(Co)Creating Innovative Curricula

Adding Value by Curriculum Agility

for Students, Staff, University, Pedagogy, Industry & Society

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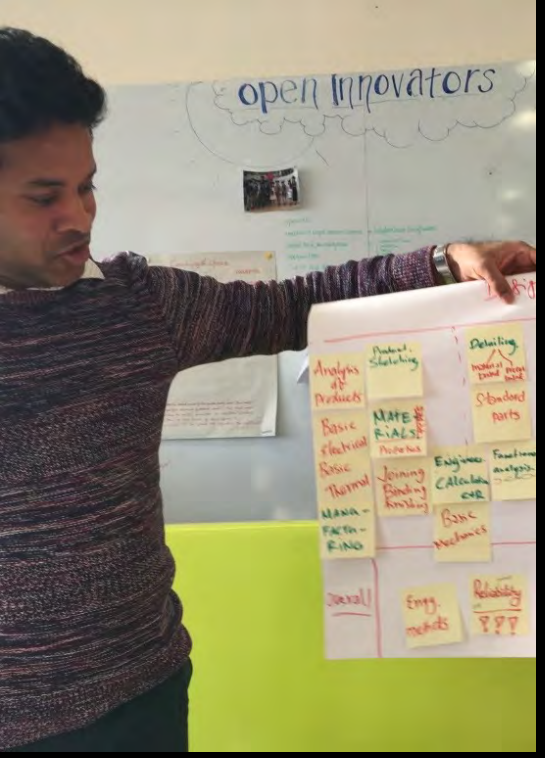
SUHF Årskonferens 2021 Luleå | Framtidens lärosäten – pandemins påverkan | 19-10-2021

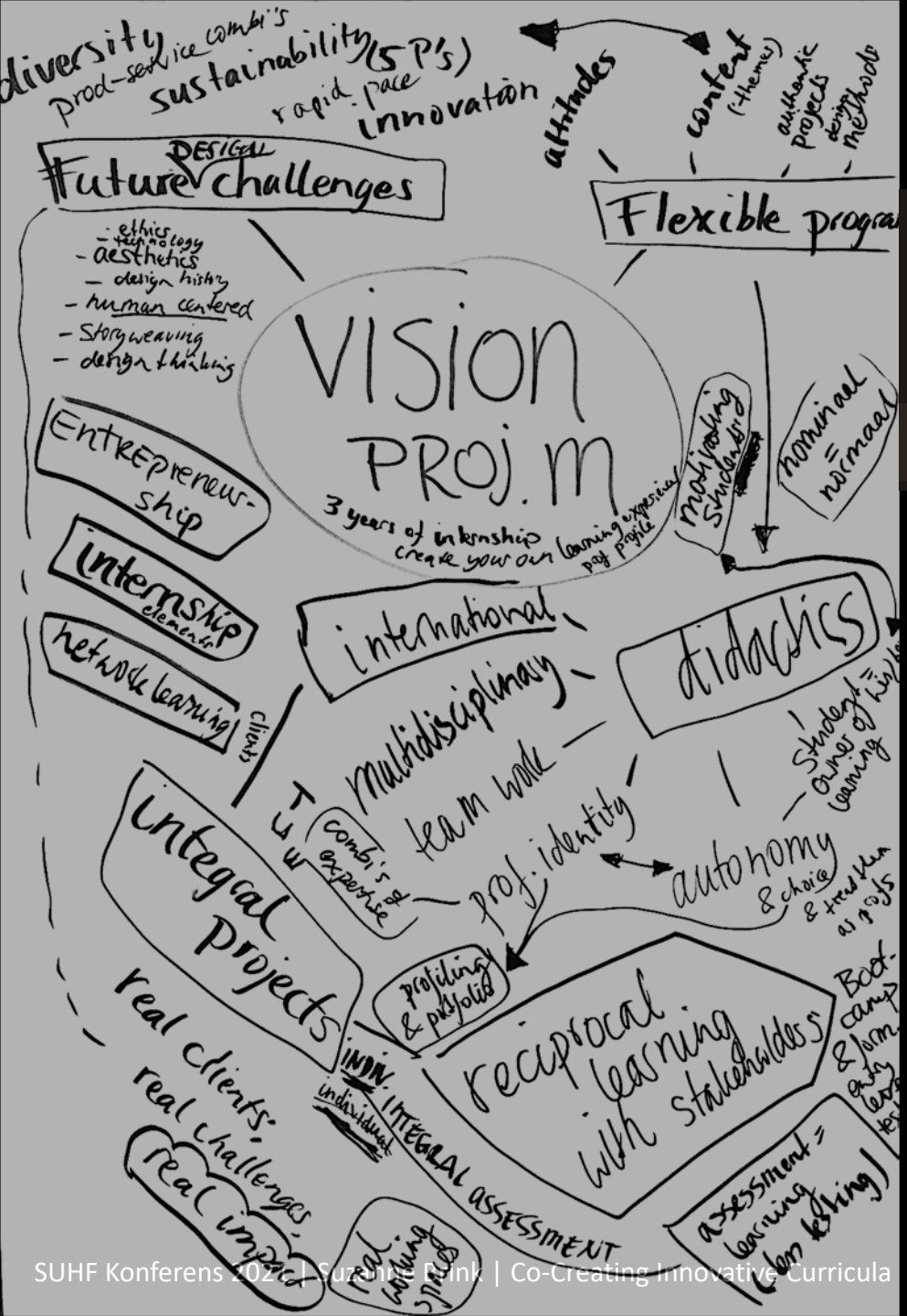


THE HAGUE
UNIVERSITY OF
APPLIED SCIENCES

Co-creating Curriculum M

With lecturers, industry, alumni, students, prospective students & educational advisors

