationalization, since these aspects are found in the handful of categories which league table organizations implicitly claim to be able to assess and rank (Times Higher Education, 2013; Quacquarelli Symonds, 2013).

The two legs of research and internationalization which support institutions' aspirations for a rise in global rankings are embodied in some degree in the Ph.D. students which these universities recruit. Working under a supervisor, international and local Ph.D. students can contribute to the research agenda of departments and therefore add to the prestige of the university and support its competition in the global rankings. They may carry out work which extends the range and the depth of a supervisor's own research while being trained and mentored in the research process. Coming from an international background, such Ph.D. students can add diversity to the student body and bring a non-local perspective to their teaching of undergraduates. Many of these Ph.D. students receive considerations which enable them to study for the required three or four years of a Ph.D.; this compact requires that they contribute to the research agenda of departments and to the teaching of undergraduates. For internationalizing institutions, this teaching is increasingly expected to be done in English, regardless of the first language of the teacher. For this kind of teaching, the term English for the Medium of Instruction (EFMI) is suggested in order to distinguish it from EMI policy and to situate EFMI as a sub-genre of ESP.

The purpose of this paper is twofold: to present and to analyze a recent effort by an EMI university in Hong Kong to overtly train new Ph.D. students in strategies to improve their English while modeling methods suitable for EMI pedagogy so that they can take up teaching duties. These Ph.D. students are similar to International Teaching Assistants (ITAs) in the United States, so the first objective of the paper is to review the literature on ITAs in the U.S. for features that may be pertinent to the Hong Kong situation. The second objective is to describe the measures taken at the university in Hong Kong for diagnosing new Ph.D. students' level of English, discuss the training sessions which many of those Ph.D. students subsequently took to improve their English, and analyze and discuss results of a survey completed by those Ph.D. students who took the sessions.

Review of the Literature

A shift towards English as the Medium of Instruction (EMI) in many European and Asian universities where English is not the usual first language of students has been discussed by Chang (2010); Brenn-White & van Rest (2012); de Graff, Koopman & Westhoff (2007); Hellekjaer (2007); Hudson (2009); Klaassen (2008); OECD (2010); Kim & Sohn (2009); Sert (2008); Tatzl (2011); Corrigan (2014); and others. Whether this shift is best attributed to changing

demographics, economic globalization, and financial constraints on institutions or to humanistic internationalization is less clear and has been the focus of some debate (Brandenburg and de Wit, 2011; Healey, 2008).

While pedagogical approaches like Content and Language Integrated Learning (CLIL) are gaining ground in primary or secondary education (e.g., de Graff et al., 2007), the shift towards EMI in European and Asian universities has been more about policy than pedagogy (Corrigan, 2014). When English is being used at universities in, for example, Korea, The Netherlands, Japan, Malaysia, and Germany to teach students whose native language is not English, then the term EMI is applicable. In such cases, teachers might be non-native speakers of English. In order to use EMI to teach at such Asian and European universities, a degree of proficiency in English is already expected and in some institutions it is tested (e.g., Klaasen, 2008). For experienced university faculty whose second language is English, proficiency is already likely. For example, a Dutch professor with native-like proficiency in English may teach her Chinese, Italian, Greek, and Indonesian students sociology (or another 'content' course, or an English language course) in English, which is a second language for teacher and students alike, using methods and techniques which would facilitate learning in the second language. In the higher education context, EMI as pedagogy is here professed to include not just a command of English by the teacher but appropriate approaches, methods and techniques as well as for teaching university students whose first language is not English. For novice teachers whose second language is English, native proficiency may be less likely and many novice teachers at EMI universities are likely to be Ph.D. students.

The contribution to teaching by Masters or Ph.D. students (called Internal Teaching Assistants, or ITAs, in the U.S.) has been the source of much research over the past thirty or forty years in the U.S. The pioneering U.S. university experience may help Hong Kong higher education institutions map their way through similar landscape more deftly. The robust literature on ITAs is exemplified by Bailey's 1984 book. She and the other contributors articulated the parameters of the International Teaching Assistants (ITAs) situation by reviewing research conducted in the 1970s and reconnoitering the landscape at American universities in the 1980s. Bailey (1984) noted that "both linguistic and cultural differences contribute to the difficulties faced by foreign TAs"; issues of English proficiency, cross-cultural communication, and teaching skills "raise some debatable issues". Kaplan (1989) further elaborated the problems which ITAs bring with them as "pronunciation problems, some syntactic problems, some cultural problems, some pedagogical style problems." For ITAs "found to be inadequately prepared in English or in teaching ability, there is often nothing to be done about it" but the problem can be avoided altogether with "advance planning".

