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An exploration on applying digital learning materials to information literacy class: a hybrid approach at Taipei Medical University

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Abstract

The Ministry of Education in Taiwan designed 3 information literacy (IL) related digital learning materials in 2008 and conducted a series of promotion activities. The MoE aims to encourage general education teachers in the universities to utilize these digital learning materials, and to resolve the deficiency of IL teachers. In September 2010, the author participated in a pilot testing group of one of these new digital learning materials, called “Library and Information Utilization”. This paper addressed Chiu’s approach in merging these new materials into curriculum, outlined the key processes on content selections and techniques used. Six out of eighteen chapters from the digital learning material were selected and arranged for asynchronous distance learning. One hundred and ninety eight learning journals of feedbacks and comments, as well as system accessing logs were collected and analyzed to examine learning outcomes of using the distance learning materials. The statistics showed that students enjoyed asynchronous distance learning, especially during midterm and final exam week. They split one chapter into 2-6 online visits. The time frames were mostly during the period of 18:00-24:00. For each chapter they spent 0.99 to 1.7 hours in average and answered 7.2 to 7.9 out of 10 after-chapter quizzes correctly. Finally, comments on the material were adopted by the program authority and they already scheduled for a material revision. Hope this hybrid approach can be a reference for other general education teachers.

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1. Introduction

In 2008, the Ministry of Education (MoE) in Taiwan invited professors and experts to design 3 information literacy (IL) related digital learning materials, including “Library and Information Utilization”, “Information Literacy and Ethics”, and “Information Laws”. From 2010, these materials were made available on the MoE digital learning platform (<https://ups.moe.edu.tw/>) with creative commons copyright license. The same year, these e-learning project teams started to conduct a series of promotion activities, including the recruitment of pilot testing teachers,

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the extended materials designs, and the sponsoring of both seminars and workshops around Taiwan. The purpose of the promotion was to encourage general education teachers from all universities to adopt these materials, and to resolve the deficiency of IL teachers and the result-in issue of the general lacking of IL education in Taiwan.

The first author is a teacher in the general education center in Taipei Medical University (TMU). She is also the associate director of the TMU library. She teaches IL related courses in the school for 9 years. As of 2010, she opened 3 IL courses, including “Introduction to Information Behavior” (<http://library.tmu.edu.tw/chiu/infobeha991.htm>), “Information Technology and Reading Society” (<http://library.tmu.edu.tw/chiu/it&rs991.htm>), and “Interpreting Health Science Information” (<http://library.tmu.edu.tw/chiu/hr992.htm>). In September 2010, the author was invited to be a member of the pilot testing group of one of the above mentioned new digital learning materials called “Library and Information Utilization”. This article reported how the author utilized the digital learning materials in her “Introduction of Information Behavior” curriculum, and made the course to become a hybrid class so that it consisted of both in-class and asynchronous distance learning. In addition, learning journals and access logs were collected for analyzing the students’ self-paced learning behavior and their learning outcomes.

2. IL courses among universities in Taiwan

In order to understand the current status of the IL courses opened by universities in Taiwan, Chiu (2009) adopted content-analysis methodology to conduct the research. First of all, the research assistants searched IL courses by keywords and browsed course titles throughout the class selection websites in all 164 universities in Taiwan in March 2008. In total, they discovered 52 related courses opened by 38 universities. Chiu collected these course introductions and syllabi for further analysis. Research questions for the 2009 project were: (1) What is the current status of IL courses opened by different universities? (2) What are the educational backgrounds and working experiences of the teachers of these IL courses? (3) What are the titles and contents of these IL courses?

The research findings were: (1) Among all 164 universities in Taiwan, only 38 (23.2%) of them opened courses related to IL. This showed that there was still sufficient space for the development of IL education in Taiwan. (2) Among the universities offering IL courses, higher education system universities offered more IL courses than technological and vocational system ones did. The private universities offered more than the public ones did. (3) In Taiwan, IL courses were mainly organized by general education centers and were taught by university faculty or university library staff who were in management positions (e.g. section head and director, deputy / associate director). (4) The contents of IL courses in Taiwanese universities mainly focused on the utilization of libraries and library resources. Further research was needed both to strengthen the course design, determine the nature and scope of information needs, and to understanding other information related issues. (Chiu, 2009)

Chiu (2009) stressed that IL was a series of learning processes that was to identify information needs, to analyze problems that need to be shed, to select suitable resources, to carry out information retrievals, relevance judgments, evaluations, and to make good use of information or even become familiar with social, legal and ethical issues that cannot be replaced by a library tour or several resource operational training sessions. Therefore, she believed that IL education was the most suitable for the 1st and 2nd year undergraduates. Chiu hoped that universities in Taiwan would put greater emphasis on IL education, and would follow the “*Information Literacy Competency Standards for Higher Education*” (ACRL, 2000) to provide more complete teaching plans.

