Transfer and Problem-based Learning – now and in the future, and why the importance of being innovative is everlasting

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Why is Transfer important?

- Problemsolving recuires action
- Qualified action recuires insight

- Insight is gained through learning of knowledge and ability

- And this creates transfer of knowledge and ability into qualified action

Why does automatic transfer not always occur?

- Difficult to adapt the learning into qualified action

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When transfer fails -

- Not motivated – or stimulated for learning
- Learning environement
  - The good professor:
    - Discussions on class about the subject
    - Personal involvment in the learners learningproces
    - Positive feedback

Transfer and PBL

- (Morgan, 1983;Barrows, 1985; Boud 1985; Duch, 1995;Domin 1999; Michel et al, 2002)

Transfer and PBL

- What is Problem-based Learning?

- No universal accepted definition in Litterature – the essence can be summarized as
  - ”the use of a real world problem or situation as a context for learning”
    - (Morgan, 1983;Barrows, 1985; Boud 1985; Duch, 1995;Domin 1999; Michel et al, 2002)

Transfer and PBL

- Why use PBL as pedagogical framework?

  - Develops critical thinking skills
  - Develops high professional compentences
  - Develops problem solving abilities
  - Develops knowledge acquisition
  - Develops ability to work productivly as a team-member and make decisions in unfamiliar situations
  - Develops the acquisition of skills that support selfdirected lifelong learning, self evaluation, and adaption to change.
    - (Engel 1991; Albanase&Mitchell 1993; Ryan&Quinn 1994)

Typical caracteristics in PBL

- PBL is typically conducted using cooperative learning groups
- PBL is usually conducted in a face-to-face setting
- Ideally, the groups are heterogene

Typical issues in PBL

- The Role of the Problem
- The Role of the Facilitator
- Collaborative Learning

How do we do it…..

- We work with ”real life cases ” in cooperation with local industry.
- The local industry shall present the students for a ”real challenge – or problem” that the industry is facing.
- That means we, as teachers, do not have the right answer to a solution.
- We are facilitators to the students creative and innovative process

5 areas

- We guide our students through 5 cognitive areas where we try to stimulate learning by:
  1. Activation of students' prior knowledge
  2. Elaboration of prior knowledge through cooperative discussions
  3. Reconstruction of knowledge to fit the problem persuaded
  4. Learning in scaffolding context of a real-world problem
  5. Emerge of epistemic curiosity due to relevance of problem

PBL and transfer – does it work?

- Yes!
- Our students know, that they are working for and along with the local industry.
- They do not experience a gap between the two learning environements:
  - The University and the industry – when they get jobs after graduation

- We have seen, that our students develop greater independence and self-assurance
  - They can create action based on their learning. And this creates transfer of knowledge and ability into qualified action

Innovation through industry/university collaboration and assessment of learning outcomes

