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Co-Creation in the educational field in Barcelona and its metropolitan area

A study for applying co-creation in the educational field in Catalonia

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ABSTRACT

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In some countries such as Finland, co-creation is applied to the educational field and is changing the relationship between educational and non-educational organizations providing different viewpoints and including the user in the creative process of the products. This study aims to see which are the benefits of co-creation in the educational field and how could it fit in the Barcelona metropolitan area context.

This study comes from the idea to make a step further in the collaboration between schools and organizations in Barcelona and its metropolitan area to co-create with each other. The purpose is to make a study of the viewpoint of teachers and people from a company not related to education to see what are their thoughts about the topic and how they think this collaboration would work. Also comparing this information with an expert from Finland to find a possible solution for Barcelona and its metropolitan area.

The research material used has been a questionnaire to teachers, a workshop to teachers, a questionnaire to an expert in co-creation in the educational field in Finland and a questionnaire to an employee in a company not related to the educational field in Barcelona and its metropolitan area.

After doing this research diverse viewpoints emerged from the different methodologies and also different evidences could be compared to the literature. This brings us to some concrete results according to the participants in the project answers.

One of the most important conclusions is that all of the participants agreed that co-creation would be useful in the educational field but the participants in Barcelona and its metropolitan area (teachers and employee) agreed that did not know how to organize it by themselves.

Keywords: Co-Creation, educational field, relationship, viewpoint, organization

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1 INTRODUCTION

Co-creation is a concept that is becoming a trend in the corporative field, at least in Barcelona and its metropolitan area. In some countries such as Finland, co-creation is also applied to the educational field and is changing the relationship between organizations. Providing different viewpoints and including the user in the creative process of the products.

The background of the topic comes from the idea that schools in Barcelona and its metropolitan area already collaborate with organizations and companies but there is not an organization such as the Helsinki Education Hub in Finland that organizes these relationships and guides them to co-create. That is why this project aims to get the viewpoints from different people who could be involved with co-creation in the educational field (teachers and employees in companies not related to the educational field) and compare it with the viewpoint of an expert in the topic from Finland.

The idea of this topic comes from a lecture in Helsinki about co-creation. The author had never heard about the topic before and she found this would be a step further in the relationship organizations and schools have nowadays in Barcelona and its metropolitan area. It was also surprising that when starting the research some information and courses were found about co-creation in the corporate field but almost anything related to education and anything in the way Helsinki does when working with different organizations to co-create.

That is why the following research questions came out: How to make schools and companies collaborate to design solutions together? How co-creation can be applied in the author's environment? Which are the advantages and disadvantages of co-creating? Is there a need for a concrete organization to work in it or can be organized by an organization or the city hall? Which will be the protocol when selecting a company to work with? Will there be a partners list? Do they have to be local? All of them will be answered in the discussion chapter.

This project is divided into theoretical, methodological and empirical parts. The theoretical part provides some information from relevant literature to understand the concept of co-creation and how it could be applied to education. This theoretical part is divided into co-creation, historical background, co-design and co-design and service design. With the theoretical framework, the aim was to have a vision from experts of what co-creation is, how does it work, how is this concept applied to education and which are the things to take into account when designing a co-creation project.

The empirical part had the main objective to collect different viewpoints from people who could be directly enrolled in a co-creation project in the education field. It included three different viewpoints. These viewpoints involved the perspectives of an expert, teachers and an outsider.

The methods used for this part looked for qualitative results as the main objective was to get feelings, thoughts and viewpoints from people who could take part in co-creation in the educational field and also from people who had a lot of information about the topic. The data has been collected through different methods. A workshop has been done for teachers, a questionnaire has been sent to teachers too and two interviews have been done. The first one is to an employee of a company not related to education and the second one is to an expert in co-creation from Finland.

An interview with an expert in co-creation has been done to get to know how co-creation projects related to education were organized in a country that is already working with them. The objective was to understand how this organization worked with the projects and how did they structure and guided the different co-creation projects. Also as getting some examples and viewpoints from organizations that already worked with this methodology.