In 2010, Chang’s thesis was greatly influenced by chiu’s previous study. She discovered that there were 41 out of 164 universities that offered IL related courses, and there with an overall total of 78 courses. This finding showed that there was a slight increase on the number of universities opened IL courses and the number of the courses opened. This finding indicated that IL education was gradually receiving more and more attention among higher education organizations. Also in Chang’s research, it revealed IL teachers comments toward MoE’s “The Utilization of Library and Information” digital learning materials. Most teachers gave high ratings on the content of these

digital learning materials. They found that they were very helpful when preparing for the class. This material incorporated multimedia interactive contents, and used case analysis to lead students to get into the IL learning context. Teachers could adopt scenarios from the materials and encourage students to discuss, and thus motivate students toward active learning. This research also found that the majority of IL courses in Taiwan used the “in-class lecture approach” (79.63%), less than 1/4 of them used “both in-class lecture and self-paced online learning approach” (22.22%), and very few of them were purely self-paced online learning approach. Finally, Chang suggested that teachers should select suitable digital learning material to follow curriculum designs. With a standard distance learning procedure, the digital learning materials could increase the effectiveness on both teaching and learning.

3. Curriculum design and research methods

The MoE’s “Library and Information Utilization” digital learning material was comprised of 18 chapters; the IL course “Introduction of Information behavior”, which the author offered in Taipei Medical University, also consisted of 18 weeks of class hours. The author adopted 6 chapters and split into 4 asynchronous distance learning sessions, whereby chapter 6 and 8 were arranged as the first session, chapter 9 and 10 were the second session, chapter 7 and 14 were the third and fourth session respectively. In addition, the author selected partial contents from 4 chapters as the in-class lecture materials for the 15th week. (See Table 1)

Table 1: “Introduction of Information behavior” syllabus detail

Week	Topics	“The Utilization of Library and Information” materials
1	Introduction	
2	Information behaviors: information need, information seeking, and information use	
3	Information communication organizations: GLAM	
4	Information organization tools	
5	How to find books and journal articles	Chapter 6: How to find books Chapter 8: How to find journals and magazines (Asynchronous distance learning session 1)
6	Reference resources, part I	
7	Reference resources, part II	
8	Oral presentation for assignment 1	
9	How to find news information and theses	Chapter 9: How to find news from newspapers. Chapter 10: How to find theses and dissertations. (Asynchronous distance learning session 2)
10	Site visit of GLAM (mid-term exam week)	
11	How to find internet resources	Chapter 7: How to find internet resources (Asynchronous distance learning session 3)
12	Theory and practice of information retrieval, part I	
13	Theory and practice of information retrieval, part II	
14	Searching and evaluating internet resources	
15	How to write an academic report?	Chapter 2: select research topic Chapter 3: Build up background knowledge Chapter 16: Writing papers at ease. Chapter 17: Citations enrich articles (Select partial contents as in-class lecture materials)
16	Information ethics and digital citizens	Chapter 14: Information ethics (Asynchronous distance learning session 4)
17	Oral presentation of final report	
18	Final exam week	

Asynchronous self-paced distance digital learning was arranged to be within or prior to both mid-term and final exam weeks, so that students could access online digital learning materials at their pace without coming into classroom. They were required to submit their learning journals before mid nights prior to the next class day, so that the author could collect their learning journals and answered students' questions aroused during their self-paced learning. In 2010 fall, there were 33 students enrolled in this class. With 6 digital learning chapters throughout the semester, this research totally collected 198 learning journals, where the accessing time frame, numbers of on-line accessing time, total hours spent, and the results of after chapter quiz were all recorded. These data was analyzed and evaluated to reflect both students' self-paced learning behaviors and their learning outcomes for this asynchronous self-paced learning experiment.

4. Findings

4.1. Student's self-paced learning behavior

4.1.1. Time frame distribution for accessing each chapter

From table 2, we found that most students tended to access online sessions between 18:00 to 24:00 for each chapter. Chapter 9 and 10 were arranged as 1 digital learning session. After further reviewing the accessing time frame between these two chapters, the author found that 28 out of 33 students accessed chapter 10 just couple hours later than chapter 9. As chapter 9 started from 18:00 to 24:00, they tended to start chapter 10 at the time closer to mid-night, or even after mid-night. In addition, the time frame distribution for chapter 14 was significantly different from other chapters. The number of students accessed chapter 14 between 0 to 6 o'clock and 6 to 12 o'clock were significantly more than those between 12 to 18 o'clock. The author further discovered that chapter 14 was assigned to be finished from December 25 to January 2. Therefore, she inferred that the students' learning pattern was significantly changed during the holiday week.