Schooling & training ourselves to be able to teach in a flexible curriculum all the way into the implementation phase



Industrial Design Engineering

Flexible, Dynamic, Modular Curriculum

Running since 2018

Build on principles of CDIO with a little extra

Dynamic semester menu

Individual choices

Spacious ½ year units

No entry requirements

100%

Competency-based Teaching &

Integrated (oral) Assessment

Collaborative

multidisciplinary & interdisciplinary

learning

Student ownership of assessment and profiling

Wicked, challenging projects

within diverse, authentic contexts

Interact with industry, NGOS, communities and society in general from day one.

Semester Choices for Professional Identity Development

IDE Open innovator

Semester A

Basics of IDE

Semester B

Responsible Design

Product Engineering

Design Aesthetics & Perception

Semester C

Strategic Product Design

Entrepreneurship

Design for Mass Production

Smart Object

Prototyping & Craftmanship

International Insights Research

Design Agency

Minor/ Exchange/ Internship

Semester D

Responsible Design

Entrepreneurship

Product Engineering

Exploring New Technologies

Design Aesthetics & Perception

Design with Nature

International Insights Research

Design Agency/ Autonomous Project

Minor/ Exchange/ Internship

Semester E

Strategic Product Design

Entrepreneurship

Design for Mass Production

Smart Object

Prototyping & Craftmanship

Service Design Thinking

International Insights Research

Design Agency/ Autonomous Project

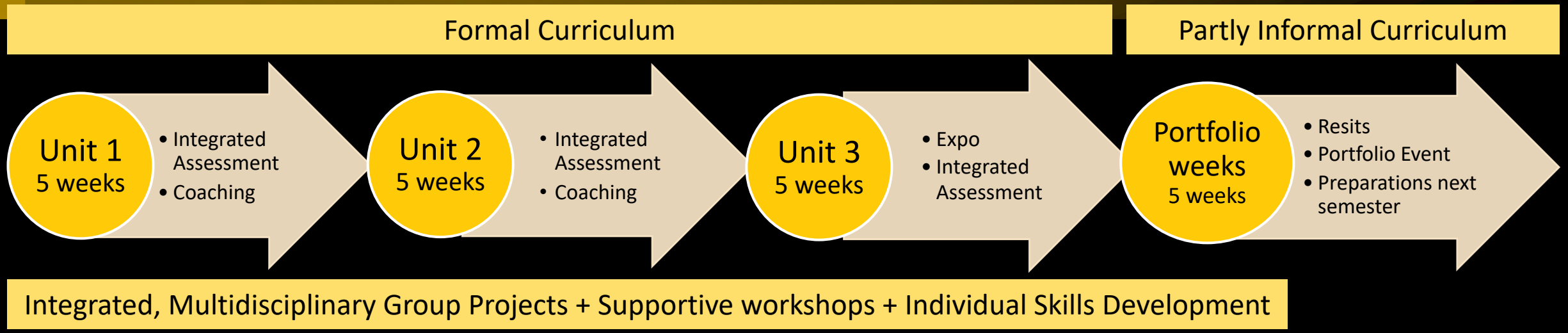
Minor/ Exchange/ Internship

Semester F

Final Project at company

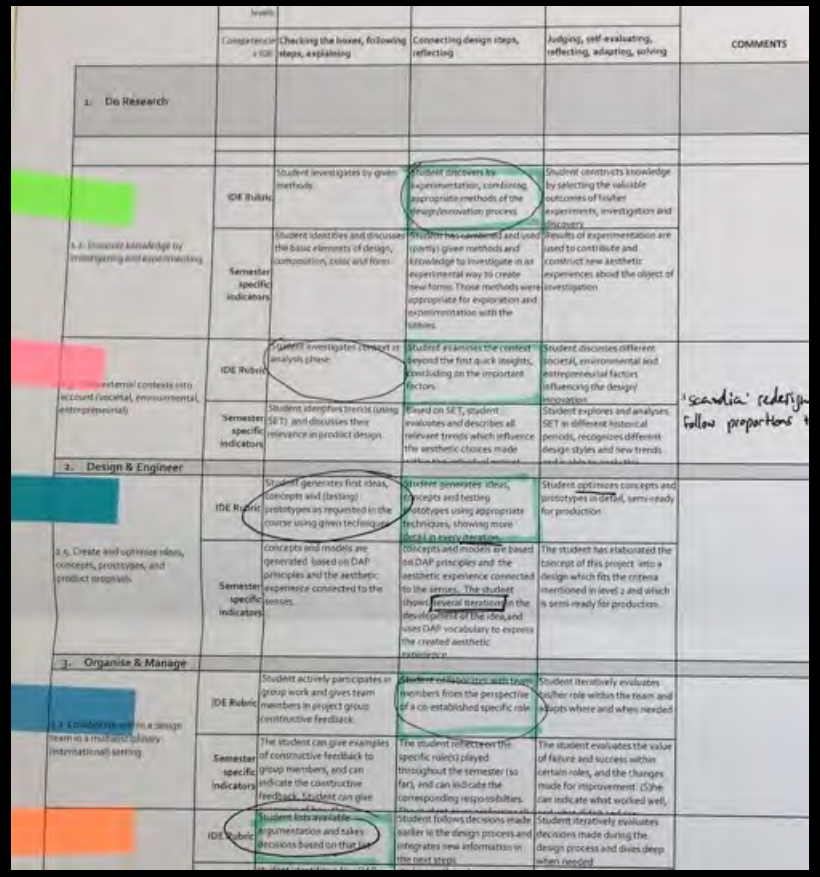
Final Project at own enterprise

semester structure

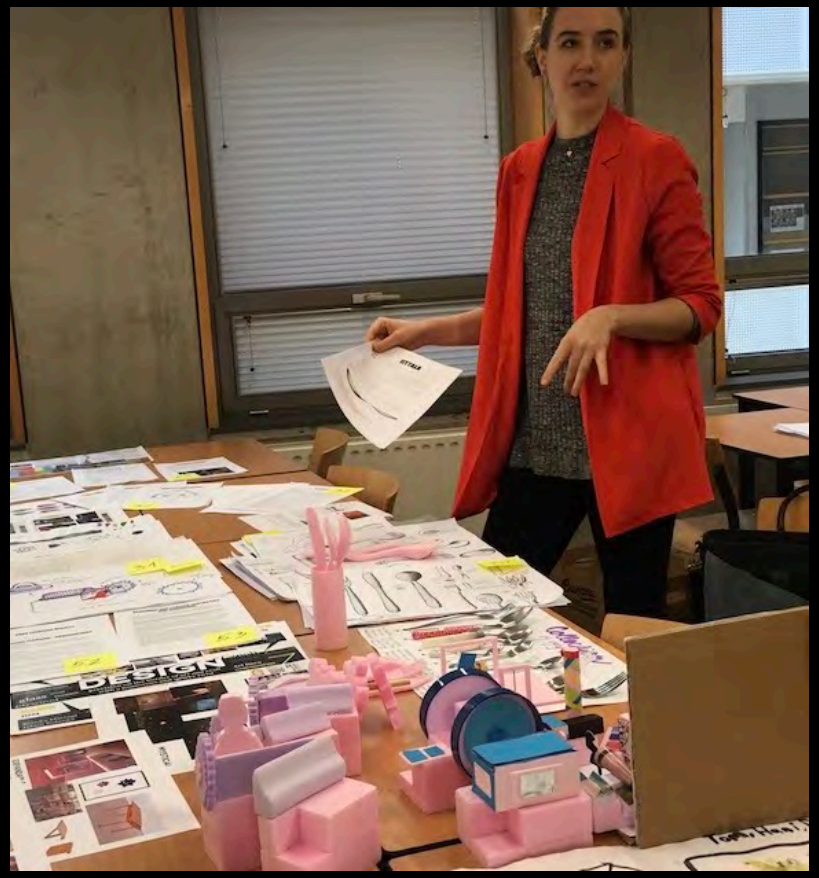


Sub-competencies table IDE	CDIO Syllabus
1. Do Research	1, 2,4
1.1. (Re)define problems and reason analytically	1.1, 1.2, 2.1
