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2. CO-CREATING KNOWLEDGE

Students and Teachers together in a Field of Emergence

> The modern school, at its best, is a satisfying extension of the unreality of societal perception. As we enter the conclusion of an industrializing age, I recognize that, within its walls, lectures are concerned with an abstract dream of future usefulness, while life is happening between classes. Half of the time, and half asleep, teachers and students keep each other caught in a fiction of relevance: Relevance of knowledge to our lives, relevance of the relationships to each other, and relevance to the questions of our time and to the society in which we live.
>
> (Besselink, 2014, p. 92)

Education systems around the world strive to customise methods and practices to fit rapidly changing societal requirements and cultural changes. Education is expected to deliver a highly skilled workforce and the term *employability* is among the parameters used in quality assessment of work done at universities and other higher education institutions. And so the aim of education becomes an ever-changing fixed point.

Preparing students for becoming 21st century knowledge workers, then, entails preparing them for an unknown future. Critical reflection, independent thinking, creativity and a strong sense of navigating in the unforeseen are among the skills required of the individual student. Moravec (2008, 2014) describes the future knowledge worker as "nomadic":

> […] a nomadic knowledge worker – that is a creative, imaginative, and innovative person who can work with almost anybody, anytime, and anywhere. Industrial society is giving way to knowledge and innovation work. Whereas industrialization required people to settle in one place to perform a very specific role or function, the jobs associated with knowledge and information workers have become much less specific concerning task and place. (Moravec, 2014, p. 18)

The point being that, to a large extent, education as we know it is operating in 1.0 mode, out of tune with surrounding cultures and societies, which are operating in mode 3.0. With increasing amounts of accessible knowledge and rapidly changing platforms of learning due to the development in digital media, classical educational

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institutions are facing the risk of being irrelevant to future generations of students and to society in general terms.

> In university, the focus is on the 1400-page curriculum. In university, the academic assignments must be between 20 and 25 pages. In university, we sit and translate complicated English theoretical texts into Danish, and then write them down in our assignments. Where the hell is the creativity? (Madsen, 2016)

The question is asked by 24-year-old Jonas, a student at the University of Copenhagen, a future knowledge worker, in a direct appeal to his teachers, calling for more creativity, a possibility of independent thinking and translation of theory into practical knowledge in universities.

A quick glance into higher education institutions around the world indicates that the better part of teaching takes place the way it has taken place for centuries (Adler & Hansen, 2012; McWilliam, 2008). The architecture of universities is a good indicator of the didactics performed in the rooms – chairs in rows facing a podium, a blackboard/whiteboard or a screen for the professors to speak and the students to listen.

C. Otto Scharmer, Senior Lecturer at MIT, points to the problem of downloading habits and reproduction of knowledge in teaching; "We probably spend more than 90 percent of our educational resources on lecturing: downloading old bodies of knowledge without self-reflection" (Scharmer, 2007, p. 448). Moreover, he points to the need for a small-scale revolution to transform our education system, so that it becomes up-to-date and able to encourage the individual's resources, creativity, and knowledge: "We need to reinvent our schools and institutions of higher education" (Scharmer, 2007, p. 449).

In this somewhat gloomy future perspective we, as teachers (and researchers), need to ask ourselves: what does it take to re-invent higher education and for teachers to become 21st century educators, especially able to navigate in the unforeseen, instantly designing education in a cross field of societal and cultural change, practical skills and individual relevance?

CO-CREATION IN AN EDUCATIONAL SETTING

The term *co-creation* is used in fields as different as therapy and product innovation (Degnegaard, 2014) although it probably originated in the field of therapy where it is used to describe the shared production of meaning in the therapeutic session. The shared production of something is the common denominator in all the uses of the expression. In the broad field of innovation it denotes a process where different stakeholders are involved in the creation of "the products", be they solutions in the welfare sector or apps for mobile phones. Even though the end goal differs – roughly speaking, the goal is creating solutions within a political system or making money – there is a clear overlap in methods.

