

The Implication of Integrated Training Program for Medical History Education

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Background: A full spectrum of medical education requires not only clinical skills but also humanistic qualities in the medical professionals, which can be facilitated by an integrated training program. An integrated project was created to improve one's medical intellectual and communication competence and to enable them to become docents who can perform well, as well as for development of their humanitarian nature. The aim of this study was to suggest an integrated program that provided approaches for creating positive effects in medical history education.

Methods: Taiwan Medical Museum conducted a project on medical history lessons and docent training program; 51 participants (24 male and 27 female) attended this plan. Targets took pre-tests before lectures, attended courses of medical history, and then took post-tests. Next, they received a series of lessons on presentation skills and practiced for guiding performance. After all the training processes, the attendees succeeded in all evaluations in order to guide exhibition visitors. Data were analyzed using paired *t* test.

Results: Two types of assessments were followed, i.e., cognitive examination and guiding practice, and both were related to good performance. Reliability (Cronbach's α) was 0.737 for the cognitive examination and 0.87 for the guiding evaluation. It indicated that the integrated program for docent training resulted in a significant difference ($p \leq 0.0001$).

Conclusion: The participants demonstrated better achievement and knowledge acquisition through the entire process, which led to great performance when approached by the visitors. The whole project helped to shape up a good docent and to accumulate positive learning experiences for medical professionals as well. Therefore, an integrated program is recommended to medical history education in the future. (*Biomed J* 2015;38:90-94)

Key words: docent training, integrated training program, interdisciplinary medical education, medical history, museum learning, problem-based learning

Teaching and learning activities can be applied in medical education to assist all the learners in a way of learning efficiency.^[1] An integrated learning program that applied

problem-based learning (PBL) method and varieties of activities to nurture medical professionals was advantageous. The PBL approach in medical education was initiated at Mc-

At a Glance Commentary

Scientific background of the subject

This study was conducted to suggest an integrated program that provided approaches for creating positive effects in medical history education. According to the statistical data, the participants demonstrated good achievement and knowledge acquisition through an integrated training program. It helped to improve medical intellectual and communication skills and also for developing humanitarian nature in medical professionals.

What this study adds to the field

The results of this study will propose an alternative way that combining ADDIE model and PBL method for effective medical history learning by way of integrated program within medical museum to give lecture, discussion, receive feedback and adjustment to reinforce one's abilities. Besides, positive learning process would develop better insights and medical humanities.

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Master University in the late 1960s, and the positive effects of clinical practices have been increasing for decades.^[2,3] It was expectable that integrated training program within museum environment could be beneficial for knowledge acquisition and narrative and observation competencies.^[4] This study involved the students who participated in a docent training program conducted by the Taiwan Medical Museum to discuss the positive effects in medical history education and to assess the efficiency of the training program.

The program included lessons of medical history and presentation of guiding skills, that contained problem solving, knowledge constructing, and practicing to a well-performing docent. Participants were able to build up the level of confidence, sharing tasks, creativity, empathy, and insights.^[5-7] Moreover, the utilization of the training program in a situated environment led to desirable learning outcomes such as better realization of medical history, positive behavioral performance, and development of medical humanities.

Taking a museum as the resource to promote positive learning effect, learners could explore in a situated environment, apply prior experiences, build up learning models, and grow a new prospect as well as inspiration of medical humanities. According to Weller's Museums for a New Century, it reminds us to value the importance of educational programs of the museum. Besides regular classrooms, museums and their facilities played as an essential resource to foster learning effectiveness.^[8-10] In association with medical museum to create an educational program, students work together to find out and solve problems, share experiences and responsibilities, and practice for successful achievement of the group and their own further.^[10,11] The instructors played a supportive role to facilitate learning in the entire process.

The Taiwan Medical Museum (TMM) was located at Kaohsiung, Taiwan and it aimed to collect and preserve the medical instruments of Taiwan and educate people toward understanding the culture roots and pursuing research in medical history.^[12] It conducted exhibitions, health promotion lectures, visitors' guiding tours, and educational programs; in addition, the museum regularly directed docent training programs and mobile exhibitions. The goal of the docent training program was to train docents in problem discovering and solving, guiding performance, and make them well aware of medical history in order to give profound satisfaction for the museum guests. Also, the medical museum provided a situated learning environment to bring in extra resources in additional to text books.^[4,12] Situated learning contains students in cooperative activities where they are challenged to use their critical thinking and communicative competence in support of social interaction that adds more experiences besides traditional school learning.

