

## **Integrating action learning into information literacy instruction in a cross-disciplinary blended learning environment**

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### **Abstract:**

*The purpose of this action-based cross-disciplinary (library information literacy and library action service App) study is to link between classroom learning and service experience by integrating the four-stage service learning process and five-step problem-based learning into curriculum design. The study adopts a hybrid of qualitative and quantitative research approach to explore the effectiveness of innovation teaching in a flipped and online learning environment. The results support the design of the course successfully by cultivating students' information literacy skills and their competence in problem-based learning and service learning in terms of self-growing, civic spirit, high-level critical thinking skills and collaborative learning.*

**Keywords:** Information literacy ; Action learning ; Service learning ; Problem-based learning ; Flipped classroom

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### **Background**

Integrating service learning (SL) and the teaching of information literacy (IL) creates a problem in that, in addition to services, less value is placed on learning value; so it is necessary to introduce new elements, such as a service learning model that integrates actions and reflections. This links service learning more closely to actual core issues to allow critical thinking and reflective dialogue. Eyler and Giles noted that the links between classroom learning and service experience and effective structured reflection are the two most important elements in achieving service learning as an educational goal<sup>1</sup>.

This study establishes a cross-sector service learning course: the general education Library and Information Utilization digital course and the Programming on Smart Phones course for the

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<sup>1</sup> Eyler, J., & Giles, D. E. (1999). *Where's the learning in service learning?* San Francisco, CA: Jossey-Bass.

Department of Information Management. The new course design implements traditional classroom teaching and an innovative method of "blended flipped online instruction", which was developed by the instructor (the first author) to enhance students' ability to retrieve information and to become familiar with the information channel. The course arranges action learning using library services and library visits. The course integrates structured five-step problem-based learning into the reflective stage of service learning, to allow deep reflection, and proposes solutions for library (action) service problems.

## Literature review and model development

### Action learning

Revans describes action learning using a formula, where L is learning, P is programming and Q is questioning, to create insight into what is seen, heard or felt<sup>2</sup>. Revans later proposed an extension to this formula with the addition of R for reflection, such that:  $L=P+Q+R$ . Action learning emphasizes that learning is a process that involves group activities. Under the guidance of teachers, members of a group repeatedly communicate through learning, stimulating thinking and reflection, clarifying problems, providing support and criticism. Action learning uses the real problem as the main axis. Therefore, in the process of repeated action and learning, the learner's knowledge level is increased and new knowledge is transformed into action in time, solutions are proposed through problem-solving processes and the new knowledge can then be tested by action.

### Four-stage service learning

The concept of service learning originated in the United States and is an empirical learning model for "learning from doing"<sup>3</sup>. Service learning enhances traditional curriculum learning, promotes personal development, cultivates civic awareness and a sense of responsibility and contributes to society. Ehrlich proposed that service learning, problem-based learning (PBL) and collaborative learning as effective civic education teaching methods<sup>4</sup>. Fertnam, White and White proposed a four-stage service learning process<sup>5</sup>: during **preparation**, an instructor combines curricula and develops service plans to provide training, supervision and support for the knowledge and resources that students require; in the **service** stage, the content and methods of service are related to the actual community problems; in the **reflection** stage, through reflection, students are affected by the impact of new experiences and adopt different perspectives from the past, which then change their lives and behaviours; in the **presentation** stage, through the sharing and evaluation of results, students, service organizations and teachers share their learning and growth, encourage students to affirm their participation and contribution and inspire a determination to continue to serve.

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<sup>2</sup> Revans, R. W. (1982). *The origin and growth of action learning*. Brickley, UK: Chartwell-Bratt.

<sup>3</sup> Waterman, A.S. (Ed.) (1997). *Service-learning: Applications from the research*. Mahwah, NJ: Lawrence Erlbaum.

<sup>4</sup> Ehrlich, T. (1997). Civic learning: Democracy and education revisited. *Educational Record*, Summer-Fall, 57-65.