An interview with an employee in a company not related to the education field was done to see also his viewpoint as he could also take part in co-creation projects. The objective of it was to see which was his knowledge about the topic and also which were his viewpoints, feelings and thoughts when thinking about working with co-creation with schools.

A workshop was done with teachers to get to know their viewpoints and needs related to the topic so they could take part in the different projects. In this part, the objective was to get to know their viewpoints and thoughts and also to see their reactions and feelings about the topic.

Finally, a questionnaire was also sent to teachers to get to know some more opinions. The questionnaire was sent to teachers from Catalonia, Valencia and the Balearic Islands from the ones thirteen answered. The objective of it was also to get to know the opinion of teachers of different ages working at different educational levels.

For the different methodologies, different data has been analysed aside from the answers. For the questionnaire, the data has been analysed by looking at the answers and their content but also the participants' age and the educational level they work were taken into account. For the workshop, behaviours, comments and the debate generated were taken into account and finally, for the interviews, the conduction of the conversation, the security when answering and the confidence about the topic were considered. To close with this introduction, the final parts of the thesis present the findings of the interviews, the questionnaire and the workshop and relate them with the literature in the theoretical part. In this chapter, some conclusions appear also as some similarities and differences between literature and research. Finally, the thesis discusses the process and the future possibilities.

2 THEORETICAL BACKGROUND

The purpose of this thesis is to find out about co-creation in the educational field. The concept of co-creation is so related to the concept of co-design and gets into the biggest topic of service design because, in all of them, the developed product has the objective to improve the quality of a social service when talking about the educational field. This is the main objective of service design too. Furthermore, co-creation works by joining people in different fields to create something as co-design also do when joining people in different fields to design something. That is why this chapter talks about these three concepts as they support each other.

2.1 Co-Creation

2.1.1 Definition

We refer to co-creation when we talk about any act where creativity is worked in a collective way (Sanders & Stappers 2008) where customers and suppliers collaborate in "the co-ideation, co-design and co-development of new products" activity (Tajvidi, Wang, Hajli & Love 2017). The factors impacting co-creation are characterized by the interactivity of customers. Reinforcing social support and relationship quality as discussed by the same authors. Next, these are described in more detail.

Social support theory refers to the social resources perceived or provided to persons by non-professionals in different contexts, both formal support groups and informal helping relationships. (Gottlieb & Bergen 2010, 512). Through this theory, the way social relationships influence individuals' emotions, behaviours and cognitions is explained. (Lakey & Cohen 2000). This theory has been analysed from a psychological, sociological and healthcare perspective. The psychological perspective refers to how people respond to "being cared for, being responded to and facilitated by people in their social group" (Cobb 1976; House 1981 cited in Tajvidi, Wang, Hajli & Love 2017). From the sociological perspective, social support can be considered emotional or informational. Emotional when messages provided involve emotional concerns as empathy, understanding or caring (Liang, Ho, Li & Turban 2011, 72). On the other hand, "informational support messages are provided as advices, helpful knowledge for solving problems or recommendations (Liang, Ho, Li & Turban 2011, 72). Relationship quality theory refers to the "intensity and tightness of a relationship" (Hennig-Thurau, Gwinner & Gremier 2002; Palmatier, Dant, Grewal & Evans 2006), and it is based on trust, satisfaction and commitment. "This relationship quality plays a crucial role in influencing a customer's intention".

Customer interactivity theory refers to the importance of interactivity in social commerce. Interactivity is defined as the participation of customers in a social networking environment by generating and sharing information to reach a consensus. (Stever 1992 cited in Tajvidi, Wang, Hajli & Love 2017). When co-creating we look for two kinds of interaction: "consumer-consumer interaction and consumer-seller interaction". Consumer–consumer interaction refers to the way users can exchange information and share interests (Lee 2005, 167). This provides consumers with more information and perspective about the product. In this way, they can also choose which firms they want to have a relationship with (Prahalad & Ramaswamy 2004). For consumer–seller interaction we understand the relationship in terms of product quality and services. Both of them have the same goal in their relationship. They both want to satisfy end consumers. In this way, value is created from both the consumer and the firm as they both look for the same objective as said before.