Presumably he had in mind a certain level of general English before an ITA even arrives on campus. Within a few years, more than 20 state legislatures had mandated oral English proficiency (Twale et al., 1997) as a result of complaints from students and parents – i.e., voters - and state universities began to institute such tests. Negative impressions of ITAs by undergraduates continued, however, with Fitch and Morgan (2003) illustrating how undergraduates constructed the identity of ITAs "usually…in a negative light", their own identity as victims, education as a commodity for which they should get their money's worth, and the university as a villain. Today, universities across America normally require that ITAs demonstrate their proficiency in English before teaching undergraduates (see, for example: Brown University; Cornell University; Georgia State University; Oregon State University; Temple University; University of Illinois; University of Maryland; University of Northern Colorado; University of Texas; and University of Virginia).

While addressing the immediate need to diagnose which ITAs need language training, limitations of such tests have been identified and improvements to them advocated. Papajohn (1999), for example, examined the influence of topic variation in performance testing of ITAs and observed the "difficulty in sorting out teaching and language skills". He suggested some changes that could be made to testing of ITAs' skills in teaching in English in order to reduce the effect of "presentation style" language which, being primarily one-way communication presumably bears little resemblance to the kind of language which is needed for actual classroom interaction. Para-linguistics was also identified as a feature to take into account, as Jenkins and Paarra (2003) found in their study of 8 ITAs. They concluded that "the least we can do now is to train both ITAs and evaluators to understand the role of non-verbal cues in interpreting communicative intent" which led them to modify their institution's Oral English proficiency test rubric to include "listening comprehension and communicative competence". Saif (2006) reported that some positive wash back occurs when ITAs know they must take a test of spoken English, but he posited an "intricate web of different yet related factors that could enhance or interfere with a test's effects being realized as educational change." Gorsuch (2006) reasoned that "if ITA development is construed as teacher education" then individual academic departments can organize seminars alongside "native English speaking counterparts (TAs)" but if it seen as mainly language education, a centralized program would be better. In her study of 15 ITAs who had not performed well in a three week, pre-service intensive classroom communication skills workshop, she reported that the ITAs "generally found … practica …a positive learning experience".

Some researchers have looked beyond pre-service testing and training and have turned to studying in-service, ongoing negotiation of meaning between ITA and student, with mixed results. Pointing to the "nationwide concern that the foreign-born instructors linguistic problems influence US higher education adversely", Chiang (2006) noted that "problematic understanding may arise from linguistic deficiencies" such as use and pronunciation of individual words as well as grammar. Cultural differences were also contributors to misunderstanding, which "does not always go unnoticed." She concluded that training programs for ITAs tend to aim at improving linguistic proficiency but just as important is the need for ITAs and American college students to negotiate meaning with each other in an ongoing, interactive process. Li and others (2011), while accepting that "ITA language use essentially functions as an ongoing reciprocal process of meaning negotiations", between American students and ITAs, issued caveats, however. When negotiation of meaning involved drawing students' attention to mispronunciations in order to check for the correct pronunciation, it "may serve as an important factor that causes students to react negatively towards their teaching" (ibid). Reinhardt (2013), using an applied genre analytic approach pioneered by Bhatia, found in his study of office hour consultations where ITAs and their students had to negotiate meaning that by "developing awareness of how academic power may be negotiated internationally" ITA's are more likely to achieve pragmatic and professional success.

Around the time that the university system in the US was beginning to notice and address issues with ITAs, plans were being laid in colonial Hong Kong for the large-scale expansion of the higher education system. Since that time the system has emerged from an elitist system with restricted enrollment and limited international reputation to a more egalitarian system with increasing enrolment and a flourishing international reputation. While a Cantonese-speaking, secondary school graduate fifty years ago would aspire to become an undergraduate at one of the two universities, today several universities have been crowned as among the world's best in the international league tables. Due to matters of 1) colonial legacy (e.g., Mellor, 1992; Poon, 2002), 2) institutional EMI policies and 3) the importance as a *lingua franca* (e.g., Crystal, 2003; Crystal, 2006; Bolton, 2008), the role of English in each of these cases - individual and institutional - carries great weight.