<sup>5</sup> Fertman, C. I., White, G. P., & White, L. J. (1996). *Service learning in the Middle School*. San Francisco, CA: Jossey-Bass.

## **Five-step problem-based learning**

Problem-based learning is strengthened by a constructivist approach. It is an instructional strategy that is organized around the study and resolution of problems<sup>6</sup>. The PBL coursework followed the five-step PBL model. Within the PBL environment, the University library service problems are catalysts that initiate the learning process: 1. Students propose ill-structured problems that are related to their library service needs; 2. Students analyze the problems to determine what they know about the problems and conduct independent investigation of the information needed to address the problems; 3. Students analyze the problems and identify action steps through collaboration; 4. Students generate possible solutions to the problems; 5. Students consider the consequences of each solution and select the most viable solution through metacognition.

## **Research tools**

An ARCS (Attention, Relevance, Confidence, Satisfaction) based online questionnaire is used to measure students' motivation. In-depth interviews are used to gather qualitative evidence, in order to evaluate the learning process.

A service learning pre-class questionnaire was distributed to determine students' perceptions towards the attitudes of civic responsibilities. The average score for the study is 3.25 (total is 4.0). In general, students have rather weak and inaccurate perceptions towards civic awareness.

## **Framework for the design of an innovative information literacy course**

The course is constructed under the objectives of collaborative learning, self-directed learning and lifelong learning (see Figure 1). It aims to help learners to translate information literacy theories and concepts into concrete action practices, treating University library service problem solving in real situations as the core of learning, planning feasible strategies and steps, and by constantly reflecting on think-and-correct after the action, so that learners continue to grow as a lifelong learner.

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<sup>6</sup> Barrows, H.S. (1986). A taxonomy of problem-based learning methods. *Medical Education*, 20, 481-486.

