NTNU – 3 cities
(since 2016)

Trondheim

Gjøvik

Ålesund

Background - what

Course: Introduction to Object Oriented Programming - part 2 (10 ECTS credits).
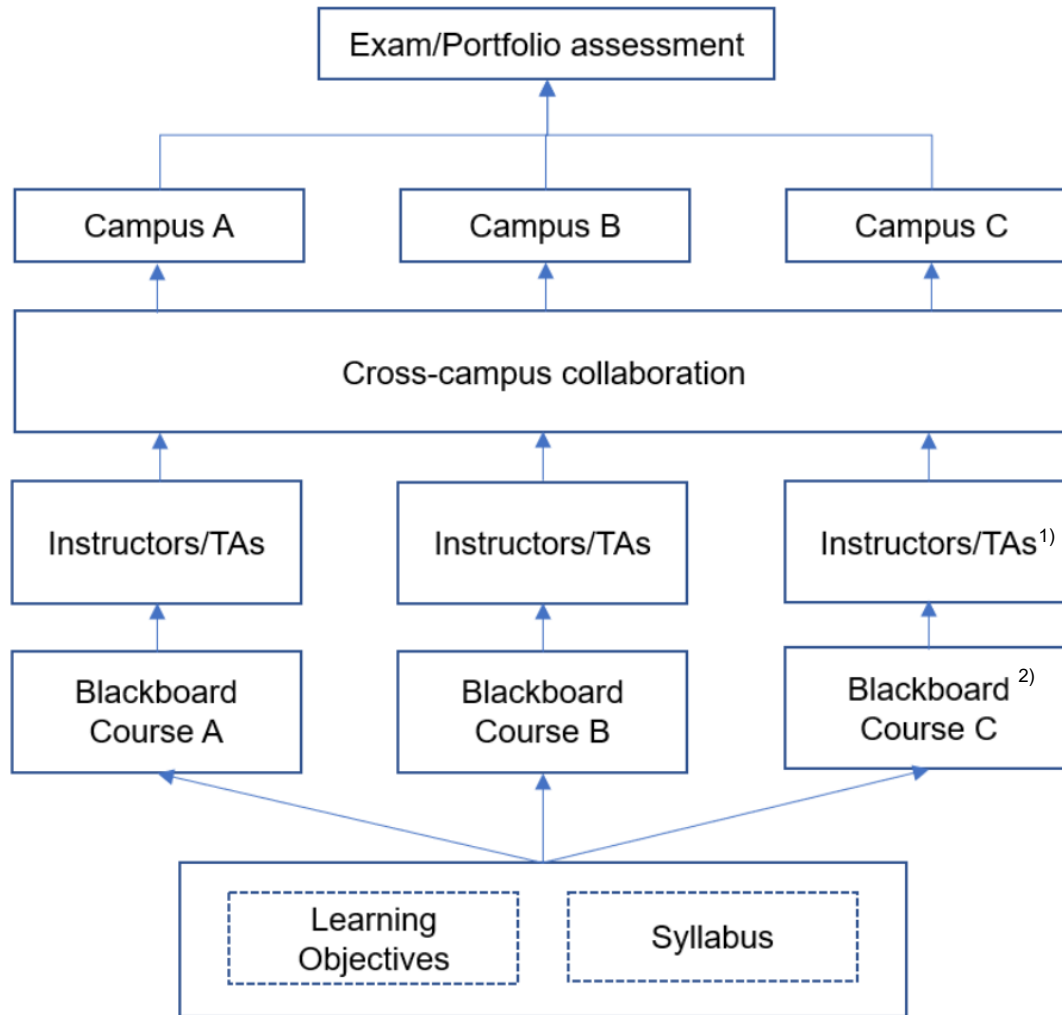
2nd semester of the 3-year Bachelor in the Computing Science program at NTNU

A cross-campus course.
A total of $\sim$ 220 students

Cross-campus Course

1) Teaching Assistant
2) Blackboard – the Learning Management System (LMS)

The COVID-19 Challenge

Pre COVID-19

Learning in the classroom
(theory + practical lab)

Summative assessment – supervised exam
(5 hours with own computer, grade A-F)

COVID-19 Outbreak (2020)

Learning in the "cloud"
(theory + practical lab)

Summative assessment – un-supervised home exam
(5 hours, pass/fail)

Background for our research

- COVID-19 challenges
  - Transition from on-campus learning to hybrid/digital/blended learning
  - Sudden change of requirements regarding assessment form (from school-exam to ?)

- COVID-19 opportunities
  - Re-think the way we assess our students, more aligned with the **constructive alignment** theory.
  - Forced to make use of alternative teaching methods.

Preparing for the future..

- Based on the uncertainty of the duration of the pandemic, the teaching staff decided to switch to *portfolio-based assessment* from spring 2021.

