The ‘Inter-University Sustainability Challenge’ Course
The City of 1.5 degrees

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Course Background
- Elective course for all 2\textsuperscript{nd} & 3\textsuperscript{rd} 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

Aim of this course
- (online) inter-university collaboration
- National and international level
- On sustainability challenges together with external stakeholders.

Theoretical Background
- CBL requires collaborative learning and interaction -> how to support online?
- Psychological and communication distance; Transactional Distance Theory\textsuperscript{1}
- Collaborative and deep learning online; Community of Inquiry Theory\textsuperscript{2}
- Interdisciplinary competencies\textsuperscript{3}

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

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\textsuperscript{4}
  - Presence Scale\textsuperscript{5}

Results
RQ 1: Perceived Transactional Distance & Presence

\begin{tabular}{ll}
\textbf{Transactional Distance} & \textbf{Community of Inquiry} \\
\textbf{score: High (46.85)} & \textbf{Score: High (119.62)} \\
\textbf{12} & \textbf{34} \\
\textbf{(- highest possible distance)} & \textbf{(- highest possible presence)} \\
\textbf{X} & \textbf{X} \\
\textbf{60} & \textbf{170} \\
\textbf{(- lowest possible distance)} & \textbf{(- lowest possible presence)}
\end{tabular}

RQ2: Perceived Interdisciplinary competencies
Top 3:
- Appreciation of disciplinary perspectives
- Integrative skill
- Reflectivity

RQ3: Perceived Strengths & Weaknesses

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses (challenges)</th>
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<tbody>
<tr>
<td>Interdisciplinary collaboration</td>
<td>Online collaboration between different universities</td>
</tr>
<tr>
<td>Open, creative &amp; critical process</td>
<td>Struggling with openness and uncertainty</td>
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<tr>
<td>Coaching &amp; guest teachers</td>
<td>Unclear course design</td>
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<tr>
<td>Use of Virtual Classroom</td>
<td>Online collaboration skills</td>
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Recent journal publication
Distance and presence in interdisciplinary online learning. A challenge-based learning course on sustainable cities of the future, Journal of Integrative Environmental Sciences, 20:1, 2185261, DOI: 10.1080/1943815X.2023.2185261

References
- Arbaugh, Paul RC, Swart W, Zhang AM, MacLeod KR. 2015.
- Double Diamond course design
- Revisiting Zhang’s scale of transactional distance: refinement and validation using structural equation modeling.
- The Virtual Classroom at Utrecht University
- The City of 1.5 degrees - University Sustainability Challenge’ Course

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