A Smart Model For Clinical Laboratory Personnel Development

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Background: To become a quality clinical laboratory, personnel development is the most important factor. In order to achieve this goal, it should emphasize that clinical laboratory is not only a testing laboratory; it must be a knowledge-based service laboratory. A smart model for clinical laboratory personnel development under the Human Asset Development (HAD) program had been launched since 2003.

Objective: To strengthen the competency of clinical laboratory personnel, an appropriate model was developed and apply to the clinical laboratory personnel.

Material and Method: Medical technologist who currently worked in clinical laboratory participated in this study. The proposed model consisted of 3 phases. 1) The knowledge providing via update and refresher courses. 2) Application of learned knowledge to practice under close supervision. 3) Training on special topic and self oriented research activity.

Results: The outcome of 5 years project was evaluated. After the first phase, they were able to identify and solve their own troublesome under ours close supervision. There were 25 projects presented within 3 years. The last phase, they were very constructive. Nine projects of self created had been presented. Those projects contained clear objectives and were able to implement.

Conclusion: The smart model for clinical laboratory personnel development leaded to many self created projects in a few years. Thus, this implies its important role in human resource development that should be continued. The keys index of success were ours strong intention, with providing motivation and periodically encouragement to the participants, and keep going on consistently.

Keywords: Smart Model, Clinical laboratory, Personnel development

The clinical laboratory has changed considerably over the recent years, being increasing driven by automation system integration and a host of information technology skills. Therefore, the skill and expertise required for a laboratory professional to fulfill the need of a continuously evolving scenario in diagnostic embrace a variety of scientific, managerial and organization issues[1]. Clinical laboratory is recognized as not only a testing laboratory but also a knowledge service laboratory with analytical excellence; essentially characterized by increasing degree of quality over time. To become a quality clinical laboratory, personnel development is one of the most important factors. In addition, in the last decade there has been a move towards the accreditation. Most of Thai clinical laboratory gears to the ISO15189; a competency of laboratory practitioner is one component as well[2]. It has been recognition that learning does not stop with the completion of degree especially healthcare practitioner. Since there is an explosion of knowledge and technology, dramatically changes have occurred in clinical laboratory services; the practitioner must be able to cop up. A lifelong learning process is necessary for them to keep up to date knowledge and maintain their competences. So, continuing professional development is served as the important mean[3,4]. It is understand that the outcome of any education and

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training program is to produce professionals who are fit for purpose[5]. What types of continuing professional development will serve the need of Thai clinical laboratory? This may vary from time to time and country to country. During this past decade, Thai clinical laboratory encountered several crisis *i.e.* global reference laboratory systems, competition of healthcare service between government and private and terrible economics crisis. This led to a budget constrain and resulting to professional shortages. Most of laboratory practitioners were over work hard lacking of opportunity to attend academic conference.

The Human Asset Development (HAD) program has been founded since 2003 with major aim on human resource development. It is accounted that a competence laboratory practitioner will serve as core of an efficiency and effectiveness laboratory service. The HAD program encourage participants to think, do, implement by themselves on their local problems on the aim of improvement of laboratory services[6]. The purpose of this study is searching and creating an appropriate model to strengthen the competency of clinical laboratory personnel via the continuing professional development; this named a 'Smart Model'.

Material and Method
Subjects

Medical technologist who currently worked in clinical laboratory all over Thailand was invited to enter our program. It was a voluntary basis and she or he was freely to stop the participation at any period. Numbers of participant in each phase varied. There was a progressive increment of participants in each phase, as follows: 178, 357 and 477 medical technologists per year respectively to phase A, B and C. The final of outcome on each phase was assessed.

HAD program. The Human Assets Development (HAD) program has been founded in 2003 by a group of university lecturers. This program was originated from the Human Resource Development (HRD) Program which launched in the year 2000. Later on, it was realized that human resource was considered as the most valuable assets, and our activity was covered a variety of tasks. Therefore, to fulfill our objective, cover all tasks and add an infinite value to the participant, the HRD was renamed as HAD since 2003.

HAD Tools. Several resource materials were special prepared, *i.e.* text-book written in Thai by the researchers, power point contained case study and scenario, computer assisted program (CAI) and test questions.

Methods

Process of the continuing professional development was planned according to the basis of learning behaviors, e.g. learning domain, learning process and learning activity as demonstrated in Fig. 1. Running of continuing professional development could be divided into 3 phases as followings:

Phase A

The knowledge providing via update and refresher courses. Tele-education as well as mobile-education was chosen as learning process. In the early phase, tele-education was used alone and then both tele-education and mobile-education were used alternatively.

Phase B

Application of learned knowledge to practice under close supervision.

Phase C

Training on special topic and self oriented research activity.

