Scale-up4 Sustainability

Workshop Challenge-based Learning: Exchange of Experiences

Documented by: Anne Seela

University of Oldenburg, 14.09.2021

Co-funded by the Erasmus+ Programme of the European Union

CONTENTS

1 Concept and Agenda, Participants

Context and Target of the workshop:

Various formats within S4S use challenge-based learning - some of which have been in use for a long time, some of which have only just been developed. The framework conditions of the respective formats are very different (e.g. curricular or extracurricular offers, challenge formats with their own (financed) infrastructure, business partners with different expectations and varying degrees of involvement…) Nevertheless, similar questions arise across all formats:

- How should challenges be designed and formulated in regard to the degree of concreteness in order to offer students a sufficient degree of clarity as well as sufficient freedom for their own problem-solving processes? (Success factors)
- How can business partners be successfully involved in the teaching and coaching of student teams, which approaches are effective? What is crucial from the business partner side?

The S4S workshop "Challenge-based Learning" addressed the teaching personal of the participating HEI's. In addition colleagues, that are not part of the project team but teach within the same context have been invited.

Participants:

University of Oldenburg	Linköping University	Vennebroek Academic Services
Klaus Fichter	Olof Hjelm	Frans Stel
Anne Seela	Charlotte Norrman	Rogier de Jong
Karsten Hurrelmann	Madeleine Larsson	
Kim Parohl	Carina Sundberg	
	Karl Eldebo	
	Cia Lundvall	
	Simon Boiertz	

Agenda:

01/09/2021

9:30 – 12:30 CET

Via MS Teams

Main Moderation by Prof. Klaus Fichter, University of Oldenburg

09:25	Check-in
09:30	Welcome
09:35 -09:50(15')	Plenary The concept of challenge-based Learning: rough introduction (Charlotte Norrmann, Linköping University)
09:50 – 10:05(15')	Plenary Warm-up: *1. What are the specific challenges and obstacles of CBL in student business collaboration? (lead by Klaus Fichter, usage of polling tool mentimeter)*
10:05 – 10:15 (10')	Plenary Overview about Challenge-based Learning approaches within S4S and introduction of guiding questions (Klaus Fichter)
10:15 – 11:00 (45')	Break out session I How should challenges be designed and formulated in regard to the degree of concreteness in order to offer students a sufficient degree of clarity as well as sufficient freedom for their own problem-solving processes? (Success factors) Presentation of Examples & Reflection
11:00 – 11:10 (10')	*Break*
11:10 – 11:20	Plenary Wrap up breakout session I
11:20 – 12:10	Break out session II Q1: How can business partners be successfully involved in the teaching and coaching of student teams, which approaches are effective? What is crucial from the business partner side? Q2: How to scale up student business challenges (nationally, transnationally, multidisciplinary)?
12:05 – 12:10 (5')	*Break*
12:10 – 12:15 (5')	Plenary Wrap up breakout session II
12:15 – 12:30 (15')	Wrap-up: Conclusions and next steps

2 Short introduction: What is “Challenge-based-Learning”

CBL is an inductive method!

Prince & Felder (2006)

- Starts with observations to be interpreted, questions to be answered, problems to be solved
- Student centred method - i.e. the knowledge is created by the student - not transferred from the teacher
- Includes active and collaborative learning

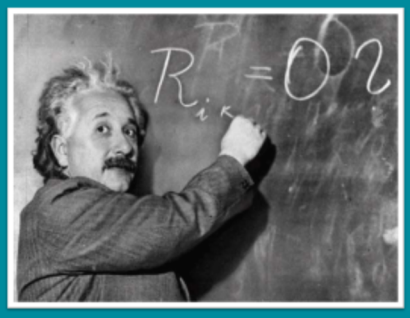
CBL enhance...

- Innovative thinking abilities (Martin et al 2007)
- Improves interaction in the group (Mahoney et al 2012)
- Makes students more involved (Baloian, Nelson, et al. 2006)

Why CBL ...

“We cannot solve our problems with the same thinking we used when we created them.”

Albert Einstein



A good challenge is...

- Open, by means of that it could be adapted by the students to fit the group
- Searching for "a" solution rather than "the" solution
- Challenge providers takes the role of a "speaking partner" rather than being a customer
- Able to "own" by the students

Some general conclusions from our experience

- Lots of VUCA (volatility uncertainty ambiguity complexity)
- Operations outside the comfort zone
- Lots of own responsibility
- Cross disciplinary teams forces individuals to contribute and communicate
- Makes students gain knowledge and self confidence

Some conclusions on challenge providers

- They need to be committed and this must be secured by the staff on forehand
- They must be prepared to engage and have a curious approach to the students and their work
- They must be open minded and accept that they are a project partner - not steer toward a specific solution
- To formulate good challenges is a delicate job that requires some efforts! Commonly it is an iterative process.

References:

Following papers will be shared:

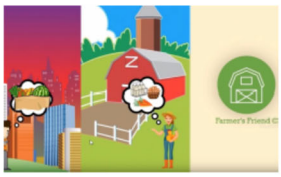
Onufrey, Ksenia; Berglund, Martina; Bienkowska, Dzamila; Magnusson, Thomas; Norrman, Charlotte (2019): Digital Tools for Selfstudying and Examination. In: CDIO Conference Proceedings, 25.-27.06. 2019 Aarhus University.

Norrman, Charlotte; Hjelm, Olof (2017): CDIO-BASED ENTREPRENEURSHIP COURSES AS DRIVERS OF INNOVATION IN INDUSTRIAL SEGMENTS. In: University of Calgary (Hg.): Proceedings of CDIO Conference. CDIO Conference, 18.-22.06... Proceedings of CDIO Conference. Calgary.

Norrman, Charlotte; Bienkowska, Dzamila; Sundberg, Amanda; André, Marcus (2017): Simple mockups-tool to enhance visualisation and creativity in entrepreneurship courses. In: University of Calgary (Hg.): Proceedings of CDIO Conference. CDIO Conference, 18.-22.06... Proceedings of CDIO Conference. Calgary.

Bienkowska, Dzamila; Norrman, Charlotte; Frankelius, Per (2015): Adaptation of the CDIO-Framework in Management Courses for Engineering students - a Micro-Level Approach. In: University of Applied Sciences Turku (Hg.): CDIO Conference Proceedings. CDIO 2015. Turku, 12.-16.06.

3 Formats within S4S, that use the CBL-Approach



Sustainability Driven Business Modelling (LIU)

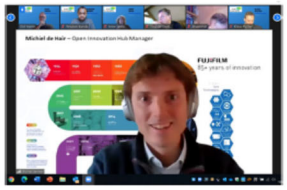
- Since 2013, curricular, 6 ECTS
- Learning objectiv: Formulating and planning a business solution for an environmental problem
- Teaching: Knowledge about environment, environmental technology, innovationd and entrepreneurship
- Not necessarely within a business partner collaboration

Eco-Venturing (UOL)

- Each winter term/ 6 ECTS (curricular), since 2009, student-business collaboration is core
- Project groups of 4-5 students work on real challenges of business partners (Sustainable Business Model Development, Sustainablity Assessment, ...)
- In-class teaching, mentoring and individual project management
- From problem-based to challenge-based learning

Climate Challenge (UOL)

- Conducted in winter term 2020/21
- Consisted of Green Business Idea Jam (11 students; extra-curricular), Innovation Management lecture and seminar „Climate Challenge" (35 students, curricular)
- Challenges formulated by BÜFA

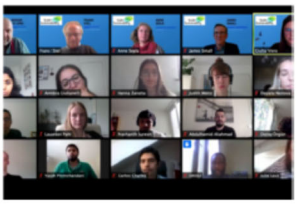


Fujifilm Challenge (VAS)

- Since 2016, 10-weeks programme, different universities participating, charakter of competition (and collaboration)
- Curricular, but not for all participating students
- 2020: international and online format
- Ideation and validation of business models
- Teaching, coaching
- Challenge formulated by Fujifilm

InGenious (LIU)

- 25 %, English, 8 ECTS
- Cross disciplinary teams
- External challenge providers
- Scheduled events such as …
  - Kick Off
  - Workshop "Shitty Prototyping"
  - Pitch training and pitches in front of audience
  - Graduation Event



Circular Challenge (VAS)

- Two-day programme (international, extra-curricular)
- Online format
- Challenges formulated by ECOR, cewe and DSM Niaga
- Competition (without teaching)

4 Key insights from Breakout Sessions

Plenary

At the beginning we discussed the following warm-up question (by using mentimeter.com as a polling tool):

➢ **What are the specific challenges and obstacles of CBL in student business collaborations?**

A vast array of points had been mentioned, dealing with

- **The organization of CBL-Formats**
  - "Finding" good challenges

- Experience level of students
- Commitment, Transparency, Timeframe, Case design, Expectations
- There is also an issue of information asymmetry that needs to be bridged
- Maintain the engagement even though the project is going in another direction than what the company really wants.

