

Laura-Maija Hero

InnoCards 2.0 DBE

Innovation competence in a multidisciplinary team
in design-based education



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InnoCards 2.0 DBE

Innovation competence in a multidisciplinary team in design-based education: Introduction

Innovation and design processes aiming at concrete new solutions are good learning platforms. Innovation and design processes based on genuine and open challenges help in developing many personal characteristics, skills, knowledge and attitudes. Design-based education is typically multidisciplinary and develops innovation competence. Innovation competence consists of a large amount of expertise. One person does not need to have all of this, as innovations are best created in multidisciplinary teams and networks. A dream team will be able to effectively utilise all of its expertise.

The purpose of this book is to help design-based education teachers understand innovation competence and multidisciplinary teams. The book provides practical instructions for organising the InnoCard workshop. It provides justifications and information

on the relationship between innovation competence and the multidisciplinary team to support your teaching based on design-based education (DBE) pedagogy. In this context, DBE refers to design-based education based on the open challenges in the world of work and co-creation.

InnoCards are used to identify personal and group strengths and competence needs during the process and to develop a shared understanding. The card workshop can be used to target learning needs and facilitate the team's grouping process.

InnoCards are based on studies on personal innovation competences (Hero, 2019; see Figure 1).

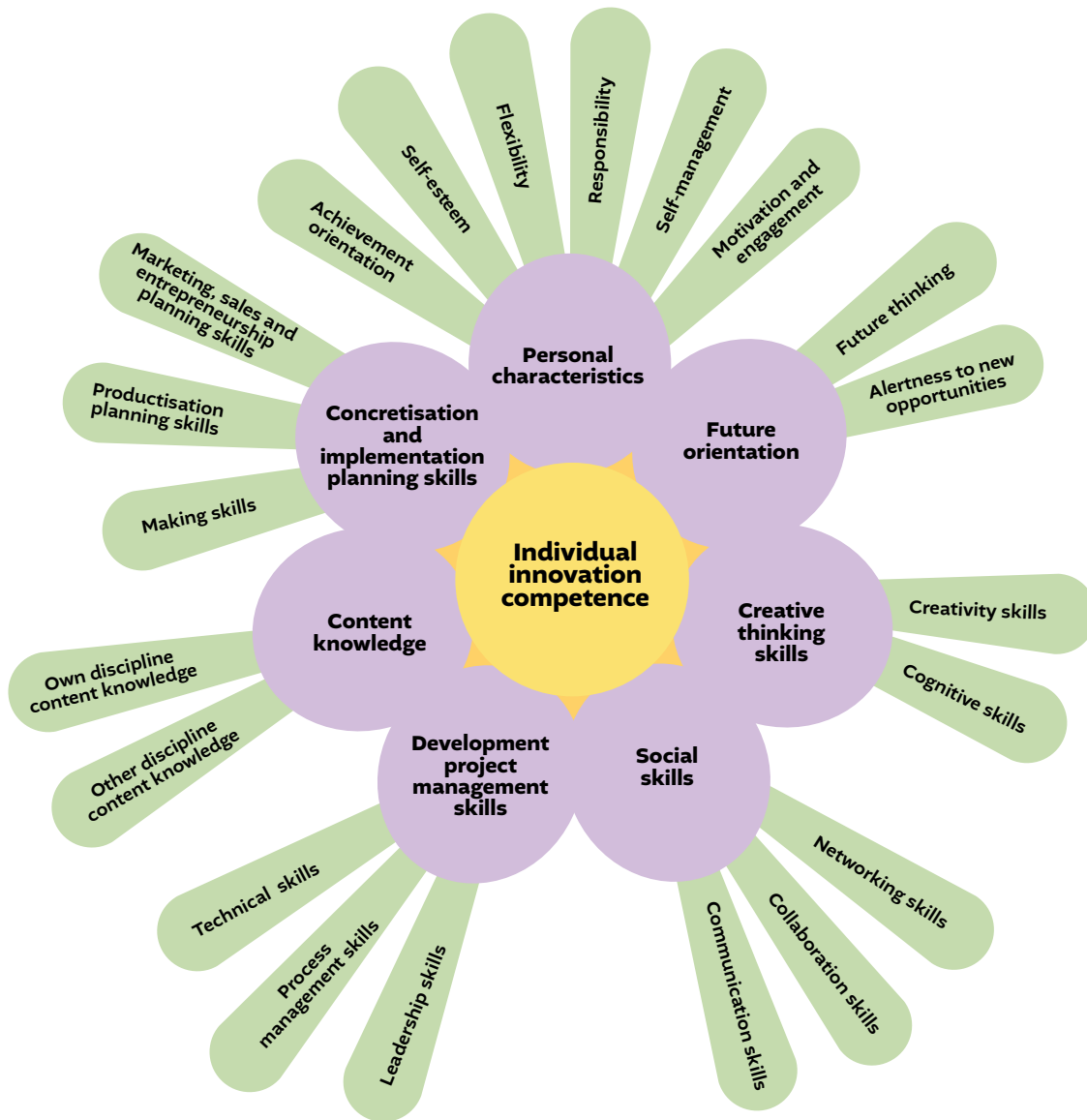


Figure 1. Innovation Competence Flower brings together the contents of the cards in one pattern. Individual-level innovation competence is defined on the basis of previous studies and empirical validations (Hero, 2019; based on studies Hero et al., 2017; Hero et al., 2021; Hero & Lindfors, 2019; Hero, 2017).

