

# Nationwide implementation of medical skills training laboratories in a developing country

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## Valorisation

The studies in this thesis accompanied a process of nationwide implementation of skills training laboratories in Vietnam, aiming for optimal collaboration among the eight participating Universities. It can, therefore, be difficult to distinguish between the value of the implementation process and the value of the studies as separate products. Aside from the value of the studies as described below, the implementation process yielded several demonstrable effects:

- 8 functioning Skillslabs in medical universities throughout the country, with teaching material available nationwide, as well as assessment materials and described procedures;
- at least 16 Vietnamese experts in Health Professions Education, distributed evenly across the country;
- efficient as well as effective collaboration among these experts and universities;

and most importantly: the skills training program is now an official part of the medical curricula in Vietnam.

The thesis is likely to have impact on the recognition and implementation of skills training program in developing countries. The main impacts will come from:

### **Demonstration that training the entire national list of basic skills is possible in our resource-challenged country**

This thesis described that starting with foreign funds and expertise, achieving national recognition, and developing high-quality teacher-made models, Skillslabs even in a developing country could train all the basic skills. Showing that this is possible can help to motivate other universities in Vietnam and in other low- and middle-income countries in implementing Skillslab training.

### **Recommending presenting the skills used by a limited number of doctors in an optional skills training program**

University experts formulated the first list of basic required skills. However, we found that several skills on the expert list were actually used by only a small number of general practitioners (GP). The proportion of GPs using a specific skill depends not only on the skill but also on the location and setting of their practice. If these skills are not offered in training, some patients would be short-changed. However, the limited available resources should not be used to train skills that very few GP will need to practice. The research reported in Chapter 2 of this thesis provides a framework to establish which skills should

be on the list of essential skills to be taught and which could be moved to an optional category.

**Demonstration that teacher-made models not only help to address financial issues for Skillslabs in developing countries but also bring extra medical/educational benefits.**

We described teacher-made models that are handmade at room temperature and pressure, making it easy to change their shape, size, details, color, thickness, softness, and density as required by the teacher. Teachers who are implementing Skillslab training know which features a specific training model should have and can identify which features could be reduced to make them more cost-effective. We can not only produce low price models but also develop new training models that are not available in the market. The teacher-made models help not only to solve economic problems in accessing commercial models in low- and middle-income countries but can also bring about extra medical/educational benefits.

The thesis work encouraged Skillslabs in low- and middle-income countries to use teacher-made models [1], explored the use of one such model quite deeply [2], and led to the development of many different teacher-made models [3]. To facilitate the use of teacher-made models, the University of Medicine and Pharmacy in HoChiMinh City, Vietnam, established the Training Material Center to develop, produce and maintain training models that were designed and made to meet specific training needs [4]. The author is the director of this center. We have produced more than 40 types of teacher-made models and equipment used in skills training and assessment. The range of models covers a range of practices from basic procedure skills (e.g. intradermal injection, insertion of an intrauterine contraceptive device), examination skills (e.g. anorectal examination, auscultation), to high level technology used in continuing medical education and transfer of new technology (e.g. bronchoscopy training model, knee arthroscopy). Some of these models allow for an integrated, patient-centered approach, integrating procedural and communication skills. Our products are provided to not only our own university and the other seven involved in the project, but also to a number of newly opened universities and colleges and to hospitals. The quality of the models has been continuously improved through feedback from trainers and trainees.

Box 1 shows that the article “Teacher-made models: the answer for medical skills training in developing countries?” was cited in the book “Teaching and Learning Methods in Medicine”, with the extremely positive postscript "Tran et al. have touched the most sensitive nerve..." and "It is highly motivating to learn through this study...", and "this study certainly provides guidance in this respect and acts as a model for developing countries." [1]

Box 1: Article *Teacher-made model: the answer for medical skills training in developing country?* was cited in the book **Teaching and Learning Methods in Medicine** (Shabih Zaidi, Mona Nasir, Simulation, Teaching and Learning Methods in Medicine, Springer, Switzerland, 2015, pp. 103-4), cited here with the publisher's permission.

*Article Teacher-made model: the answer for medical skills training in developing country? was cited in the book Teaching and Learning Methods in Medicine*

“Tran et al. (2012) have touched the most sensitive nerve in the following study. The advantages of using simulators in skills training are generally recognized, but simulators are often too expensive for medical schools in developing countries. Cheaper, locally-made models (or part-task trainers) could be the answer, especially when teachers are involved in design and production (teacher-made model, TM). They evaluated the effectiveness of a teacher model in training and assessing intravenous injection skills in comparison to an available commercial model (CM) in a randomized, blind, pretest-posttest study with 144 undergraduate nursing students. All students were assessed on both the TM and the CM in the pre-test and post-test. After the post-test, the students were also assessed while performing the skill on real patients. Differences in the mean scores pre- and post-test were marked in all groups. Training with TM or CM improved student scores substantially but there was no significant difference in mean scores whether students had practiced on TM or CM. Students who practiced on TM performed better on communication with the patient than did students who practiced on CM.

These researchers believe that decreasing the ratio of students per TM model helped to increase practice opportunities but did not improve students' mean scores. The teacher-made model appears to be an effective alternative to the commercial model for training students on basic IV skills, as students showed similar increases in performance scores after training on models that cost considerably less than commercially available models. They believe that these models could be produced using locally available materials in most countries, including those with limited resources to invest in medical education and skills laboratories.

It is highly motivating to learn through this study that inexpensive tools can be made locally available. The cost of skill laboratories can be prohibitive. Many countries in Africa, Asia and Latin America want to change the modus operandi of imparting education from conventional to modern technology, albeit the cost may prohibitive. This study certainly provides guidance in this respect and acts as a model for developing countries.”

**Our studies reinforced the importance of how training is organized in achieving desired results. Practice did not always make perfect.**

We reported how using teacher-made models helped us to have many more models for training, so that students could practice more often. However, maximizing the number of models did not improve the results of student assessment. The researcher strongly believes that different groups must be tested with different student/model ratios to find the best balance between observation and practice and the optimal student/model ratio for each

training condition, and possibly for each skill.

**Providing evidence for applying partnership model in doctor-patient communication. Doctors in Vietnam reported a willingness to apply the partnership model in doctor-patient communication, which may influence doctors in other Asian countries**

Although there are many cultural differences between Vietnamese and Western cultures [5], universities in Vietnam and maybe in other Asian countries can apply the partnership model in doctor-patient communication. We found no barriers in doctors' motivation; most of the doctors expressed their willingness to perform all of the activities that reflect the partnership model in the list for doctor-patient communication.

Looking at cultural differences, when patients are not satisfied or expect different behavior from their doctor, more investigation is needed. Items of communication behavior should not be dropped from the list unless we find that patients consider them negative or if they lead to harm to the patient. Cultural difference is an important topic in doctors' training in both Western and non- Western countries; doctors can fine-tune their communication with patients based on a knowledge of cultural differences.

This finding may make it easier for universities in Vietnam and possibly other non-Western countries to adapt the partnership model in doctor-patient communication, to support patients in their role as partners, and ultimately improve the quality of health care.

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