- **The design of suitable challenges**
  - Designing the challenges in an appropriate balance between concreteness and openness is as a general demand – but sometimes students seem to be overwhelmed by open challenges, they are used to worked with clear and detailed tasks
  - Development of a solvable task for the students, which is also of great interest for the business partner.

- **Teaching and coaching**
  - Qualifying so that students and providers share a common understanding (at least from the start).
  - motivation/ engagement of the participants
  - Making students and providers understand that things will change (agility)
  - tools supplied and guidance of the teams, coaching
  - Not pushing your own solution as a teacher
  - Aligning Skills & Knowledge levels with students from different universities
  - Making students believe in themselves (they are skilled enough).
  - Supporting the students to deal with uncertainty / finding the specific tasks
  - Communicating real implementation of ideas to students. It normally takes years for companies to implement and when students have left

The discussion was deepened in two breakout sessions.

Breakout Session I

In the first breakout session, concrete challenges from the teaching context were presented and discussed on the basis of these challenges. The aim was the exchange of experiences and collegial feedback. The challenges presented can be found in the appendix.

Guiding question:

How should challenges be designed and formulated in regard to the degree of concreteness in order to offer students a sufficient degree of clarity as well as sufficient freedom for their own problem-solving processes?

All participants agreed that it is a challenge for responsible teaching personal to create a good challenge beforehand: open enough to foster student's creativity and detailed enough to not overtax

student's ability. In reality offen the respective projects are somewhere in between problem-based learning and challenge-based learning. (Means, that the challenges do not have the absolute degree of freedom for solving and some details are fixed in advance. Particularly through cooperation with practice partners, concrete demands and expectations often arise. Therefore, lecturers also have to deal with expectation management and should balance business expectations on the one hand and degrees of freedom for student learning on the other hand.

To find out, if a challenge is appropriate for the learning approach it could help to differ between "What-questions" and "How-questions".

- What-question: ***What could be done to create a solution for a certain problem?*** These kinds of questions leads to a challenge and contain a lot of learning possibilities for students.
- How-question: ***How should a problem be solved?*** If the solution is known in principle and the students are only to carry out operative implementation, then the task is not suitable.

In the evaluation of the Fujifilm Challenge and the circular challenge, the importance of 4 themes are mentioned frequently in the evaluations: (1) time spending, time management; (2) breath/width of the programs; (3) tools, coaching, guidance; (4) organization and team processes. In CBL-programs, 21-st century skills are developed:

- analytical thinking & innovation;
- active learning / coordinating with others;
- critical thinking & analysis,
- creativity, originality and initiative

In order to be successful in CBL-programs, emotional intelligence, troubleshooting and user experience, persuasion/negotiation are underlying skills.

We discuss success factors of CBL-programs. Regarding the design of CBL-workshops, it's important to manage expectations towards students and businesses. A definition of a challenge should be communicated clearly with students and businesses: a challenge should be formulated not to narrowly due to the fact that this complicates 'out-of-the-box' thinking. Another success factor of CBL-workshops is a 'fit' between students and the challenges. Madeleine Larsson at LiU uses an intake questionnaire to designate students to possible projects. With transparency, students can select which challenge they are most appealing to them. It's important to be realistic and communicate how much time is available for the challenge.

Team diversity (different faculties/universities/personalities/nationalities) makes CBL-programs more attractive to some students. Multidisciplinary teams enrich the creativity in teams, but are more difficult to configure.

Motivation of participants is a key success factor: CBL-programs get positive ratings from students who are interested in entrepreneurship and innovation. Students who are less motivated should be given alternatives to CBL-programs because these students interfere in c.q. block healthy team dynamics. Problem-based learning varies from challenge-based learning. Defining a challenge can be considered as part of a CBL-program. We discussed useful tools for CBL-programs, e.g. the MOM-test with do's and don'ts of receiving customer feedback:
https://www.youtube.com/watch?v=Hla1jzhan78

Before starting a CBL-program, team building is recommended. The role of teachers and businesses in CBL-program differs: rather than instructors, teachers become coaches and businesses take the role of sparring partners. Some CBL-programs are curricular, others are extra-curricular. The later should not be too time consuming.

Breakout Session II

Guiding question:

How can business partners be successfully involved in the teaching and coaching of student teams, which approaches are effective? What is crucial from the business partner side?

- Commonly Business Partners are liked by the students as they add relevance to the learning situation and enables that theory and practice get mixed.
- Commitment, patience and transparency are crucial, "open mind" as well
- Adjusting expectations and ensuring commitment – both from students and from business partners (documented in agreements, project plans, playbook)
- Reachability (of challenge/ expectations) is crucial
- Partners can give inputs on certain topics (technical / company / industry related input, but also methodological input if applicable). Business partners can take different roles depending on context; technological experts, data providers, discussion partners, other expert roles
- important is the quality of the relationship with the business partner; long term partners tend to better understand what is needed on the educational side (and v.v.). they already know about preparation, clarify expectation and personal commitments.
- How the contact with students are actually organized depends in practice very much on the set-up of the challenge and the wishes from the business partner
- Benefits from the covid19-crisis: short term appointments, online meetings with students etc. easier to implement.

How to scale up student business challenges (nationally, transnationally, multidisciplinary)

First the question was raises if that's needed; yes, because the world is multinational, -cultural, -disciplinary and because the societal issues we must solve require such.

- Funding seems always to be an issue as these CBL project do not easy fit into the finance constructs of universities; InGenious for example has funding and is a great example of how over a longer period of time they're able to scale up CBL based activities;
- for others long term success and the opportunity of scaling up or not often depends on ambition and drive of individuals involved which makes things not so stable
- tools such as the platform within S4S Borderstep is working on will help bringing together supply and demand across disciplines, nations, etc
- sharing tools, lessons learned and general insights by leading innovators in this respect - and we do such within S4S too - is also supportive

- Digitalization provide great opportunities to make transnational challenges.
- Better to do this step-by step and learn from attempts.
- There is a big difference in doing things extra-curricula an as part of students curricula.
- Extra-curricula challenges most likely need some project funding

- Curricula challenges can be funded via ordinary university budgets but a lot of formal rules have to be managed with irrespective if we do it more national, transnational or transdisciplinary
- There is also the aspect of building internal capacity at the different universities so that it becomes more robust and not fully dependent on individuals or external funding.

- One way is to do it jointly as lnGenious is done within the ECIU
- Formulating broad challegges, like EU "Missions" or SDG-related goals could be a way - finding a business partner becomes then a task for the students.
- Shared events - i.e. invite each others to have international guests is a way for both students, teachers and Business Partners to learn
- Another way is to cooperate on "how to do it" - i.e. share experience between universities
- Early guidance, preparation

w internal capabilities.

Upscaling is possible by digitalization and step-by-step experimentation in order to acquire internal capabilities.

Not all CBL-programs need to be upscaled; sometimes business cases are more suitable for small-scale implementation.

5 Wrap-up

It was a worthwhile exchange of experiences. It would be helpful for transfer these experiences to other interested institutions to have some guidance for setting-up challenge-based learning formats with business partners. We would like to provide a checklist about formulating challenges in for successful Challenge-based Learning formats. This checklist will be included in the upcoming Manual for implementing innovative approaches in collaborative green venturing (WP 4.4)

Charlotte Norrman (Lead), Anne Seela and Rogier de Jong will provide a draft for this checklist.

Annex:

Linköping University: Battery Challenge

Linköping University: InGenious Challenge – Finesse Hygien

University of Oldenburg: Take back system for old photo products

University of Oldenburg: Green Business Idea Jam

Vennebroek Academic Services: Evaluation of Challenge Programs within S4S

Title of course or event: Energy and Environment Project Course

Responsible: Madeleine Larsson, Olof Hjelm

Time to deal with the challenge: 6 ECTS

No. of students working on that particular challenge: 6

Scale-up4 Sustainability

Challenge: Environmental Performance of Emerging Battery technology.
Students were given the task to assess the environmental performance of a new battery from an LCA-perspective. The battery was already constructed but production was still in labscale. The company wanted to use the information to find investors and customers.

