

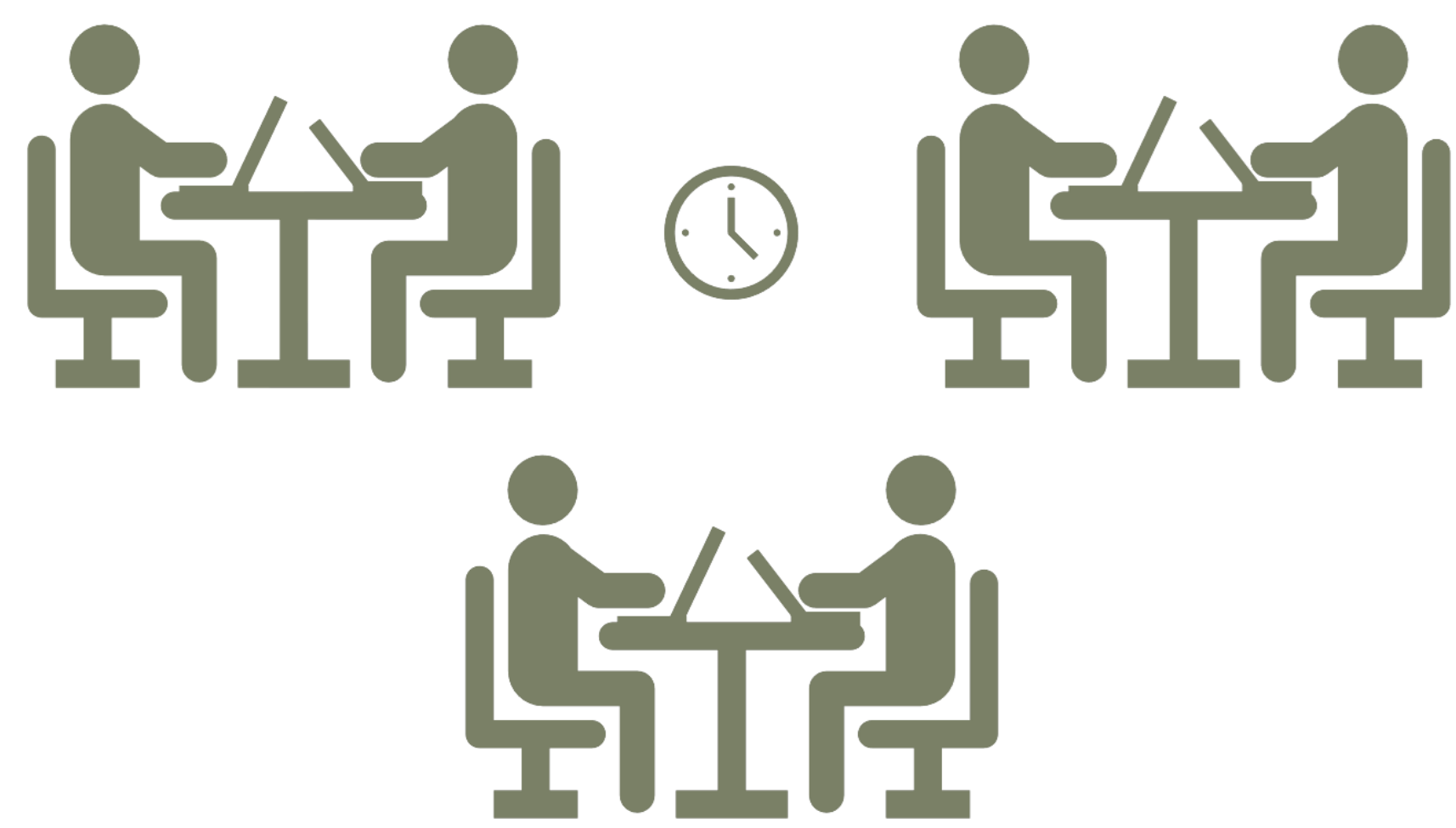
# Hackathons to support teamwork and project-based learning in a capstone software-engineering course

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## What is a hackathon?

A common extracurricular activity where people can learn about software development by challenging themselves to complete a project in a short period of time.



