Teamwork-Intensive Coursework

Teamwork-Intensive Coursework in In-Major Required Classes

The ability for students to use their interprofessional skills in their majors is a paramount desire of employers. In-major course work in the department can be structured so that group work occurs in the first two years of the curriculum but can be shifted into teamwork experiences in the latter years. Group work should be used to provide practice for an individual student's interprofessional skills so that the shift to teamwork is not too abrupt. Training students to use their interprofessional skills in core courses and then applying them in project/problem-based tasks facilitates the transferability of these skills into the student's discipline.

One or more preexisting in-major courses can be modified to provide the *boundary of disciplinary knowledge* that requires team members to communicate. Effective communication and problem-solving needs well-honed interpersonal skills. The use of problem- or project-based learning can assist in setting up the *boundary of disciplinary knowledge* where two or more intradisciplinary groups form an interdisciplinary team. The nature of the problem/project also facilitates the use of problem-solving, analysis, reasoning/argumentation, and critical thinking skills. When these cognitive skills are combined with the boundary of disciplinary knowledge, a framework is built that mimics how industry solves comprehensive real-world problems. In an interview, a B.S.-level job candidate could explain examples of their abilities in these terms.

Example In-Major Teamwork-Intensive Course – This category of can be used by any major, adding it to an existing in-major course requirement. One example is "Water Quality in Southwestern Pennsylvania" where an analytical chemistry course (CHEM) is paired with a geography and reginal planning course (GRP). Intradisciplinary groups of two students are taken from each course to form an interdisciplinary team of four students. The GRP students are well versed in geographical surveys and mapping and the CHEM students are practiced in water quality testing. Only together can they analyze the effect of various human actions on the water quality surrounding the well sites. The vast difference in student knowledge (surveys/mapping and water quality analysis) sets the *boundary of disciplinary knowledge*.

Skills Practiced: initiative, executive function, intellectual interest and curiosity, problem-solving, analysis, reasoning/argumentation, career orientation, and critical thinking.

Logistical considerations for each intradisciplinary group and the entire team need to be planned in advance to force the necessary communication to break through the boundary of disciplinary boundary. It is important to explain to students these logistical considerations and compare them to projects that are representative to their chosen field of study. The timeline below illustrates how each of the CHEM and GRP disciplinary groups (pairs of two students) come together to form a team of four students. Both groups of the team are responsible for the direction of the project which imparts team-member buy-in. The disciplinary group members need to use their interprofessional skills to complete the discipline-specific tasks. The case is the same for the communication that takes place on the interdisciplinary team.

Timeline:

Team: Decide overall problem (i.e. acid mine drainage, fracking, logging, and if water or soil samples will be taken).

GRP: Survey area and digital mapping.

Team: GRP students report out to CHEM students on process, procedures, and deliverables of mapping information.

Team: CHEM students train GRP students on how to collect soil/water samples.

GRP: Soil/water sample collection.
Team: Hands off samples to CHEM students with information on process, procedures, and any changes to initial sampling plan.
CHEM: Analyzes samples, Quality Assurance (QA) and Quality Control (QC).
Team: CHEM students report out to GRP students with process, procedures, and deliverables of soil/water analysis.
CHEM and GRP: Review initial data of both groups, identifying common themes and questions.
Team: Discuss data from both groups with aim of combining each group's themes and answering questions.
Team: Generates final written and presents oral report.

We have found the most effective teams have the ability to orally present information, using correct terminology, to convey scientifically sound conclusions on topics of the other disciplinary group of the team. For this transfer of information to have occurred, communication had to have had to have happened, requiring well-honed interprofessional skills such as empathy, team leadership, collaboration, interpersonal skills, conflict resolution, trust, and appreciation for diversity.

Teamwork-Intensive Models are Flexible

Teamwork-Intensive courses can be set up a number of ways as long as they facilitate a boundary of disciplinary knowledge, often using a project-based approach. The case of the "Water Quality in Southwestern Pennsylvania", a two-course model, used two courses where each course taught specific information and skills the other did not. One-course teamwork-intensive courses can also be envisioned can be standalone courses, clinicals, internships, research projects.

One successful one-course teamwork-intensive courses has been Business Communications, a core course taught in the Business College. Students in this junior course create a business plan for two businesses over the course of a semester. Teams are formed to have representation from accounting, economics, finance, human resources, management, and marketing, to create the disciplinary boundary. Although most of the disciplinary-specific information required of these majors is disseminated in sophomore-level courses prior to this course, instructors can prepare specific mini lectures for each major when the need arises.