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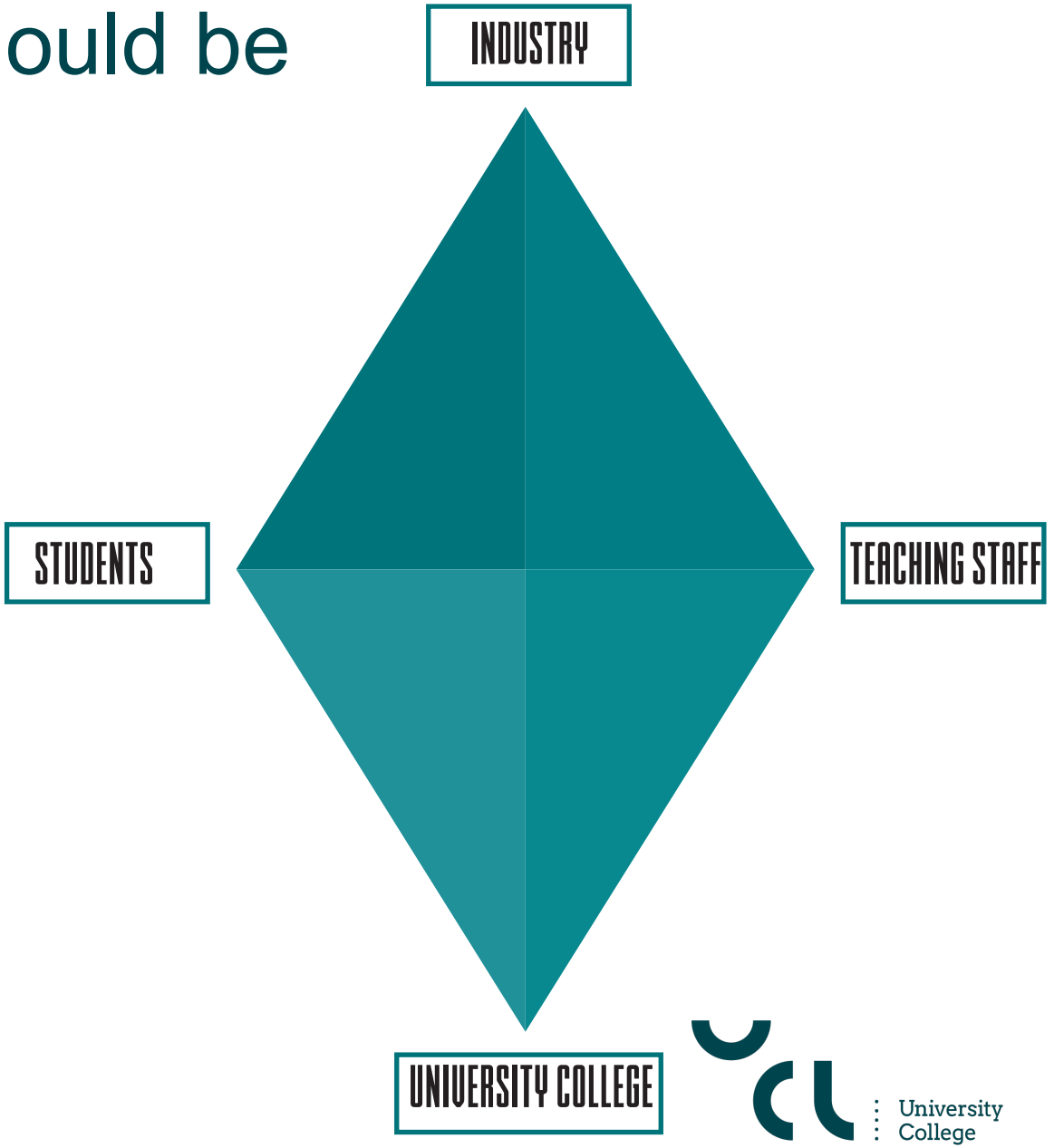
Maybe the first question should be – why innovation?

- University projects should not **compete** with industry
- Students should not be creating what the industry is already making
- So **innovative challenges** that the industry is strugling with – with no set answers, no answer book – allow all parties to learn something



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Schumpeter's definition (1934)

"Innovation is an effort of one or more individuals to create economic profit through a qualitative change"

Lotte Darsø's take on Innovation

- She wants to focus on the heterogenous group of people, who is performing the innovation as knowledge workers
- Innovation takes place in teams and is a proces