The idea of the InnoCard workshop

InnoCards allow a multidisciplinary team to make its competence and development visible. InnoCards can be used at the beginning, middle, and end of co-creation processes to create new concrete solutions.

Discussions can be recorded on a video. A video camera, i.e. a mobile phone, circulates in a team: the person not currently speaking will film. The competence found in the team can also be documented with photographs and notes. Videos or photos can be collected, for example, in an electronic team portfolio or be otherwise

submitted as a study performance. In this way, the team can use these to monitor the development of innovation competence.

Cards are divided into top categories by colour. The purpose of the card users is to obtain as diverse a range of colours as possible for their strengths during their learning process. In addition to their characteristics, the team is guided to consider and process the strengths, weaknesses, areas of development and competences that have developed.





Use of the InnoCards

Initially

When multidisciplinary team members meet for the first time, they know nothing about one another's competence. At this time, it is a good idea to give the teams time to get acquainted with each other and make their competence and development opportunities visible.

Each team member selects five cards that describe their strengths. Everyone, in turn, tells about these. This will help the team find out what they can do together.

During the second round, everyone selects five cards that describe their weaknesses. Everyone, in turn, tells about these.

- What expertise does your team have in total?
- What are your team's strengths and weaknesses?

- What areas require further development, and what competences may need to be acquired?

Use of the InnoCards during the process

In the middle of the development project, it's useful to re-examine the direction of competence development. Each team member selects five cards that describe the things in which they have developed. Everyone, in turn, tells about these.

During the second round, everyone selects five cards describing the things they should or would like to develop. Everyone, in turn, tells about these.

- How has your team developed?
- What are the areas that your team needs to develop still?

Use of the InnoCards in the final stages

In the final stages, the cards can be used for the assessment of team competence development that has been negotiated by the entire team. Negotiations should take place in a good spirit and with mutual respect. For many, it may be difficult to recognise the development of their own competence, but it may be easier to detect the development of a teammate.

Each team member selects five cards describing the things they have developed. Everyone, in turn, tells about these.

During the second round, everyone selects five cards describing the things they still need to develop. Everyone, in turn, tells about these.

- Have you learned to identify strengths and weaknesses?

- What about your development?
- How has your team developed?
- What are the areas in which there is still room for improvement?

Finally, the team can compile a diploma or report for themselves.

The mutually agreed heading could be "Active development of innovation competence in a multidisciplinary team", and it could include a description of the initial situation, the middle stage and the end. The teacher may also be interested in signing the diploma.

This learning journey is worth celebrating!

Print out your cards. Print the cards double-sided with a colour printer. Cut these into the correct size and shape and use them in connection with multidisciplinary innovation or design projects. One team will need one deck of cards.



Innovation competence: Strengths and weaknesses

Individual-level innovation competence (as opposed to the company's innovation or RDI competence) is linked to many competence variables. Those are personal characteristics such as self-esteem, self-management, achievement orientation, motivation and engagement, flexibility and responsibility, future orientation, creative thinking skills; social skills such as networking, collaboration and communication skills, development project management skills, implementation planning skills such as making, productisation, sales, marketing and entrepreneurship planning skills and one's own and other's discipline content knowledge.

Leadership skills mainly refer to the ability to develop team competence and encourage and coach others actively. Competence in

implementation is essential if genuine innovations are desired, as innovations are not just ideas or concepts (see Figure 1).

Individual-level innovation competence, i.e. the IIC model (Hero, 2019, Figure 1), was developed based on long-term research and validation work. The data collected first comprised ten years of scientific research (Hero et al., 2017), after which the model was improved and validated with empirical studies (Hero et al., 2021; Hero & Lindfors, 2019; Hero, 2017). By identifying the participating students' strengths, weaknesses and competence development needs, it is possible to make visible the opportunities for complementary competence and support the learning of an individual student as part of the team.

Innovation competence develops in genuine activities

But what kind of activities should be organised in our higher education institutions to develop innovation competence?

Innovation competence can develop in many multidisciplinary co-creation activities. As competence is visible and developed within the activities, it is a good idea to plan the activities to enable the development of innovation competence. Improving competence as a whole is essential, which is why learning outcomes cannot be broken

down and trained one at a time in separate courses or by splitting the development challenge into small sections separate from one another. Refining innovation competence requires genuine activities, open challenges that enable genuine creativity, multidisciplinary groups like genuine work development teams, which have sufficient differentiating and complementary competences, and committed facilitation and coaching, and tools for different stages. By identifying the strengths, weaknesses

and competence development needs of the participating students, it is possible to make visible the opportunities for complementary competence and support the learning of an individual

student as part of the team. The most important variable related to learning seems to be the journey and not just the output.