Difficulties:
How to deal with when results are not as positive as the company expect?
How to make analyses when real data is not available?

Results/ Assessment: [*Please note your assessment here (bullet points)] e.g.*

- Students provided clear results.
- Students had to develop their skills in LCA, project management and communication both within the student group and with the company. They had to develop both their engineering and management skills.
- The business partner was impressed by the students but a bit disappointed about the result. But they gained valuable insight in strengths and weaknesses.
- The company has an interest in new assessments when more is known about the production process?

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Title of course or event: InGenious 799g52

Responsible: Charlotte Norrman

Time to deal with the challenge: Last year – spring 20

No. of students working on that particular challenge: about 5

Scale-up4 Sustainability

Challenge: Finesse Hygien
https://www.in-genious.eu/challenges/362015/finess-hygiene

The products we have today with that type of raw material are mainly wipes and protective sheets. We would like to get ideas about what type of usage that could be for our new material in the home and healthcare sectors.

The result was bought back by Finesse for 25.000 SEK
Cia has written an article in Swedish about the case.

Results/ Assessment:

- The students developed a new solution and they digged up valuable information that could be used by Finesse
- Finesse established good relations with LiU which was their goal
- All course goals were achieved by the group at a PWD level.
- Business partner was happy!
- Students got paid

Difficulties:

Rather limited challenge as it was tied to a particular material – this was a little bit constraining.

Example of a unsuccessful case: https://www.in-genious.eu/challenges/362009/agtech-2030

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Title of course or event: Eco-Venturing (Winter term 2020/21)

Responsible: University of Oldenburg

Time to deal with the challenge: 18 weeks (workload 180 h each)

No. of students working on that particular challenge: 4

Scale-up 4 Sustainability

Challenge: More sustainable products and services for CEWE

Take-back system for old photo products:

1. **Initial situation and sustainability problem**: Linear Economy; Raw material consumption = Product manufacture + Disposal
2. **Task:** Develop a „Take-back system for old products“ (all kind of photo products) for instance via vending machines;
   - ➢ More sustainability by closing the loop;
   - ➢ How can this be implemented in an economically and ecologically sensible way?
3. **Preliminary work:** Take-back system via existing photo kiosk infrastructure, coupling with marketing opportunities
4. Critical Aspects: Data protection, infrastructure, time gaps, use of reclaimed materials

Results/ Assessment:

Concept for a Take-back event (Living-Lab approach) to sensitize customers and to evaluate the acceptance of custumers (incl. caluclations, sustainability assessment, critical reflection of open questions)

Very clear result, but not the type of result intended by CEWE (although CEWE claims to be open to any kind of result), no further usage of the concept untill now.

Difficulties:

- Challenge was more complex than expected
- Students struggled to find a clear „roadmap“ within the first weeks.
- Tension between (perceived) expectations of a traditional company and radically new ideas of students

How to improve the „fit“ between companies needs and university requirements?

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Green Business Idea Jam

Responsible: University of Oldenburg + BÜFA

Time: online kick-off and one-day face-to-face event (10h)

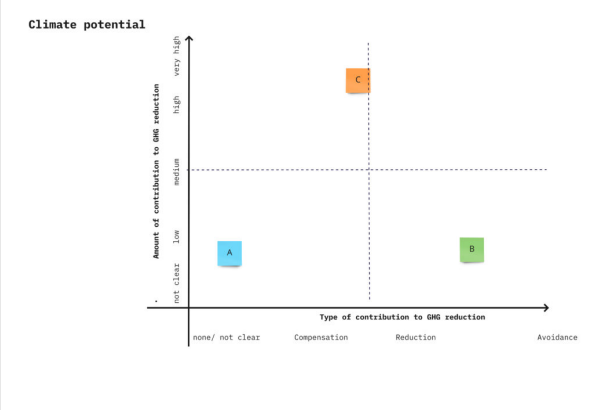
No. of students: 11

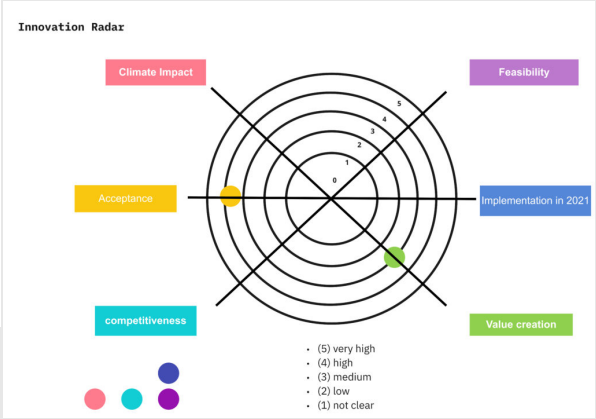
No. of business personnel: 7

Scale-up4 Sustainability

Challenge

Mixed teams of corporate staff members and students from different disciplines worked together to develop innovative ideas and measures to reduce BÜFA's carbon footprint and to become climate neutral. This special type of challenge-based ideation workshop was an one-day extracurricular event.





Results/ Assessment

- New and sustainable innovation ideas to reduce BÜFA's carbon footprint
- Competence enhancement for BÜFA and students
- Follow-up of the developed approaches in a "Climate Challenge Seminar" as part of a curricular master's module "Innovation Management"
- BÜFA was very satisfied with the results and promised to implement some of the ideas. Students were also very happy with the format.

Difficulties

- High preparation effort: identifying relevant topics, coaching mentors, providing access to the collaboration tool
- Student acquisition for an extracurricular module is time-consuming

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Scale-up4 Sustainability

CHALLENGE-BASED LEARNING EXPERIENCES
STUDENT-BUSINESS COLLABORATION
IN GREEN VENTURING

1. Main eye openers
2. Missed topics
3. Suggestions for improvement

1 September 2021
Frans Stel

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Vennebroek Academic Services

S4S - CONCEPTS

- E+ program: S/B collaboration in green venturing (2019 - 2022)
- Germany (Oldenburg Uni. - lead), Sweden (Linköping Uni.) and Netherlands (VAS, Uni.Twente, Tilburg, Avans)
- full and associated business partners in all countries
- evaluation /developing / testing tools (WP2,3,4) -> digitalisation, upscaling
- transnational exchange & learning; dissemination (WP5,6) e.g. at ISPIM
- website: https://www.scaleup4sustainability.eu

Scale-up4 Sustainability

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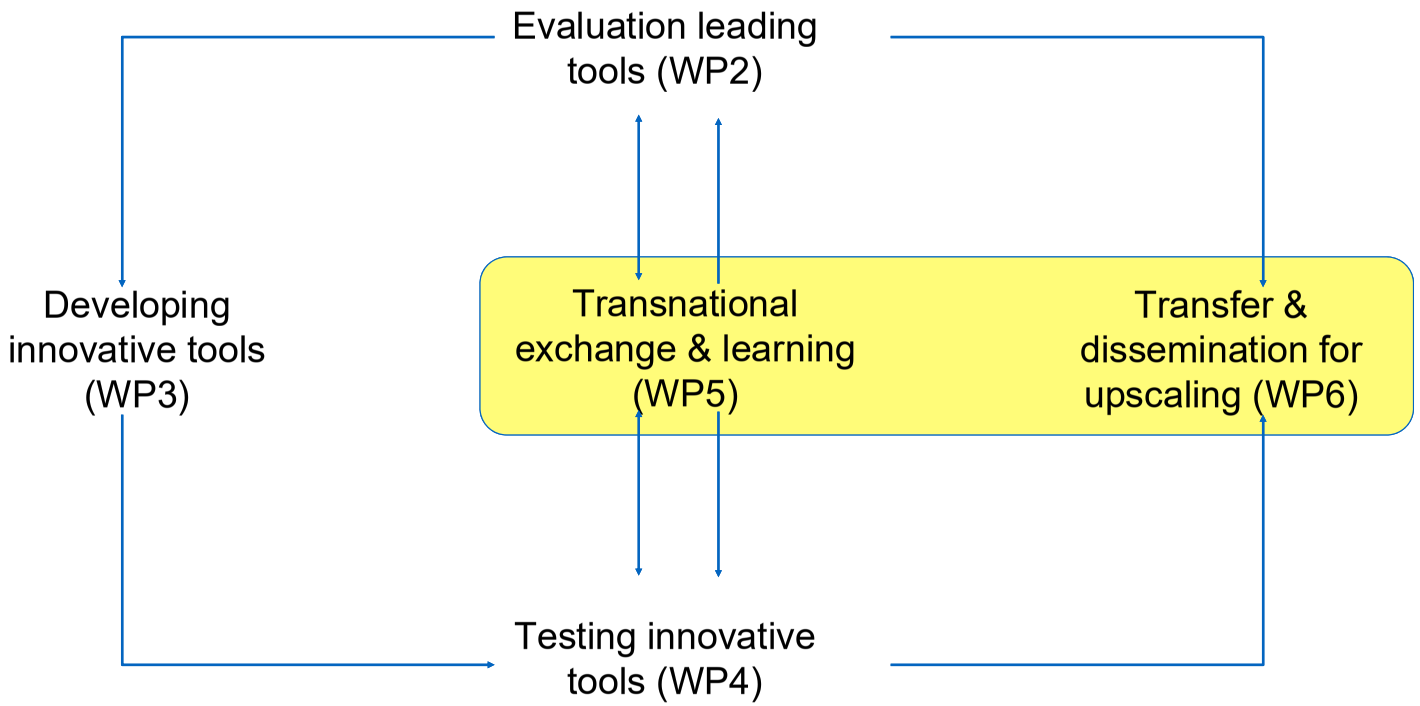
WORK PACKAGES