In co-creation, dialogue, "access, risk-benefits and transparency" (Dart cited in Prahalad & Ramaswamy 2004) become essential for the consumer and the firm / seller interaction (Prahalad & Ramaswamy 2004). With it, the view of the Markets is changed. The Markets become a forum where consumers and firms interact through consumer communities and networks of firms.

Also, co-creation improves efficiency "because users' input can partly substitute employees' input" as consumers take part in the product design and creation. It also facilitates improvements and reduces the risks of failure (Steen, Manschot & De Koning 2011).

Figure 1 illustrates how the different consumer interactivities explained above are related to the intention to Co-Create. As can be seen in the figure, from both consumer-consumer and consumer-sellers interactivity participants can work on "social support creating relationship quality which develops in thintention to co-create"

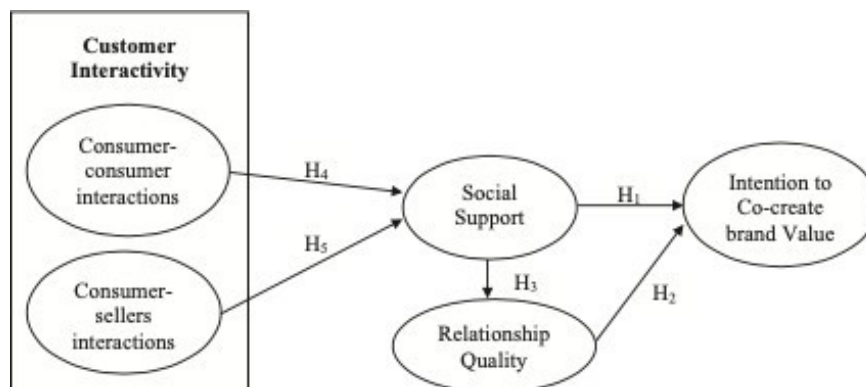


Figure 1: Consumer interactivity. (Tajvidi, Wang, Hajli & Love 2017).

2.1.2 Roles and Examples

In co-creation, customers become active partners working with suppliers instead of being a passive audience as they used to be. (Grönroos 1997; Payne & Al. 2009; Prahalad & Ramaswamy 2000, 2004; Vargo & Lusch 2004). This makes a change in the vision it used to be by changing "from a goods dominant to a customer-centric logic". (Prahalad & Ramaswamy 2000). Firms should look for the maintenance of users for the long-term by offering more activities instead of focusing on the products. (Tajvidi, Wang, Hajli & Love 2017).

There are examples of how companies have supported a more active role by consumers. One of them is LEGO Group. Their online brand community invites "users to engage in dialogue" with each other and allows them to organize celebrations to present new products features from the information shared between users. (Hatch & Schultz 2010).

Steen, Manschot & De Koning (2011) talk about an experience of co-designing "with children to generate ideas for new telecom services" in order to innovate and stimulate creativity in the business creation department. The commissioner of this project realized that children are more capable to think out-of-the-box than adults working on telecom for years. (Druin 2002 cited in Steen, Marischot & De Koning (2011)). The intended benefits of the project were: the generation of "innovative ideas as an input for new business creation and to improve company's employees' creativity" through children.

For this experience in the telecom company, different workshops were done, and an instructor explained children a story. After the story, they had to join the storytelling and come up with ideas for inventions people in the stories could use. They first did drawings of their ideas and then created models by using different materials. TV show style presentation was done at the end of the workshop for children to present their inventions. In this project some ideas "as a picture frame for video communication, a device for jointly making music while from different locations", a "wearable language translator or a device to touch things to another location" came out.