1.2. Discover knowledge by investigating and experimenting	2.2
1.3. Take external contexts into account (societal, environmental, entrepreneurial)	2.5, 4.1
1.4. Approach research in a (technical and) human-centered way	1.2, 1.3, 2.5
1.5. Report on research using a practical scientific standard	
2. Design & Engineer	1, 2
2.1. Formulate design briefs containing vision and requirements, based on primary and secondary research	
2.2. Use an iterative process with diverging and converging methods and techniques	2.1, 2.2
2.3. Integrate human, market, technological, and context values during the design process	1.3, 2.3, 2.5
2.4. Consider desirability, viability, and feasibility while designing and engineering	1.2, 4.4, 4.6
2.5. Create and optimize ideas, concepts, prototypes, and product proposals	1.1, 1.3, 4.4, 4.5,
2.6. Evaluate ideas, concepts, and (end) products based on requirements	4.4
3. Organise & Manage	3, 4
3.1. Work methodologically	2.2, 4.4
3.2. Collaborate within a design team in a multidisciplinary (international) setting	3.1
3.3. Show resourcefulness, flexibility and willingness to make decisions in fuzzy (complex) contexts	2.4, 4.2, 4.7
3.4. Show entrepreneurship or intrapreneurship	4.7, 4.8
3.5. Practice project, stakeholder, time and resource management	4.3, 4.7
3.6. Break down and model systems and select relevant approaches	2.3, 4.3
4. Communicate	3
4.1. Manifest/present yourself in a (semi) professional setting	3.2
4.2. Communicate within a team on team dynamics and (your) role	3.1
4.3. Make deliverables tangible in a refined, communicative way	3.2
4.4. Communicate in a foreign language and/or in an international setting	3.3
5. Learn	2, 4
5.1. Reflect on your role in projects and your impact on society as an innovator	2.4
5.2 Develop and adapt learning strategies	
5.3. Transfer and integrate acquired knowledge and experience in projects	