Time frame on each phase was shown in Fig. 2. Outcome of each phase was assessed. To increased effectiveness of continuous professional development, many strategic plans had been applied to cop up the detected deficits, *e.g.* the limited interaction between the instructor and participant, the dependency on HAD instructor. The last phase, it is on purposes to encourage them to enter the profession world; so world-class hot topics was thoroughly selected.
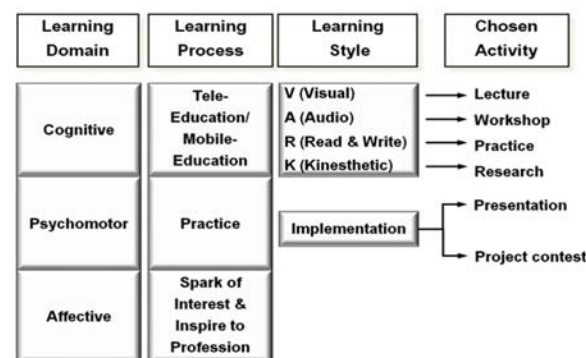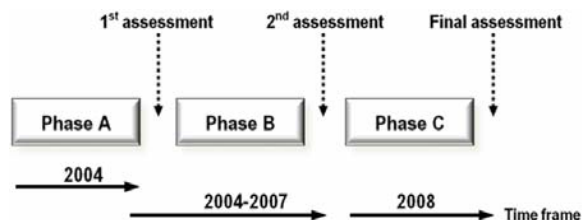

Fig. 1 Continuing professional development process based on the learning behaviors

Results

From the 5 years experience, an appropriate model for strengthen the competency of clinical laboratory personnel was created; named the 'Smart Model'. The structure of Smart Model shows in Fig. 3. This model can apply widely to the laboratory practitioner; it serves the need of Thai clinical laboratory. Since the program attendant is able to analyze her/his own problem or deficit; with provided knowledge and information, she/he creates project for problem solving with a clear objective, implement and innovative. It should be stated here that the local problem was considered as the most importance, training strategy should be adjusted to serve need and cultural concerned. Thus, the proposed 'Smart Model' fits to one's own need. At the end of Phase C, the assessment was performed with the national contest on participant's self creating project. The meeting convened on December 17, 2008. Results show in Table 1. These nine creative projects can be easily categorized into 3 types, there were 4 of the R to R (routine to research), 4 laboratory system developments and 1 innovative project. These projects came from all over Thailand.

They were 3, 1, 1, 1 and 3 from Bangkok metropolitan, northern, southern, north-eastern and central parts; respectively. In addition, outcomes of Phase A and B have been published. There were 25 projects presented within 3 years (Details are not shown herein). Several questions have emerged. How do we achieve this ultimate goal? What are the driving forces? Keys index of success on the 'Smart Model' was demonstrated in Fig. 4. Mainly it comprised of 3 factors, *i.e.* strong intention, spark of interest, and professional inspiration. Not only the HAD instructors but also laboratory practitioner have the strong intention, since medical technology is considered as a profession, not an ordinary job who need technical expertise.

Discussion

Besides, medical technologist earns the

Fig. 2 Schematic presentation on running process of the continuing professional development
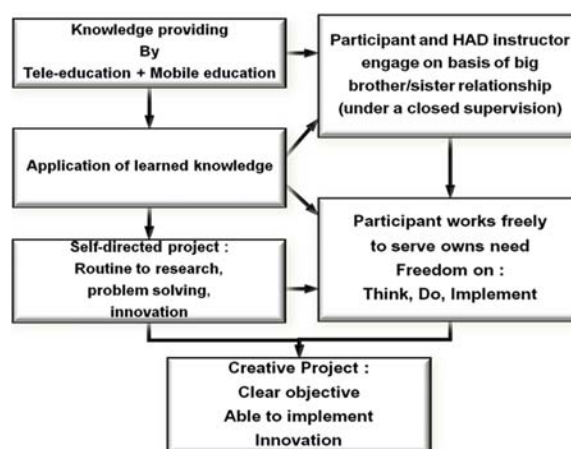
Fig. 3 Structure of the 'Smart Model' of continuing profesional development

Table 1. The outcomes of Phase C on the continuing professional development

Created Project	Participated Institute
Prevention on errors of identifying blood group during the blood donating process	Rachaburi Provincial Hospital
Prevention on errors of dispensing wrong blood bag to the recipient	Pramongkutklao Military Hospital
Motivation factors of the blood donor	Trang Provincial Hospital
Method to enhance the efficiency of routine urinalysis	Thammasat University Hospital
Improving hematology service quality with the sigma metric.	Pramongkutklao Military Hospital
Method development for the ESR determination	Burirum Provincial Hospital
Innovation of the 3- Safe blood collection	Mahanakornchiangmai University Hospital
Inner-Customer relationship towards quality services	Saraburi Provincial Hospital
QC rule selection for judging the internal quality control	Phayathai II, Private Hospital

Fig. 4 Keys index of success

social recognition as trusted profession. And the HAD instructors are university staff with medical technology background to be proud. Therefore, she or he aspires to meet the professional challenge. In spite of time consuming, workload confronting, budget constrains and psychological stress; neither HAD instructors nor participants gave up. Sparking of interest had been done; encourage to do the local problem solving, the HAD instructors were serve as mentors and supervised closely in the beginning phase. And the last driving force was the professional inspiration, the enthusiasm of becoming a true profession. Moreover, there was a strong inter-relationship between the HAD instructors and participants with aiming towards the same ultimate goal of quality clinical laboratory services.

