

CHAPTER 9

Innovation pedagogy as a tool to solve challenges with teamwork

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THE 4TH INDUSTRIAL REVOLUTION AND THE FUTURE OF WORK

Workforces across the world are being challenged by the changes brought about in the Fourth Industrial Revolution, as is widely acknowledged. For graduates to be successful as effective members of any workforce they need to be educated in entrepreneurship; they require skills to innovate, work collaboratively and think critically. Traditional teaching methods have been seen to be no longer appropriate to develop those skills. Governments around the world are beginning to task higher education to work more closely with employers to meet this demand. Using this tool will therefore enable teachers to learn how to guide students to become more effective and therefore more valuable resources (Sjöblom et. al. 2019; Mälkki 2010, 2019).

Feedback from work life often comments on a lack of skills in self leading, problem-solving and collaboration. The problems of the world and work life are extraordinarily complex and often compounded by the interconnectedness. This phenomenon has been termed wicked problems (Dunne & Martin 2006; Lackéus 2015; Leavy 2010). To solve them multidisciplinary expert teams are needed which must be capable of exploiting a fast and iterative development cycle (Katchenbach & Smith 2015; Sonalkar et. al 2016). It is widely believed to be too late to learn these skills in work life where they should focus on applying their substance skills and competences and therefore it must fall to education to prepare graduates to join the workforce with the appropriate skills.

The Innovation Pedagogy tool can be used in a single or multiple related courses to support the development of essential skills that can be utilised immediately by teachers. It includes introducing and developing student-centred learning, collaborative learning, and dialogical skills, which among others, are core skills in consolidating deep learning (Kolb 1984; Lackéus 2016; Lombardo 1996; Heikkinen et. al 2012; Ruhalahti et. al 2018). Guided reflection of one's

own and peers' performance used within this model therefore supports professional growth (Heikkinen et.al 2012, Mälkki 2011; 2019). *The Innovation Pedagogy Tool* can be used in Teacher Education programmes at bachelors, masters, and/or doctoral level when collaborative learning methods and student-centred approaches will clearly provide beneficial results.

INTRODUCTION

In this way of teaching, the workflow is divided to 3 parts: preparation, implementation, and reflection (Figure1). With these elements it is guaranteed that the process will meet the need of required course content or curriculum requirements. The preparation phase has two distinct tasks: the teacher will plan the whole learning process, create the knowledge baseline and learning goals, while simultaneously, the students will do any required pre-reading individually. Once the preparatory work has been completed, the implementation phase can begin. The students will now begin to learn how to solve authentic and contextual challenges in teams.

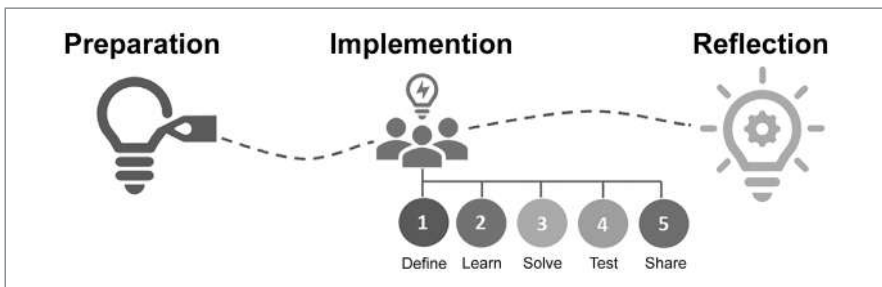


Figure 1 - Stages of learning process

Solving a so-called ‘real problem’ generates positive feedback reinforcing the learning cycle and can increase value creation by up to 70%. In this phase the teacher’s job is to coach the students by using design thinking tools as the teams work through the problem to find one of any given number of solutions. To encourage the use of creative thinking skills, there should be no limit to the number of outcomes here. Finally, in the reflection phase the students will produce a report and reflect on their own learning but also that of their student colleagues in the teams, as well as their collective solution toward the content requirements (e.g., the content related learning goals that were set in the preparation phase).

THEORETICAL BACKGROUND OF THE TOOL

“Let students learn by applying their existing and future competencies to create something – preferably novel – of value to at least one external stakeholder outside their group, class, or school”

Lackeus, M. et. al. (2016)

The innovative pedagogy model consists of 3 components: innovative pedagogy, design thinking methods and teams as a learning platform. Combining these 3 components will create student-centred learning which produces the skills for self-leading, leadership, creativity, and critical thinking.

Design thinking brings the tools with which to solve modern and often wicked work life challenges because it involves enhancing creative and critical thinking skills. The tools and double diamond process model forces the team gently to focus and solve a problem from a user point of view. In the double diamond model, divergent and convergent thinking is part of solving process (Martin 2009, Osterwader & Pigneur 2010, Leavy 2010).