Design-based pedagogies promote the development of innovation competence

Learning to develop new concrete solutions, even innovations that have been put to practical use, is implemented extensively as part of education at universities of applied sciences, e.g. in connection with multidisciplinary design and innovation projects. Finland is already very far along in the establishment of student-centred pedagogical models based on open challenges that will enable the co-creation between the world of work, students and educators. These include Laurea's *Learning by developing* (Juvonen et al., 2018; Raji, 2014), Metropolia's *Monialainen innovaatiopedagogiikka MINNO* (Hero, 2020; Hero & Lindfors, 2019), Turku University of Applied Sciences' *Innopeda* (Konst & Kairisto-Mertanen, 2020), Aalto University's *PdP* (Mikkonen et al., 2018; Figueiredo et al., 2022) and Häme University of Applied Sciences' *DBE* i.e. design-based education (Lahdenperä et al., 2023) and many others. These are all very similar and are all based on design thinking, at least in practice. These forms of learning should be applied not only to business challenges but also to solving difficult societal, ecological and social problems, so EU projects and associations addressing these problems can be inspiring providers of challenge for our students.

Design-based education (DBE) is learning through co-creation. The aim

is to develop new concrete solutions together in a user-oriented manner. These solutions can be new services, operating models, products or new practices or anything concrete and useful. In fact, challenge-based processes offer an inspiring learning environment in their authenticity. Multidisciplinary teams provide a sufficiently challenging learning experience for developing work-related skills and produce more creative and progressive solutions when there is a broader range of competence. DBE is based on the principles of self-regulated, contextual, constructive and collaborative learning (Geitz et al., 2019; Geitz et al., 2023). DBE aims to develop future sustainable innovation skills and advanced work-related skills. Pedagogically speaking, DBE promotes the socio-constructive idea of co-creation of new knowledge and authentic learning (e.g. Guaman-Quintanilla et al., 2023). For this reason, teachers' role in DBE differs from that of traditional classrooms.

Although DBE is a pedagogical approach, it is rooted in the real world of work and practical design and design thinking. Design thinking has been illustrated in many ways, for example, as product development, problem-solving activities, and as a way of perceiving things and creating meaning (see e.g. Johansson-Sköldberg

et al., 2013). DBE allows students to learn by developing new solutions to the complex real-life problems offered and derived from workplaces in organisations (Geitz et al., 2019) and to guide their collaborative development and learning processes as teams. These real-life challenges are the starting point for creativity and new solutions. Students learn together in open physical and virtual learning spaces by using iterative design thinking processes as a tool while building meaningful and innovative solutions to challenges.

Applying design thinking can significantly improve innovation results (Liedtka, 2017; Prud'homme van Reine, 2017). In design-based co-creation, the same tools and processes can be applied at different stages of design thinking as in other multidisciplinary innovations. For example, many

methods and tools for service design, product development, brainstorming, conceptualisation, prototyping and user research are well suited for the use of DBE teams and for facilitating and coaching activities.

A theoretical model of the pedagogical innovation process can also be used in the same way to develop innovation competence in the context of universities of applied sciences (Hero, 2019, Figure 2). This can be utilised in planning learning projects when they have a timeframe of at least 7–8 weeks and when a challenge arising from the world of work requires a concrete solution. It is, of course, very similar to the iterative process of design thinking applied in the world of higher education. Still, it also highlights future thinking and taking deployment, even as a bridge to entrepreneurship, for teachers to consider.