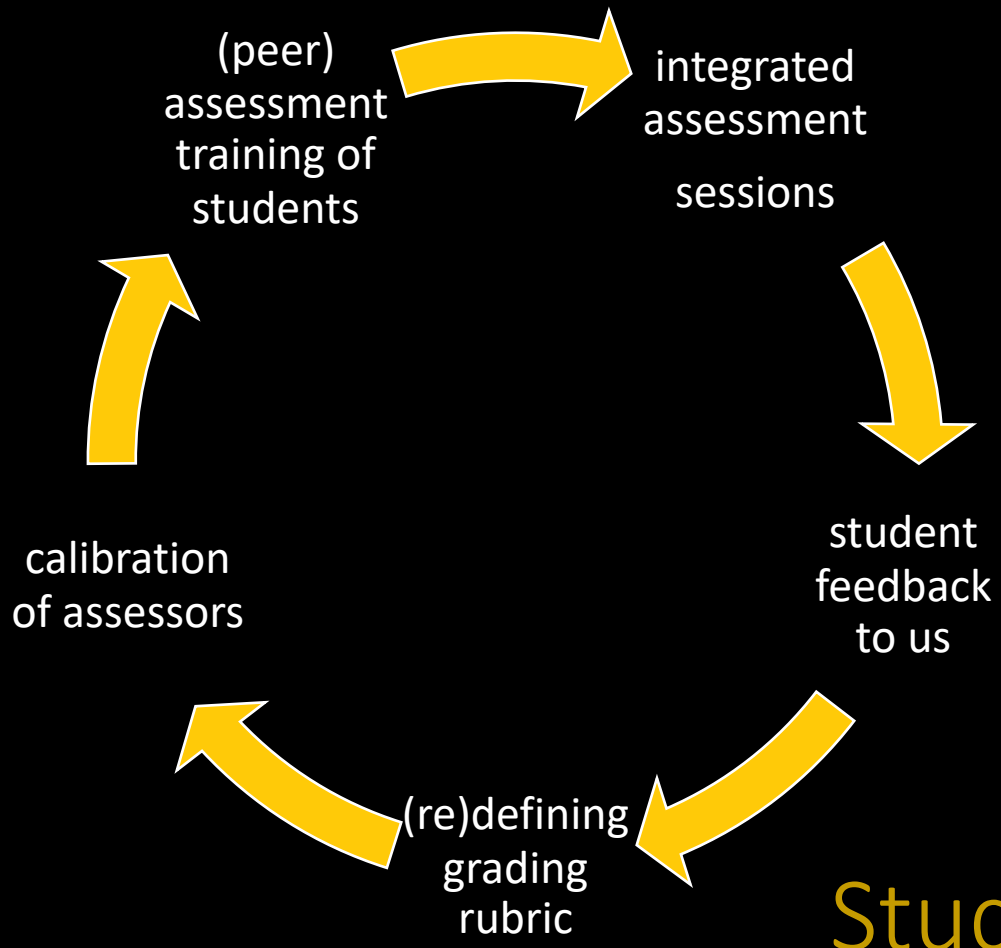
Design Expertise levels:	ENTRANCE level	NOVICE (apply strict rules)	ADVANCED BEGINNER (general thruths)	COMPETENT (problem solver)	THE MASTER (post bachelor)
Competencies IPO/IDE:	Linear processing, guessing and assuming	Checking the boxes, following steps, explaining	Connecting design steps, reflecting	Judging, self-evaluating, reflecting, adapting, solving	developing new ways, creating new domains
1. Do Research					
1.1. (Re)define problems and reason analytically	Student retells client's and user's input literally	Student lists client's and user needs and problems, based on general arguments	Student determines stakeholder needs and problems, based on relevant arguments	Student constructs the problem definition, based on triangulated arguments	Student adapts problem definition with client based on logical, experience-based analytical arguments
1.2. Discover knowledge by investigating and experimenting	Student finds existing general knowledge	Student investigates by given methods	Student discovers by experimentation, combining appropriate methods of the design/innovation process	Student constructs knowledge by selecting the valuable outcomes of his/her experiments, investigation and discovery	Student dives deep for each new project by investigating and experimenting by prefered methods
2. Design & Engineer					
2.2. Use an iterative process with diverging and converging methods and techniques	Student considers the design process to be a 'straight line' process from A to B	Student iterates when requested to do so, and uses basic (given) diverging and converging techniques	Student selects proper methods for the diverging and converging phases in the design process	Student selects proper methods for an iterative, diverging and converging design process	Student compiles, executes, and adapts an iterative design process, and evaluates along the way
2.4. Consider desirability, viability, and feasibility while designing and engineering	Student defines desirability, viability and feasibility	Student classifies desirability, viability and feasibily issues in their project	Student keeps desirability, viability and feasibily issues into account	Student evaluates desirability, viability and feasibily factors of his/her design, weighing their relative importance	Student creates desirable, viable, feasible designs
3. Organise & Manage					
3.2. Collaborate within a design team in a multidisciplinary (international) setting	Student (occasionaly) takes part in team work	Student actively participates in group work and gives team members in project group constructive feedback	Student collaborates with team members from the perspective of a co-established specific role	Student iteratively evaluates his/her role within the team and adapts where and when needed	Student combines several signature roles as a designer in team work
3.3. Show resourcefulness, flexibility and willingness to make decisions in fuzzy (complex)	Student makes decisions when asked to	Student lists available argumentation and takes decisions based on that list	Student follows decisions made earlier in the design process and integrates new	Student iteratively evaluates decisions made during the design process and dives deep	Student formulates a decision making strategy for an iterative design process