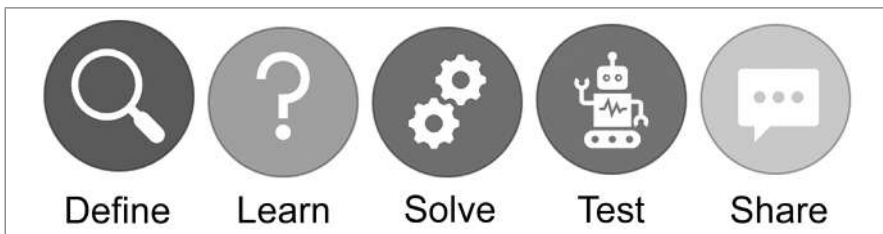


Figure 2 - Design Thinking phases during the implementation phase in learning process

In this model the double diamond is simplified into 5 stages: define, learn, solve, test, share (Figure 2). By guiding student teams in each phase using well select design thinking tools, the teams will be able to solve the original challenge. All the teams will have unique solutions and by sharing their teams' outcomes and thoughts during the process, peer-to-peer learning increases the learning outcomes.

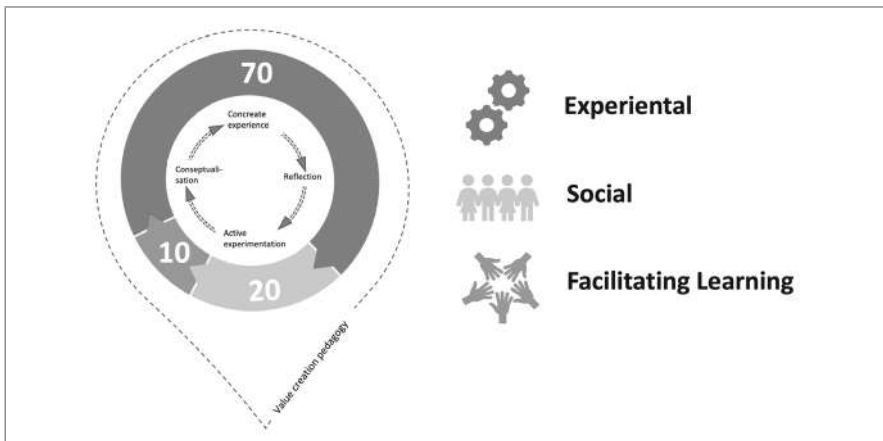


Figure 3 - Pedagogical model in Innovative Learning model

The core pedagogical theory in this experiential learning model is Kolb's cycle, applied at the individual and team level. According to Kolb (1984, 26), learning is best conceived as a process, not in terms of outcomes. The ideas and meanings in the learning process are not fixed, but in motion and change and construct through experience. The transformal learning process through experience includes, 1. concrete experience, 2. reflecting on experiences, 3. conceptualization and 4. active experimentation. All teachers should be aware of Kolb's learning cycle though their own education and training and be aware of how it affects education, but one could argue that they are mostly unaware of the value creation process required in certain learning situations. In experimental learning processes value creation pedagogy (Lackéus 2015; 2016) allows for a variety of values and meanings for all partners during the learning process. When the learning process and actions create value for others it helps students to see the importance of the ongoing process and its key contributing elements. Lackéus (2016) continues that this model has a direct effect on learning motivation and growth of entrepreneurial skills and community level to social climate. Both Kolb's cycle and value creation pedagogy state that real-life cases and active role of the student in learning process. Lombard et. al. (1996) reveals that individuals tend to learn 70% of their knowledge from challenging experiences and assignments, 20% from developmental relationships and 10% from formal education like lectures, coursework, and training.

In teachers' work, 70% of the work happens before the intensive student engagement part. Before coaching teams towards any learning goals, the case, a learning goals, assessment, reflection points and the coaching process need to be planned, agreed, and prepared. Twenty percent of a teacher's time is coaching and facilitating the learning process during intensive part and 10% formal instructions or lectures. While in students work 70% comes from interesting learning activities to solve the case with the team, 20% from reflection toward the learning goals and collaborative learning and 10% from writing reports or other formal educational tasks.

The third component of this innovative learning model are teams as learning platforms. The term, 'teamwork' is often applied synonymously with 'group work'. This is a mistake if a student-centred learning approach is desired. In group work, the teacher performs a central role and leads the work of students whereas in teamwork the teacher's role is to design the learning process and actively guide student teams to achieve the learning goals and to be active agents in their own learning (Katzenbach & Smith 2001, Kouzes et. al 2013). Effective teamwork requires self-leading skills, peer leading and collaborative working skills. The team needs to solve the problem – not the teacher. This requires that the leadership and action-oriented way of doing, and learning is encouraged and

supported by the teacher and the team is responsible for making its own decisions – for example, what ideas are worth presenting (criteria for what is a “good” idea must come from the teacher and the person or organisation who presents the initial challenge). Skills to negotiate, respect difference (in all respects) and sharing ideas and critically thinking are developed in teams when it is building part of the process, and the makeup of the team is multidisciplinary. For teachers this is central to gaining such awareness of understanding of the process of creating and managing effective teams (Katzenbach& Smith 2015; Kouzes et. al. 2013, 2; Wenger et. al 2002). When this is understood the focus on coaching teams and facilitating learning is a natural part of the process. The teacher is a key player by guiding the teams to focus on the right things and supports them to find solutions instead of simply giving answers. Developing a teacher’s coaching skills is therefore based on meaningful learning tasks and, when suitable learning partnerships are utilised, learning is always value-driven according to the desired outcome.