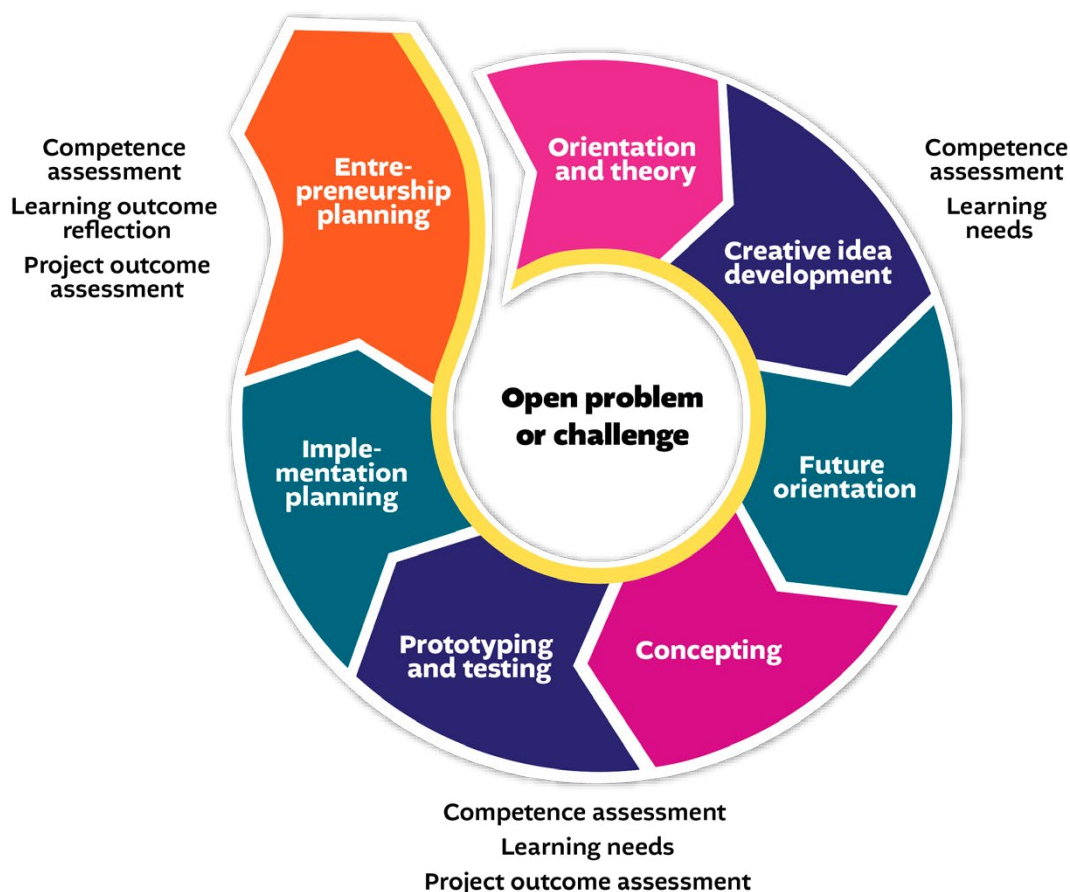


Figure 2. Pedagogical innovation process (Hero, 2019).

The pedagogical innovation process model has been developed through experimentation so that innovation competence could develop optimally. It includes several development phases and opportunities for assessment. Projects should start with genuine problems open to all participants, the solving of which requires versatile competence and the right workplace networks. In practice, the start of such a project will involve teachers, students and workplace representatives standing together, perplexed about the open challenge without first being aware of what they should learn, what they can do together and in which direction they should head. Thus, at the beginning, participants will need tools to understand what competence the group has and what competence

should be acquired during the project. InnoCards are well-suited for this.

The teacher's task is to show what is learned and help in its assessment even when participants are fully immersed in the project and nobody remembers that it is actually a part of their studies. For this reason, InnoCards are an excellent tool for teams to make learning needs and outcomes visible and for teams' assessment as a tool for discussions. As the teacher is not aware of what will happen and what kind of support students may need, teachers also need support. A teacher's uncertainty can be alleviated by this process understanding, i.e. a model of what should be achieved within the given time frame.

Multidisciplinary collaboration in a team

Multidisciplinary activities can support innovation learning if they optimally enable conflicts and conflicting situations, new networks and teams for students, and opportunities for identifying their competences. The multidisciplinary building of teams enables the identification of complementary competence and one's own expertise.

Developing new concrete solutions involves multidisciplinary professional cooperation, as the need for new solutions often stems from complex issues. The company or project that poses the challenge has no ready-made solution in mind or path for its development. It may be possible to even come up with a patented invention by oneself, but creating practical, concrete solutions, such as products and services, requires

networks and the competence of many people. Such problem-solving processes are promoted by utilising complementary competence in cooperation. The previous professional competence of participants, or lack thereof, will be utilised in multidisciplinary development work. For this reason, the in-depth understanding of content in one's own field and some understanding of the content of other fields, as well as its application, is an important raw material in development work in which generic work-related skills develop most effectively.

The team's structure is based on the characteristics of the individuals that form the group. As a concept, team structure refers to combining the characteristics of an interactive unit comprising two or more people

sharing the same goal (see e.g. Hackman & Wageman, 2005). It will become important to examine an individual's agency in the community when the activities aim at joint learning in challenging collaborative processes. In co-creation activities, agency refers to the ability to act based on the individual's identity and cultural models. The will to act, experience and exist is called agency. Agency refers to attributes such as activeness, intentionality, inclusion, the ability to influence and choose, voluntary participation, skills and strength to choose operating methods themselves. (Vähäsantanen et al., 2009) Cooperation is essential for innovation, i.e., how the team's agency, i.e., the operational readiness based on the team's identity and cultural models, can be harnessed together.

The team's composition is usually either homogeneous, in which all members have similar competences, or heterogeneous, in which the team members have different competences and characteristics. A team's heterogeneity has been seen as a key factor in team performance (Senior & Swales, 2004). Martins et al., who have examined multidisciplinary team structure (2004), have found that homogeneous teams are more satisfied and experience more positive reactions but are not particularly creative. In contrast, heterogeneous teams benefit from better team creativity and thus produce more solutions to given problems. However, working in heterogeneous teams is challenging, and therefore, very educational e.g. in improving social skills.

It is difficult to determine a team's perfect size and structure, as the appropriate size depends on the task and context. Size matters in relation to efficiency: the work of a team that is either too large or too small may become inefficient. Larger teams may

have more resources for such things as retrieving new information, but team coordination and cooperation may be more difficult and slower. (Moreland & Levine, 1992) Heterogeneous teams can perform better due to their diverse and versatile role-taking. (Mello & Ruckes, 2006) Competence must first be identified, after which it can be developed in a group with other experts. A suitable team size for design-based learning projects usually has 5–6 people when the team has been given 7–8 weeks of working time and an open challenge has enabled concrete outputs. In this manner, there are enough varying views for joint ideas, the team can achieve concrete outputs, and the resources are sufficient for user testing, studies, experiments, planning of deployment, communications and reporting, and the management of development processes. This still allows everyone's voice to be heard and the team's management to be fairly agile.