2.2 Co-Creation historical background

Over the past six decades, there has been a US phenomenon called "user as a subject" where manufacturing companies have taken users more into account by basing their products on their needs. Furthermore, in northern Europe countries, the users were the ones starting to participate actively in the companies and they were called "users as a partner". Now, the two approaches are beginning to influence one another as cited by Sanders & Stappers (2008).

Nearly fifty years ago, the concept of participatory design was established as "the practice of collective creativity in design". In Norway, Denmark and Sweden, the Collective Resource Approach was established in the 1970s joining designers and workers who would notice the change in their workplace. "Engaging workers in the development of new Systems for the workplace" to increase the value of industrial production as discussed in Sanders & Stappers's (2008) article. The later view on participatory design was based on Dewey's work as part of the American Pragmatists' work which saw "design as a way of developing knowledge through cycles of action and reflection" (Newell & Simon 1972; Schön 1983).

The new view of the design was quite different from the traditional one. Traditionally, customers and companies relation was not seen as a source of value creation (Normann & Ramirez 1994; Wikstrom 1996) and the communications went always from the firm to the consumer (Prahalad & Ramaswamy 2004). The new view, however, engaged consumers and customers in the design process.

Co-creativity requires people to believe that everyone is creative. This brings us to the idea that co-designing requires the entire team's creative initiative to break the existing power structures, and it also requires giving importance to the "potential customers, consumers or end-users". This makes consumerism which is based in happiness increasing according to the purchase and consume of material goods antithetical to participatory thinking according to Sanders & Stappers (2008). Sanders (2006) it is said that increasingly, people want to look for "the balance between passive consumption" and actively choose the kind of "more creative experiences they want to engage in and how".

As discussed in the same article, the changing landscape of human-centred design research has influenced the design practice. In the 1970s, an approach called user-centred design began and got widespread by the 1990s, proving "to be the most useful in the design and development of consumer products" (Sanders 1992). Despite it, now, we are facing with more complexity and challenges that cannot be covered by user-centred design as the design is taught for experiences connected people will have in the future much different than ten years ago. Nowadays, with the growth of social media, citizens communicate their experiences more actively which helps the development "of citizen-led advocacy and service design" (Burkett).

2.3 Co-Design

2.3.1 Definition

According to Sanders & Stappers (2008), "co-design refers to the collective creativity of designers and people not trained in design working together through the whole design process". This means that the position of expert of his/her experience is given to someone who is not used to working on a design process (Sleeswijk Visser & Al. 2005) supported by researchers who provide them tools for ideation because of the importance of design skills in the tool's development. The designer and the researcher should be the same person because this figure is still critical to give form to the ideas. Taking this into account, "businesses are shifting from goods-dominant to a service-dominant logic". (Pirinen 2016).

"Design is approached as a distinct way of thinking which has its own logic", methods, tools and a distinctive knowledge production activity (Rowe 1987; Brown 2008; Lawson 1980; Dorst 2015, Jones 1970; Sanoff 1999; Bratteteig, Bødker, Dittrich, Mogensen & Simonsen 2013; Cross 2006 cited in Zamenopoulos et Alexiou 2018). As also said by Buchanan (2001), Dorst & Cross (2001) & Krippendorf (2006), different researchers emphasize the differences of the design thinking and practice characteristics as the capacity of "conceiving, planning, making, framing problems and solutions or sense-making".

In the following figure, we can see a representation of a descriptive illustration of two creative solutions. The one on the left displays the roles of participants in the classical design process. The situation on the right is different and it presents the view on the designing process under the co-design method. In other words, the figure depicts the Classical design vs. co-design in terms of working methods, which potentiate creativity, sharing knowledge and creating together.