	Competence in a IDE	Checking the boxes, following steps, explaining	Connecting design steps, reflecting	Judging, self-evaluating, reflecting, adapting, solving	COMMENTS
1. Do Research					
	IDE Rubric	Student investigates by given methods	Student discovers by experimentation, combining appropriate methods of the design/innovation process	Student constructs knowledge by selecting the valuable outcomes of his/her experiments, investigation and discovery	
	Semester specific indicators	Student identifies and discusses the basic elements of design, composition, color and form	Student has combined and used (partly) given methods and knowledge to investigate in an experimental way to create new forms. Those methods were appropriate for exploration and experimentation with the senses	Results of experimentation are used to contribute and construct new aesthetic experiences about the object of investigation	
	IDE Rubric	Student investigates context in analysis phase	Student examines the context beyond the first quick insights, concluding on the important factors	Student discusses different societal, environmental and entrepreneurial factors influencing the design/innovation	
	Semester specific indicators	Student identifies trends (using SET) and discusses their relevance in product design	Based on SET, student evaluates and describes all relevant trends which influence the aesthetic choices made	Student explores and analyses SET in different historical periods, recognizes different design styles and new trends	
2. Design & Engineer					
	IDE Rubric	Student generates first ideas, concepts and (testing) prototypes as requested in the course using given techniques	Student generates ideas, concepts and testing prototypes using appropriate techniques, showing more detail in every iteration	Student optimizes concepts and prototypes in detail, semi-ready for production	
	Semester specific indicators	concepts and models are generated based on DAP principles and the aesthetic experience connected to the senses.	concepts and models are based on DAP principles and the aesthetic experience connected to the senses. The student shows several iterations in the development of the idea, and uses DAP vocabulary to express the created aesthetic experience	The student has elaborated the concept of this project into a design which fits the criteria mentioned in level 2 and which is semi-ready for production.	
3. Organise & Manage					
	IDE Rubric	Student actively participates in group work and gives team members in project group constructive feedback	Student collaborates with team members from the perspective of a co-established specific role	Student iteratively evaluates his/her role within the team and adjusts where and when needed	
	Semester specific indicators	The student can give examples of constructive feedback to group members, and can indicate the constructive feedback. Student can give	The student reflects on the specific role(s) played throughout the semester (so far), and can indicate the corresponding responsibilities	The student evaluates the value of failure and success within certain roles, and the changes made for improvement. (S)he can indicate what worked well,	
	IDE Rubric	Student lists available argumentation and takes decisions based on this	Student follows decisions made earlier in the design process and integrates new information in the next steps	Student iteratively evaluates decisions made during the design process and dives deep when needed	



Student-Owned, Integrated, Competency-based Assessment



Student-Owned, Integrated, Competency-based Assessment Cycle

Projects – Expo – Portfolio Event

Better student achievement & experience + Being accredited well!

Added value

“Thank you so much for this exam. I have learned so much from it.”

“You put the emphasizes on what I am good at.”

“ The feedback I got during the assessment made me feel you really know me.”

“You are actually curious about me!”