When planning a team's structure, its objective should be considered (Schaffer et al., 2008). Often, the exact objective is completely vague, and no one can define it. A student may request a precise definition from their teacher. Still, in the face of a new situation and problem, a teacher, a business partner, or an entire network may be equal in the face of a completely new situation. Such "ill-defined problems" (open problems, authentic real-world problems) often have poorly defined objectives, and it is not possible to know in advance what actions the team must take and what the team should do in practice to solve the problem. (Voss & Post, 1988) There are several possible solutions to these problems, routes to finding a solution, or it may ultimately even be impossible to find any solution. (see e.g. Kitchner, 1983) Such issues are often impossible for a homogeneous team to resolve. This means we learn something we

cannot define precisely in advance. Engeström (2016) calls this expansive learning. We learn something that does not yet exist, which we cannot predetermine very accurately. This is "Learning that is not there yet".

Problems and opportunities lie in the border zones and boundary areas of industries and disciplines, and in this way, the structure of the heterogeneous team appears to be an opportunity to find some new, novel combinations, sometimes even new fields or even more ill-defined problems. To mobilise the resources of the heterogeneous team, more effective ways of making the competence of individuals visible must be found. In this way, the team's opportunities become more concrete, boundaries can be perceived, and the team's current resources can be understood. In addition, it is possible to find and concretise a solution and to see the learning of new things needed in the process. It is unlikely that any perplexing problem can be solved using previous expertise alone. Such challenging processes need fast learning, the fast learning of a new type of learning, even the enabling of new kinds of learning for one another, and coaching another person to ensure the best possible learning of new learning. Innovation processes are complex learning processes.

Suppose a team is striving for a solution to a complex problem (for example, by producing new ideas and making them into a concrete solution to the problem). In that case, the mood may vary from enthusiasm to frustration, and the conflicting situation may require unreasonable self-management and learning that is too excessive and pressured. Support from a teacher and the required network may, in this case, be related to the coaching of the process, the promotion of cooperation and

coaching of the skills needed in the search for information and the stages of the process. The team is as strong as its characteristics, skills, knowledge and attitudes if they can be used effectively (Cheney et al., 1990) and harnessed for joint learning. The team is as strong as its shared learning-to-learn and networking capabilities (cf. Neuman & Wright, 1999). For this reason, it is essential to assist the team in identifying competence, especially at the beginning of the process, in the middle of corrective measures, in the identification of learning outcomes, and finally in interpreting what has been learnt into something visible. Otherwise, what is learned will remain hidden behind practical activities and will often only be identified after years. InnoCards are suited as tools for this.

The process is central: during it, participants learn in a new context, in a new situation and a community. The individual's task is to build the atmosphere actively, focus on coaching other team members to the best result outside instead of just on their own learning, and learn to be flexible, find motivation and, act in a goal-oriented manner and aiming at a solution. Learning in one's field alone will not be the focus of the activities, but the boundaries of new fields as well as the new co-creation, creativity and proactiveness required by these boundary areas. As a transfer effect, i.e. what a student exports to the world of work, the students also have process control: they may be able to detect problems and tackle them together with colleagues, be able to understand the process and know how to apply it in practice, be able to act in a constructive, collaborative spirit, create new heterogeneous operating communities and flexibly take part in and adapt to changes.

Do we underestimate our students' abilities?

Has our students' competence caught us by surprise? The purpose of the degree programme is not to underestimate the potential of our young people. On the contrary – we as educators must give young people the opportunity to develop genuine solutions to genuine problems that will be genuinely deployed. The objective of such activities is to learn in co-creation activities the knowledge, skills, and attitudes as well as the tools and routines needed in networks to create and implement new concrete solutions. In universities of applied sciences, students have the right to grow as

people and professionals to their full potential and to grow far beyond what teachers can ever imagine. This competence becomes visible in authentic contexts and requires a direction and goal related to the activities. Therefore, an open challenge that emerges from a problematic field in the world of work or society is needed to ensure an authentic learning experience and networks. Assessing competence development throughout the journey through a peer review is a natural way to help the team learn together.

Is the concept of innovation puzzling? Do you recognise the term in our higher education communities?

The word innovation causes strong reactions, both good and bad. The word has gotten out of control and is used even as a vague synonym for the words idea or invention. Innovations are not ideas or inventions, not even in the context allowed by education. Innovations are the concrete, useful and introduced reforms (practices, services, products, etc.) that produce added value for their users. Sometimes even in a radical manner. The value innovations create is tied to the benefits a user gains from a new product, service or operating process. Still, it can also be tied to more widespread areas of value-creation (e.g. economic, well-being, sustainability, or social). Although there is a long history of innovation defined as disrupting technological novelties with a business benefit, innovations are important in all professional fields.