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S4S-CONCEPTS

SIMILARITIES & DIFFERENCES

- Students & Businesses collaborate
- Sustainability

- International exchange: Y/N -> local complexity
- Duration: 2 hrs /1 day / 2 days/ 10 weeks
- (Extra) curricular => sometimes combined
- # of companies involved: 1/many
- # of universities involved: 1/many
- learning progress monitored and evaluated (“eye openers”)
- Digital: Y/N/ Hybrid
- Scale: 2 - 150 students
- Individual / team
- Research/ education / mix

- **Time management, motivation, reflexivity**
- **Breadth/width**
- **Tools, coaching, guidance**
- **Organization & team processes**

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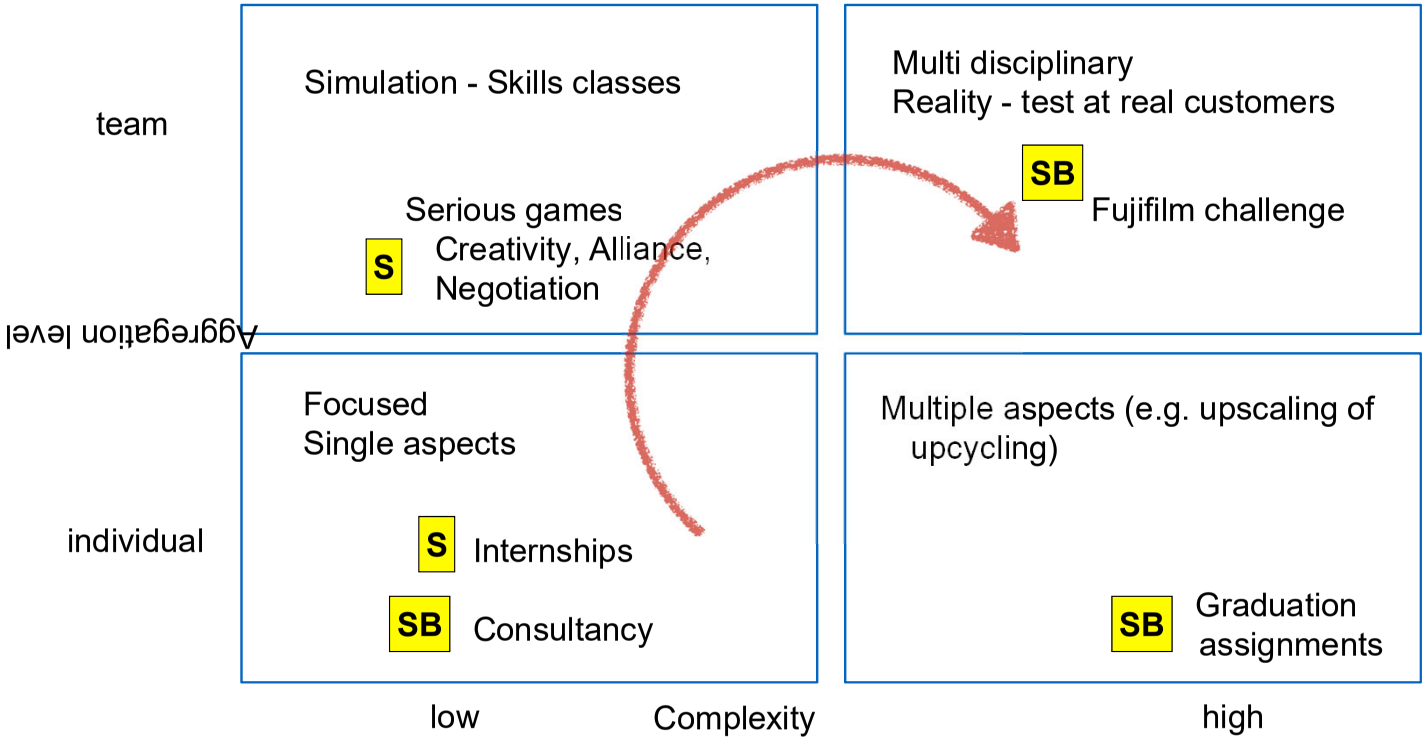
Student/Business collaboration



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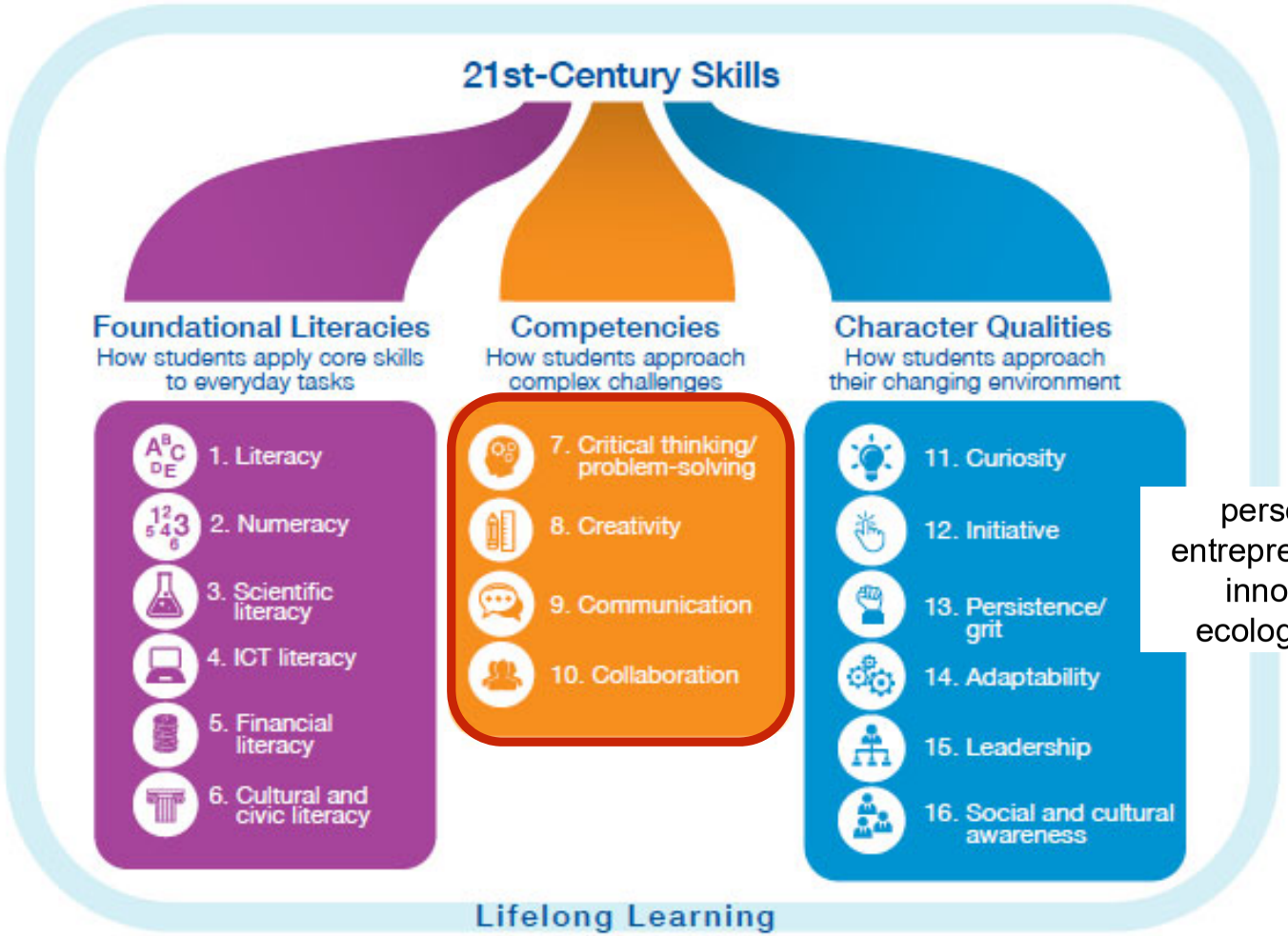