Covid-19 Proof

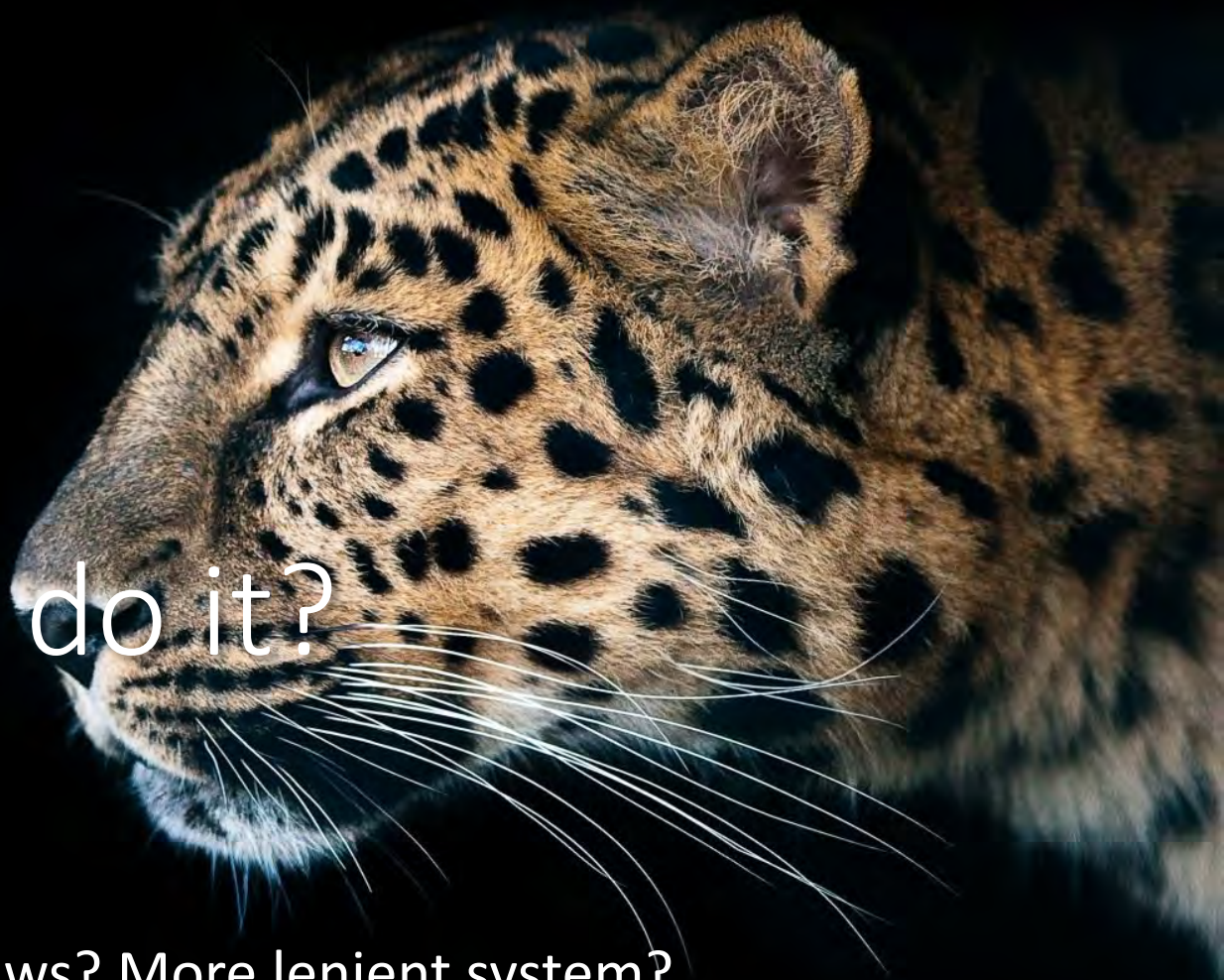
Smooth transfer to online self-directed, collaborative learning
No cheating problems on examination
Easier access in international collaborations
Expo and Portfolio Events online

Brink, S.C., Carlsson, C.J., Enelund, M., Georgsson, F., Keller, E., Lyng, R., & McCartan, C. (2020). Curriculum Agility in a CDIO Engineering Education. Proceedings of the 15th International CDIO Conference, Chalmers University of Technology, Gothenburg.