Coaching as a method is a means of managing the learning process. It requires a large amount of work by teachers in planning and creating the learning tasks and identifying the milestones beforehand. This allows teachers to coach teams when the learning event starts. Teachers facilitate this learning by asking questions which help students with teamwork, and to solve the problem. This is a core element of the learning process which requires good presence and coaching skills from teachers. The challenges that teachers will face when using this model can appear rapidly but there will often be multiple solution that can be applied (Kouznés et. al 2013, Lackéus 2016). To reflect on a situation and create good learning process solutions, we strongly suggest employing the buddy teaching method.

Explanation of the tool

1. Preparation phase:
 - a. Decide how long your process needs to be: from a few hours to a much longer processes, like a week.
 - b. Create 3 to 5 learning goals for your student group (collaborative work, design thinking tools, problem-solving, critical thinking).
 - c. Find/formulate a real-life problem and agree the boundaries for solving this. What outcomes are required from the challenge owner’s (stakeholder’s) point of view.
 - d. Determine and agree what things the teams can decide for themselves.

- e. How will the process learning be assessed? Often the outcomes are not important - the fact they have implemented the tools and collectively worked together and agreed the ideas, is more valuable. The criteria for assessment and outcomes are planned, agreed, and communicated at this stage.

Notes for consideration: Think the amount of work the tasks will demand from the students and plan and schedule the learning phase accordingly. With younger students it is advised that the process is very closely guided, and the instructions and tools are easy to implement. Guided reflection is also a key step in learning. Plan the steps for reflection: before, during, after each step. Collaboration, creating ideas and validating them will take more time than you might imagine.

2. Implementation phase – facilitating the learning process and coaching teams to solve challenges:
 - Define, learn, solve, test, share – make sure that teams are understanding what is required and the design thinking tools are available for them.
 - Start days or sessions with your student teams by telling the goals of the phase and introducing the tools they need to apply.
 - Coach teams to solve faced challenged and applying the tools. Give options instead of giving answers and help them to discuss and make decisions in a team.
3. Reflection phase:
 - Guide the reflection with the point of views and questions. For example, team working own participation and roles in team decision making and doing, design tool implementation.
 - Students write a reflective report of complete process, guided by teacher/tutor.
 - Peer and coach/mentor feedback in plenary.

The learning environment

In this active based learning approach, we cherish the time together with the team. This means that learning spaces need to be organised so that every team has its own space in which to work. Round tables are recommended because that helps communication when everyone sees each other's face and the leadership can be built in a democratic way. Helpful resources to help facilitate the process can be found from online platforms (like Moodle) and they can be adopted and adapted according to a teach-

ers plan of how the process should go. Prior preparation of any such resource is recommended as it saves valuable time for both teacher and students. Initially collaborative work in teams might seem extremely hard the students so consider how the learning environment can make the process easier for them. A simple remedy is pencil and paper. That is the fastest route to transfer thinking to a visual format. It also forces teams to interact with each other. There can be no hiding behind screens: computer or mobile. This stage can also be used as a physical learning phase. Sharing outcomes, ideas and thoughts during the process will boost peer-to-peer learning and is practising important work life skills at the same time. If you use an E-learning platform, make sure it is suitable for collaborative work. Finally, any physical learning environment containing sufficient tables/chairs for the group and white/noticeboard for collaborative creation

Role of students and teachers

- Students: they are in the star role during such intensive learning events: actively participating in teams to create solutions.
- Coaches/teachers: they lead by example, designing the learning process, and coaching students towards individual and team-level learning goals.

Expected outcome:

- For students
 - o To develop their creativity in problem-solving, collaborative work, and critical thinking skills.
- For teachers
 - o To understand the definition of an effective coach in a pedagogical framework.
 - o To define the self as a coach and understand how to act responsibly to be a successful role model.
 - o Expand his/her own network within education and with work life partners and stakeholders.

CONCLUSION

Schools are for life – so education in all levels should give practical skills to manage one’s own life. As the world evolves, teachers must develop their own skills through learning new and innovative methods that are suitable for the time to meet the demands of employers. This tool enables teachers to take one step in that direction. By leaving behind, even for a fleeting period, traditional teach-

ing methods, we can face new challenges and thus better prepare our young charges for their life ahead. After all, education's role is to create individuals to be valuable members of the society they grow up to become a part of.

A comprehensive approach is hard to implement as such. Also, this tool is best to apply in iterative rounds. That means that teachers can start to apply tools step by step and finding suitable solutions for their context. Buddy teaching is best way to support this implementation process. That is also a natural way to expand good pedagogical practises. Transferring the learning from student to others is a good motivator for students but also teachers and schools to take proactive step for community.

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