The methods applied when working with co-creation are designed to engage the stakeholders in a collective learning process built on emerging awareness and shared commitment. Investigating both the field of intervention and the individual and collective intention is part of this process (Scharmer, 2007, 2014; Hassan, 2014) and requires facilitation, either by the participating stakeholders or by consultants/facilitators. Frequently-used methods are dialogue, field studies, interviews, log-writing, narratives and a variety of creative methods inspired by the world of design and art (Kahane, 2012; Scharmer, 2007; Darsø, 2004; Hassan, 2014; Belling, 2012; Bason, 2010).

In this chapter, we explore co-creation as an opening towards re-designing and re-inventing the shared space of teaching and learning. The methods suggested in the chapter in some ways suspend the classical concept of teaching and replace it with a structured *co-creative generative dialogue* within which knowledge exchange and knowledge production can take place.

We base the chapter partly on theoretical perspectives, partly on empirical material generated through a series of qualitative interviews with teachers, and on extensive personal experience of teaching in higher education. Our intention is to establish a dialogue between practice and theory. In the interviews, the interviewer did not set out to explore co-creation *per se* but the concept emerged as the interviews progressed. Two main questions were asked; (1) which interdisciplinary, innovation pedagogy can higher education teachers design and use, so that it has the best potential to stimulate the development of innovation and transferability competencies in students? and (2) what does this innovation pedagogy demand of the teacher? (Stavnskær, 2014) In other words, exploring innovation and innovation pedagogy in the interviews led to the emergence of the concept of co-creation. We draw on the descriptions given by the teachers, theoretical perspectives and personal experience in the conceptual framing.

This chapter has two meta-perspectives in its approach to co-creation. One meta-perspective primarily focuses on communication and explores the *term co-creative generative dialogue* and the demands on teachers and students. The other meta-perspective offers a five-phase model to design a co-creative teaching process for students.

IT ALL STARTS WITH COMMUNICATION!

A discovery we made, on analysing the interviews with teachers, was that they brought a focus on communication to their meetings with students, especially with regards to how they listened and asked questions. The teachers described in detail how they listened, how they asked questions, how they meta-communicated with students to create new learning and innovation. Meta-communication in this context is to be understood in the sense originally introduced by Gregory Bateson (1972) as communication about communication “all exchanged cues and propositions about (a) codification and (b) relationship between the communicators”. Lotte Darsø, too,

highlights the importance of communication: "It is especially important that one is clear about these patterns of dialogue if one wishes to lead processes of change. It is through dialogue that we create the world here and now" (Darsø, 2011, p. 154).

In order to explore the type of communication that facilitates co-creative dialogue between teachers and students we turn to Shaw, who takes her point of departure in complexity theory (Shaw, 2002). Shaw includes a description of the communicative approach to user-driven design, which could be transferred into an educational context (Shaw, 2002, 2005). She describes an open and meaningful type of communication that captures the interest of participants, revolving around what excites or even frustrates them. The dialogue implies a willingness to explore and improvise. The teacher listens closely to what students say and lets associations arise. "I am describing the process of weaving in our actions one with one another to co-create the future" (Shaw, 2002, p. 70).

This implies that the purpose of dialogue between students and teachers is not just the mutual understanding of preconceptions, but also the co-creation of new ideas. The teacher becomes a facilitator in order to encourage lively dialogue and encompass different views, even conflicts, regarding what is going to be taught and how. This requires that teachers and students alike be at ease, with an open approach. Teachers must let go of fixed agendas and be able to help students do the same. "Leading becomes being able to articulate issues and themes as they emerge and transform" (Shaw, 2005, p. 21).

A co-creative dialogue requires the teacher/facilitator to be very conscious of the form of communication used.