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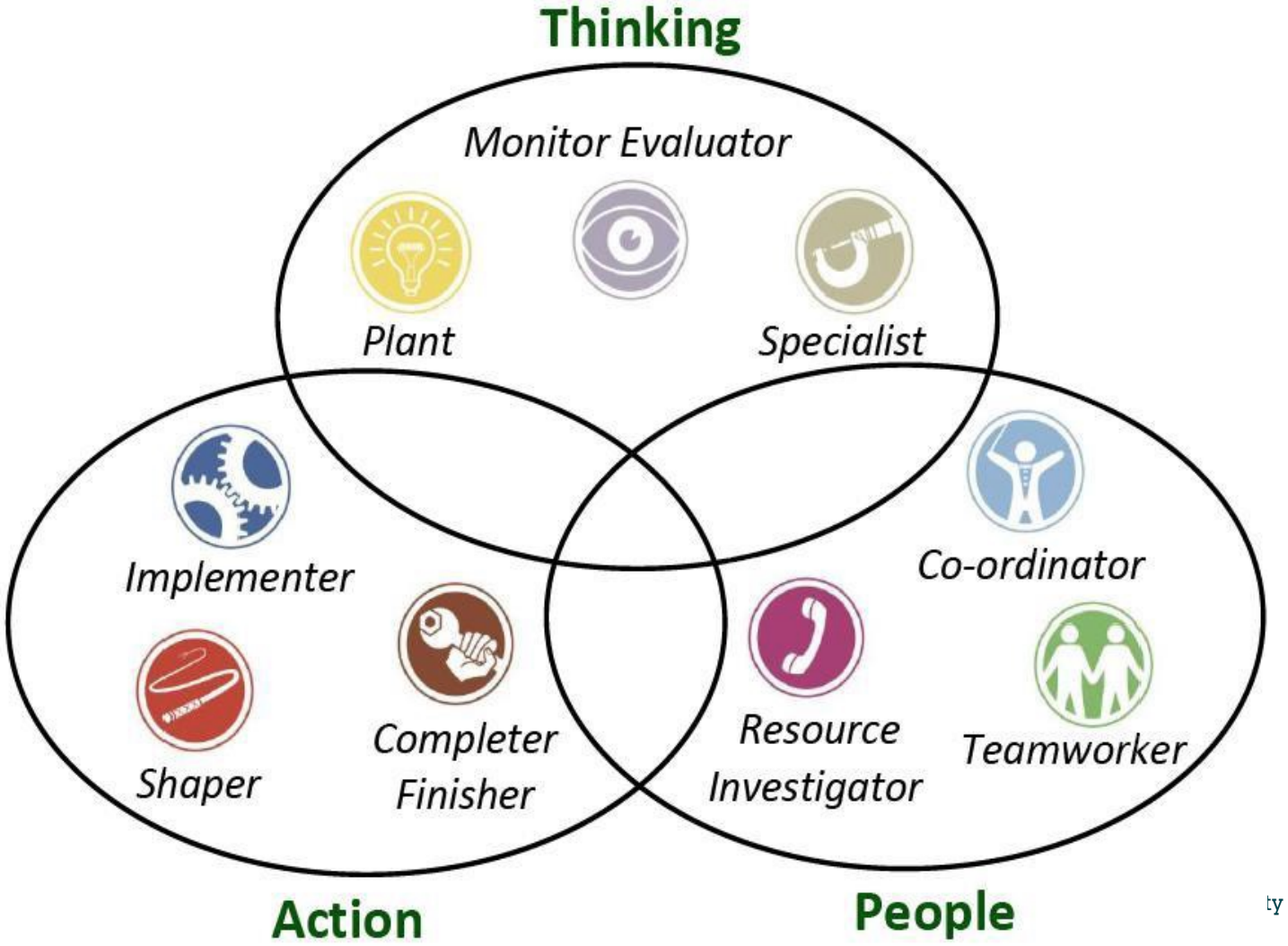
According to Darsø complex problems should be solved in groups with different backgrounds

- Which is why we use Belbin test results for combining groups
- Teach project management
- Make the teams create contracts



Knowledge happens

- In Innovation processes the point is to strategically in the teams to seek knowledge within the field.
- So you move from not knowing something to knowledge about it continuesly