Students are also capable of high-quality RDI activities. For this reason, universities of applied sciences have also introduced the acronym "TKIO" (RDIL), which refers to RDI activities integrated into learning activities (Unkari-Virtanen et al., 2023). Innovation seems like a useful concept to be applied in educational conditions when a) the outcome of students' work is not required to be pre-determined; b) when the students are encouraged towards creative outcomes with original novelty value and empowered to reach for their full capacity and exceed it by learning; c) when the importance of aiming at concrete and useful outcomes such as products, services, processes or other concretised artefacts is emphasised; d) when the students are encouraged to plan the implementation (commercial

or otherwise) to be taken into use to convey value; e) when the value in authentic experiences is required to be grasped by students working as part of society (not only inside school buildings) by learning together with their potential future employers and in real networks. (Hero, 2019)

These InnoCards have been productised through research and development for the use of design-based education teachers as a coaching tool that promotes learning. What could you develop to help others?

About the author

Laura-Maija Hero (PhD in Education) is a principal research scientist at the HAMK Edu research unit. She is specialised in multidisciplinary innovation pedagogy and design-based education. She studies, develops, and innovates solutions related to the green transition, digitalisation, culture and social innovations to benefit companies and learners,

and trains teachers and education management. Among other things, she studies the development of innovation competence and the impact of innovation activities. She has previously served as a lecturer in cultural management, RDI project manager, and marketing manager in the international technology industry.

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Printable Cards

I am able to be flexible to ensure good collaboration.

FLEXIBILITY

I can shift my approach if team work so requires.

FLEXIBILITY

I know how to use humour wisely to make collaboration more pleasant.

FLEXIBILITY

I am able to engage myself to the task if the situation so requires.

MOTIVATION AND ENGAGEMENT

Personal characteristics



Personal characteristics



Personal characteristics



Personal characteristics



**I can find
motivation
if needed even if
the task is not
very motivating.**

**I can act
ambitiously
to achieve
something big.**

**MOTIVATION AND
ENGAGEMENT**

ACHIEVEMENT ORIENTATION

**I am able to
take the initiative;
I don't usually
need to be pushed
to take action.**

**I am able to
help my team
achieve its goals.**

ACHIEVEMENT ORIENTATION

ACHIEVEMENT ORIENTATION

Personal characteristics



Personal characteristics



Personal characteristics



Personal characteristics



**I am able to
get constantly
excited about learning
something new.**

**I can work actively
to add value
to my team
to achieve our goals.**

ACHIEVEMENT ORIENTATION

ACHIEVEMENT ORIENTATION

**I am confident
in my ability
to cope in
difficult situations.**

**I am usually able to
control myself
in conflicts.**

SELF-ESTEEM

SELF-MANAGEMENT

Personal characteristics



Personal characteristics



Personal characteristics



Personal characteristics



I am able to concentrate and focus on the task at hand.

I can work persistently to reach even a problematic goal.

SELF-MANAGEMENT

SELF-MANAGEMENT

I am able to perform well under pressure.

I am able to take responsibility for my actions.

SELF-MANAGEMENT

RESPONSIBILITY

Personal characteristics



Personal characteristics



Personal characteristics



Personal characteristics



I know how to make sustainable choices.

I am able to imagine many possible future scenarios.

RESPONSIBILITY

FUTURE THINKING

I am able to plan for the future.

I am capable of being alert to new opportunities.

FUTURE THINKING

ALERTNESS TO NEW OPPORTUNITIES

Future orientation



Personal characteristics



Future orientation



Future orientation



**I am capable of
recognising signals
that anticipate change.**

**I am able to
remain open
to new experiences.**

**ALERTNESS TO
NEW OPPORTUNITIES**

**ALERTNESS TO
NEW OPPORTUNITIES**

**I am able to
utilise my curiosity.**

**I am able to
act proactively,
people do not have to
ask me to do
my share.**

**ALERTNESS TO
NEW OPPORTUNITIES**

**ALERTNESS TO
NEW OPPORTUNITIES**

Future orientation



Future orientation



Future orientation



Future orientation



**I am able to
cope with uncertain
situations.**

**I am willing to
accept risks
that come with
new opportunities.**

**ALERTNESS TO
NEW OPPORTUNITIES**

**ALERTNESS TO
NEW OPPORTUNITIES**

**I am able to
easily adapt
to change.**

**I am able to
utilise my
creativity.**

**ALERTNESS TO
NEW OPPORTUNITIES**

CREATIVITY SKILLS

Future orientation



Future orientation



Creative thinking skills



Future orientation



I can present original ideas.

I am usually able to use my imagination to find new solutions.

CREATIVITY SKILLS

CREATIVITY SKILLS

I am able to generate new ideas easily.

I am able to generate solutions to problems easily.