Generally speaking, teachers should be good at asking questions and stimulating students to ask questions themselves in order to create lively dialogue. In a quote from the empirical material, one teacher stresses how important it is to listen to the students: "It's important for me to listen to the students and start the process where they are. It is important for me that I can see that they are getting smarter and more competent and that they are empowered" (Stavnskær, 2014). Furthermore, the majority of the teachers focus on listening when facilitating co-creation between teachers and students, as well as in student-student communication. Shaw recognizes that listening is a central competence of the facilitator. The facilitating teacher listens closely to what the students say, and to their associations. Ideas regarding the given task or problem (content and form) should arise out of that listening (Shaw, 2002, p. 5).

This also implies being able to balance different viewpoints and manage conflicts. Students should be encouraged to express explicitly what they think – so that teachers can relate their understanding to other approaches (Iversen et al., 2015).

A co-creative dialogue allows something new and unforeseen to emerge. Stacey puts it this way: "We should expect not to see what we set out to achieve in the way we originally intended" (Stacey, 2007, p. 812).

The majority of teachers emphasised that one has to be able to improvise in the encounter with students, if something new is to arise. One teacher in particular

stressed repeatedly in the course of the interview how important improvisation is to her: “Innovative communication consists in being prepared for the unexpected-in being able to improvise. I believe this to be a very important innovative competence. It gives me energy and flow” (Stavnskær, 2014). Similarly, Shaw mentions improvisation in her approach to facilitation: “a more improvisatory way of approaching how we might go on together” (Shaw, 2002, p. 5). The essence is that the facilitator of co-creation, in this case the teacher, should possess the ability to improvise, be ready for it, and have the courage and ability to step into the unknown together with the students.

These teachers’ approaches can be seen as similar to the learning processes described by Chris Mowles et al. and Ralph Stacey. In their work, learning is understood as something complex and non-linear, emerging in communication by listening to participants, not by following a path staked out in advance by an expert (Mowles et al., 2008; Stacey, 2007).

It is teachers and students, who know the complexity of their own reality and, on that basis, who can find the way and *create something* together. One of the teachers described something similar: “The most important thing for me is to be a catalyst. Filter whatever the students carry with them, and put it in perspective, while at the same time presenting them with new perspectives” (Stavnskær, 2014). Co-creation is a mutual process amongst teachers and students where both parts contribute, as the teacher here underlines.

However, the demands on teachers and students are not identical. The majority of the teachers interviewed stressed the necessity of connecting with the students ‘where they are’, so to speak: “Meeting others where they are sounds simple, but it demands a certain didactical knowledge to be able to do it. It’s about engaging the students, and getting them to engage themselves. It’s like digging for gold” (Stavnskær, 2014). In other words, a precondition for finding gold is meeting students where they are. The majority of teachers interviewed said that they are expected to have a large methodological knowledge they can draw on and adapt to different target groups. They mention that didactics has to be in motion all the time: “It’s important that didactics don’t stiffen up, that they change to follow who the students are, that they are dynamic” (Stavnskær, 2014). This implies that the teacher has to be able to be flexible and able to create situation-based didactics out of his or her toolbox.

ROLES AND RESISTANCE

Under the title *Unlearning how to teach* Erica McWilliam (2008) introduces what you could call a teacher typology – or a set of positions to describe the relation between student and teacher in current education. Looking at teaching as a social practice, she makes a point in comparing teacher roles and communication strategies in teaching to societal changes and changes in cultural production in general. The point being that relational habits which once served teaching well may be past their expiration date and in need of revision.

