

Identifying curricular learning goals through qualitative research

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Summary

With the assistance of the Office of Educational Assessment, we developed a novel interview strategy to encourage faculty members to articulate learning goals for their courses without using preconceived notions of what learning goals are. We used transcripts of these interviews to determine which of the 9 departmental learning goals were being addressed by each course. Course and learning goal information was entered into a database, and allowed us to determine the following:

- Major skill and content goals of all regularly taught biology courses
- How these individual course learning goals related to overall departmental learning goals
- How courses within three of the main tracks of the Biology major relate to departmental learning goals
- If departmental learning goals need refinement
- If there are any areas that are over- or under-emphasized in the Biology undergraduate curriculum

Introduction

In Biology, student skills build on and are integrated with content as they progress through the major. Students can focus coursework within several tracks: Ecology Evolution and Conservation Biology (EECB), Physiology (Phys.), Molecular and Cellular Biology (MCB), Plant Biology (Bot.), General Biology BA or BS. Within each track, students progress through introductory, foundation, and advanced-level courses (Fig. 1). Departmental learning goals were created to help students, faculty and outside evaluators to see the overall logic of course offerings in Biology across these tracks.

The purpose of this project was to develop a qualitative research strategy to identify skill and content learning goals for all regularly taught courses. In addition, we looked at how departmental skill and content learning goals were acquired as students progressed through the coursework in the three most popular tracks within the department: EECB, Phys. and MCB.

Biology Department Learning Goals

I. Scientific Reasoning

1. Organize biological information
2. Understand the process of biological science
3. Becoming a practicing biologist

II. Information literacy/ technological fluency

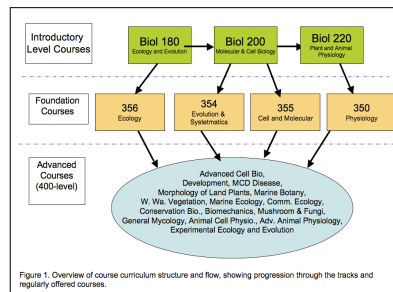
4. Identify gaps in knowledge and self-assessment
5. Use available resources to answer questions
6. Consult primary biological literature for information

III. Communication

7. Communicate knowledge
8. Work in a group

IV. Social responsibility

9. Application/ Bioethics



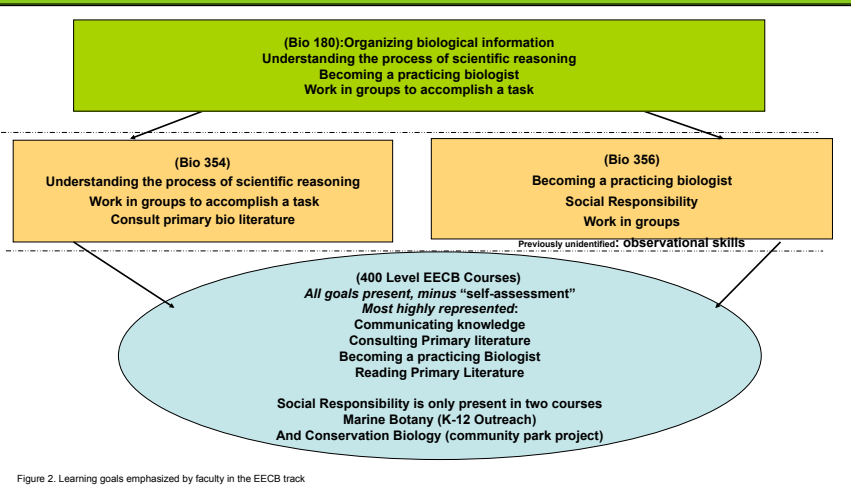
Findings

From interviews with 25 faculty we found:

- Mapping course learning goals demonstrates where and at what level of instruction departmental learning goals have been emphasized by faculty. For example, in the EECB track, the two possible intermediate courses focus on different skills (Fig 2.)
- Comparisons between tracks reveal that emphasis on particular learning goals shifts depending on the track. In comparing EECB and MCB (not shown), learning goals such as "using available resources to answer a question" was heavily emphasized by MCB, but not present in EECB courses.
- Some skills emphasized by faculty had previously not been identified, but may be included under a specific learning goal
 - Examples: lab and field skills, such as "observing patterns" and "scientific drawing," experiences such as "seminar attendance" and "networking skills."

Transcripts of interviews also provided:

- A list of innovative teaching strategies
- Course, resource and general curriculum recommendations by faculty in a low-stakes environment
- A record we can return to for more data or to inform future curriculum development



Methods

Curriculum committee establishes nine learning goals model for curricular development and assessment.

We collected information on current, regular courses offered and which faculty teach them.

In collaboration with the Office of Educational Assessment, we developed a qualitative, open-ended interview method that allowed faculty to articulate identified and unidentified course goals

Created database of all courses included in the interviews. 9-pillar departmental learning goals were used as a template for organizing and structuring database. Courses were assessed individually and within each track of the Biology major.

Interviews were transcribed and transcripts were used to identify course-specific content and skills.

In one-on-one interviews, faculty were asked to identify:

- Overall course organization
- Skills and content expected before the course
- Skills and content goals for the course
- How student progress was assessed
- Skill and content challenges

Conclusions

We found:

- Biology curriculum supports departmental learning goals overall
- Representation of learning goals is different across courses and across curricular tracks
- Some learning goals are highly represented, some are rarely represented
- Emphasis on certain goals shifts depending on whether students are in the EECB, Phys or MCB track
- Departmental learning goals should be expanded to include skills not previously recognized

This research strategy:

- Requires small time commitment from teaching faculty
- Provides a basis for examining course contributions to tracks and the overall departmental curricular strategy
- Has a flexible methodology that can be applied to other disciplines and departments

Acknowledgements

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