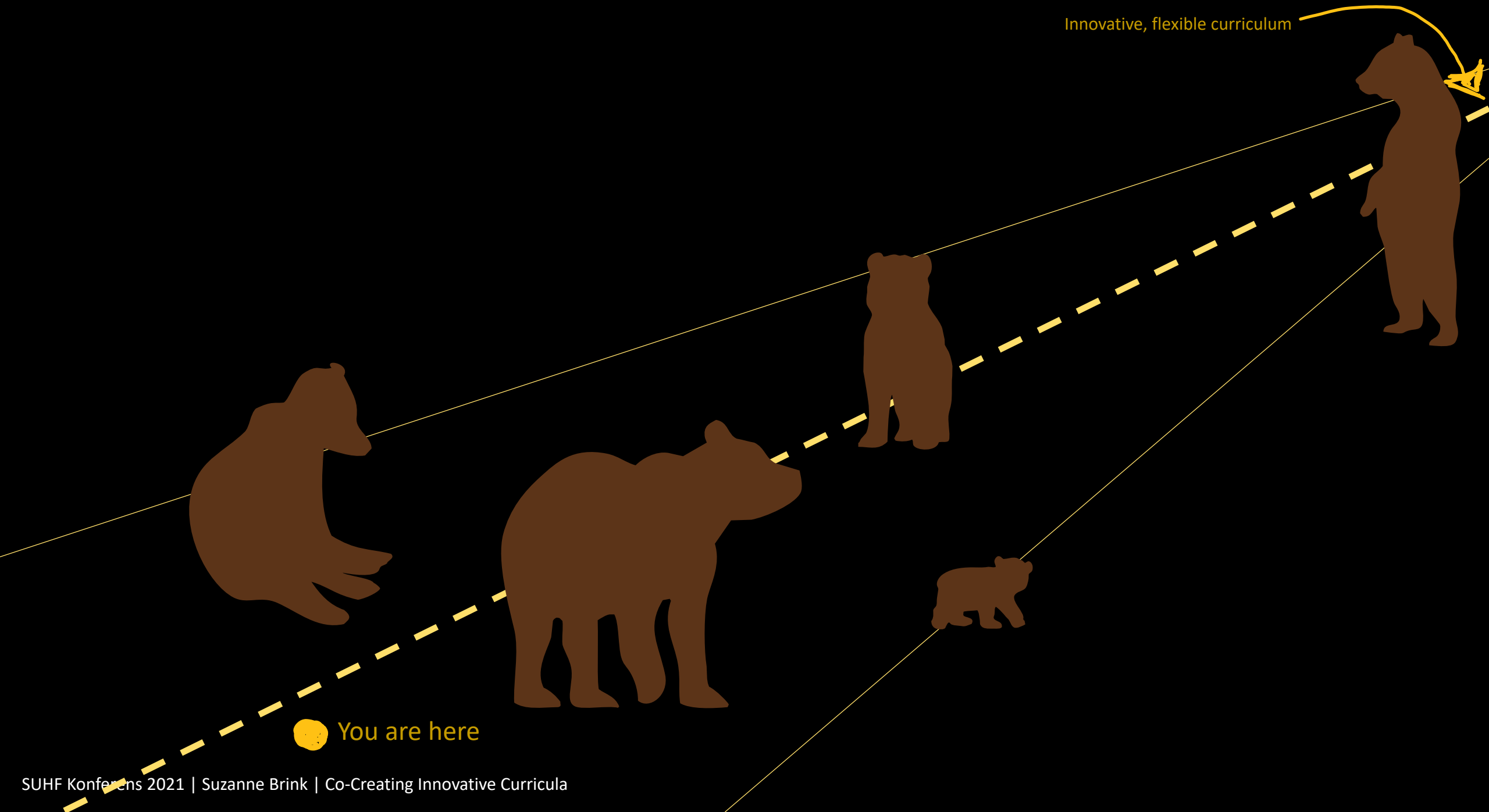
Curriculum Agility

a higher education curriculum that is responsive and adaptable to changes in characteristics and needs of students, industry and society, by having the capacity to change its structures and learning activities, outcomes, and assessment in a timely manner."

So how did we do it?



National context? Different laws? More lenient system?
Different kind of students! No lack of resources?


Innovative, flexible curriculum
You are here

About (not) changing curriculum and course content: we have all the control, we lament the way we teach, they way we measure students' learning etc. Yet we don't.

Are we unmotivated? Do we find it difficult to change the system that we are products of? Or is just that we are plain scared? And that fear paralyzes us? Or is it difficult to see ourselves as boundary spanners, in the middle of two camps.

31:15 / 1:06:49

If not you, then who? If not now, when?

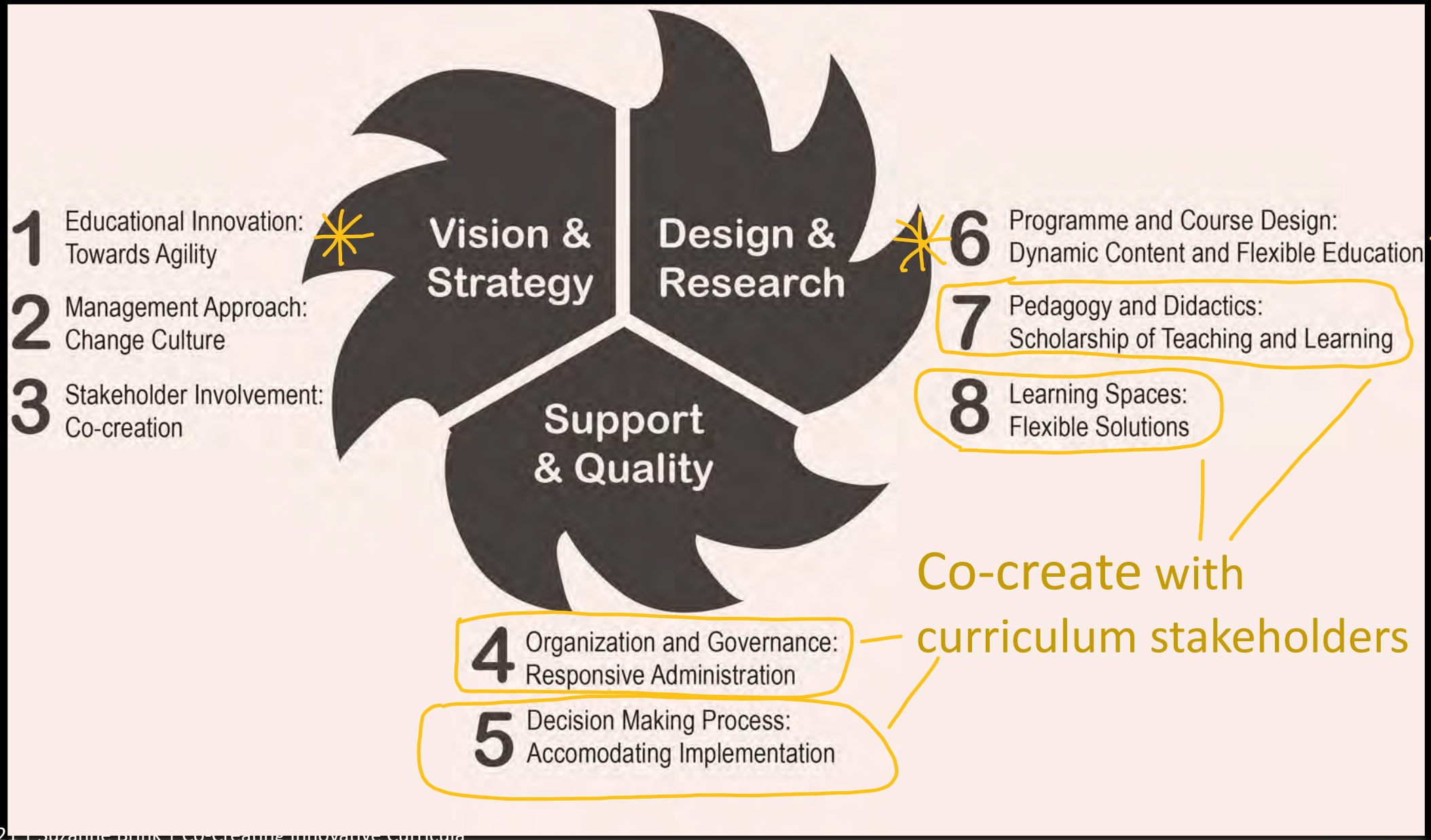
Stephanie Adams, Dean Engineering & Computer Science at University of Texas