McWilliam (2008) outlines three relational positions in teaching: *sage on the stage*, *guide on the side* and *meddler in the middle,* arguing that the latter is a possible equivalent to the unstable and ever-changing cultural conditions teaching is embedded in. In short, *sage on the stage* is a position where the teacher is an expert lecturing primarily one way, a classical auditorium situation. As a *guide on the side,* the teacher is a coach following the learning process on the side. The *meddler in the middle*:

> … positions the teacher and student as mutually involved in assembling and dis-assembling cultural products. It repositions teacher and student as co-directors and co-editors of their social world. […] it means less time giving instructions and more time spent being a usefully ignorant co-worker in the thick of action, less time spent being a custodial risk-minimizer and more time spent being an experimenter and risk-taker; less time spent being a forensic classroom auditor and more time spent being a designer, editor and assembler; less time spent being a counsellor and "best buddy" and more time spent being a collaborative critic and authentic evaluator. (McWilliam, 2008, p. 263)

The apparently paradoxical constellation of being a collaborative critic and an ignorant co-worker makes way for a new interpretation of the relation between teacher and student. This means neither leaving the responsibility of the learning with the student nor placing the responsibility of the teaching on the teacher. It is a position where the social space of teaching and learning is co-created in a cross-field of emergence and control. With the teacher not playing the role of curricular custodian and bearer of answers, knowledge can be regarded, then, as something occurring in a shared space of teaching and learning.

Changing habits, however, requires the will to change. Habits. A somewhat redundant statement, but nevertheless relevant. As teaching is a skill acquired over time, the individual teacher, like all professionals, acquires a level of expertise by doing certain things a great number of times. Changing strategies, consequently, puts the teacher in a potentially vulnerable and anxiety-provoking situation. Otto Scharmer talks about this challenge of not downloading:

> What we do is often based on habitual patterns of action and thought. A familiar stimulus triggers a familiar response. Moving towards a future possibility requires us to become aware of – and abandon – the dominant mode of downloading that causes us to continuously reproduce the patterns of the past. (Scharmer, 2007, p. 119)

Experimenting and taking risks may not be the average state of teaching. And venturing into a space of not knowing is not particularly common either. It is then, in short, something completely "other" that is required by both teachers and students. The challenge is mutual; teachers experimenting are at risk of exposing themselves to disappointed expectations and frustrations on the students' part. Or maybe even

anger and aggression. An ability to manage and contain the potential anxiety in students is seen as a central and necessary quality inherent in the role of facilitating co-creative learning processes by most of the teachers we interviewed. One teacher says:

> You should be able to manage the frustrations of students, because […] you are challenging them. […] So the contact you will have with them will be closer than if your job was simply to deliver the sum of 2+2. The former approach implies going into a more personal dialogue with them, where you maybe put pressure on them. Some students appreciate it; others find it anxiety-provoking. (Stavnskær, 2014)

Darsø (2011) describes this ability to contain anxiety as essential for something new to emerge: "The teacher must train his ability to 'hold space', space which is characterized by chaos, uncertainty, anxiety, and vulnerability" (p. 12). Another teacher expresses something along the same lines. One should be able to: "contain and manage the students' uncertainty and insecurity. I should be able to handle all the feelings that are circulating in the classroom" (Stavnskær, 2014). And a third teacher adds that it puts a demand on the teacher to navigate on shaky ground, "It requires that you as a teacher "put yourself at risk" (Stavnskær, 2014). As such it takes a great deal of courage to become a 'meddler in the middle' or a co-creating teacher; "Facilitation is not for wimps" (Ghais, 2005, p. 2).

All the teachers interviewed emphasised that when they engaged in the process of facilitation in the search for innovation and co-creation, meeting resistance was part of the process. This resembles the conviction held by Susanne Ghais: "Whereas many books on facilitation treat conflict as an occasional snafu, I consider it as a given" (Ghais, 2005, p. 3). One teacher puts it this way: "You get a few slaps in the face." The courage required is described by another teacher. In a teaching situation she used a new creative method in a course, which led to one student leaving the room in frustration:

> I experienced a student who grabbed her bag and said, "this is simply too much, I'm gone." Then you stand there and hold your breath for 10 or 15 minutes. So you gamble a bit. But always with the idea in mind of creating something new for the students. (Stavnskær, 2014)

One teacher mentions courage explicitly as a necessary element of a co-creative approach. Adler & Hansen, too, identify courage as a central quality in creating change: "Daring to care requires courage—the courage to speak out and to act. Courage transforms convictions and compassion into action" (Adler & Hansen, 2012, p. 2). All this seems to indicate that courage is an essential quality for daring to facilitate transformative processes in students, which means pushing them out of their zones of comfort, as you do when being a co-creative teacher or a *meddler in the middle*. It is clear from these quotes that courage is required if one is to persist with co-creative dialogue when faced with resistance.