Subjects

A docent training program included summer medical camp and mobile exhibition for 3 years. The targets of summer camp were sophomores from Kaohsiung Medical University and selected undergraduate students from places in Taichung, Taipei, and Hualien where the mobile exhibition was held. Most of them majored in medicine, public health, and pharmacy, and they were required to have entry level knowledge of medical history of Taiwan. There were 51 participants that included 24 from the summer medical camp and 27 from the mobile exhibition. We adopted the PBL methods and practiced in a medical museum to establish a learning model in which we encouraged learners to discover and solve problems with group members, hold discussions, and gain fundamental knowledge. The preparation and presentation process strengthened the knowledge of cognition of medical history and developed better communication skills and problem solving competence. It also inspired the development of medical humanities.^[13]

This program design was based on the analysis, design, develop, implement, and evaluation (ADDIE) learning model, which is commonly applied in instructional system for effective learning. It consisted of need assessment analysis, program design, development, implementation, and practice evaluation applied to access achievement.^[14-16] Each step was sequential and iterative as well.

METHODS

We hypothesized that integrated training program within medical museum would lead to successful learning effects and support the participants becoming museum docents. A delivery strategy contained medical history lessons, presentation skills, and museum guiding demonstration. Good and broad medical cognition would lead to better guiding performance. The assessments were through the pre- and post-tests of cognition of medical history and guiding presentation [Figure 1].

Procedure

Step 1. At the beginning of the training program, students took a pre-test of 25 multiple-choice questions and attended lectures of medical history that included six sections from the Taiwan Medical Museum: Legendary Pioneers in Taiwan Medical History; The Exhibition of David Manson Memorial Hospital in 1860s decades;^[17] History of Presbyterian Missionary since 1865; Nursing History of Taiwan; Chinese Traditional Medicine in Taiwan; and Exhibit of Ear, Nose, and Throat and Dental History in Taiwan. The museum instructors introduced the objectives and steps of the program, and handouts and related resources were

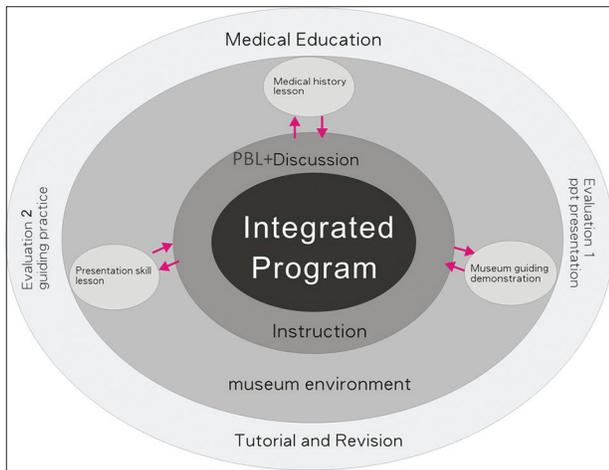


Figure 1: Delivery methods for the docent training program. An integrated training program which involved various approaches of medical history lessons, presentation skills, and guiding demonstration. It took place in the museum environment to benefit learning and enabled the participants to finally become museum docents to guide visitors with a good performance. During the entire learning process, discussions, instructions, tutorials, and revisions were repeated as needed. Evaluation was necessary to assess the learning outcome.

provided beforehand. Targets had to find out the problems and research for extra contents when they came to meetings. The instructors helped in problem solving and shared thoughts for better improvement.^[18-21] In this program, students were required to have at least four interactive meetings and 8 h of lessons on the medical history of Taiwan.

Step 2. After the pre-test and lessons on medical history, the targets took the post-test in which they were required to obtain a score of 80 (out of 100), and then proceeded to the next step. They were encouraged to discover and solve problems for acquiring basic knowledge in support of guiding performance. Better cognitive knowledge of medical history was fundamental for the development of guiding performance.