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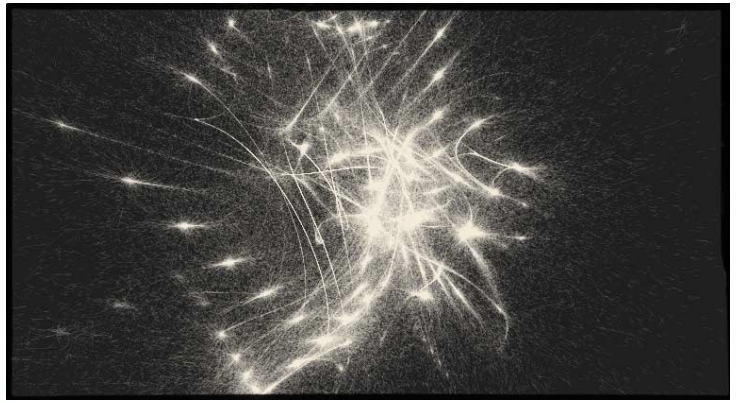
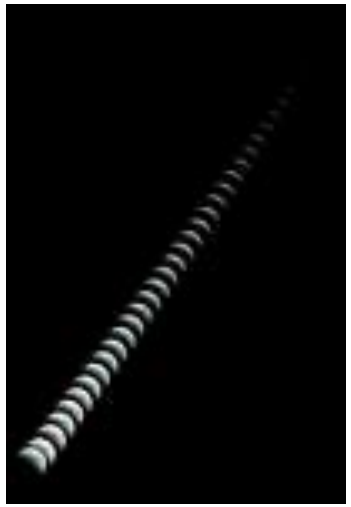
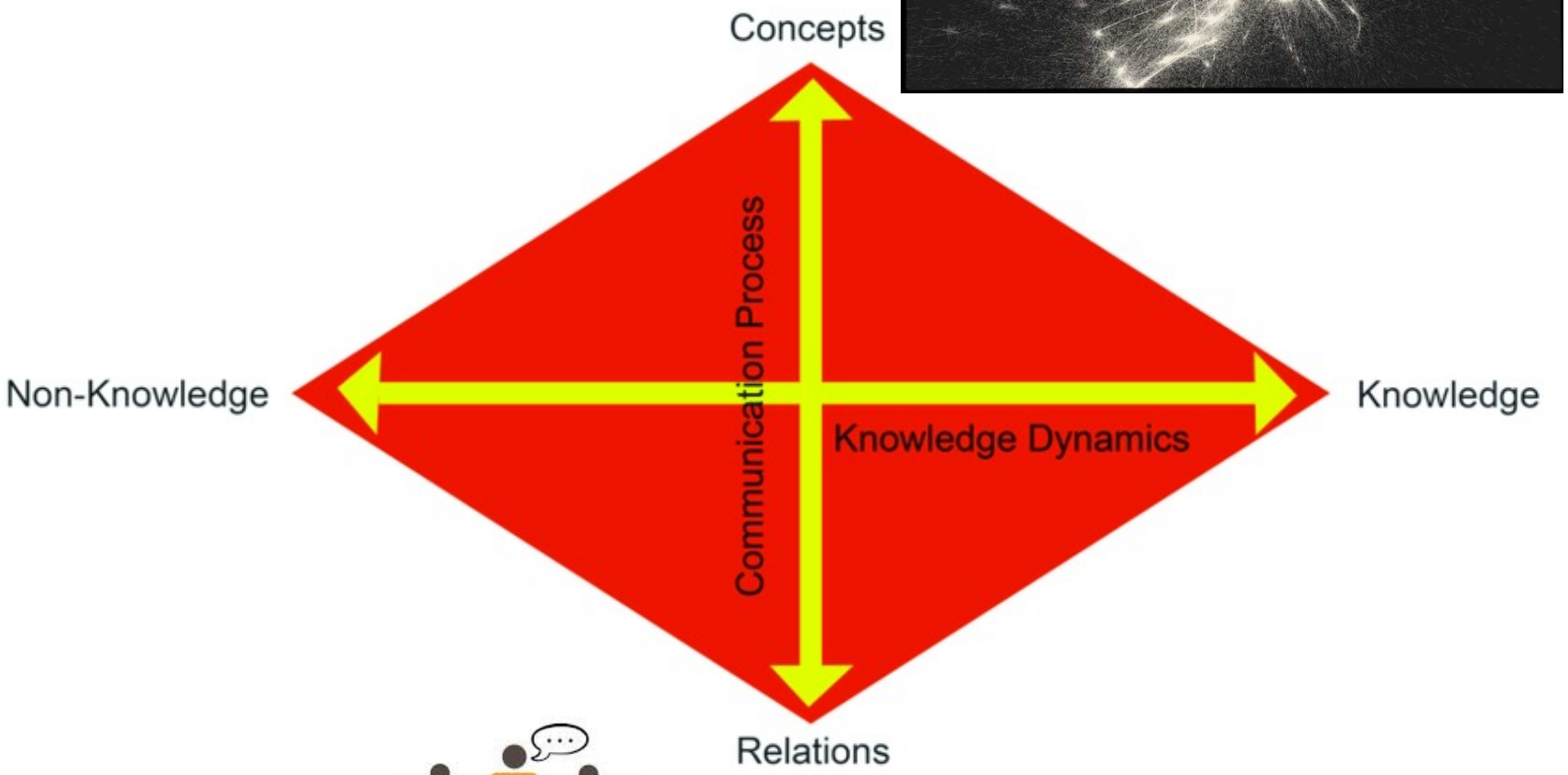
The diamond of innovation