personality traits
entrepreneurial attitude
innovators DNA
ecological concerns

World Economic Forum, 2016

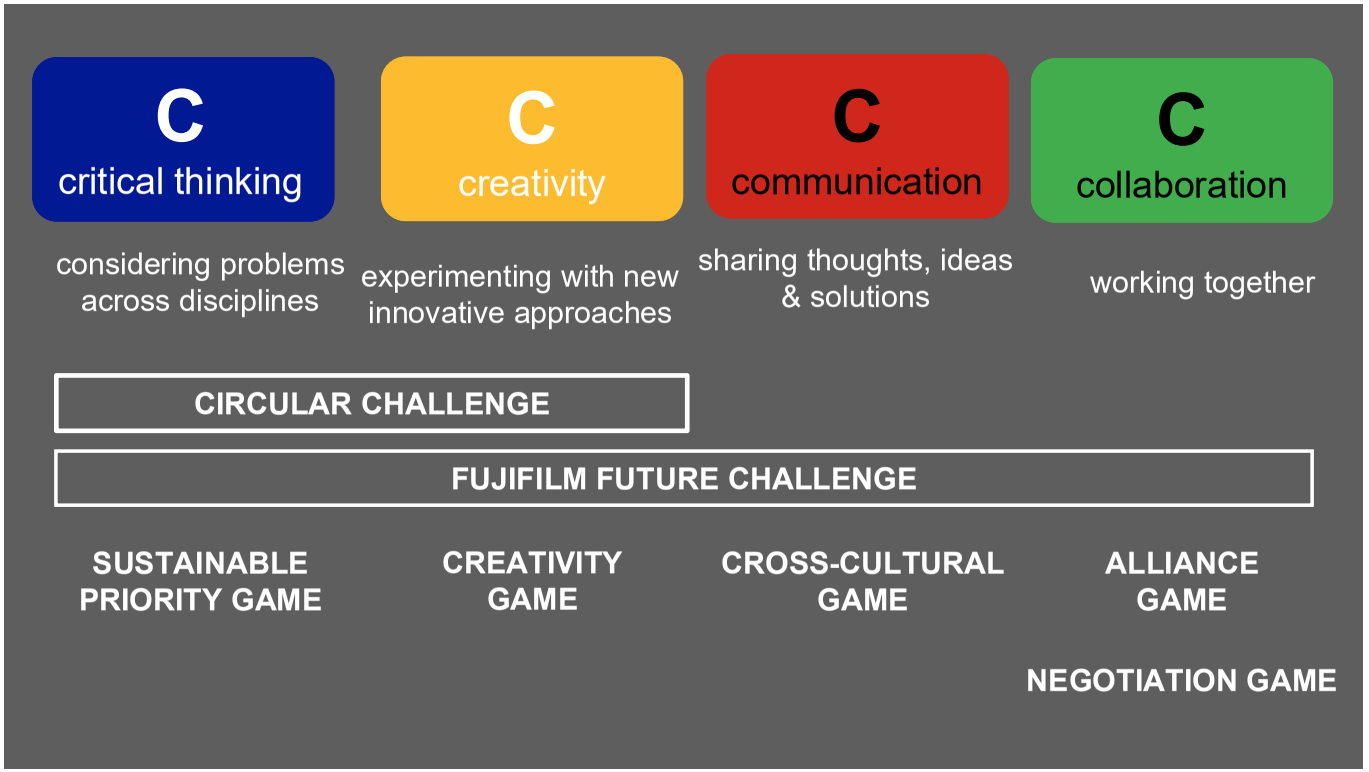
TOP 21 CENTURY SKILLS

	2025	2020	2015
Analytical thinking and innovation	1		
Active learning and learning strategies (coördinating with others)	2	5	2
Complex problem-solving	3	1	1
Critical thinking and analysis	4	2	4
Creativity, originality and initiative	5	3	10
Leadership and social influence (people management)	6	4	3
Technology use, monitoring and control	7		
Technology design and programming	8		
Resilience, stress tolerance and (cognitive) flexibility	9	10	
Reasoning, problem-solving and ideation (Judgment & decision making)	10	7	8
Emotional intelligence	11	6	
Troubleshooting and user experience	12		
Service orientation	13	8	7
Systems analysis and evaluation (Quality control)	14		6
Persuasion and negotiation	15	9	5

World Economic Forum, 2020. 2015, 2010

University of Twente
The Netherlands

21 CENTURY SKILLS



University of Twente
The Netherlands

S4S - CONCEPTS

- **Modules:** Eco-venturing, Environmentally driven Business Development., Fujifilm Future Challenge
- **Challenge workshops:** Circular Challenge, Againity International Expansion
- **Skills workshops:** Tools for Venturing, Pitching, Negotiation, Creativity
- **Standardized trainings:** training material, videos, playbooks etc.
- **Research:** Role of Ecosystem partners at Upcycling business, Innovators DNA, Entrepreneurial Traits

Vennebroek Academic Services

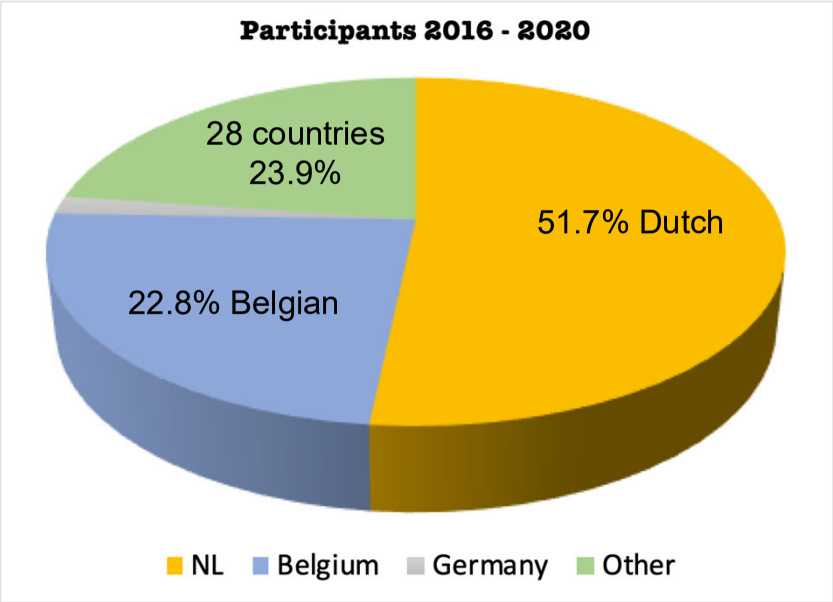
CIRCULAR CHALLENGES

- 1 à 2 days **interactive** program: preparation + challenge
- 1x virtual / 1x on campus
- organised by S4S / students green hub
- **companies** presented their circular challenges (NL / Germany; small/large)
- student teams developed **innovative & feasible** ideas and presented these to an expert jury
- different (academic or national) background in **interdisciplinary** teams
- the companies and **coaches** assisted the teams on demand
- students from Sweden/Germany/NL - high entrepreneurial attitude
- jury of circular experts & companies: discussion of results
- certificates of participation / winning

CIRCULAR CHALLENGE 2020

Academic Services

VARIOUS NATIONALITIES FFC



* Afghanistan, Austria, Azerbaycan, Bulgaria (3x), China, Croatia, Curacao, Ecuador (2x), Finland, France (2x), Germany (6x) , Ghana, Hong Kong, Indonesia, Italy (2x), Kosovo (4x), Lithuania, Poland (2x), Romania, Saudi Arabia, Slovakia, South Africa, Spain (3x), Surinam, Turkey (2x), Turkey, Ukraine, USA.