Generally, publically-funded universities in Hong Kong officially use English as the Medium of Instruction (EMI) (e.g., Hong Kong Polytechnic University[1], 2014; Hong Kong University of Science and Technology[2], 2014). Disparities between official policy and actual practice have been studied in Hong Kong - with Kember and others (2001), for example, referring to "the myth of English as the medium of instruction" in universities in Hong Kong - but EMI with all its attendant problems is not a unique Hong Kong phenomenon. Rather, EMI appears to be part of a nascent, intercontinental systemic shift in higher education (Corrigan, 2014). In contrast to the inroads EMI is making as an internationalizing *policy* at many higher education institutions in countries where English is normally used as a second language, however, EMI is yet to develop as a mature *pedagogy* in support of such a policy at many such institutions (ibid).

While many of the problems that U.S. researchers have documented are applicable to Hong Kong, universities in this Special Administrative Region of China face an additional triple challenge. Many new teachers at such institutions are: 1) teaching at a tertiary institution for the first time in a socio-cultural-educational matrix different from what they previously experienced; 2) teaching in their second language; and 3) teaching students who are learning in their second language.

From the American higher education experiences with ITAs, several lessons may be extrapolated for universities in Hong Kong to strengthen EMI teaching by Ph.D. students. The list is not meant to be exhaustive, some universities may already be considering such measures, and the list may change over time. At present, however, the following can be taken from the American university experience with new Ph.D. students who are likely to become ITAs:

1. Recognize that even if Ph.D. students who are non-native speakers of English provide an acceptable, documented level of English at a high intermediate level or better before admission to study, it may not mean the candidate has the higher level language skills needed to teach in EMI;
2. Require a pre-service teacher education courses for all new Ph.D. students who will become novice teachers, focusing on the Hong Kong and institutional context and pedagogy appropriate for EMI teaching of Hong Kong undergraduates;
3. Implement accepted tests of English proficiency and communication skills with clear descriptors of the different levels and kinds of teaching, if any, possible at that level for all candidates who will be expected to teach and 1) do not have English as their native language or 2) did not graduate from an EMI university;
4. Require that those who did not achieve a level for specific kinds of teaching to take a course to improve their overall English proficiency: such a course should aim to help candidates improve their general English if need be as well as specialist English in their disciplines, in addition to including strategies for learning through ongoing interaction and negotiation of meaning with students and peers to encourage ongoing scaffolding of their language and communication skills;
5. Offer additional workshop and seminars to sustain gains which candidates have made in the English classes;
6. Organize, in addition, practica as appropriate if candidates already have a high intermediate level of English;

[1] "28. Medium of Instruction 28.1 English is the medium of instruction (the only exceptions are for a small number of programmes/subjects which have got special approval to be taught and examined in Chinese, due to the nature and objectives of the programmes/subjects concerned). Chinese could only be used in small group discussions/tutorials/practical sessions if and when necessary."

[2] "1. Medium of Instruction. Unless otherwise approved by the Senate for a specific course or program of study, English is the medium of instruction and assessment at the University."

7. Implement such changes with the cooperation of departments and faculty development units;
8. Recognize that this kind of systemic change will be long-term and implement stopgap measures to help assure quality in the short to midterm.

Method

In this section, the background of the university under study is presented, the interviews for new Ph.D. students are discussed, and the content and organization of supplementary sessions is described.

Background of the University and the Launch of the EFMI Seminars

The university is a comprehensive, publically-funded university recognized as one of the top 100 or so around the world. The university has admitted more than 200 Ph.D. students every year for the past few years and looks set to significantly increase the number in the coming years. In recent years anecdotal information was reported from the teachers of a pre-service teacher education course about the low English language skills of many new Ph.D. students. Therefore, commencing in 2013, diagnostic interviews were conducted the first two weeks to determine who should enroll in two, two-hour "supplementary sessions". The supplementary sessions would consist of strategies training so that the Ph.D. students who were deficient in their general English could be taught how to help themselves learn English.

Interview Format

A diagnostic interview was developed. In the first part, the candidate read aloud a never-before-seen passage in English (which they could not take away) to an imagined classroom of undergraduate students, in order to evaluate pronunciation, stress and rhythm, intonation, and overall intelligibility; in the second part, the candidate was engaged in unrehearsable and impromptu speaking; in the third part, the candidate was asked to explain an object (drawn randomly from a bag) to the imagined classroom of undergraduate students, in order to evaluate ability and skill in explanation strategies in English.

Results

Results of the interview and the supplementary sessions are presented in this section.

Interviews

Of 188 candidates interviewed, 105 were requested to attend the supplementary sessions, including four candidates who did not attend the pre-sessional diagnostic.