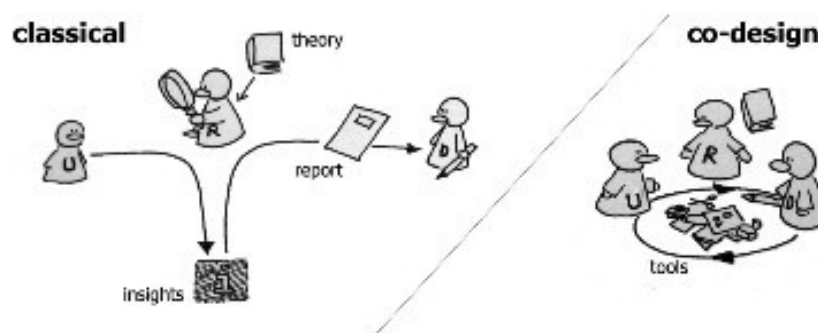


Figure 2: On the left are the "classical roles of users, researchers and designers". On the right is the co-designing process. (Sanders & Stappers, 2008).

When co-designing we face that through sharing and understanding of each others' experiences as well as generating ideas, framing, proposing etc. people become more collaborative. For this collaboration, there is also the need to have access to a space that ensures that all stakeholders can contribute on an equal basis. This helps participants to co-design situations they would like to participate in in the future (Sanders, Westerlund 2011).

Co-designing is also a mechanism for empowering people as they develop their ideas, skills and knowledge to respond to a situation to take control over their futures (Zamenopoulos & Alexiou 2018). As said by the same authors, co-designing "creates stronger and more meaningful connections among people and their creations". As discussed, in (Zamenopoulos & Alexiou 2018), there are "different types of co-designing depending on how strong they focus on networking practices and shared goals. We talk about collaborative and cooperative co-design when "the emphasis is placed on working together" and finding and working on common values and goals. We talk about collective and connective co-design when "there is a tendency to work independently" and "there is a strong emphasis on individual goals and values" (Figure 3).

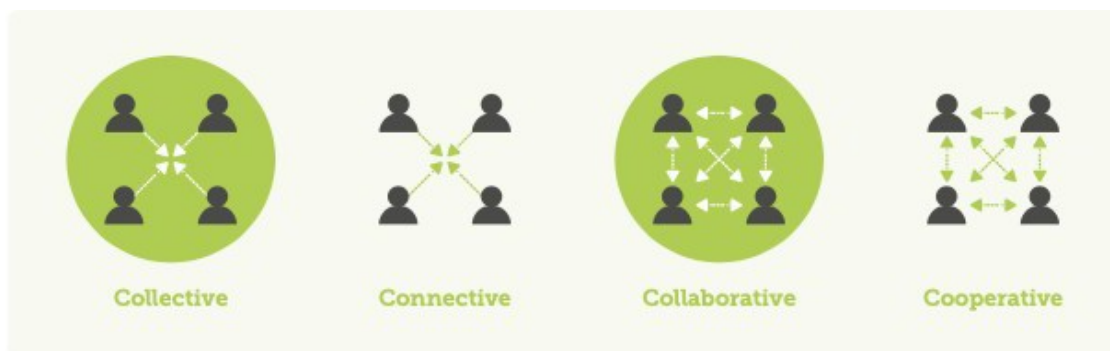


Figure 3: Different types of co-designing. (Zamenopoulos & Alexiou 2018).

When it comes to bringing co-design to education, Roschelle & Penuel (2006), state that "co-design is a highly-facilitated, team-based process where teachers, researchers and developers work together in defined roles to design an educational innovation, realize the design in one or more prototypes, and evaluate each prototype's significance for addressing a concrete educational need." For it, the authors set seven characteristic features do define co-design as a method:

1. "Co-design takes on a concrete, tangible innovation challenge".
2. "The process begins by taking stock of current practice and classroom contexts".
3. "Co-design has a flexible target".
4. "Co-design needs a bootstrapping event or process to catalyse the team's work".

5. "Co-design is timed to fit the school cycle".
6. "Strong facilitation with well-defined roles is a hallmark of co-design".
7. "There is central accountability for the quality of the products of co-design".

