



# PBL AS A CHALLENGE AND OPPORTUNITY FOR INNOVATIVE AND INTERDISCIPLINARY LEARNING

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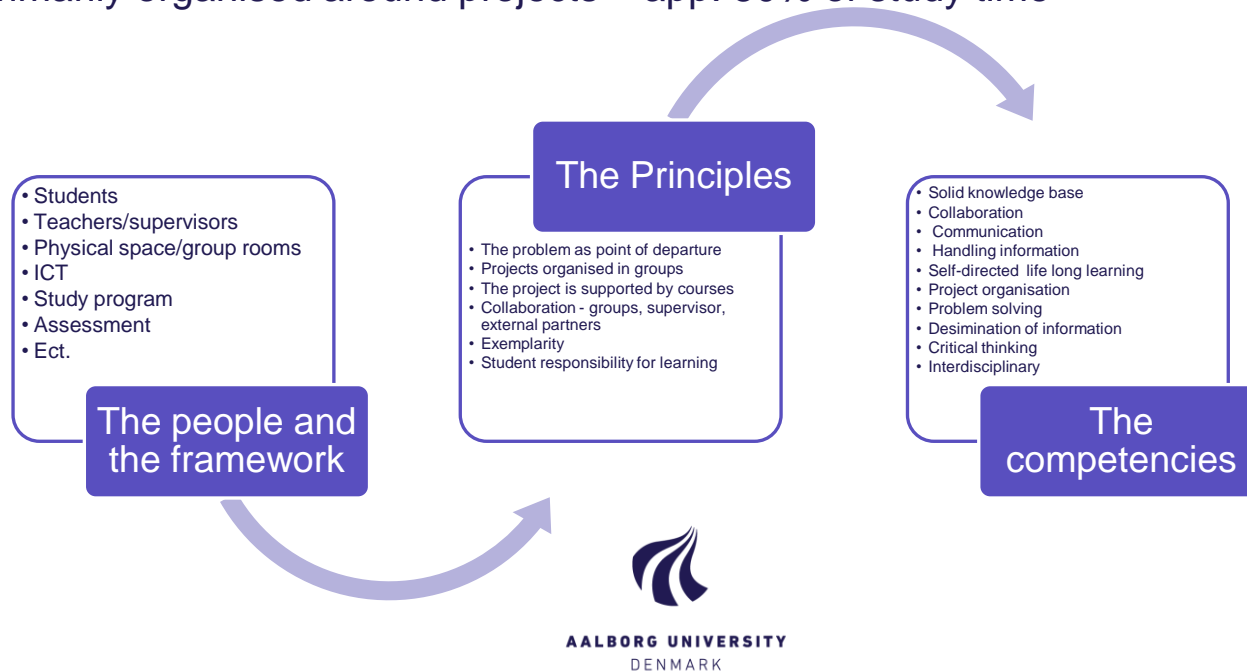
# What will be addressed

- How does PBL support and challenge students to work across disciplinary boundaries?
- How may PBL supervisors and facilitators support students to handle disciplinary uncertainties of complex problems?
- How may PBL contribute towards innovation and entrepreneurship in higher education?