Supplementary Training Sessions and Survey

Two supplementary sessions of two hours each were scheduled for candidates diagnosed as needing them, with a teacher to student ratio of about 52:1. Attendance was not formally recorded but a rough headcount indicated some candidates did not attend the sessions. Candidates were taught and trained in three speaking/listening strategies, as well as explanation strategies; they were also provided with a rationale for extensive reading in English and encouraged to read a Hong Kong English newspaper, for example, on a daily basis. The focus of the strategies was for the students to become ongoing, autonomous learners of English. One such focus included strategies for improving listening comprehension (i.e., input) since it is needed for correct pronunciation (i.e., output). In many cases, the students had studied English for many years and

believed themselves to be good at reading. The sessions therefore aimed at moving existing competency to actual performance; i.e., help them bring knowledge of English gained through input like reading into use of English, and expanding the repertoire of English available. The survey on the outcomes of the strategy sessions is presented below.

Survey on Supplementary Training Sessions
[Responses: 93 - 96 per question]

1. I am from:

   ☐ Hong Kong (**3 respondents**)

   ☐ Mainland China **86 respondents**)

   ☐ Other (write country name) (**4 countries; 6 respondents**)]

	Strongly Agree	*Agree*	*Neutral*	*Disagree*	*Strongly Disagree*
2. The sessions helped me understand my **strengths and weaknesses** in English.	**52**	**38**	**4**	**0**	**1**
3. The sessions helped to model or show me **methods and techniques** which I can use in my own teaching in the future.	**53**	**41**	**3**	**0**	**0**
4. The sessions helped me strengthen my overall **listening skills** in English.	**32**	**50**	**12**	**2**	**1**
5. The sessions helped me strengthen my overall **speaking skills** in English. (95 responses)	**36**	**43**	**14**	**1**	**1**
6. The sessions helped me strengthen **my explanation strategies** in English.	**50**	**35**	**9**	**1**	**1**
7. The sessions modelled examples of **effective teaching techniques and methods** to improve my own teaching in English. (96 responses)	**49**	**43**	**3**	**0**	**1**
8. I feel **more confident** about teaching in English after taking the supplementary sessions.	**32**	**43**	**19**	**1**	**0**
9. The sessions helped me understand about ***sense groups*** when speaking in English.	**46**	**40**	**6**	**0**	**1**
10. The sessions helped me understand about ***stress, rhythm, and intonation*** when speaking in English.	**49**	**35**	**10**	**1**	**1**
11. I could use **additional sessions** to improve my English for teaching.	**38**	**46**	**10**	**1**	**1**
12. I find Strategy One (**using an on-line dictionary**) helpful for pronunciation.	**42**	**43**	**8**	**0**	**1**
13. I find Strategy Two (**using DVDs with English subtitles**) helpful for listening and speaking practice	**42**	**37**	**14**	**1**	**0**
14. I find Strategy Three ("**Read and Look Up**") helpful for speaking in sense groups.	**52**	**32**	**10**	**1**	**1**

Discussion of Results

Interviews

Although the diagnostic interviews were intended only to identify who should attend the supplementary sessions, several observations were made: 1) Candidates from Hong Kong,

Europe, North America, the Middle East, and (usually) South Asia did not need the supplementary sessions even if they were new to HK; 2) Almost all candidates from top tier universities in China did not need the supplementary sessions even if they were new to HK; 3) Candidates from all other universities in China did need the supplementary sessions if they had been in HK less than 2 years; one year was marginal and the candidates were not ready yet at one year.

Linguistic and cultural differences, which Bailey (1984), Kaplan (1989), and Chiang (2006) noted in ITAs in the United States, were also observed in many of the interview candidates, especially those from mainland China. Cultural differences were expressed by them during many interviews regarding the amount of time devoted to work in Hong Kong, which was noticeably more than candidates were used to, and time for reflective thinking or leisure, which was far less than many were used to. The lack of such time for reflection and leisure could be expected to make adjustment more difficult not just to the Western-influenced culture of Hong Kong, but to the educational culture of the university, which had been established during the last decade of British colonial rule and maintained a globally-engaged stance. Besides the cultural differences, linguistic differences were observable in two domains: spoken Chinese and spoken English. Most students from the mainland had difficulty expressing themselves in spoken English and they remarked that their spoken Chinese was Mandarin rather than Cantonese, the latter being the majority spoken first language in Hong Kong and parts of southern China.

Supplementary Training Sessions and Survey

Two, two-hour supplementary sessions were developed for students who were identified through the interviews as lacking English proficiency for teaching. The content covered in the sessions included several means to help students develop their spoken English. Listening excerpt exercises based on the American television show 60 Minutes were developed. The excerpts provided broadcast-quality, standard American English. Around these, explicit activities related to the development of stress, rhythm, and intonation as well as how to use a dependable pronunciation dictionary and learning to speak in sense groups were developed.