In her article, Buckett talks about "the potential of co-design for civil society" organizations, and she collects the following five features needed for Co-Design:

1. Co-design is "person-centred".
2. Co-design "starts with a desired end".
3. Co-design "is focused on developing practical, real-world solutions".
4. Co-design "makes ideas, experiences and possibilities visible and tangible".
5. "Co-design processes are inclusive and draw on many perspectives, people, experts, disciplines and sectors".

As can be seen in both lists, with co-designing we will work on something concrete and tangible solutions adapted to a flexible target and which includes different perspectives. Also, it needs to have a scheduled end and know who will be the product user as he or she is also participating in the co-creation process.

2.3.2 Creativity levels and roles in co-design

There are four creativity levels "seen in people's lives: doing, adapting, making and creating". These levels are lived simultaneously in different parts of their daily lives and vary according to the amount of interest and expertise needed (Sanders & Stappers 2008) as we can see in the following table:

Table 1: Four levels of creativity. (Sanders & Stappers 2008).

Level	Type	Motivated by	Purpose	Example
4	Creating	Inspiration	'express my creativity'	Dreaming up a new dish
3	Making	Asserting my ability or skill	'make with my own hands'	Cooking with a recipe
2	Adapting	Appropriation	'make things my own'	Embellishing a ready-made meal
1	Doing	Productivity	'getting something done'	Organising my herbs and spices

Depending on the level we are we will be more valid for certain activities, for example, if we are on level 3, we will be inclined to make things with our own hands. People can become a co-designer if they have a high level of passion and knowledge as written by (Sanders & Stappers 2008).

The researcher used to be the "translator between users and the designing". In co-design, the researcher becomes a facilitator to the users. This means that "researchers need to learn how to lead, guide, provide scaffolds and offer a clean slate". (Sanders & Stappers 2008). It is important to take into account that designers provide the expertise the other participants do not have, that is why they should play a role on the co-designing teams. Despite it, in the future, "co-designing will be a collaboration between stakeholders" with professionals having both design and research skills as cited in (Sanders & Stappers 2008).

2.3.3 Co-design in education

Co-design requires understanding the "particular learning contexts which make it similar to the focus in user-centred" (Carr 1997) and scenario-based design processes (Carroll 1995 cited in Roschelle & Penuel 2006). Co-design also is closed to the "researchers who have worked for learner-centred design" (Soloway & Al. 1994) and "emphasizes the need to develop tools that motivate students in a variety of contexts". Despite it, the notions teachers' have about project goals and the curriculum differ from the vision developers have. (Shrader & Al. 2001 cited in Roschelle, Penuel & Schechtman 2006). "Teachers often see researchers' solutions as too theoretical and not practical for real classrooms". On the other hand, "researchers often see teachers' limited content knowledge as a barrier" to contributing to design efforts. (Brown & Edelson 1998 cited in Roschelle, Penuel & Schechtman 2006).

Centred in the education field, Roschelle, Penuel & Schechtman (2006) define co-design as a process where teachers and designers work together in defined roles taking into account that prototypes need to be done, evaluated and addressed to a concrete educational field to design an educational innovation. This is related to the description Reiser & Al. (2000); Shrader & Al. (2001) make when talking about co-design. They say that "co-design relies on teachers' design on educational innovations", which include a wide range of curriculum materials to help teachers improve instruction. Shepard (1997).

When working on a co-design project, three phases need to be taken into account (Roschelle, Penuel & Schechtman 2006). These are "collecting requirements, rapid prototyping and software solidification". The first of these, collecting requirements, is about collecting data, giving opinions, analysing the needs and selecting the tools that could help. The second refers to creating and trying a rapid prototype. And the last phase is to integrate it into the lessons and discuss how it works.

2.4 Co-design and service design

As discussed by Sanders & Stappers (2008), "service design includes visual communication design, information design and interaction design". As there are some emerging design disciplines, "transformation design is based on user-centred methods combined with participatory practices. "We are moving from the designing of products to the designing of peoples' purposes".