Step 3. In this stage, the participants needed to have 3 h of lessons on presentation skills and explore complete museum guiding by instructors in order to accomplish first guiding evaluation. The lesson of presentation skills was arranged to reinforce their guiding performance and contained oral and non-oral communications. Oral presentation skills included lectures, interactive discussion with the instructors, and self-practice. Correct and proper tones, words, languages, and volumes were important when they are approached by visitors. Non-oral communication involved body language, gesture, and facial expressions, appropriate distance, and clean outfits. In the summer camp, learners formed six groups with two persons in each and worked and presented cooperatively; they were free to choose their partners for this. Participants of mobile exhibition worked with all members, but performed individually when they gave presentation. For

a better performance, the instructors directed the guiding tours and shared tips and experiences, and the targets could learn from peers through presentations, discussions, and adjustments for learning unique ways of guiding.

Step 4. The assessment made in this program was through cognitive evaluation and guiding presentation, both conducted twice each.^[22] For the first guiding evaluation, students gave a PowerPoint presentation of the topics they were assigned and received critical inputs from the evaluation committee and peers for improvement.^[23] The committee members consisted of six experts, doctor, professor, history teacher, museum instructor, and senior volunteer, who held at least three meetings to design all the evaluation criteria. Criteria for the first guiding evaluation were as follows: Content accuracy was given 40%, oral presentation skills 30%, visual aid 20%, and time management was given 10%. Participants were required to obtain a score of 80 (out of 100) to move on to the next stage.

Step 5. In the second guiding evaluation, the students performed formally to the evaluators consisting of a professor, museum staffs, senior volunteers, and peers to receive suggestions. Practice and revision were essential to the learners.^[21-23] The evaluation criteria for the guiding presentation were as follows: Content accuracy was given 30%, presentation skills and style 30%, costume 20%, time management 10%, and other creative thoughts 10%. Targets were required to obtain a score of 80 (out of 100) at the second guiding presentation to achieve the final goal. Strategies above were used to assess the learning outcomes, and every procedure was accomplished in sequence and with iteration if necessary.

Step 6. Attendees who had been through the entire process and passed the evaluation basis received a guiding certificate of honor and began to guide exhibition visitors as a docent.

Evaluation and statistics

All participants ($N = 51$) completed the data analysis of pre- and post-tests of cognition of medical history and guiding presentation conducted two times. The assessments were designed by the evaluation committee that consisted of Chairman of the Taiwan Medicine and Humanity Foundation, Board of Taiwan Medicine and Humanity Foundation, doctors, historical experts, museum instructors, and senior museum volunteers. Data were analyzed using the standard statistical software (IBM SPSS, 12.0).

RESULTS

Test reliability

Pre- and post-tests of cognition of medical history and first and second guiding evaluation covered most of the learning objectives in this docent training program. Reliabil-

ity (Cronbach's α) for pre- and post-tests of medical history knowledge was 0.737 [Table 1] and for the guiding evaluation was 0.872 [Table 1]. Both indicated good reliability, which would benefit in giving a positive guiding performance.

Evaluation in the cognitive domain

Pre- and post-tests were conducted for cognitive evaluation of the 51 students ($N = 51$). There were 25 questions in the pre- and post-tests which were from topics of medical history, and the basic criterion was that the attendees had to obtain a score of 80 (out of 100). Only 19.6% of the participants obtained a score of 80 in the pre-test. With lessons, instructions, group studies, and revisions, 96% of the students achieved a score of 92 (out of 100) in the post-test and the mean score was 85. Difference in cognitive evaluation between pre-test and post-test was significantly increased ($p \leq 0.0001$) [Table 2]. The outcome showed that cognitive knowledge of medical history of the students was improved.

Evaluation in guiding practice

The 51 students ($N = 51$) took the formal guiding evaluation twice, and the basic criterion was that the attendees obtain a score of 80 (out of 100). Only 21.6% of the participants obtained a score of 80 in the first guiding assessment. After lessons, instructions, demonstrations, tutorials, and revisions, 99% of the students achieved a score of at least 80 (out of 100) in the second guiding performance, and the mean score was 97 ($p \leq 0.0001$) [Table 2]. There were some differences between the two guiding assessments; however, they were fundamental. It was necessary to pass the first guiding presentation for gaining experience in order to undergo the second guiding evaluation.