CREATIVITY SKILLS

CREATIVITY SKILLS

Creative thinking skills



Creative thinking skills



Creative thinking skills



Creative thinking skills



**I also have
the courage to do
things differently
from others.**

**I actively
suggest
new practical
solutions to solve
problems.**

CREATIVITY SKILLS

CREATIVITY SKILLS

**I am able to
learn new things
by myself.**

**I am able
to acquire
new knowledge
easily.**

COGNITIVE SKILLS

COGNITIVE SKILLS

Creative thinking skills



Creative thinking skills



Creative thinking skills



Creative thinking skills



**I am able to
integrate
knowledge from
different sources.**

**I am able to
think critically.**

COGNITIVE SKILLS

COGNITIVE SKILLS

**I am able to
question
my own views.**

**I am able to
question
the views
of others.**

COGNITIVE SKILLS

COGNITIVE SKILLS

Creative thinking skills



Creative thinking skills



Creative thinking skills



Creative thinking skills



**I act
in good cooperation
with other people.**

**I am able to
work productively
with others.**

COLLABORATION SKILLS

COLLABORATION SKILLS

**I am able to
promote successful
teamwork.**

**I am able to
create a confidential
atmosphere
through conversation.**

COLLABORATION SKILLS

COLLABORATION SKILLS

Social skills



Social skills



Social skills



Social skills



**I am able to
take into account
the views and opinions
of others.**

**I know how to be
sensitive to what
motivates others.**

COLLABORATION SKILLS

COLLABORATION SKILLS

**I am able to
adapt my behaviour
to promote
successful
collaboration.**

**I am capable of
acting as
an influencer
in different
networks.**

COLLABORATION SKILLS

COLLABORATION SKILLS

Social skills



Social skills



Social skills



Social skills



**I am able to
resolve conflicts
to achieve
a common goal.**

**I am able to
motivate others
to strive for
personal excellence.**

COLLABORATION SKILLS

COLLABORATION SKILLS

**I am able to
build a trustful
atmosphere.**

**I am able to
direct others on
using the skills
they have.**

COLLABORATION SKILLS

COLLABORATION SKILLS

Social skills



Social skills



Social skills



Social skills



**I can create
new partnerships.**

**I am able to
establish
fruitful cooperation
with people from
different fields.**

NETWORKING SKILLS

NETWORKING SKILLS

**I am capable of
giving a clear
oral presentation.**

**I am able to
communicate clearly
in writing.**

COMMUNICATION SKILLS

COMMUNICATION SKILLS

Social skills



Social skills



Social skills



Social skills



**I am able to
express myself
clearly.**

**I know how to
write a report.**

COMMUNICATION SKILLS

COMMUNICATION SKILLS

**I know
how to write
a meeting memo.**

**I know how to
write a project plan.**

COMMUNICATION SKILLS

COMMUNICATION SKILLS

Social skills



Social skills



Social skills



Social skills



I am able to express myself well in a foreign language.

I know how to negotiate to ensure the best possible result for all parties.

COMMUNICATION SKILLS

COMMUNICATION SKILLS

I am able to listen actively to other people.

I am capable of sharing information efficiently.

COMMUNICATION SKILLS

COMMUNICATION SKILLS

Social skills



Social skills



Social skills



Social skills



**I am able to
develop practical
new solutions
together
with other people.**

**I am able to
manage a project.**

**PROCESS MANAGEMENT
SKILLS**

**PROCESS MANAGEMENT
SKILLS**

**I am able to
make a project plan.**

**I am able to
use my time
efficiently.**

**PROCESS MANAGEMENT
SKILLS**

**PROCESS MANAGEMENT
SKILLS**

Development project management skills



Development project management skills



Development project management skills



Development project management skills



I am able to develop practical solutions based on research.

I am able to make well-grounded decisions.

PROCESS MANAGEMENT SKILLS

LEADERSHIP SKILLS

I am capable of leading a team.

I am able to concretise an idea using a computer.

LEADERSHIP SKILLS

TECHNICAL SKILLS

Development project management skills



Development project management skills



Development project management skills



Development project management skills



**I am able to learn
new technological
applications
independently.**

**I have
good IT skills.**

TECHNICAL SKILLS

TECHNICAL SKILLS

**I can use the Internet
for effective
information retrieval.**

**I am able to
apply the knowledge
of my field
in practice.**

TECHNICAL SKILLS

CONTENT KNOWLEDGE

Development project management skills



Development project management skills



Content knowledge



Development project management skills



**I can apply
the understanding
of disciplines
other than
my own in practice.**

CONTENT KNOWLEDGE

**I know
how to design
practical items
from abstract ideas.**

MAKING SKILLS

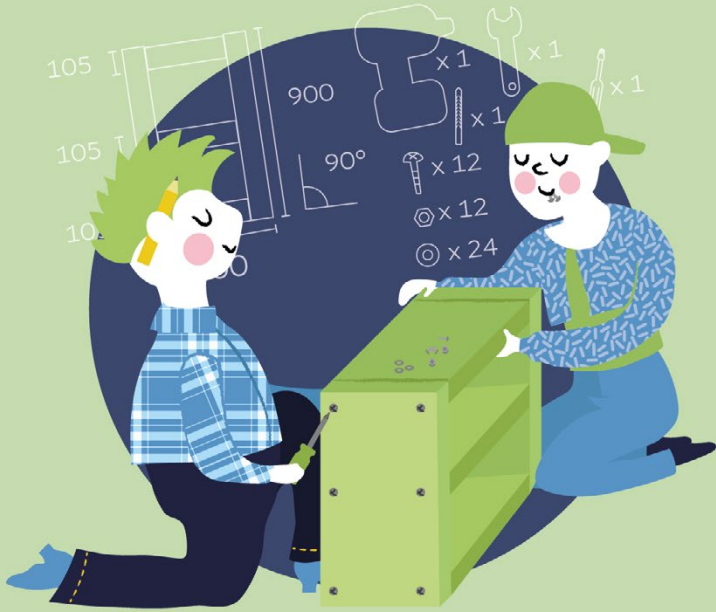
**I know
how to make
a working prototype.**

