Conducting fieldwork in teaching and learning human microbial diseases, causes and control: the mosquito-borne diseases

Context: This article outlines changes of teaching method and learning style to meet the learning outcomes associated with the mosquito-borne disease session, a part of human microbial diseases, causes and control module, MB 4102/4202. This is a course for undergraduate level, fourth year and second year honours microbiology students. There were 45 fourth year students in my classroom. The new teaching learning approach was based on training material for people facilitating small group discussions and activities using Pillars Guides by Clarke *et al.,* (2004). The activity allowed students to make their own observations and increased subject understanding, students' knowledge and skills.

Activity Aims:

- to get more knowledge and information to understand the module
- to shift the student learning environment from the classroom to the public area
- to change the students' learning style
- to learn how to conduct team work successfully
- to build the students' communication skills
- to develop the students' problem solving skills
- to rely on their own skills as students interact with people independent of the teacher
- to develop students into independent, life-long learners by opening their eyes to all they can learn

Wht the activity was developed:

Previously, I had taught this module by lecturing method in the classroom. In teaching, I conveyed information to students by talking to them. I clarified the terms and ideas and gave overview of the module. This method established a common understanding of facts but the learners knew only the facts from the textbook. As this method was a teacher-centered, it resulted in minimal student participation, one-way communication and passive learning. It was not conducive to meeting students' individual needs and skills. Students need to gain more information and knowledge and other individual skills. We need to create active learning styles and stronger learning communities. Taungthaman Lake is situated near our University and areas around it offer a particularly favorable

environment for mosquitoes. Mosquito-borne diseases such as dengue and malaria occur in the local community. So I allowed the students to conduct fieldwork in villages around Taungthaman Lake.

The activity:

First, I instructed the students how to prepare for the fieldwork. Students were advised to bring the safe drinking water, foods and medicines, appropriate clothing for the outdoors and the mosquito coils or insecticides. They were reminded to wear long, loose-fitting clothes to avoid getting bitten by mosquitoes, to use an effective mosquito repellent on all exposed skin and to avoid lone working during fieldwork. And then I explained them how to collect data and how to conduct an interview. Students discussed their preparations for the fieldwork and exchanged attitudes and ideas with each other. They determined the dates for the fieldwork, expected cost, transport links and required materials. They organized five teams for conducting field studies in five villages. Each team included one leader and eight members. Students contacted the village administrators to inform them about fieldwork and to gain their support and cooperation. They met the servants of village health care centers and villagers whose could participate in field study and interviews. They observed the breeding habitats of mosquitos: the indoor and outdoor water containers, ditches, pools and fields and pastures near villages. They also collected the sample of larvae and adult mosquitos to identify the species found in local community. Finally, we reflected on all findings of field experiences and shared knowledge each other in the classroom. Students were asked to complete a feedback questionnaire.

Feedback from students:

Students said that they had thoroughly enjoyed the field work. They could learn much more from the field experience about mosquito-borne diseases occurred in local community, the infection of diseases and the currently used prevention methods. They could investigate the harboring sites of mosquitos and availability of suitable breeding habitats in community. The water storage and use of households, wastewater disposal and other sanitary conditions of villages could be observed. They gained a better understanding and reinforcement of previously learned classroom materials.

Students said that there were many difficulties and problems in preparation and conduction of fieldwork. As fieldwork was done in the rainy season, they met and solved the problems for transportation, health, and safety. In addition, some people did not correctly answer the questions because of poor knowledge and observations. Some refused to participate in interviews and to answer the questions. Some people disliked them to enter their houses and yards for observations. They did not want to see students their poor sanitation conditions. Therefore, they explained, so that villagers came to understand the aims of interviews and observations. Students said that they esteemed themselves and became self-confident though direct interaction with an environment.

Students had explained to local people about the behaviors, feeding and breeding habits of mosquitos and the correlation between the occurrence of disease and abundance of mosquitos, based on classroom learning. They could give some suggestions for solving the sanitation problems and prevention and control of infections. They realized the importance of classroom learning.

Students said that they like activity because it built a strong relationship and good friendship (students to themselves, students to local people) through collaboration and cooperation with each other. They learned how to conduct team work successfully.

Strengths and weakness of the activity:

The activity allowed the students to visit a novel environment. As the field-based learning is learner-centered, the students became active participants in their own learning and active learning styles could be created. Due to the activity students gained more knowledge and information to understand the module and could help create strong community of learning. Fieldwork provided the opportunities to reinforce classroom-based learning. It increased collaboration and provided the interpersonal and teamwork skills and communication skills. Knowledge sharing increased social interaction in the community.

Although we managed health and safety plans to avoid bites of mosquitos, to get safe water and medicines to achieve a safe learning environment, parents worried about their children who went to places where infectious agents live. The participation of local people is very important for successful fieldwork. However, the poor knowledge and observation of some villagers made some difficulties for students in data collection.

Key words:

Fieldwork; active learning; learning environment; communication skills; student skills; local community; learner-centered

References:

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