Keynote speech at Frontiers in Education Conference 2021, last week, 14th October 2021

Functional co-creation sessions, creating sense of co-ownership

1) Influencing and simultaneously integrating the new **university strategic agenda**
2) Influencing, asking for space, and implementing the **faculty assessment policy** update
3) Dialogue with writer of the **Program and Examination Regulations** (legal university document linked to national higher education laws)
4) Ongoing interaction with the **Exam Board**
5) Dialogue with **university teaching courses** at HCTL
6) Work with **scheduling office** to find solutions how to schedule our flexible roster within the existing system and the system that was implemented the year after.
7) IT project with **grade administration** to find solutions how to administrate competency-based assessment.
8) Collaborate in workgroup on **reconstruction plans** of our wing of the building to advocate for multipurpose and flexible learning spaces
9) **Interacting on and communicating the advantages by participating** in pedagogic seminars for staff, university wide learning network on flexible education, annual university-wide staff professionalization day, management day workshops etc.

Curriculum Agility Principles



Principles of Curriculum Agility: Vision & Strategy

1. **Educational Innovation**
   Towards Agility
   Encouraging initiatives and innovations that promote education that is responsive to change, dynamic in content, and flexible in didactics in order to be prepared for societal and technological changes.

2. **Management Approach**
   Change Culture
   Ensuring and maintaining a culture rather than a “one-person engagement” for change and innovation through entrepreneurial change management: being initiative-driven, and proactive rather than reactive.

3. **Stakeholder Involvement**
   Co-creation
   Involving both external and internal stakeholders in the change process and establishing structures and procedures for identifying and prioritizing stakeholders’ (changing) needs continuously.

Principles of Curriculum Agility: Support & Quality

4. **Organization and Governance**
   Responsive Administration
   Empowering an organizational structure that can effectively address the administrative system and its internal and external regulations, in order to guarantee implementation and support maintenance of the curriculum changes while safeguarding the quality.

5. **Decision Making Process**
   Accommodating Implementation
   Having efficient curriculum and course approval and adjustment processes: timeframes, steps required, number of persons involved, communication channels etc.

Principles of Curriculum Agility: Design & Research

6. **Programme and Course Design**
   Dynamic Content and Flexible Education
   Formulate holistic learning goals with replaceable indicators that support dynamic teaching content and flexibility in the programme structure. Create didactic flexibility: course choices, adjustable and customizable projects, opportunities for students to build their own profiles etc.

7. **Pedagogy and Didactics**
   Scholarship of Teaching and Learning
   Having structures for supporting new developmental needs of teachers, by promoting scholarship of teaching and learning, facilitating pedagogical unit support, and collegial teaching teams. Incorporating inclusive and lifelong learning pedagogy.

8. **Learning Spaces**
   Flexible Solutions
   Utilizing blended and hybrid social, physical, and digital learning environments, allowing for flexibility of teaching and learning in format, place and time.

How well we comply to these principles is dynamic in itself

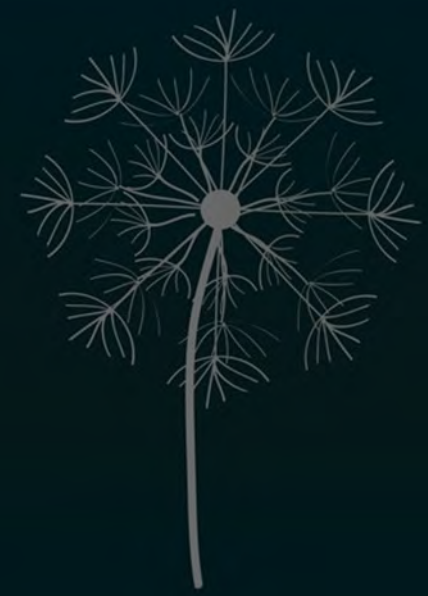
It shifts, it changes over time

The stars have to be aligned,

by being pro-active & collaborative & responsive

And cross-polination takes time and effort
and in the meantime things can change (again):

See the possibilities, engage & care for it (principles)
Continue to communicate about it!



(Co)Creating Innovative Curricula

Adding value by working towards the Curriculum Agility Principles

for Student, Staff, University, Pedagogy, Society & Industry

- Don’t be scared
- Find your room to play
- Play together
- Play nice
- Play by the book
- Bend, not break, the rules
- Better yet: Reframe the rules
- Be patient but keep the game going

- Address the principles where there is not that much agility yet within the university