UTRECHT University

The 'Inter–University Sustainability Challenge' Course
The City of 1.5 degrees

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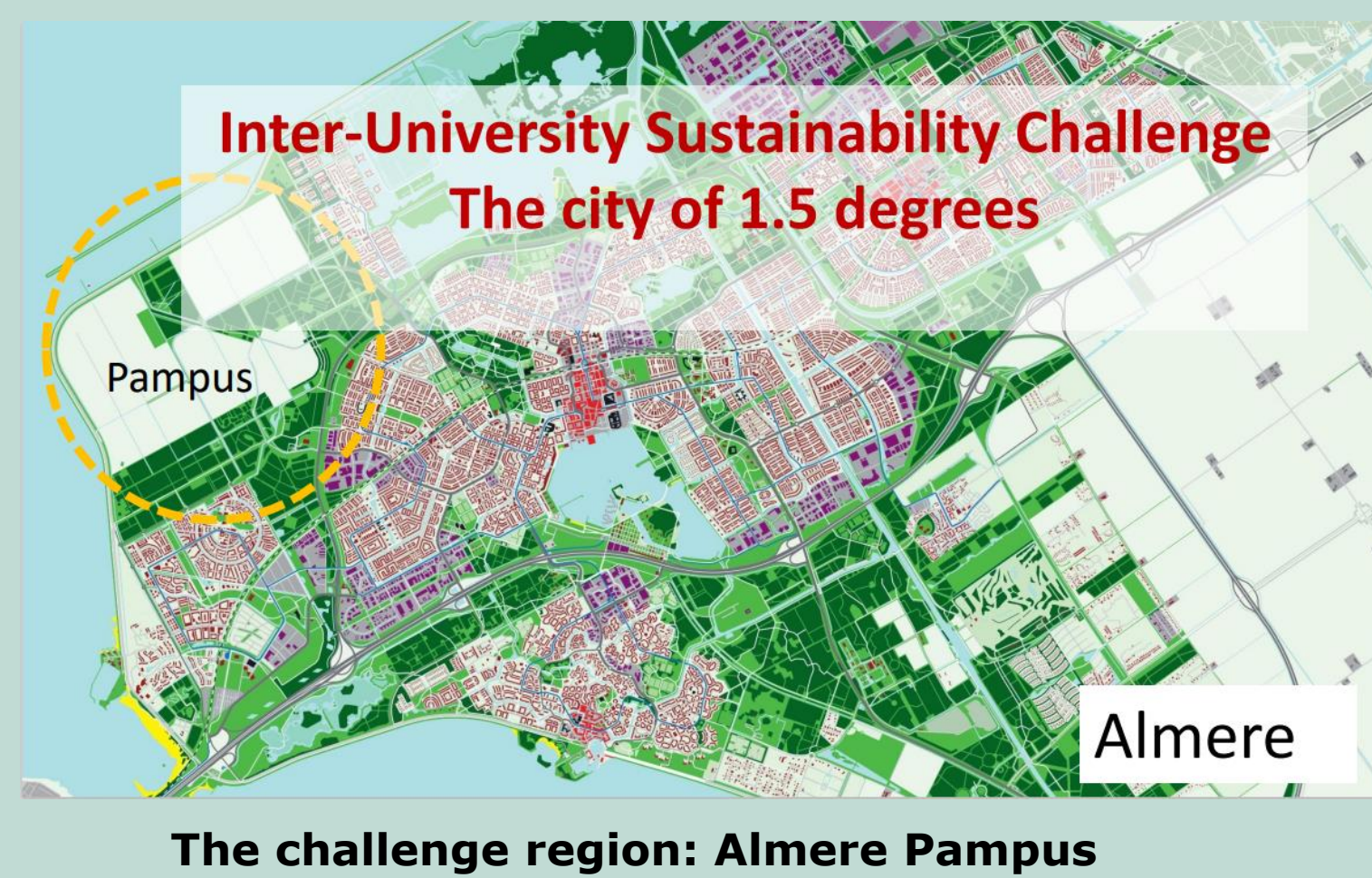[c]Freudenthal Institute, Faculty of Science, Utrecht University
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Course Background

