Internationalizing a teaching instance: An example from molecular medicine

By Dr. Nicolas Pillon, Assistant Professor, Department of Physiology and Pharmacology

Spring 2020

Description of the teaching-/supervision session

Within the biomedicine bachelor program at the Karolinska Institute, I teach in the Molecular Medicine course[1]. I am responsible for an exercise that consists in a review the current literature on a topic. Students have to identify a gap in knowledge and write a grant proposal.

The students are in their third year of the program, so they already have a decent knowledge of biology. They are split in groups of 4-5 students and given a topic in relation to the other lectures and courses of the course. For instance, lectures will cover infectious diseases and metabolic diseases so groups will be assigned research topics like malaria, tuberculosis, "inflammation in diabetes" or "lipids in atherosclerosis". Each group is also assigned a mentor: a scientist working on that specific topic at KI and who is there to help with the literature and give feedback but is not allowed to write anything for them. We only give the students the mentor's email and it is up to them to decide how much they want to use their mentors.

The course runs over several weeks with several checkpoints. There is an introductory lecture, days where we meet with groups individually to check their progress and a first submission of a preliminary title. The first version of the research proposal is reviewed by another group. The students then have the possibility to revise according to the feedback before they submit their final version. Then they have to give a group presentation of 15 minutes and defend their project. All others students are required to be present and ask at least one question during the day. The students' role as reviewers is part of the evaluation.

The aims are to develop the students' skills in:

- Finding, reading and interpreting scientific literature
- Formulating a hypothesis and a coherent research idea
- Adapting experimental techniques in order to address a specific question
- Writing, presenting and defending a research proposal
- Critically analysing scientific work and giving constructive feedback

[1] https://education.ki.se/student/molecular-medicine-cardiometabolic-and-infectious-diseases-15-hp/1bi048

We received a note recently about the fact that we should be prepared to make this course online for the next session in November. So now is a great time to re-think the whole organization of this course!

Review

I never noticed any students struggling with English, at least not in conversational English. There is a requirement of a B level to register to the program, but I have never formally assessed it myself. However, there are important differences in the level of written English in the proposals. In light of the internationalization concepts that we covered; I think that this could reflect differences in English level that do not appear clearly orally. The use of proper scientific English is an ILO in our course, but I think that we do not provide enough resources to the students.

I have faced several problems with conflicts within groups. I however never considered that they could be due to cultural backgrounds. About half of the students are exchange students and there is an important diversity in cultures. I do not currently use any sort of agreement or contract, and I think this is missing and could help prevent conflicts or at least give the students a procedure to follow in case of conflict. We also do not make groups according to their cultural backgrounds, and in light of this course, I do realize that groups are not uniform. There are often a couple of groups that are all Swedish with excellent English skills and a few groups of only international students with poorer written English.

Global health is not currently mentioned in the course, despite the fact that it covers diseases such as malaria, obesity, tuberculosis etc. I think that the fact that we have students from so many different backgrounds could be used to stimulate the group discussions on these diseases.

I think that the learning activities are not diverse enough and not precise enough. They do not explicitly align with the teaching outcomes. One mistake is probably to give all the information in one lecture at the beginning. Some groups get to work on the assignments right away but other wait weeks before they start and forget about what they should do. I think the overall course would benefit from more milestones and checkpoints with defined objectives that align with the ILOs.

Developing the teaching-/supervision session

Preventing and managing conflicts through development of cultural knowledge. I have observed several instances of conflicts, from harmless unequal work load to unmanageable freeloaders and more intense personal conflicts. I am not sure how much of these are due to cultural backgrounds, but I think students should be made aware of these. I will therefore use the exercises that we worked on in module 2 in a teaching activity that would be close to a team building exercise. Before the students start working on their research projects, I will ask them the following:

- Reflect on your strengths and weaknesses for the research project by answering the quiz “what is my contribution?” on Canvas (individual assignment).
- Reflect on how group work should be organized based on your cultural and educational background. How should leadership be organized? How should people give and receive feedback? How should work load be distributed? Write a short reflection on Canvas (100 words max).

- Within your group, discuss each member's strengths, cultural and educational background and the team operating guidelines. Decide each member's role using the "team member job's list" as a guide.
- As a group, fill and sign the team contract. Upload the signed copy on Canvas.

I hope that this activity will trigger discussions about how to organize the work and help distribute the work load equally between members.

Helping students develop advanced scientific English writing skills. To kick start the course, I will add an individual assignment that would help assess the level of written English of the students. After the groups are assigned a specific topic, each student will have to select one published article relevant to the topic. The assignment will consist in two tasks:

1. In a table, list the terms that are unclear to them and find their definition.
2. Write a summary (200 words) of the scientific article using their own words.

The focus will be to see if students are able to read an article, write in proper scientific English and know where to find resources to help them understand new conceps. I will use plagiarism testing and will provide assistance in English to the students/groups that I deem need it. Groups will be given the opportunity to contact KI writing support[2]. The articles selected by the students will have to be relevant for the topic their group has to work on, so the assignment will also help the group get started with the literature review.

Evaluating the importance of a scientific topic for global health. The whole course is focused on cardiometabolic and infectious diseases but with no clear focus on global heath. Each group is assigned a research topic on a disease, so it will be easy to trigger a discussion within each group about how this specific disease affects their "home" country. I will therefore add a learning activity as follows:

1. Use global health tools (gapminder[3], WHO database[4], global burden of disease tool[5]) to find statistics about the disease you study in countries close to your heart.
2. Relate the statistics observed in different countries to economical and socio-cultural factors based on your own experience and factual literature.
3. Discuss with your group and write a short summary (200 words) on how the disease you are studying affects global health.

In addition to increasing the knowledge on global health of the students, I also see this exercise as a way to help them introduce their research topic. Every research proposal has to start with the importance of science for human health, so having the students think about that on a global scale will be beneficial for writing the introduction of their final assignment.

[2] https://kib.ki.se/en/contact-us/academic-writing-support
[3] https://www.gapminder.org/tools/
[4] https://www.who.int/nutgrowthdb/database/en/
[5] http://ghdx.healthdata.org/gbd-results-tool