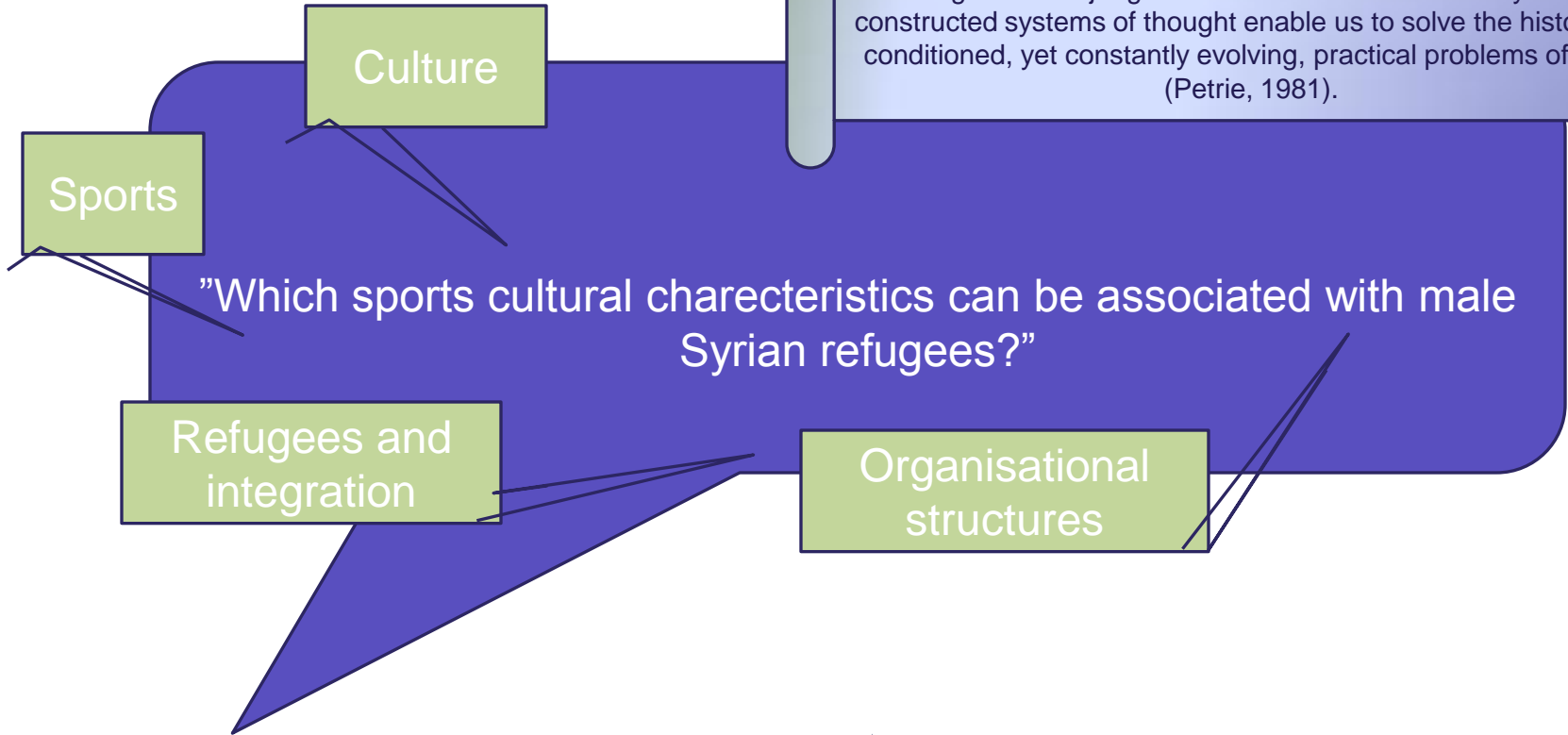


# My context...

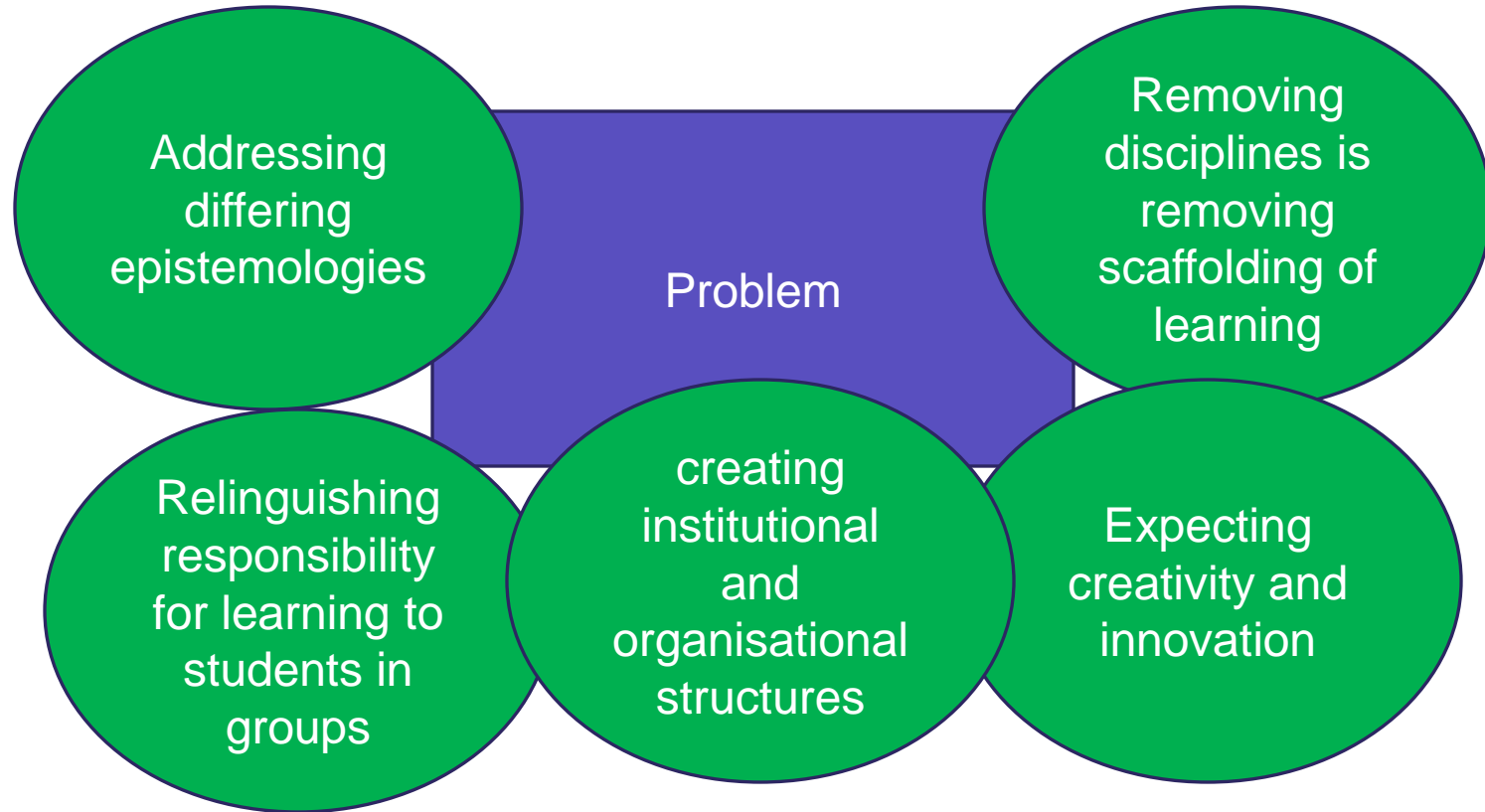
- Head of Centre for Health Science Education and Problem-based Learning, Aalborg University, AAU
- Years of experience with research and practice of PBL
- AAU as an established PBL university (1974)
- PBL primarily organised around projects – app. 50% of study time



# The problem....



# Interdisciplinary learning and PBL – the challenges



# Which kind of interdisciplinarity does the problem call for?

”Which sports cultural characteristics can be associated with male Syrian refugees?”