- Elective course for all 2nd & 3rd years BA students
- Max. 48 students
- ECTs UU (7.5), WUR (6), TU/e (5)
- Enrolment numbers: 2021= 24; 2022= 36 ; 2023= 18
- Innovative online CBL course (Virtual Classroom)
- Online = means to an end
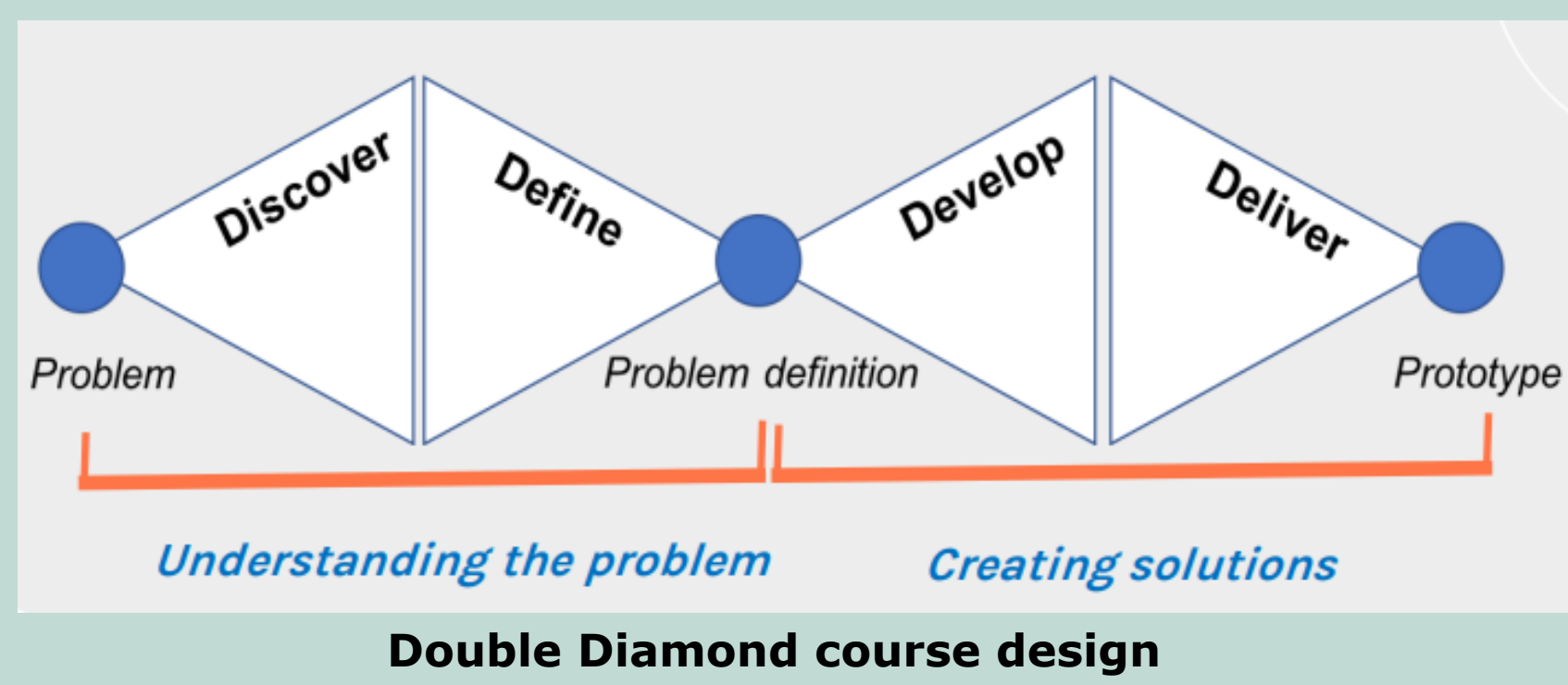- Municipality Almere Pampus external stakeholder

**Inter-University Sustainability Challenge
The city of 1.5 degrees**

Pampus

Almere

The challenge region: Almere Pampus

Aim of this course

- (online) inter-university collaboration
- national and international level
- on sustainability challenges together with external stakeholders.

Discover — Define — Develop — Deliver
Problem — Problem definition — Prototype
Understanding the problem — *Creating solutions*
Double Diamond course design

The Virtual Classroom at Utrecht University

Aims of the study

- Investigate strengths & weaknesses of CBL in an online, inter-university setting
- Improve online CBL course design -> scalability?

Theoretical Background

- CBL requires collaborative learning and interaction -> how to support online?
- Psychological and communication distance; Transactional Distance Theory[1]
- Collaborative and deep learning online; Community of Inquiry Theory[2]
- Interdisciplinary competencies[3]

Research Focus

RQ 1: How do students perceive transactional distance and presence?

RQ 2: Which interdisciplinary competencies do students develop?

RQ 3: Which strengths and weaknesses do students perceive of online CBL?

Conclusions

Interaction and feeling of presence through Virtual Classroom

Interdisciplinary competencies are achieved online.

Perceived weakness of online CBL can be prevented through course design.

Methods

- Bi-weekly student interviews (N= 15)
- Analysis course evaluation papers (N =15)

- Online surveys (N = 13)
  - Transactional Distance Scale[4]
  - Presence Scale[5]

Results

RQ 1: Perceived Transactional Distance & Presence

Transactional Distance score: High (46.85)

12 ----------------------------------**X**------------- 60
(= highest possible distance)   (= lowest possible distance)

Community of Inquiry Score: High (119.62)

34 -------------------------------------**X**------------------------170
(= lowest possible presence)   (= highest possible presence)

RQ2: Perceived Interdisciplinary competencies

Top 3:
- Appreciation of disciplinary perspectives
- Integrative skill
- Reflectivity

RQ3: Perceived Strengths & Weaknesses

Strengths	Weaknesses (challenges)
Interdisciplinary collaboration	Online collaboration between different universities
Open, creative & critical process	Struggling with openness and uncertainty
Coaching & guest teachers	Unclear course design
Use of Virtual Classroom	Online collaboration skills

Recent journal publication

References

[1]Moore MG. 2013. The theory of transactional distance Moore, Michael Grahame ed. In: Handbook of distance education. New York: Routledge; pp. 84–103 9781136635571.

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[3]Lattuca LK, Knight, DB, Bergdom IM. 2012. Developing a measure of interdisciplinary competence for engineers ASEE Annual Conference & Exposition June San Antonio, Texas. American Society for Engineering Education. doi:10.18260/1-2–21173.

[4]Paul RC, Swart W, Zhang AM, MacLeod KR. 2015. Revisiting Zhang's scale of transactional distance: refinement and validation using structural equation modeling. Distance Educ. 36(3):364–382. doi:10.1080/01587919.2015.1081741.

[5]Arbaugh JB, Cleveland-Innes M, Diaz SR, Garrison DR, Ice P, Richardson JC, Swan KP. 2008. Developing a community of inquiry instrument: testing a measure of the community of inquiry framework using a multi-institutional sample. Internet Higher Educ. 11(3–4):133–136. doi:10.1016/j.iheduc.2008.06.003.

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