In the second guiding evaluation, we encouraged the participants to wear nice costumes to attract audiences, which worked the same purpose as visual aid. It also had a great effect upon the interested visitors due to creativity, so we added it in our assessments. The results also revealed that the utilization of integrated training program for the guiding presentation demonstrated a positive development. The outcomes of both evaluations indicated that the attendees who had higher scores in the cognition test also showed better performances in guiding presentations because with better understanding of contexts, they showed greater confidence to audiences. Furthermore, they possessed more enthusiasm to assist visitors of the exhibition and were willing to share experiences with others.

DISCUSSION

This study was conducted with an aim to introduce the positive effects of integrated training program for medical history education. It involved well-planned activities,

knowledge gain, and learning effectiveness. Throughout the docent training program that was practiced in the medical museum, targets learned from observation, imitation, and modeling. Their knowledge of medical history and recognition of Taiwan was reinforced as well. After getting trained and succeeding in guiding evaluation, the participants received positive suggestions from the evaluation committees and audiences, which enriched their extraordinary learning experience. These findings are summarized as follows.

Learning outcomes indicated that docent training program helped the students to find out their interests in medical

Table 1: Result of reliability of cognition of medical history knowledge and guiding evaluation

	<i>n</i>	Cronbach's
Cognition evaluation: Pre-test to post-test	51	0.737*
Guiding evaluation: G1 to G2	51	0.872†

Reliability statistics: *Reliability for cognitive tests of medical history learning; †Reliability for first and second guiding evaluations The 51 students ($N = 51$) were compared pre- and post-tests of the cognition of medical history and completed two times of guiding evaluation. Reliability for the cognitive test was 0.737 and for the guiding evaluation was 0.872. It indicated a good reliability that could lead to a successful learning experience

Table 2: Paired comparison after integrated training program in cognition of medical history and first and second guiding evaluations

Paired samples statistics	Mean score	<i>n</i>	Std. deviation	Std. error mean	<i>p</i>
Cognition evaluation (pre-test to post-test)	72.98	51	5.577	0.781	0.0001
	97.10		3.401	0.476	
Guiding evaluation (first to second performance)	75.57	51	3.874	0.543	0.0001
	85.31		3.184	0.446	

Paired samples test	Paired differences				<i>p</i>
	Mean	95% confidence interval of the difference		<i>t</i>	
		Lower	Upper		
Cognition evaluation (pre-test to post-test)	-24.118	-25.393	-22.843	-37.998	0.0001‡
Guiding evaluation (first to second performance)	-9.745	-10.438	-9.052	-28.238	0.0001‡

‡($p < 0.0001$). The 51 participants ($N = 51$) had to go through a pre-test and a post-test in cognitive evaluation. The mean score of pre-test of medical history was 73 and of post-test was 97 ($p < 0.0001$). They were fundamental for the development of guiding performance. After passing the cognitive tests, the targets were evaluated for their guiding ability twice. The mean score of first guiding evaluation was 75 and of the second guiding performance was 85, which indicated better improvement ($p < 0.0001$). The results revealed that the utilization of integrated training programs in both cognition tests and guiding presentations resulted in a significant difference.

history study and discover their passion of participation. In addition, targets worked cooperatively on well-planned activities that nurtured positive learning, responsibility of tasks, and empathy of others, all leading to a wonderful guiding performance.

Medical history lessons that applied PBL methods in museum environment assisted targets in developing intellectual knowledge of history and formed positive insights. It involved a process of assessing the need, problem solving, resource collection, peer discussion, revision of presentation, and finally guiding visitors.^[16,23] The medical museum created atmosphere and provided direct learning effect.

Creativity was welcome in guiding presentation, which was involved in story illustrations, role playing, costumes, and visual aids. As a consequence of practice and revisions in the museum, the participants did well especially in recalling the history content and interpreting it giving a great performance as museum docents.^[24] Museum instructors and experts acted as facilitators to assist learners in developing their diverse perspectives; also, good preparation, willingness to challenge, interpretation of stories, practice of presentation skills, and creativity resulted in effective and efficient achievement of the final goal. Thus, an integrated program including combined activity, lecture, demonstration, and practice is recommended for medical history education in the future.

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