- Why ?
  - Cannot give a grade (A-F) on a 5-hour un-supervised home-exam
  - Assessing skills in practical courses in a good and fair way is extremely challenging in a 5-hour written exam.
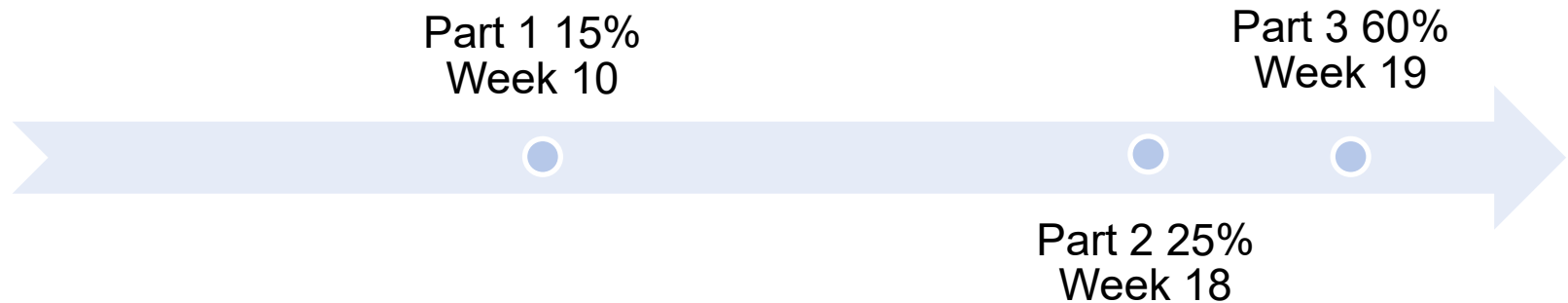
Research objective

To reflect on the strengths and weaknesses of the portfolio as an instructional and formative assessment method and share our experiences and findings as we shift from a written exam to a portfolio assessment.
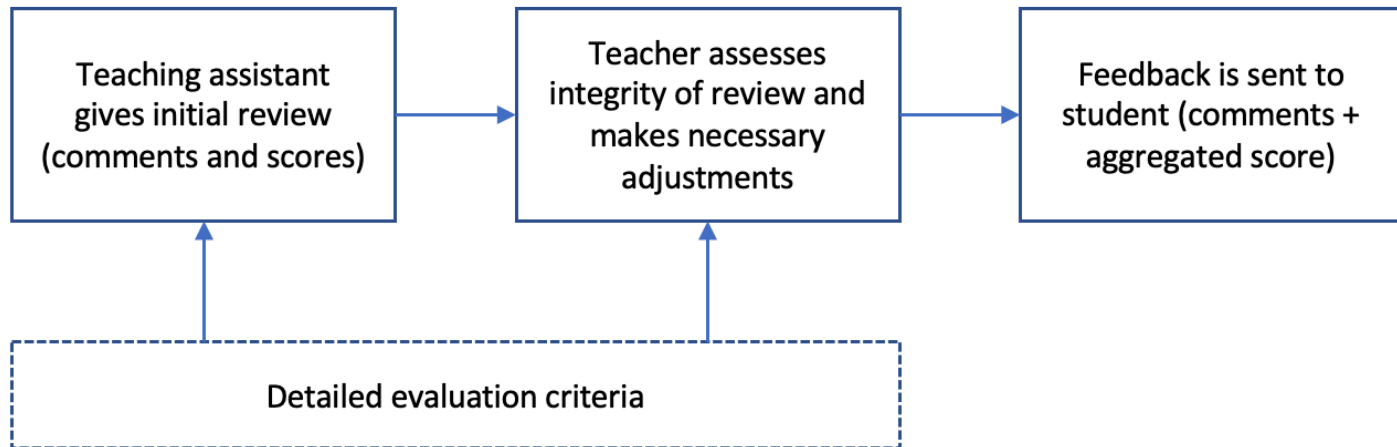
Research method

- This study is based on quantitative- and qualitative research methods where data has been collected using surveys, open-ended questionnaires and reflections notes.

- We look at the transition to portfolio assessment and the perspectives of students and instructors in this case study.

Portfolio assessment

Part 1 15%
Week 10

Part 3 60%
Week 19

Part 2 25%
Week 18

Assessment/grading: P1-P3 given a score [0-100]:

| Teaching assistant gives initial review (comments and scores) | → | Teacher assesses integrity of review and makes necessary adjustments | → | Feedback is sent to student (comments + aggregated score) |

Detailed evaluation criteria

Findings

When asked:

"What do you think about the change from written exam to a portfolio assessment in the course",

the students responded:

Response	Result
5 – Very good	80,43%
4 - Good	8,70%
3 - Ok	6,52%
2 – Less good	4,35%
1 – Not good	0%

Findings

Relevance to working life:

- Several students commented that portfolio assessment **enables the students to solve a problem similar to how they expect to work in the industry when they graduate**.

- This also conforms to the theory on **constructive alignment**.

"It provides a more realistic assessment in terms of what it is like to develop an application in a professional setting."

"It seems closer to the way it will be in working life, something I like."

Conclusion –

From written exam with supervision to portfolio assessment

Pros

- it can increase learning benefits
- better adaption to constructive alignment
- a much more suitable form of assessment in a practical course like programming, according to student feedback.

Cons

- increasing degree of opportunities for cheating/plagiarism
- significantly increased workload for teaching staff (first attempt)
- no re-sit exams for the students, must redo the entire portfolio the following year.

Future work

We strongly believe that portfolio assessment (done right) is a far better form of assessment in practical courses, where assessing the student **skills** are more important than only assessing the theoretical knowledge of the student.

Some suggested changes (implemented in 2022):

- Portfolio graded only once; end of semester

- Provide student feedback on portfolio work during the semester, but no grading

- Portfolio consisting of both the practical work **and** a written reflection-report. Reduces the risk of plagiarism/cheating.