Co-creating course projects

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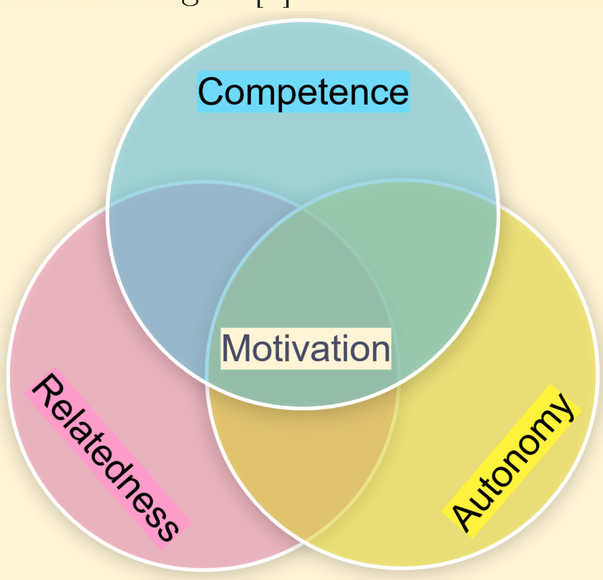
Introduction

The introductory courses for oceanography and meteorology include a field work project that is executed by each student individually. We aim to increase the students' motivation and consequently the learning outcome by applying three different methods throughout the semester. Self-determination theory suggests that internal motivation is created by the need for or feeling of [1]:



Student perspectives

Regarding experiences with **3.**:

former student: *"Det var gøy å friske opp litt i kunnskapen fra GEOF100."*

current student: *"Det hjalp med gjennomføring av målinger, og å komme i gang med skrivingen."*

Conclusions

- ✓ Motivation increased → quality of student reports was high
- ★ all three methods improve learning experience independent of class size

Co-creation

1. Design of personal research question

Students can either

- choose a project from a given list of suggestions
- come up with their own question

For guidance, a list of available instrumentation and course goals is provided.

Advantages

- ☆ students can self-determine their personal course outcome → **autonomy**
- ☆ students are deeply interested in the outcome of the experiment

2. Group supervision

Alignment of the research question with student's knowledge and skills

- Groups consist of 2-4 students with different projects + teacher
- every student

Advantages

- ☆ students learn about each other's projects
- ☆ students can contribute with their knowledge to other's projects → **competence**
- ☆ students solve their problems together → **relatedness**

3. Exchange with former students

In case a project has been performed in a similar way in the previous year, the teacher puts the former student into contact with the current student. They are free to exchange any type of knowledge or information

Advantages

- ☆ the former students can apply their knowledge → **competence**
- ☆ the knowledge is transferred across cohorts
- ☆ the additional resources increases the independence of the teacher → **autonomy**
- ☆ the students may together improve the experimental design → **relatedness**

Outcome - some examples

1. Design of personal research question

- How does humidity change in the bathroom while I am taking a shower?
- What drives changes in humidity in my local training center – the weather or the amount of people training?
- What type of tides can I observe near my parents' cabin?
- ☆ research questions are related to the students' daily life experiences

→ **relatedness** & **autonomy**

2. Group supervision

Problem: The instrument needs to float on the ocean's surface for about two weeks.

Solution: A friend of mine owns a boat, we can ask him whether we can attach the instrument to the boat or whether he knows of a suitable floating dock.

- ☆ the students could use their network to solve the problem without help from the teacher

→ **relatedness** & **autonomy** & **competence**

3. Exchange with former students

Measuring current velocity due to tidal forcing:
tremendous improvement of experimental design

→ improved measurement accuracy
→ increased measurement frequency
→ increased complexity of the research project

→ **relatedness** & **autonomy** & **competence**

former student:	measured velocity of floating plastic bottles → there was no suitable point of reference to measure the distance
current student:	measured velocity with a fishing rod → consistent distance measurement
former student:	took four measurements during the full tidal cycle
current student:	took hourly measurements for 18 hours
current student:	measured at several locations across the fjord & measured bottom topography to calculate an accurate volume flux

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scan to find the full proceedings:

References

[1] Edward L. Deci and Richard M. Ryan. The "What" and "Why" of Goal Pursuits: Human Needs and the Self-Determination of Behavior. *Psychological Inquiry*, 11(4):227–268, 2000.