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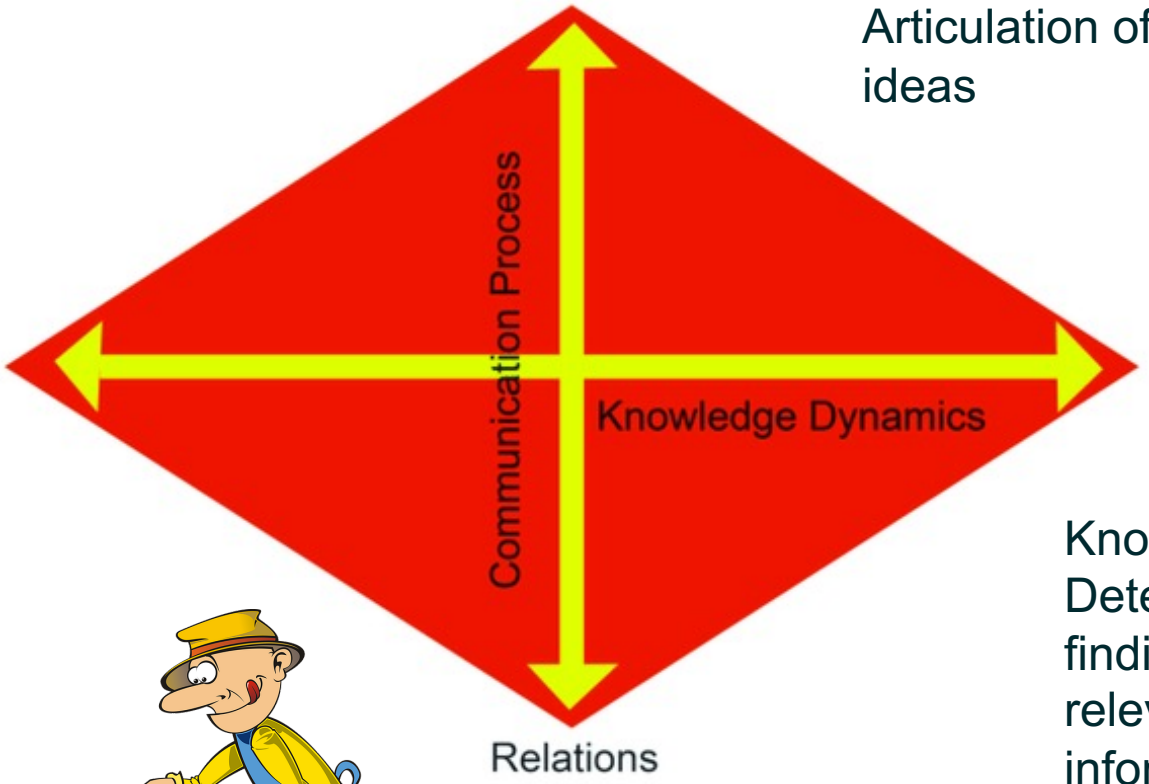
Four roles for team participants