## The Course

### CMPUT 401 - Software Process and Product Management

- Capstone course
- Team-based projects
- Service-learning - software development for clients

#### The course needed

An on-boarding process where students can rehearse their teamwork and software development skills

#### To meet this need

We used a hackathon including tutorials at the beginning of the term on a weekend

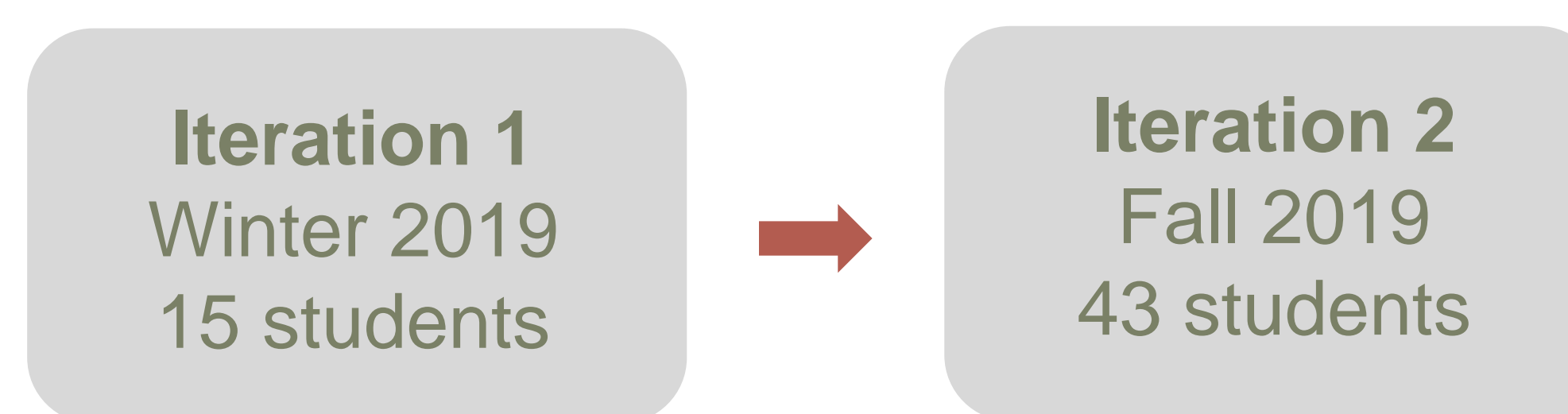
#### To refine the hackathon design

We examined the first two iterations

## Methods

### Research design: Action-research

#### The process



#### Hackathon schedule

	Friday	Saturday	Sunday
9 am – 12 pm		Tutorials/ Working on projects	Working on projects
12 pm – 4 pm		Tutorials/ Working on projects	Presentations
4 pm – 9 pm	Tutorials		

#### Changes made in second iteration

- Exclusive to those registered in the course
- Students formed their own teams
- The venue was changed

#### Didn't change

- TA support
- Presentations at the end of the event

#### Data collection and analysis

- Observation and a debrief form
  - Likert scale
  - open-ended questions
- Descriptive statistics and thematic analysis

## Results

### Iteration 1

#### Tutorials

- Challenging due to range in student backgrounds
- Some felt the tutorials did not target their current level or were not interesting
- Some from junior courses found it “difficult to keep up with the tutorials”

#### Teamwork Experience

- Most were pleased
- Some didn't contribute due to limited knowledge: “I only wished I knew more about front end developing so that I could help”

### Iteration 2

#### Tutorials

- More than 75% felt they “gained new knowledge from the tutorials”
- The tutorials took longer than the scheduled time to
  - answer student questions
  - solve problems students encountered
- Students said
  - “the tutorials are helpful for building web application during the hackathon”
  - “I enjoyed the tutorials”

#### Teamwork Experience

Most students were positive:

- “We all got along well, and did not have any difficulty working together”
- “We did great in collaboration”

## Comparison & Synthesis

- Most changes received positive feedback:
  - restricting the event to only 401 students
  - mitigated the background and experience differences,
  - facilitated the appropriate sharing of tasks among team members
  - none of the teams experienced dropout in iteration 2
- The venue change may have negatively impacted student experiences in Iteration 2 due to limited comfortable workspace for groups.

## Conclusion

The findings of the study showed hackathons...

- support the early identification of possible issues related to
  - collaboration,
  - development processes, and
  - technical work.



- enable instructors to
  - observe
  - deliver early feedback
  - set expectations for the term