Secondly, the companies get closer to customers' needs. And thirdly, the projects benefit the participating organizations by cooperation with people and using innovative practices.

When working in co-design in services projects, Pirinen (2016), refer to what can be considered a barrier or an enabler in a service-design project. They can be divided into five different types. These can be named as collaboration, organization, process, implementation and method types of barrier-enabler couples (see Table 2)

Table 2. Barrier – enabler couples (based on Pirinen 2016).

Types	Barrier-enabler couples
Collaboration	1. "Prejudices and misconceptions – Trust through making together".
	2. "Differences in language and culture – Credible, responsible communication"
	3. "Conflicting goals and expectations – Search for mutual value"
	4. "Complexity of organizations, processes and real-life contexts – In-depth understanding of the nature and characteristics of the target system".
	5. "Systemic resistance and professional power hierarchies – An informal arena for different expertise's to come together as equal".
	6. "Lack of ownership and leadership – Taking responsibility for Co-Design".
Organization	7. "Lack of organizational justification and commitment to Co-Design – Support management, connection to strategy and everyday goals".
	8. "Lack of time, resources and funding for doing anything out of the ordinary – Allocation of time, resources and funding for Co-Design".
	9. "Lack of personal motivation and incentive to participate – Meaningful personal role in Co-Design and benefit to one's own work".

Processes	10. "Misfocused Co-Design – Finding where Co-Design truly adds value".
	11. "Disconnection from other development activities – Integration of Co-Design to the core".
	12. "Asynchrony of the development processes – Coordination and timing of Co-Design".
	13. "One – off, short lived development spurts – Continuity beyond singular projects".

Implementation	14. "Poor ability to utilize the outcomes – Skilful translation to the outcomes".
	15. "Reliance of the implementation on a few insiders – Becoming an agent of Co-Design".
	16. "Systemic barriers to dissemination – Pilots as seeds of broader transformation".
Method	17. "Superimposed methods with weak connection to implementation – Integration of Co-Design methods into project planning".
	18. "Poor leverage of the methods, unconvincing outcomes – Effective, well-focused and well-prepared methods, facilitation and reporting".
	19. "Rigid, strenuous methods – Open and flexible methods".
	20. "Reliance of the methods on an external facilitator – Portable method toolkits and facilitator training".

In addition to describing barriers and enablers, Pirinen (2016) gives ideas about co-design. Firstly, he says that communication is key for creating "trust, facilitation of collaboration and making things with others" in co-design projects. Making others feel they work with equals can support this idea. For it, designer-facilitators have to command the process confidently and know their users. Secondly, co-design commitment should be enabled by management. On the other hand, "employees should be helped in finding a meaningful role to commit to the project". Thirdly, organizations should look for projects that add value to ensure the continuity of development. Fourth, the language used for service co-design projects to succeed "needs to be translated to the needs of the client language". Lastly, service-design methods need to be integrated into the project planning phase.

Co-design in service design products provides multiple benefits for both customers and organizations. These can be "benefits for the project, for the services customers" / users, or the organization. They are collected in the table below.