THE ‘CO’ AND THE ‘CREATION’

In co-creation both the ‘co’ and the ‘creation’ are significant. The ‘co’ signals that the process is social and the ‘creation’, that something new appears as a consequence of the process. Taking a closer look at the social aspect in co-creation, inspiration can be found in the writings of Scharmer. He introduces a conceptual approach that combines relation and communication as a set of “social fields” within which different states of attention determine the quality of the communication, which on its part determines the outcome of the situation (Scharmer, 2007). This is conceptualised as a set of different ways in which the ‘I’ relates to the ‘you’, both the I and the you being understood as generalised terms. Scharmer names the positions of four different sources of attention from which social action can emerge (Scharmer, 2007, p. 234). Each position combines a state of attention with a mode of communication. The four positions are;

1. The I-in-me: the I relates to the you from a point where the focus is on the I itself. The communication in this state would be a monologue or parallel monologues where communication aims at confirming existing knowledge and perceptions and avoiding relating to the other, who is simply an ear in the periphery of attention.
2. The I-in-it: the I directs the attention to the outer world. From a position of not necessarily wanting to change, the attention is directed towards seeing the world as it really is. The mode of communication is discussion and critical scrutiny.
3. The I-in-you: the I relates to the you with the intention of understanding beyond the boundaries of the preconceptions of the I. Emphatic listening, dialogue, and reflective inquiry characterise the communication of this position.
4. The I-in-now combines introspective self-awareness of the I with listening beyond the I and entering a collective field of emergence. It is listening to both the intention and preconceptions of the I and being part of a shared generative space. The mode of communication is *presencing* – a hard to define term, which we choose to name generative dialogue, partly for lack of a better expression and partly inspired by earlier writings of Scharmer and Kaüfer (2000).

Most of the teachers interviewed describe how they establish a dialogue with the students, and how their field of attention moves away from themselves towards the domain of ‘I-in-you’: “Creating this kind of attentiveness and closeness is not so simple. One needs to have both knowledge and the opportunity of training the skills involved in practicing this kind of dialogue”.

Above and beyond listening and dialogue is the ‘I-in-now’ position, which is a creative field of generative listening. The distance between teacher and student is dissolved, and a process of co-creation arises:

> The relationship with the students is more equal and more a co-creation process. As a teacher I have more knowledge that I contribute to the shared knowledge – where students also contribute. The knowledge I contribute and

> what the students bring is made into one collective pool of knowledge. It is a broader and more diverse perspective on the new knowledge that emerges between us. (Stavnskær, 2014)

It is neither clear nor important who contributes what in the dialogue, but something new arises among the participants and the learning process is mutual. "Being with students changes me." The teacher role in the generative field resembles McWilliams *meddler in the middle*.

The opposite teacher role is 'sage on the stage', where the students: "spent time guessing what the teacher wants to know like a quiz." 'Quizzing'. We interpret this as 'listening downloading' or 'projective listening', (Scharmer, 2007, pp. 275–276) and being in the position of the 'I-in-me' where the teacher only hears what students say insofar as it fits into the mental models that already exist in his or her own mind. The rest of what students say is more or less ignored.