Feedback from students attending the sessions was very positive, as indicated by the survey completed by more than 90% of the students attending the sessions. This high level of satisfaction may be attributed in part to the materials and teaching methodology but it is also attributable to students' appreciation for being provided with training which had been absent or deficient in their previous education and which they now recognized is essential for their careers as Ph.D. students. Almost 90% of the students completing the survey from the supplementary sessions were from universities in China where opportunities for exposure to standard spoken English were limited in the extreme. The chances to have supplementary sessions of any sort conducted in EMI were themselves a treasured opportunity for these students. To be able to learn some strategies for self-improvement of English was an additional opportunity for which they seemed genuinely grateful.

While the sessions were successful in exposing students to ways for how they could improve in those areas, it does not necessarily mean that the students would improve. During the first of the two supplementary sessions, they were asked to set realistic goals for practicing strategies; during the second supplementary session, few indicated that they had fulfilled all their goals for practice. It is inferred that the other demands on their time and resources - such as their doctoral research, cultural and institutional adjustment, and lack of instrumental motivation – were factors inhibiting them from spending time practicing the strategies.

As seen in the table in the previous section, the survey consisted of one question (item 1) about the country from which they came; 13 statements (items 2-13) about the supplementary sessions

and the effect it had on them and for which they could respond on a 5 point scale, from strongly agree to strongly disagree; and two questions (items 14 and 15) asking them for additional suggestions and comments. Out of 105 students, 95 completed the survey; all came from Asia and 90% came from mainland universities. Responses for items 2-13 indicated that the students were very satisfied about the sessions, with satisfaction (i.e., any positive response above "neutral") ranging from 79% to 97% on individual aspects of the course. A very high level of satisfaction was reported for items 2, 3, 6, 7, 10, and 14. For these items, the survey respondents reported that they had a clearer idea of where they were strong and weak in English and that the session provided ways to help them improve their teaching, explain things better in English, and speak with better stress, rhythm, and intonation.

Conclusion

The paper has looked at EFMI training for new Ph.D. students, mainly from outside the Hong Kong Special Administrative Region, who were expected to take up teaching duties at a publically-funded university in Hong Kong in English as a Second Language (ESL) during their program of Ph.D. studies. The author has also suggested the term 'English for the Medium of Instruction (EFMI)' for such for teaching in ESL and in the process reified EFMI as a new subgenre of ESP.

The kinds of issues reported in the literature which ITAs using ESL to teach at American universities have faced are also the kinds of issues which these new instructors at the university in Hong Kong in this study face. The implications for universities, who aspire to ascend the league tables of best universities in the world, be they located in Hong Kong or elsewhere, are significant. First, English for the Medium of Instruction (EFMI) in Hong Kong's EMI universities is new ground whose acceptance will need to be gained but the potential for future studies are enormous. The same is also true for other Asian and European universities which are switching programs and courses to EMI. Development of the EFMI concept in terms of both functional-notional language, and EMI methods and techniques enveloped in the language, will be needed. As of this writing, the university under study is embarking on that very path by offering a regular university course in EFMI.

Furthermore, while needing to be customized for the higher education context in Hong Kong or elsewhere, many good ideas can be drawn on from the U.S. experience and from what has been done in Hong Kong, as reported in this paper. They range from studying the effects of changing language requirements for Ph.D. admission to the establishment of language testing for Ph.D. students in Hong Kong or elsewhere who are expected to teach, and from the design and implementation of courses designed for English language development of Ph.D. students to the effects of such courses on teaching. Studies of attitudes of undergraduates towards Ph.D. students who teach, Ph.D. students' identity formation as teachers, and other areas also hold the potential for research. The direct effects of such research could mean better understanding of the situation and better teaching for undergraduates, while indirectly it may facilitate or sustain a university's trajectory into the highly competitive top ranks of the world's universities.

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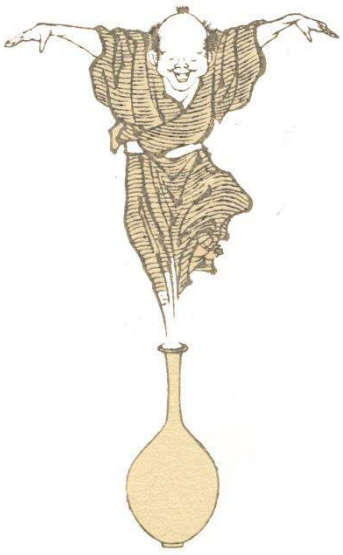

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