FUJIFILM

Vennebroek Academic Services

FUJIFILM FUTURE CHALLENGE

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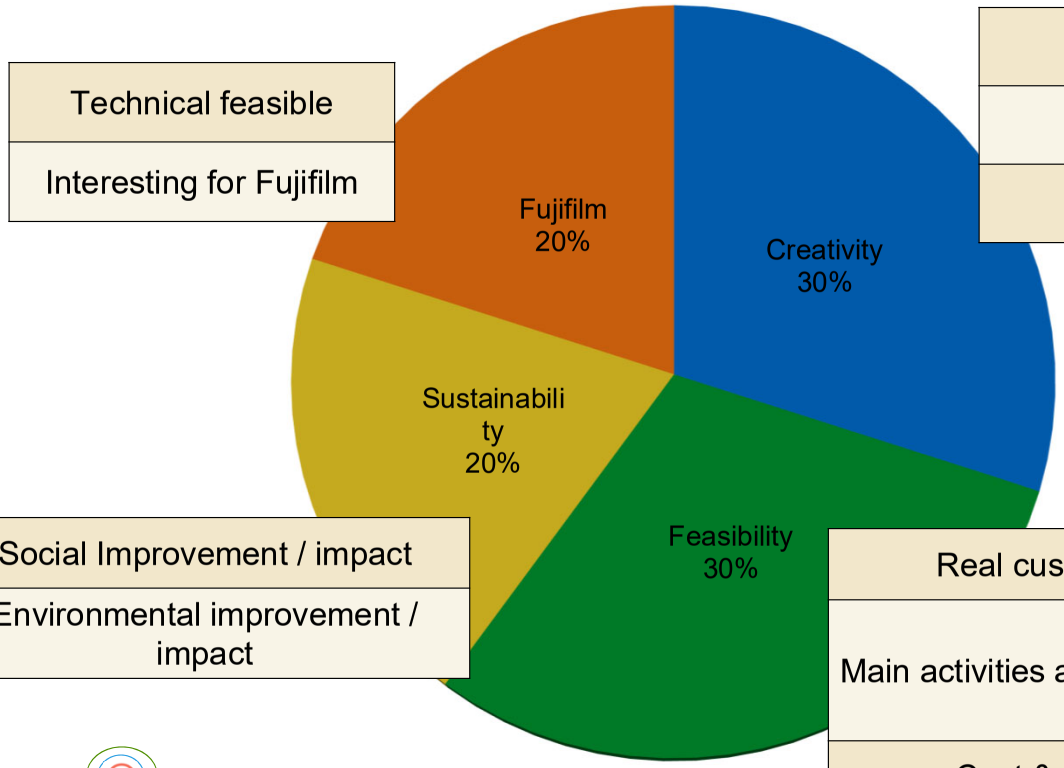
ASSESSMENT CRITERIA



Technical feasible

Interesting for Fujifilm

Idea is radical new

Real ‘pain’ and gain’

Concrete prototype

Social Improvement / impact

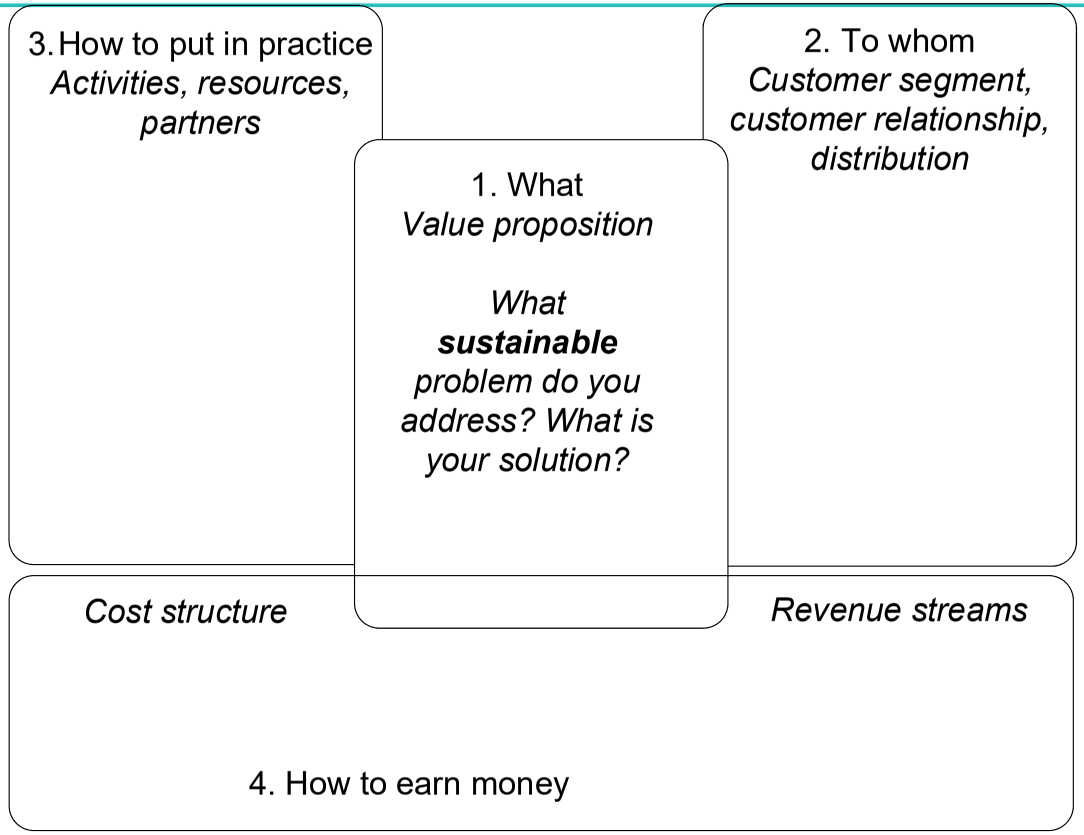
Environmental improvement / impact

Real customers are interested

Main activities and resources are described

Cost & benefits are realistic

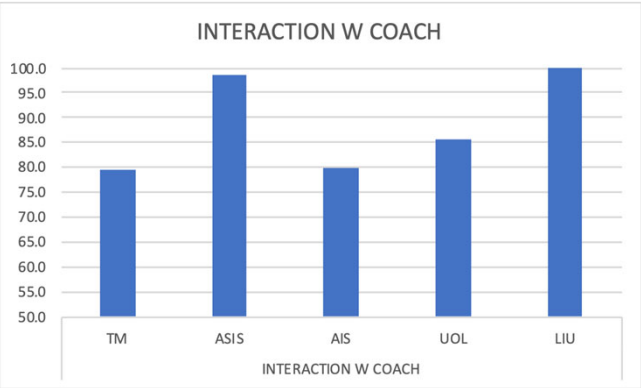
DELIVERABLES

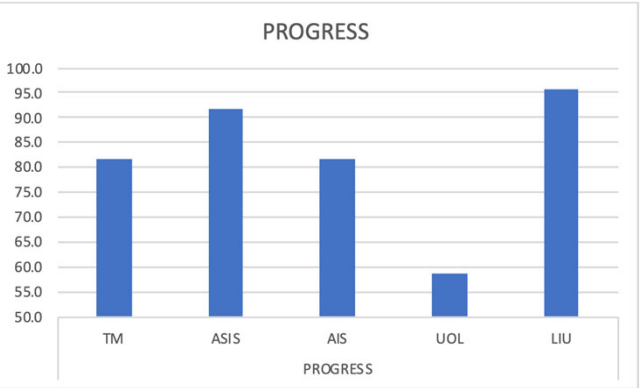


- 2 videos: team (1'), product (3')
- 2 Business Models (initial & validated)
- 3 learning community meetings
- team meetings, with Fujifilm, customers
- coaching (weekly - progress monitor)

PROGRESS MONITOR

* 3 predictors of success: reflexivity; motivation; coaching





EVALUATION (%)

	2 CIRCULAR CHALLENGES	5 FFC 2016-20
N	31	**204**
My **commitment**, participation and contribution in the team was	87	79
Participating in this contest has made it MORE likely that I will become an **entrepreneur** or start my own business	72	68
The **business experts** had adequate responses to our questions	88	81
The **coaches** were useful	88	75
We had **enough time** to prepare our business ideas	66	70
The contest was **well-organized**	89	73
My **overall** rating for this contest is	89	79
Would you **recommend** this contest to others?	100.0	

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CIRCULAR CHALLENGES

- "Learning how to work with people from different backgrounds and solving real case studies is **fun**"
- "Useful enjoyable helps you gain lots of **experience** and a **deeper understanding** of circular business"
- "Circular challenges can be solved with out-of-the-box **creativity**" (3x)
- "In a **short time** creating innovative and real solutions is **possible**"
- "The **counselors** where helpful"
- "Well-establish companies **struggle** with implementing circularity"
- "Students have so many ideas, and a bring a fresh perspective"

- missed: **toolkit** to structure ideas
- missed: detailed company **information**
- missed: c**onsumer** support
- missed: possibility to **network** with companies and coaches
- although **time** pressure is part of the challenge, more time is appreciated: we needed to hurry and would have enjoyed more time to shape ideas.