A MATRIX

Looking at modes of attention AND intention in the context of teaching is highly relevant, as is the emphasis on communication. Taking steps towards understanding how co-creating knowledge is related to communication as well as roles and intention could then be done by combining the teacher typology outlined by McWilliam with the set of social fields described by Scharmer. The point of so doing would be to develop a hypothesis on how teacher position and communication are related, when it comes to identifying prerequisites for co-creation to take place in teaching. In a simple matrix we place communication and mode of attention on the y-axis and teacher roles on the x-axis, generating a model looking like this:

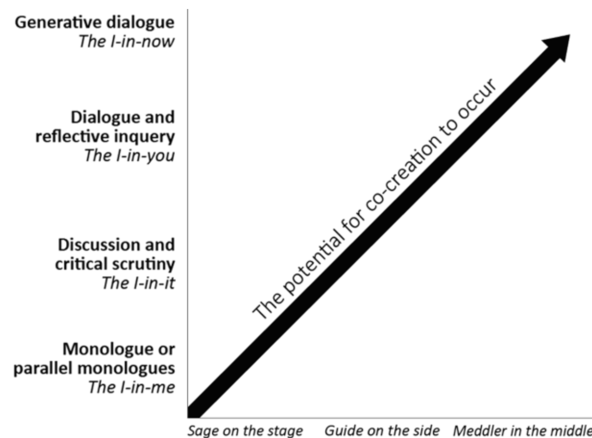

Figure 2.1. The co-creation matrix (Iversen & Stavnskær, 2016)

Drawing on both Scharmer and McWilliam and comparing their writings to the experiences of the teachers interviewed, it would be our hypothesis that the potential for co-creation to occur in teaching can be described as an outcome of communication and teacher position. Moving from the lower left corner to the upper right the potential increases. As *sage on the stage,* the teacher is not inclined to include the students in knowledge production. Communication will tend to be monological, since the teacher is regarded as the knowledge bearer. For the most part, the teacher lectures and the students listen. As the *guide on the side,* the teacher may join the students in a discussion or a critical scrutiny of the state of the world. Or (s)he could be the empathic listener and dialogue partner. As *meddler in the middle*, the description of teachers and students as co-directors and co-editors of their social world (McWilliam, 2008, p. 263) matches the coming-to-be of a collective field of emergence expressed as the I-in-now mode of attention. And generative dialogue, then, is the type of communication that represents the highest potential when it comes to co-creation in teaching. Generative dialogue – with teachers and students as co-directors and co-editors – calls for a change in the way knowledge production takes place in teaching, and in the design and framing of learning processes. Below we suggest a possible approach to reframing teaching and operating from basic co-creation principles.

FRAMING AND DESIGNING CO-CREATIVE LEARNING PROCESSES

Through years of personal experimenting with different types of participatory approaches in teaching, a progression or design-model emerged. It describes phases in a co-creation process customised to a teaching-learning environment. Its origin is higher education but it most likely has a broader relevance due to its relatively simple composition.

The design progression comprises five phases. Through all phases, teachers and students co-operate through generative dialogue with a shared goal of developing and carrying out curricular activities. Not as an extraordinary or extra-curricular activity, but as a basic methodological approach to designing and performing education. The five phases are as follows:

1. Framing/contextualising; defining the intention and understanding the field – which journey are we embarking on? The where and the why
2. Finding the question(s); what are the challenges of the field we are entering? The what
3. Co-designing micro-prototypes (of knowledge production); in which ways will we try to engage with the challenges? The how
4. Co-operative performance
5. Evaluating

Given a visual expression, the design progression will come out like this:

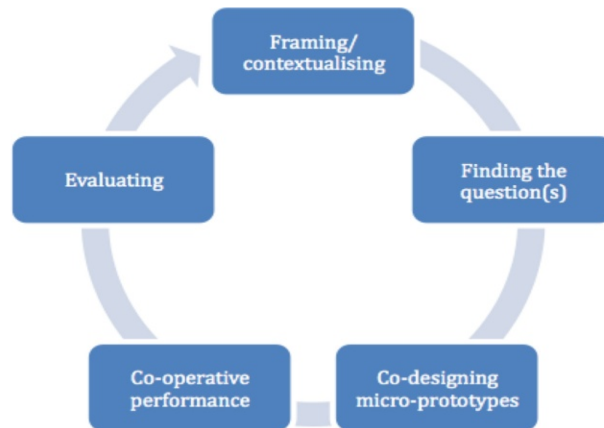

Figure 2.2. The co-creative learning process wheel

FRAMING/CONTEXTUALISING

Framing and contextualising is about clarifying both the where and the why. In what specific context are teachers and students situated? Which course, class, lecture or training session and so forth is the objective of the teaching situation? And what are the formal requirements, the learning goals and academic demands of the forthcoming process? All of these are potential subjects of discussion and shared reflection among teachers and students. A shared awareness of these basic conditions constitutes a platform from which direction can be taken for the design process. Also, goals and objectives of a more informal character can be integrated during this phase. For instance, both students and teachers may have personal aspirations and ambitions related to the process.

FINDING THE QUESTIONS

The next phase is focused on finding the question(s) and looking at the challenges of the field we are entering. In other words, defining the 'what' of the teaching.

Part of designing a learning process that facilitates co-creation is finding the questions or challenges that the students strive to solve. A challenge and questions where there are no pre-given or self-evident solutions or answers are more likely to facilitate co-creation and co-creative dialogue than *sage on the stage*-type processes.

These challenges and questions could be real-life projects. This means that in the preparation phase, either students or teachers, as part of preparing a specific project, investigate who it would be relevant to work with, contact them, and agree on what the project's character and goals are. This is to say that, for the teacher, there is a

didactical balancing act between academic demands and a real-life challenge. The point is that students, like the teacher, have to learn to balance the academic demands of their disciplines with the challenges.

Or it could be simply by challenging or questioning knowledge domains.

CO-DESIGNING MICRO-PROTOTYPES

The expression "prototype" – or "micro-prototype" – is used regarding the different potential solutions to the challenges established in phase one. In practice, these kinds of prototypes can vary, from suggestions, to solving actual problems formulated by external stakeholders and partners, to teaching design. The prototypes spring from non-linear, open space, improvisatory processes involving students and teachers as co-designers. Co-designing involves collective creativity and socio-epistemic practice. Students and teachers are co-developers of whatever designs and solutions emerge. There are no pre-defined answers.

There are points of similarity between this learning design and some of the factors identified by Teresa Amabile as encouraging creativity. Amabile concludes, among other things, that individuals must be offered a degree of autonomy if one hopes to encourage the development of intrinsic motivation: "Autonomy around process fosters creativity because giving people freedom in how they approach their work heightens their intrinsic motivation and sense of ownership" (Amabile, 2002, p. 82).

One of the teachers interviewed describes the transformation occurring in students when they encounter co-creative teaching design:

> We see students with a long history of discouraging experiences with education systems. They appear withdrawn and frustrated when they come to us, but we see that they gradually and quietly discover that they actually have a pool of competencies inside themselves. We see them straighten up, pull the hair back from their faces, see light come back into their eyes. What a transformation! It's one of the most meaningful things we experience as teachers, and it happens fairly often when you work in this way.

All in all, the interviews with teachers could indicate that the intention of dynamic flow in the design of the co-creative learning process between (1) learning goals and (2) challenges – between theory and practice – in some way has a potential for creating new solutions and new knowledge. Brown and Isaac's discussion of learning in the following passage could lend support to the potential of this co-creative way of designing the teaching:

> It's never enough just to tell people about some new insight. Rather, you have to get them to experience it in a way that evokes its power and possibility. Instead of pouring knowledge into people's heads, you need to help them grind a new set of sunglasses so they can see the world in a new way. (Brown & Isaacs, 2005, p.12)