MAKING SKILLS

**I know
how to make
a functional product
by hand.**

MAKING SKILLS

Concretisation and implementation planning skills



Content knowledge



Concretisation and implementation planning skills



Concretisation and implementation planning skills



**I have
the crafting skills
required for
creating a new
concrete product.**

**I know
how to use
my sense of beauty
to realise
of a quality product.**

MAKING SKILLS

MAKING SKILLS

**I know
how to turn an idea
into a product.**

**I know how to make
a marketing plan.**

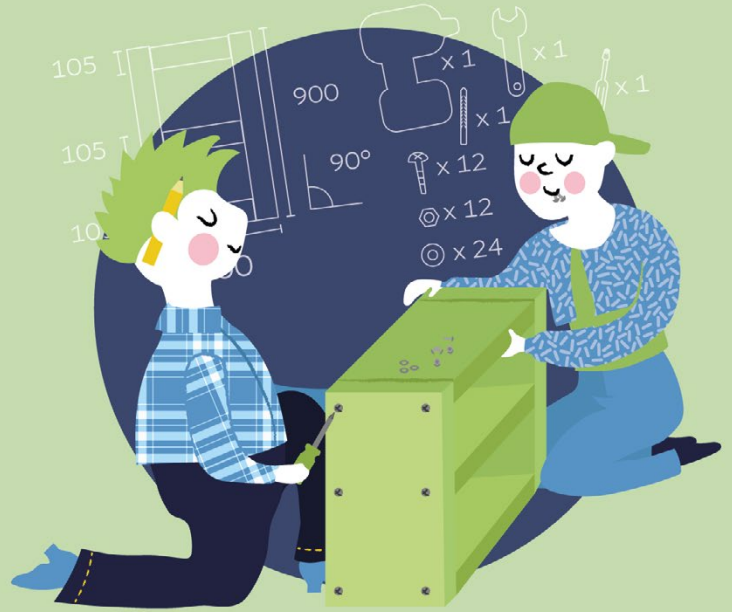
**PRODUCTISATION
PLANNING SKILLS**

**MARKETING, SALES AND
ENTREPRENEURSHIP
PLANNING SKILLS**

Concretisation and implementation planning skills



Concretisation and implementation planning skills



Concretisation and implementation planning skills



Concretisation and implementation planning skills



**I know how
to make a sales plan
for a product.**

**MARKETING, SALES AND
ENTREPRENEURSHIP
PLANNING SKILLS**

**I can plan
the utilisation
a new product.**

**MARKETING, SALES AND
ENTREPRENEURSHIP
PLANNING SKILLS**

**I am able to evaluate
the threats and
opportunities
associated with
entrepreneurship.**

**MARKETING, SALES AND
ENTREPRENEURSHIP
PLANNING SKILLS**

Concretisation and implementation planning skills



Concretisation and implementation planning skills



Concretisation and implementation planning skills



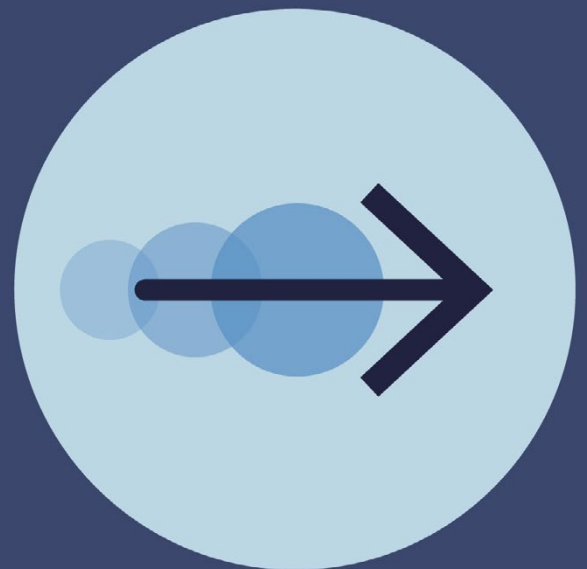
Strengths



**Development
and improvement
have been made**



**The area that needs
to be developed
(Weaknesses)**





InnoCards 2.0 DBE

Innovation competence in a multidisciplinary team in design-based education

Design-based education is typically multidisciplinary and develops innovation competence. Innovation and design processes are good learning platforms. Processes based on genuine and open challenges help in developing many personal characteristics, skills, knowledge and attitudes. Innovation competence consists of a large amount of expertise. One person does not need to have all of this, as innovations are best created in multidisciplinary teams and networks.

A dream team will be able to effectively utilise all of its expertise!

InnoCards allow a new multidisciplinary team to make its competence and development visible in different phases of the project. Individual-level innovation competence is defined on the basis of research.