Table 2: Time frame distribution among each chapter (n=33)

Time Frame	Chapter 6		Chapter 8		Chapter 9		Chapter 10		Chapter 7		Chapter 14	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
0-6 O'clock	2	6%	1	3%	0	0%	4	12%	1	3%	5	15%
6-12 O'clock	5	15%	6	18%	4	12%	2	6%	5	15%	5	15%
12-18 O'clock	9	27%	8	24%	10	30%	8	24%	11	33%	1	3%
18-24 O'clock	15	46%	16	29%	18	55%	18	55%	15	46%	20	61%
Missing data	2	6%	2	6%	1	3%	1	3%	1	3%	2	6%

4.1.2. Average number of time accessing each chapter

Since digital learning assignments were scheduled as an asynchronous self-paced learning sessions, students could access these chapters whenever they were free, and they were not required to finish one chapter at one time, the author discovered from Figure 1 that the numbers of time accessing chapter 6 and 8 were higher than the descending chapters. The author inferred this result to be caused by the unfamiliarity of both the digital learning platform and materials. The average times for all of the descending chapters stayed between 2.1 to 3.13. These figures reflected the fact that students became used to this learning model.



Figure 1 Average times of accessing each chapter (in the order of assignment)

4.1.3. The average hour spent for each chapter

The “Introduction of Information Behavior” was a 2 credit hour general education course in TMU. Each week, students spent 100 minutes (1.67 hours) to attend the in-class lecture. Figure 2 showed that the average of the hours spent for each chapter was between 0.99 to 1.7 hours. In addition, the hours spent in the first session, which included chapter 6 and 8, was 2.09 hours, and the second session, which included chapter 9 and 10 was 2.66 hours. These two numbers showed that even though students were not coming into the classroom, they spent more time on self-paced learning.

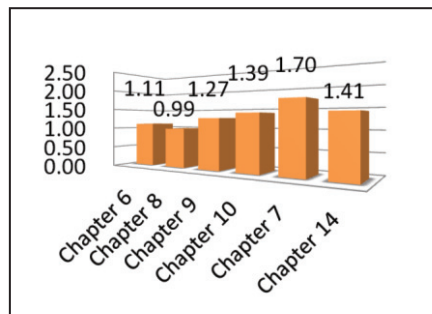


Figure 2: The total accessing hour for each chapter

4.2. Students' self-paced learning outcomes

At the end of each chapter of the MoE's “Library and Information Utilization” digital learning material, there was a 10 single choice question quiz, called “big challenge”. Students could evaluate their own learning outcomes through this session. Figure 3 showed that the average numbers of correctly answered quiz for all chapters were between 7.2 to 7.9 out of 10. These results showed that students comprehend nearly 80% of the digital materials. In addition, the author asked students to write down questions that were aroused during self-paced learning to the journal, and the author would answer both in the classroom during class hour or in one on one discussion session.

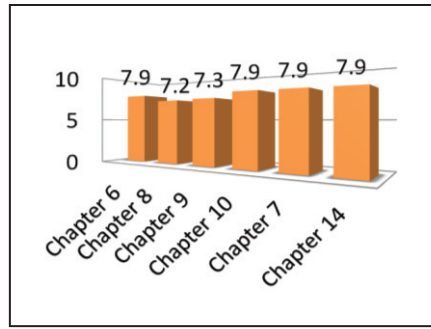


Figure 3 Average numbers of correctly answered quizzes

4.3. Students' feedbacks toward these digital learning materials

The author participated in this digital learning material promotion project as one of the pilot testing teachers, so she was responsible for collecting students' comments and suggestions in regard with to this digital learning material. Then she passed the results to the principal investigator for future material revision. In general, students gave positive feedbacks to the digital learning materials. For example, students wrote "these digital learning materials incorporated with videos, animations, and games; it was more interesting than traditional in-class lecture". They also thought that "asynchronous distance learning gave a flexible learning pace to fit a personal schedule". As for the suggestions, students in general thought that "the speed of the narrative should be faster", and "the content could be more sophisticated", etc.

5. Conclusion & Reflection

The author was honored to be participating in the MoE "Library and Information Utilization" digital learning material project promotion and experimental teaching application. She merged the digital learning material into the 18 weeks curriculum, and reshaped the course to become a hybrid learning approach class. Even though it was the first attempt of merging the digital materials into the class, she was pleased with the outcome of this experiment. She therefore used the same format in her two other courses with different digital learning chapters to meet the courses' purposes. For the 2011 course of the "Introduction of Information Behavior" started in 2011 fall, she will once again apply the same model to it, and then she will compare the outcomes from these two years data.

In conclusion, the author would like to share a couple suggestions as a reference for those who are interested in utilizing digital learning materials in the future:

5.1. From the aspect of utilizing digital materials:

Utilizing an online education platform requires taking technical issues into consideration. For students who were not technical-savvy, teachers had to provide a solution available anytime to resolve students' issues instantly. Secondly, online information has the tendency of a short life span. They tend to be outdated really fast. In a traditional classroom lecture, teachers can provide up-to-date information to students right away. For asynchronous digital learning approach, it is recommended to provide corrigendum to students before they go online, to avoid misleading students with outdated information.

5.2. From the aspect of facilitating asynchronous distance learning

Traditional in-class lecture approach allowed the teacher to monitor students' academic performance; Asynchronous distance learning approach made learning hours flexible. But it required students to have self discipline to become active learners. Based on the accessing log collected from this research, most of students completed digital learning assignments literally close to due dates. Therefore, to motivate students to become active learners will always be a challenge to teachers.

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