This is not a new insight, as Ib Ravn points out: "For teaching to be effective and learning to take place, educators must realize that students are actively engaged in constructing their worlds […] They learn from engaging" (Ravn, 2007, p. 215). Ravn continues his point with reference to older learning theories by Dewey, Piaget and Vygotsky, which also emphasise that teachers often ignore the importance of context and engagement, and instead teach in a way that pacifies students. And, we could add, Carl Rogers in his groundbreaking book*, Freedom To Learn*, first published in 1969, introduces significant learning with a set of characteristics similar to the points made by Brown & Isaacs, and Ravn. Significant learning is self-initiated, has a quality of personal involvement, and is driven by a sense of meaning to the learner (Rogers, 1983, p. 20).

CO-OPERATIVE PERFORMANCE

The name of the fourth phase indicates that this is the phase of enacting the prototypes developed in phase three, be they teaching designs or prototypes related to challenges put by external partners Or a combination of both. Types of action can vary from carrying out courses, workshops, training programmes and so forth to presenting and/or carrying out prototypes in co-operation with external partners. The performance is co-operative in the sense that it progresses as a co-operative action driven by shared knowledge production. Steps are taken on a basis of generative dialogue and shared reflexion.

Integrating co-operative performance in teaching design facilitates action. Consequently it stimulates both teachers' and students' capacity for action. And at the same time – and more importantly – it stimulates the capacity for actually creating sustainable proto-types. They are, so to speak, tested by action.

The action perspective is identified by researcher Anne Kirketerp as initiative-taking didactics. (Kirketerp, 2010). Kirketerp explores different teaching designs that support entrepreneurial initiative, and develops the SKUB (English: PUSH) method, a method of integrative learning, which leads to changes in patterns of both thinking and acting in students:

> With regards to teaching entrepreneurship, it should be the norm that the greater part of teaching must be action-oriented. The methods that encourage initiative specially belong to the didactics of entrepreneurship. If one of the goals is to stimulate innovation competence generally, one of the means to that end is to push the students out into action. (Kirketerp, 2010, p. 258)

Teaching in this sense always involves practice alongside elements of reflexion and analysis. The students and teachers are, in other words, pushed to act. Kirketerp's point is supported by Brown and Duguid (1991). They argue that there is a huge difference between espoused practice and actual practice and that acquiring abstract knowledge about, for instance, co-creation will have little or no effect on the capacity

of co-creating. Consequently, teaching design aiming at developing co-creation skills in students must include co-creation practice.

EVALUATION

The last phase is evaluation. It consists of two parts. One part is the evaluation, done by the external partners, of practical real life proto-types. Criteria for this are the quality and the practical applicability of the proto-types in the context for which the prototypes are designed. The second part of the evaluation is an internal one with teachers and other students. In this part, both the quality of the teaching design and the correspondence between learning goals, academic demands and the final outcome of the entire process are evaluated.

From a teacher's perspective, there are specific challenges that arise with designing evaluation methods that can measure co-creative competencies. Co-creative knowledge production, in some ways, constitutes an opposition to strict academic norms. Standards for exams and evaluations for the most part stem from the latter. Evaluation, then, to some extent will risk reproducing academic standards far from the methodology in co-creative knowledge production. This remains a challenge to be taken into consideration in a future perspective.

CO-CREATIVE KNOWLEDGE PRODUCTION AND ITS FUTURE POTENTIAL

One of the aims of this chapter was to give some pointers towards preparing students for becoming 21st century knowledge workers, and preparing them for an unknown future. Another aim was to answer the question of what it takes to re-invent higher education and for teachers to become 21st century educators and designers of education characterised by a high degree of relevance to both society, and culture and the to the coming generations of students.

The answer suggested in this chapter is building significant parts of knowledge production and knowledge exchange *on co-creative generative dialogue*. The purpose of this would be to develop new types of knowledge and subsequently potential answers to the questions of our time. It would require breaking habits and changing modes of communication. Building education round the emerging future is no easy task. It is, however, a task to be taken on – and why not involve the students?

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