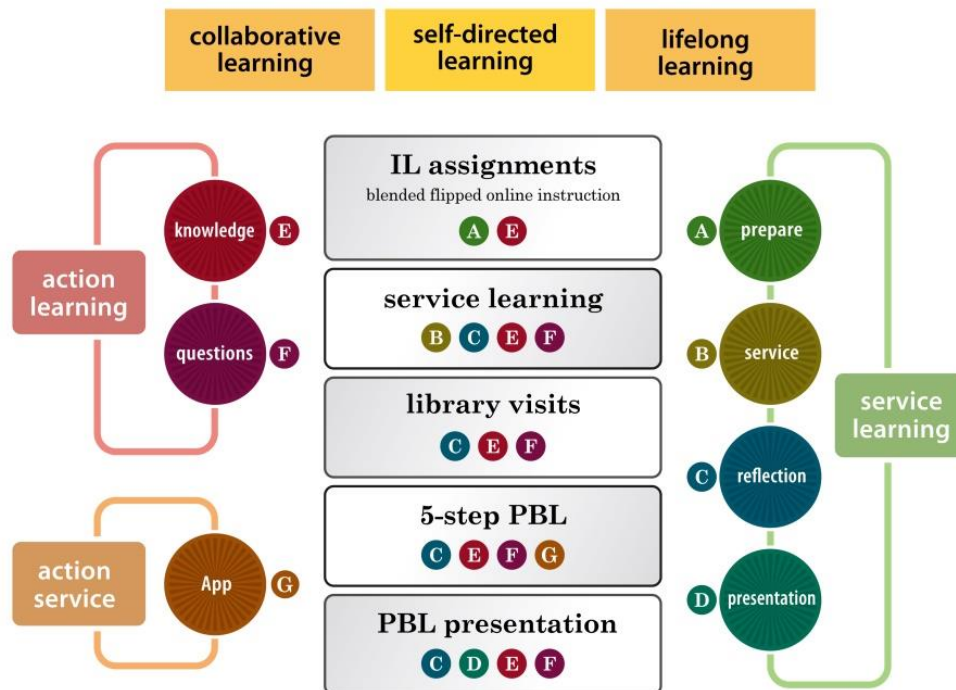


Figure 1. Framework for the design of an innovative information literacy course

- **Five group assignments.** The assignments aim to develop effective search strategies and skills using online databases and web search engines on free topics. The instructor begins flipped teaching in coursework one and two. The instructor observes and encourages qualitative search process of search skills. Meanwhile, the instructor enables the group leaders to strengthen their leadership and stimulate effective collaborative learning. Students then continue with more coursework using the online mode in an online community at students' own learning pace.
- **Four-stage service learning.** From the impact of University library service experience, students master knowledge and ask questions, and they gain different views from the past.
- **Library visit.** Students visit more libraries to master knowledge and ask questions, and they gain deep reflection.
- **Five-step PBL assignment.** Based on the knowledge and skills gained from the above three course activities, groups define University library service problems, and gather and evaluate information to address problems in a real-world setting. Students from Library Service App team, who also take the course, produce Apps to support library action services.
- **PBL presentation.** Through sharing the PBL results, students ask and answer questions, which trigger deep reflection and mastering knowledge.

## **Results and discussion**

### **Quantitative results**

The regression analyses results are considered to be acceptable in this study (N=97, loading>0.60 and Cronbach's  $\alpha$ >0.8). The paths in the model, Attention—> Relevance—> Confident—> Satisfaction, are all statistically significant ( $p<0.01$ ).

### **Qualitative results**

#### **Service learning**

The service learning process brings new experiences and challenges and stimulates students' growth if the learning content is related to the course. A proper design for service learning, whereby the reflection activities occur before and after the service learning, allows students to learn and grow. Service learning provides students with multiple learning channels and the process of serving enhances the development of the curriculum and personal character and fosters civic awareness and social responsibility<sup>7</sup>. *"The service learning helps me to gain insight into library management. I felt joy through helping the University library and the activities increase team collaboration."* (Engineering College student, grade 2)

#### **Problem-based learning**

The PBL process is supported by continuous reflection on the content and the process. The instructor acts as a facilitator and observes the PBL process and supports the group leaders to strengthen their leadership and stimulate effective collaborative learning. The instructor also promotes self-regulated learning, in order to stimulate critical reasoning and elaboration on the topics. *"It is interesting to learn how other universities manage library services. The team worked closely to provide solutions to the problems for our University library service, which are relevant to our needs. The PBL activities enhance our motivation to learn and inspire a feeling of achievement."* (Management College student, grade 3)

#### **Information literacy digital materials**

People with an adequate level of IL skills can compete more effectively with others in their workplace and living communities. It is therefore crucial to ensure that educational systems develop the necessary skills to enable students to function effectively in the knowledge economy. The digital IL course allows students to access the re-usable digital multimedia materials before graduation whenever necessary. Students integrate the knowledge acquired into other subjects and daily life after learning. *"I learned useful search skills from using Boolean Logic in advanced searches and learned how to assess information and how to incorporate useful information into my own knowledge base. These are very helpful in other subjects and will help me in future, if I later decide to go to graduate school."* (Electrical and Engineering College student, grade 3)

#### **Blended learning**

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<sup>7</sup> Huang, Y. (2001). Service learning: Actual practice for civic education. *Newsletter for Teaching the Humanities and Social Sciences*, 12(3), 20-42(in Chinese)

The development of a student-centered blended learning environment has provided new modes of teaching and learning IL skills. The innovative blended flipped and online mode retains the benefits of flipped and online instructions, and addresses the difficulties that each method presents. There is a noticeable improvement in reliable leadership and group collaboration learning. Self-directed learning is enhanced and negative learning attitudes are reduced significantly. "I have a busy schedule with my graduation project. I enjoy the blended learning mode very much. In the flipped weeks, the group can get immediate help from the teacher. In the online weeks, I watch the materials and work on the coursework at my own learning pace, which improves my time management." (Design College student, grade 4)

## **Conclusion**

The qualitative and quantitative results reveal that overall students are satisfied with the design and delivery of IL course in the innovative blended learning environment. The results support the design of the course successfully by cultivating students' IL skills and their competence in PBL and SL in terms of self-growing, civic spirit, high-level critical thinking skills and collaborative learning.

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