CIRCULAR CHALLENGE

2020 & 2021

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Main eye-openers FFC (feedback)

(2016 - 2020)

- **Creativity** -You can better start big and turn it down by time, instead of thinking limited and missing opportunities afterwards. Innovation and creativity do not just happen, they are actually the result of hard and extensive work. The power and creativity of multi-disciplinar cooperation. Great variety of ideas, great opportunity to have a real international event.
- **Entrepreneurship** - You have to contact a lot of potential customers to get an answer. It was learning full how to put these technologies into a new concept/ idea. There are no problems only challenges
- **Difficulty -** it's difficult to motivate and work with teams online. it's not easy to find a good idea. How difficult Business modelling is. Difficult to identify a real pain, find really new and creative ideas and to provide a profitable solution.
- **Team process** - Communication is very important in every team! With teamwork you can achieve much more. Mixed Uni teams performed very well. How in a short period of within our team we could make a complex product using a lot of perspectives.

FUJIFILM Value from Innovation
Future Challenge 2020

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MAIN ADVICES COACHES FFC

IDEATION

- Broaden your scope - more ideas - diverge
- don't focus to much on the solution in this stadium

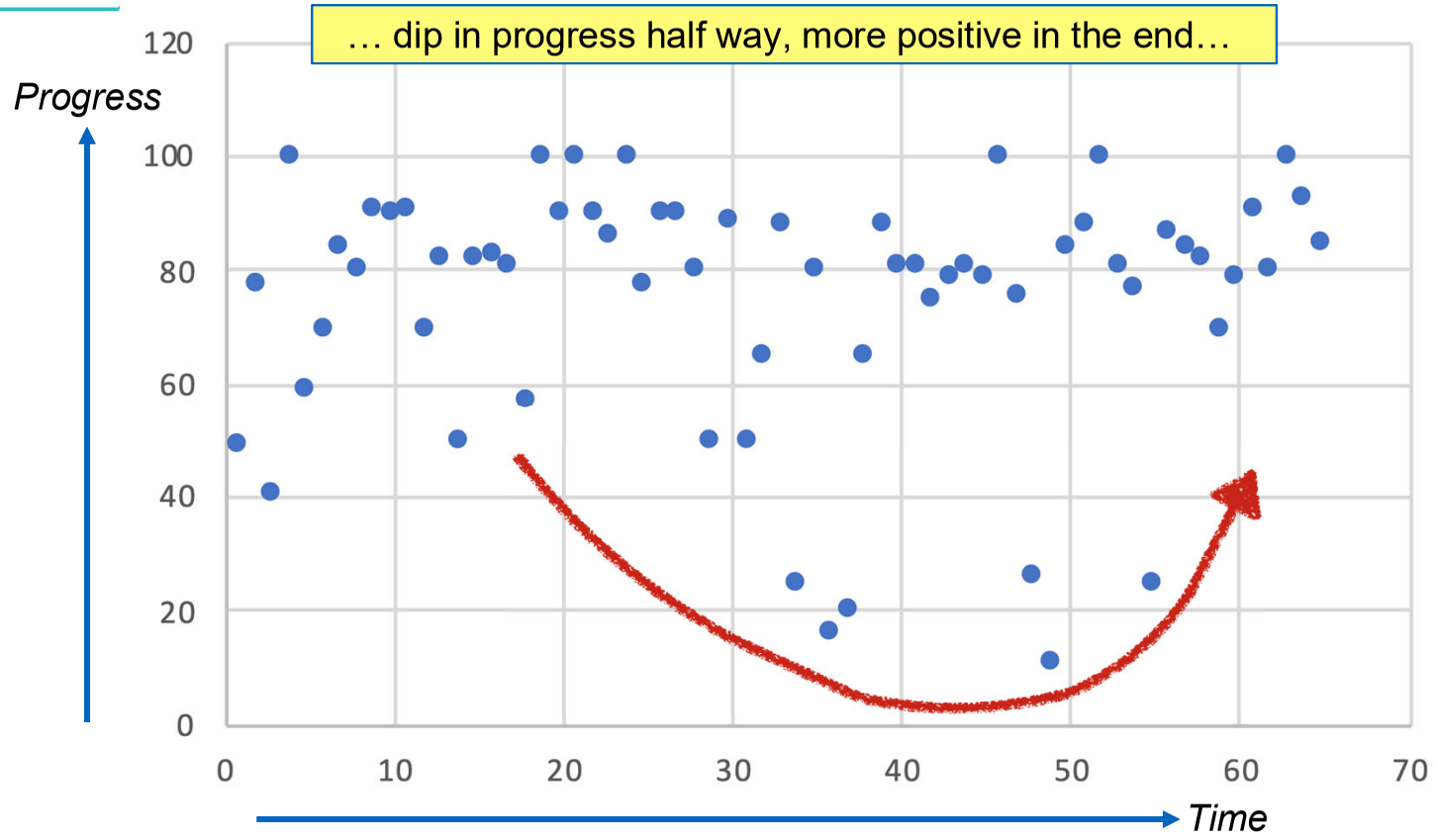
- **TEAM PROCESS**
- work together, interact and communicate more – don’t work individually
- give room to the different people in the team, with different interests and expertise.
- be more pro-active instead re-active. Keep on going and at once to Fujifilm.

Suggestions for improvement FFC

(2016 - 2020)

- Most participants were satisfied
- **Time, frequency** - More time needed. Meetings to be more frequent, and shorter/more compact. You have a lot of useful information and specialists within this challenge, and especially. Timing of the contact moments.
- **Breadth/width** - Emphasis on sustainable / social benefits and better research as some ideas already have solutions in the market. Less technical aspects, the most of it was focused on healthcare. More varieties of ideas. Sometimes I missed the costs and the elaboration.
- **Tools, coaching, guidance** - Coaching from everyone, teachers and Fuiji members. How to calculate budgets / costs, advanced tools for idea validation. Give some input to tools for sustainable business models. How to prepare a business case.
- **Organization.** Knowledge about the technologies and business. G-drive access. Knowledge resources at the start, for ideation, research methods, technological feasibility and Business Modell assumptions. Organize the meetings not late in the evening.
- **Team processes.** Time management within the teams, e.g. meeting schedules. Punctuality. Communication. Choosing ideas, creative thinking.
- **Online / In person** - Shorter and a bit more personal contact. Face-to-face contacts
- **Coach** - More coaching moments.

PROGRESS & TIME



Overall opinion 2020

FUJIFILM
Future Challenge 2020

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PROGRAM

11 September : preparing the challenge

10.00 – 14.00 Circular Business cases ECOR, CEWE, DSM Niaga (3x1h - interactive)

14.00 – 15.00 Preparation for day 2 – tools, formation of teams, Q&A

12 September: circular challenge

9.30 – 11.00 Start Circular Challenge in virtual teams (I: ideation)

11.15 – 12.30 Circular Challenge in virtual teams (II: feasibility and viability)

13.30 - 15.00 Circular Challenge (III: pitches) - Evaluation, Jury assessment, and Q&A.

INTERACTIVE QUIZ

- What are the most important barriers /drivers to adopting a circular business approach?
- What are the main principles of circular design?

go to www.menti.com
337 087

CIRCULAR CHALLENGE
2020

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What are the most important barriers to adopting a circular business approach?

Mentimeter

16

What are the most important drivers to adopting a circular business approach?

Mentimeter

23

What are the main principles of circular design?

Mentimeter

15

FEEDBACK CEWE

Main eye opener

* students enjoyed the challenge, so it was good learning in the end
* very committed students who offered quite good ideas/results regarding the very short time frame.

Overall

* all good
* interesting experience; gaining useful food for thought; format and moderation worked well - especially concerning the Covid situation as well as the internationality of the participants.

Missed

* none
* nothing - especially given that short time frame

Suggestions for improvement

* none
* Maybe only in terms of the preparation phase I would have wished for more information and planning. However, that possibly is because I missed out on some e-mails and the last video conference before the event.