Conceptualizer - Articulation of ideas

Court Jester
- encouraging the ”stupid” questions

Knowledge Detective – finding relevant infomation

Gardener – nursing relations

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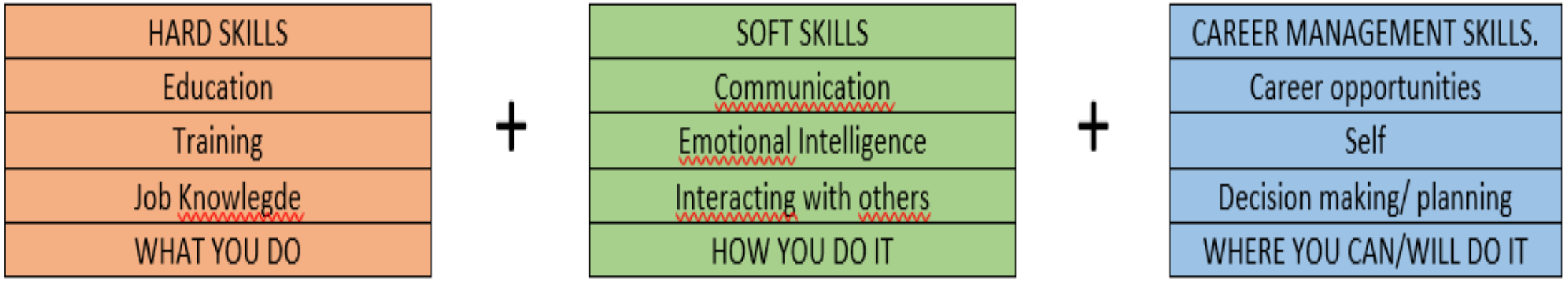
Exactly what employability skills are in demand?

- 3 types: ”Hard skills”, ”Soft skills” og ”Career management skills”.



Employability in the Curriculum

- In the curriculum we have a strong focus on following topics:

  Team-work – not study-groups or groupwork

  Communication and negotiation

  Conflict management

  Self-awareness

We are trying to mowe from hard skills to soft skills with a focus on lifelong learning.

How to assess both the hard skills, the soft skills and the career management skills?

Is there a place for students to reflect on the learning outcomes?

- Until the early 1990'ies there hadn't been a "place" for students to reflect on their own learning goals and achievements, to formulate it or to publish it

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What does the articulation of reflection benefit?

The student interpret his/her learning by communicating about it

Philosopher Paul Ricceur, in *Interpretation Theory*, analyses how communication makes its possible for the essentially private experience to become interpretable for a **dialogue**

“The experience as experienced, as lived, remains private, but its sense, its meaning, becomes public. Communication in this way is the overcoming of the radical non-communicability of the lived experience as lived.” (Riceur 1976: 16)

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Enter portfolios

- The students showcase their achievements and reflect upon them in writing
- The oral examination is a **dialogue**. About the achieved results and the level of learning
- Portfolio use started as an add on – almost extra curricular – and now it is an exam practice widespread in the Danish educational system from primary school to university level