**Table 2.1** Defining characteristics in typologies of interdisciplinarity

Multidisciplinarity	Interdisciplinarity	Transdisciplinarity
<ul style="list-style-type: none"> <li>• juxtaposing</li> <li>• sequencing</li> <li>• coordinating</li> </ul>	<ul style="list-style-type: none"> <li>• integrating</li> <li>• interacting</li> <li>• linking</li> <li>• focusing</li> <li>• blending</li> </ul>	<ul style="list-style-type: none"> <li>• transcending</li> <li>• transgressing</li> <li>• transforming</li> </ul>
<ul style="list-style-type: none"> <li>• complementing</li> </ul>		<ul style="list-style-type: none"> <li>• hybridizing</li> </ul>
<ul style="list-style-type: none"> <li>• Encyclopedic ID</li> <li>• Indiscriminate ID</li> <li>• Pseudo ID</li> </ul>		<ul style="list-style-type: none"> <li>Systematic Integration</li> <li>Transsector Interaction</li> </ul>
Partial Integration ←-----→ Full Integration		
Contextualizing ID		Conceptual ID
Auxiliary ID	Supplementary ID	Structural ID/Unifying ID
Composite ID	Generalizing ID	Integrative ID
<u>Degrees of Collaboration</u>		
Shared ID ←-----→ Cooperative ID		
<ul style="list-style-type: none"> <li>• Narrow versus Broad or Wide ID</li> <li>• Methodological versus Theoretical ID</li> <li>• Bridge Building versus Restructuring</li> <li>• Instrumental versus Critical ID</li> <li>• Endogenous versus Exogenous ID</li> </ul>		

Klein, J.T. (2010) A Taxonomy of Interdisciplinarity. In Frodman, R., Klein, J.T. and Mitcham, C. *The Oxford Handbook of Interdisciplinarity*. Oxford University Press. P. 16



# Scaffolding interdisciplinary PBL

- Explicit learning outcomes emphasising:
  - The need for meta-cognitive competencies when addressing complex and interdisciplinary problems
  - Disciplinary anchoring
  - Critical awareness of the interdisciplinary learning process – e.g. contributions and limitations of disciplines, knowledge gaps on the intersection of disciplines, differing epistemologies etc.



# Equipping students to learn through problems

Exploring existing information – information processing competencies

Which are the competencies needed to work with complex and interdisciplinary problems in student groups?

Identifying potential contributions of disciplines to the exploration of the problem – collaborative strategies

Bringing different beliefs and epistemological positions into a collaborative process – critical thinking and feedback processes

Experiencing discomfort and uncertainty in project groups – tools and strategies to accept uncertainties





# Equipping supervisors to supervise across disciplinary boundaries

Explicating learning outcome with students  
– competencies to work with complex learning processes and meta-cognition

Which are the competencies needed by PBL supervisors to support students' interdisciplinary learning?

Bringing student experiences and future aspirations into the project work

Trusting students' to control the project even if the project is not within ones field of expertise – tools and strategies to surrender power of the process

Letting the problem and student creativity guide the work – tools and strategies to handle uncertainties



# Equipping institutions to scaffold interdisciplinary and problem-based educations

Procedures and structures in place to enable interdisciplinary learning – e.g. through external or cross-faculty collaborations

Adequate physical and ICT facilities

Which are the organisational and administrative structures necessary to interdisciplinary and problem-based learning?

Procedures for allocation of supervisors and use of co-supervisors from other faculties or external partners

Supporting students to take their projects into 'real-life' – incubating ideas, business support etc.



# PBL as a catalyst for innovation?

Yes – but only in so far as the uncertainties naturally included in innovative processes for both students and supervisors are addressed

Yes – as prolonged periods of project work opens to collaboration with businesses and organisations

Yes – as learning from problems rather than books offers students possibilities to use and develop their creativity and move across disciplinary boundaries in their search for solutions