ECOR - Giulia Viero

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MISSED ITEMS

- Nothing missed (3x)

- toolkit to structure ideas
- missed information: detailed company information, technology, design knowledge, feasibility of the plans (2x).
- overall discussion about what is the circular economy
- possibility to network with companies and coaches
- targeting myself as a customer and designing the idea (2x).

TEAM PROCESSES - WHAT WENT WELL

- Brainstorming and approaching the problem (2x)
- The ideation process went well as teammates agreed with my convincing support statements.
- Ideas comes fast and creative, everyone had ideas (4x)

- Coordination and team work, communication was good, good understanding with each other (3x)
- I liked how we worked together in my team and that it was very international. Everybody brought in his/ her ideas and within that process we came up with our idea. Overall everybody was very motivated. (2x)
- The counselors where helpful
- We worked very efficient and were able to communicate our differences if there were any.
- No communication problem in the short time, in fact at the end of the event we sent each other emails to say goodbye and thank for the work we did.

TEAM PROCESSES - WHAT WENT WELL

- Brainstorming and approaching the problem
- Coordination and team work.
- Everyone knew what they were talking about.
- I liked how we worked together in my team and that it was very international. Everybody brought in his/ her ideas and within that process we came up with our idea. Overall everybody was very motivated.
- Ideas comes fast and creative (3x)
- everyone had ideas, communication was good
- The brainstorming session went very well. We could come up with several ideas for the challenge.
- The counselors where helpful to answer our questions and doubts. We had a good understanding with each other that helped us to keep ourselves on track of the task.
- The ideation process went well as teammates agreed with my convincing support statements.
- We finally agreed on the frame and scope of our pitch and the delivered message.
- We worked very efficient and were able to communicate our differences if there were any.
- work and ideas flowed. We didn't have any communication problem in the short time, in fact at the end of the event we sent each other emails to say goodbye and thank for the work we did

TEAM PROCESSES - IMPROVEMENTS

- Being fine with presenting less information due to team preference.
- Communication in ideas /overcoming differences in the way of working and listening to each other
- Communication was impaired a bit because the challenge was online.
- Creativity (2x).
- Efficiency and PPT preparation
- For me personally I was struggling to push the team outside the known solution, and the challenge was not completely grasped by everyone, which by turn impacted the presented solution at the end.
- I think it would be good to have some tools to structure ideas for example in a "digital wall" with post its or other tools. I think that would have been very helpful in a team that has to work together very efficiently in a very short time. Maybe you could prepare a toolkid or somethink like this for the next Challenge..
- I think we could have spent more time on the ideation process. We really rushed through that which ment that we needed more time communicating our different ideas and visions along the line.
- It took some time to understand the challenge at first, so maybe we should have asked for help directly from the start.
- More fluidity in working.
- Set goals for each meeting and structure the ideas
- Stick to the idea and try not to add irrelevant aspects.

TEAM PROCESSES - IMPROVEMENTS

* **Creativity** (2x).
* **Communication** in ideas /overcoming differences in the way of working and listening to each other. Communication was impaired a bit because the challenge was online.

* Efficiency and PPT preparation
* "I was struggling to push the team outside the known solution, and the challenge was not completely grasped by everyone, which by turn impacted the presented solution at the end".
* tools to structure ideas
* more time on the ideation process: it took some time to understand the challenge at first, so maybe we should have asked for help directly from the start.
* Set goals for each meeting and structure the ideas
* Stick to the idea and try not to add irrelevant aspects.

SUGGESTIONS FOR IMPROVEMENT

- At the beginning of the challenge, there should be more clarity provided that the students are free to run their imagination wild.
- Divide better the time between explaining the challenge and answering questions about the challenge
- Even though the time pressure is part of the challenge, I would have appreciated a little bit more time to work on the challenge because our group really needed to hurry and I think we would have enjoyed to have more time to shape out our ideas.
  Also, it would have been nice to get some feedback by the jury afterwards, not just the winning team.
- Everything was good.
- Extra time to get to know one another
- In my opinion the time to develop a solution for the problem and for preparing the pitch was a bit too short. But at the same time 2 days for the Challege were perfect. It would have been nice to get the possibility of talking to the team members again after the pitch. In physical workshops you would have the possibility to quickly talk about it afterwards. We got along very well in our group and I would have liked to catch up again for some minutes.
- Include more company information
- Maybe not on Saturday
- More clarity from the beginning that participants are free to think of out of the box ideal solutions that might work in the real world.
  A better understanding of circularity in different aspects of the businesses.
- More time should be given for presenting the ideas. The need for a good quality pitch us understood well, but the work done over two days need more time to summarise effectively.
- The challenge involved competing teams with different challenges, that made the assessment criteria for the participating teams not clear enough, so I would highly recommend for next time providing individual feedback for each team to help in highlighting the missing knowledge in each team.
- The challenges were very different between them and required a different set of skills/knowledge. Maybe they should be in the area of expertise.
- We expected to receive the information from CEWE on the first day. More time for Q&A after Pitches.

SUGGESTIONS FOR IMPROVEMENT

- Everything was good.

- more clarity about to run your imagination wild (2x)
- divide better time between explaining the challenge and answering questions about the challenge
- extra **time** to get to know one another
- although **time** pressure is part of the challenge, more time is appreciated: we needed to hurry and would have enjoyed more time to shape ideas.
- 2 days for the Challenge were perfect, but **time** to develop a solution and preparing the pitch was a bit too short.
- more **time** should be given for presenting the ideas.
- talking to the team members again after the pitches. We got along very well in our group and I would have liked to catch up again for some minutes.
- more feedback from the jury afterwards, not just the winning team. More time for Q&A after Pitches. (2x)
- more Information, about companies and circularity in different aspects of the businesses.
- maybe not on Saturday
- the challenges were very different and required different skills/knowledge. Maybe they should be in the area of expertise.
- assessment criteria were not clear enough: provide individual feedback for each team to help in highlighting the missing knowledge.

OVERALL OPINION

- According to me if a company is going for making a game to advertise it will take time and money. If you ask us that you have a startup with less expense and come out with some feasibility than our ideas was much better than others. But this is our learning time so we will focus more on other things as well later on.
- Excellent event, encourages teamwork and the resolution of real cases. At the end I would have liked more time to discuss ideas with the other teams.
- Good. It was a very nice experience.
- Great Initiative. I really enjoyed and it's nice to collaborate from people across the world, understand their perspectives and their ideas which help to broaden your own mind.
- It is very interesting and well structured. 2 intensive days that give you good new ideas.
- It was a lot of fun
- It was fun and I learnt a lot! Great possibility to exercise the theortical knowledge
- It was very interesting to participate in an online challenge like this. I think working together in a group would be easier in a real physical workshop, but the experience of doing it online was also good and helpful. I liked the topic a lot and that it was such an international group of people. I also think that the business cases were interesting.
- It's quite interesting, realistic and introducing real scenarios and challenges
- Nice concept. Really enjoyed the experience especially collaborating with students across the world and solving real-time case studies.
- Productive, innovative
- The challenge was a good experience to understand the need for circular economy and entrepreneurship.
- The contest was very well organised and helped me a lot getting a deeper understanding of circular business models. I also think the mentors were a great help!
- Very useful enjoyable helps you gain lots of experience

OVERALL OPINION

- I really **enjoyed** and it's nice to collaborate from people across the world, understand their perspectives and their ideas which help to broaden your own mind. Nice concept. Enjoyed collaborating with students across the world and solving real-time case studies. It was **fun** and I learnt a lot! (2x) Great possibility to exercise the theoretical knowledge

- It is **very interesting** and well structured. 2 intensive days that give you good new ideas. It's quite interesting, realistic and introducing real scenarios and challenges. It was very interesting to participate in an online challenge like this. I think working together in a group would be easier in a real physical workshop, but the experience of doing it **online** was also good and helpful. I liked the topic a lot and that it was such an international group of people. I also think that the business cases were interesting.

- Great Initiative. Good. It was a very **nice experience**. Productive, innovative. Very **useful** enjoyable helps you gain lots of experience. Excellent event, encourages teamwork and the resolution of real cases. At the end I would have liked more time to discuss ideas with the other teams. The challenge was a **good experience** to understand the need for circular economy and entrepreneurship.

- The contest was very **well organised** and helped me a lot getting a deeper understanding of circular business models. I also think the mentors were a great help!

Join our activities in 2021!

Thank you

Scale-up4 Sustainability

More information:

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Vennebroek Academic Services

Borderstep Institute for
Innovation and Sustainability