Currently all exams in PBA in Digital Concept Development are portfolio exams*

* Except the BA project exam

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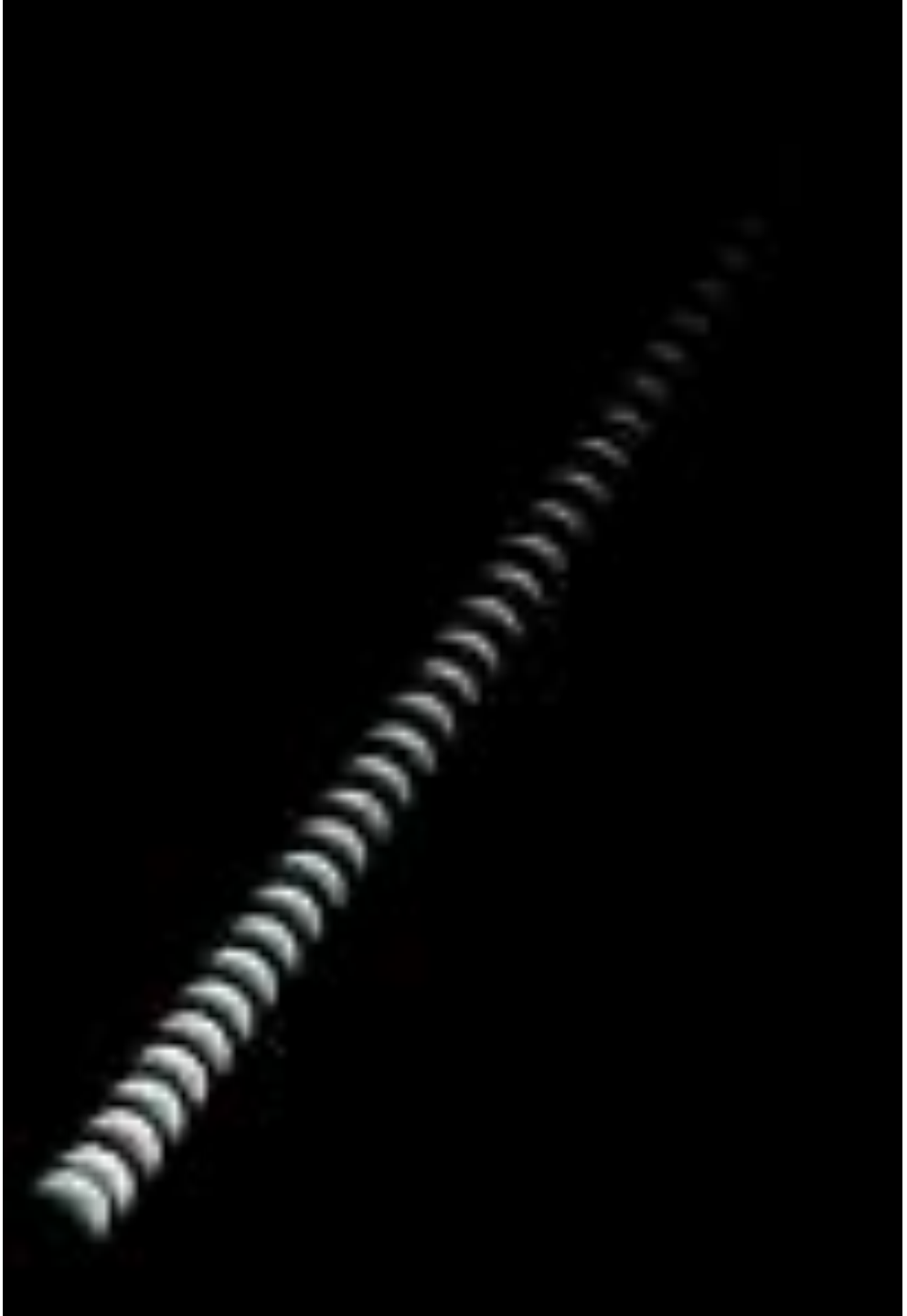

Articulation through the narrative

- Objectives as trajectories
- Looking at your own work can give you a sense of what you are becoming or where you are going
- Telling your own story

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Our inspiration

- Agerbæk, E. & Borch, I (2008) 'E-portfolio - a means to bridge the gap between the student's knowledge of own competences and future job profiles', in *Proceedings ePortfolio & Digital Identity 2008*, Elfel.
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- Krill, Cecilia og Saltofte, Margit (2017) *Portfolio i praksis*, Hans Reitzels Forlag
- Ricoeur, Paul (1976*) Interpretation theory: discourse and the surplus of meaning*, Fort Worth
- Scumpeter, Joseph (1934) *The Theory of Economic Development*, Harvard
- Wahlgren, Bjarne (2010) *Voksnes læreprocesser - Kompetenceudvikling i uddannelse og arbejde*, Akademisk Forlag