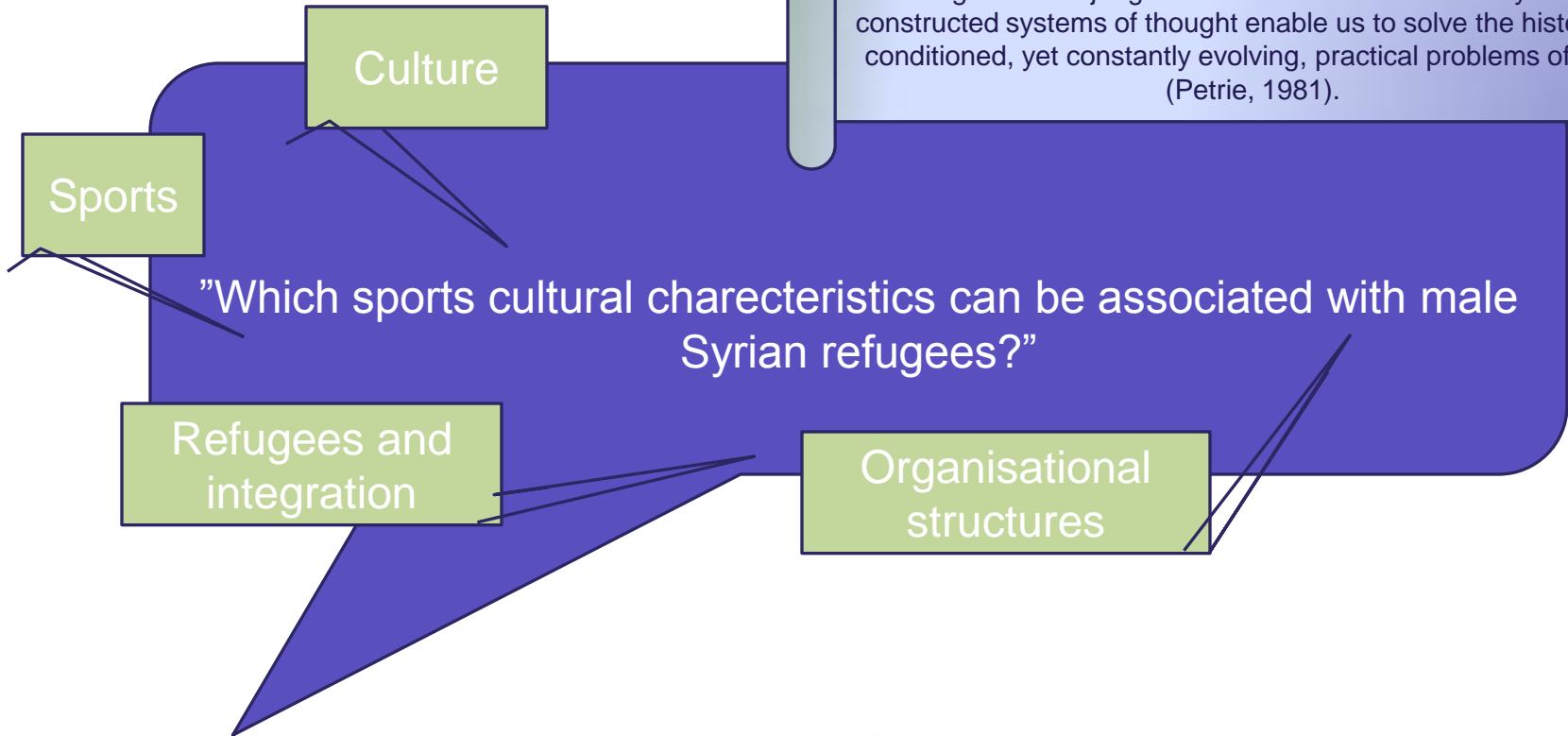
No – because structures of projects sometimes become the scaffolding remedy when students can no longer lean on disciplines

No – because supervisors may direct students towards their own fields of interests and where they feel most comfortable offering supervision

No – as institutional and administrative structures do not allow for the time or cross faculty interactions necessary to foster innovative and interdisciplinary processes



# The problem revisited



As such, the worth of disciplines or interdisciplines can be judged on roughly pragmatic grounds. Both the traditional disciplines as well as new interdisciplinary and transdisciplinary ways of thinking are to be judged on the basis of how well any of these constructed systems of thought enable us to solve the historically conditioned, yet constantly evolving, practical problems of living (Petrie, 1981).





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