It must be kept in mind that competency is no longer considered as an achievement but rather a habit of lifelong learning. Competence should reflect the relationship between a person's abilities and the tasks that she or he is assigned to perform. Finally, it should be noted here that the 'Smart Model' of continuing professional development was the most appropriate one for Thai clinical laboratory; since participants are encouraged to engage in the lifelong learning habit with critical thinking and their competent is measurable.

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Smart Model สำหรับการพัฒนาบุคลากรทางห้องปฏิบัติการเวชศาสตร์ชันสูตร

กุลนารี สิริสาลี, สุดารัตน์ มโนเชี่ยวพินิจ, ไพโรจน์ ลีฬหกุล, ปานทิพย์ วัฒนวิบูลย์, วิจิตร วงศ์ล่ำซำ, โสภณ สิริสาลี

ภูมิหลัง*: การพัฒนาบุคลากรเป็นปัจจัยสำคัญของกระบวนการพัฒนาคุณภาพของห้องปฏิบัติการ เวชศาสตร์ชันสูตร เพื่อให้ห้องปฏิบัติการเวชศาสตร์ชันสูตร มิใช่เป็นเพียงห้องปฏิบัติการที่ให้บริการทดสอบเท่านั้น แต่เป็นห้องปฏิบัติการ ที่สามารถตอบสนองความต้องการของแพทย์ผู้ใช้บริการเพื่อแลกเปลี่ยนเรียนรู้ซึ่งกันและกัน ด้วยความสำคัญนี้ โครงการพัฒนาศักยภาพบุคลากรทางห้องปฏิบัติการเวชศาสตร์ชันสูตร ได้สร้าง "Smart Model" ขึ้นเพื่อพัฒนา ศักยภาพของบุคลากรโดยเริ่มดำเนินการตั้งแต่ปี พ.ศ. 2546*

วัตถุประสงค์*: เพื่อพัฒนาและประยุกต์รูปแบบที่เหมาะสมสำหรับการเพิ่มศักยภาพของบุคลากรทางห้อง ปฏิบัติการชันสูตร*

วัสดุและวิธีการ*: ดำเนินการจัดตั้งโครงการพัฒนาศักยภาพบุคลากรทางห้องปฏิบัติการเวชศาสตร์ชันสูตร เพื่อพัฒนารูปแบบ (Smart Model) สำหรับการเพิ่มศักยภาพของบุคลากร ดำเนินการตามรูปแบบซึ่งประกอบด้วย 3 ขั้นตอน ได้แก่ 1) การให้ความรู้ด้วยการจัดหลักสูตรอบรมด้วยการสื่อสาร 2 ทาง 2) ส่งเสริมให้นำความรู้ที่ได้รับ จากการอบรมมาปฏิบัติโดยการให้คำปรึกษา 3) พัฒนางานวิจัยเพื่อแก้ปัญหาของห้องปฏิบัติการของตนเอง*

ผลการศึกษา*: พบว่าหลังจากสิ้นสุดโครงการระยะแรกผู้เข้ารับการอบรมสามารถนำความรู้มาปฏิบัติเพื่อแก้ไขปัญหา ของตนเองโดยมีอาจารย์ที่ปรึกษาในระยะเวลา 3 ปี สามารถนำเสนอโครงการเพื่อพัฒนาคุณภาพรวม 25 โครงการ และเมื่อสิ้นสุดระยะสุดท้าย ผู้เข้ารับการอบรมสามารถนำเสนอโครงการที่คิดด้วยตนเอง และสามารถนำมาใช้ได้ อย่างมีประสิทธิภาพรวม 9 โครงการ*

สรุป*: รูปแบบการพัฒนาบุคลากรนี้สามารถพัฒนาให้บุคลากรทางห้องปฏิบัติการเวชศาสตร์ชันสูตรสามารถ นำความรู้มาปฏิบัติด้วยตนเองอย่างสร้างสรรค์ภายในเวลาเพียง 2-3 ปี บุคลากรที่ได้รับการอบรม สามารถนำผลงานไปใช้แก้ปัญหาได้อย่างมีประสิทธิภาพ ปัจจัยที่ทำให้เกิดความสำเร็จอยู่ที่ความตั้งใจจริง ของผู้ดำเนินโครงการที่คอยสร้างแรงจูงใจและให้การสนับสนุนแก่ผู้เข้าร่วมโครงการอย่างสม่ำเสมอ*