Benefits for the service design project	Benefits for the service's customers or users	Benefits for the organization(s)
Improving idea generation:		
<ul style="list-style-type: none"> • Better ideas, e.g. from customers or users^{M; Cases A and B}, with high originality and user value^{KMM} • Better knowledge about customers' or users' needs^{R&S; M}, e.g. changing existing views or validating ideas or concepts^{Case A} • Better idea generation, e.g. by bringing together customers, users and employees^{S;C&L; P&H; M; R&S} 		<ul style="list-style-type: none"> • Improved creativity^{M; R&S; Case B} • Improved focus on customers or users^B and, e.g. better dissemination of findings about customers' or users' needs^{Case A} • Better cooperation between different people or organizations, and across disciplines^{B; M; Case C}
Improving the service:		
<ul style="list-style-type: none"> • Higher quality of service definition^{K; Case C} • More successful innovations, e.g. reduced product failure risk^H 	<ul style="list-style-type: none"> • Better fit between service and customers' or users' needs, and better service experience^{K; H; Case A} • Higher quality of service^{K; R&S; Case C} • More differentiated service^A 	
Improving project management:		
<ul style="list-style-type: none"> • Better decision making, e.g. quality and speed^{R&S} • Lower development costs^{R&S} • Reduced development time or time-to-market^{A; H; R&S} • Continuous improvements^H 		
Improving longer-term effects:		
	<ul style="list-style-type: none"> • Higher satisfaction of customers or users^{K; R&S} • Higher loyalty of customers or users^{R&S} • Educating users^A 	<ul style="list-style-type: none"> • More successful innovations, e.g. rapid diffusion^A • Improved innovation practices, processes and capabilities^{B; R&S} • More support and enthusiasm for innovation and change^B • Better relations between service provider and customers^{A; H} • Better public relations^A

Table 3: "Benefits of co-design in service design projects" (Steen, Manschot & Koning, 2011)

To conclude with the theoretical framework, as we have seen above, the idea of working together according to Steen, Manschot & Koning (2011) co-design is beneficial for both organizations and users and it helps the product to fit better to users' needs. Through these methodologies relationships between people are also improved which brings us to a collective learning experience that allows different experts to provide their viewpoints.

3 METHODOLOGIES

The empirical part included three different viewpoints. These viewpoints involved the perspectives of an expert, teachers and an outsider working in a company not related to education.

Both teachers and the employee work in the Barcelona surroundings (some teachers in Valencia and the Balearic Islands) but taking into account that the educational system is almost the same.

This is qualitative research as the objective is what people from different fields think about co-creation. That is why methodologies such as interviews were used because we wanted to get concrete answers and viewpoints about how co-creation was seen between different possible users.

For this methodological part, different data has been collected to get different opinions. The data will be divided into three as three different methodologies have been used. The methods included conducting interviews, a workshop, and a survey in the form of a questionnaire.

The first methodology used is the interview. These interviews are semi-structured, which is defined as a "data collection method that involves asking open-questions to participants to explore" their response and the topic of interest as described by Delve. Two interviews have been done; the first one is with an expert in the co-creation field in Finland. The interviewee already uses co-creation. The second interviewee is a worker of a company not related to education in Spain. The idea is to get his viewpoint when talking about co-creation in education. The questions were designed in a way the interviewee could provide as much information as needed as they had an open-ending. (For questions see Appendices 1 and 3). The questions came from the reflection of the literature and the viewpoint of how things work in Barcelona. Another thing to take into account was that both interviewees were asked the same base questions. In this way, it was easier to compare their viewpoints on the topic. The interviews were conducted in the months of March and May and had different durations. The interview with the expert in co-creation was online and lasted for about an hour. The one done to the employee of a company not related to education was done face-to-face and it lasted about ten minutes because of the relationship he had with the topic.

When doing an interview, the main objective is to let the respondent express his subjective feelings as spontaneously as possible (Cohen, Manion & Morrison 2018). To that, Moser & Kalton (1997, 127) add that respondents should be encouraged to talk about the subject and to be free to guide the interview in a prefigured framework. In this study case, some questions were previously designed but some questions were designed as the interviewee was explaining his viewpoint.

The second methodology used is a workshop realized to a group of early childhood and primary education teachers to get their viewpoint when talking about co-creation in education and also get to know their needs. The workshop lasted about 30 minutes and it was organized in different parts. The first part was an explanation of what co-creation is. This explanation was done through a video that explained the story of a shepherd who had problems with a wolf because it was eating the shepherd's sheep. In the beginning, the shepherd acted with his knowledge but the wolf was still acting. After some time, the shepherd decides to organize a meeting with the sheep and other shepherds and together they find a possible solution. When they try it, the wolf gets scared and goes away.

After the video, two questions were asked to the group of teachers taking part in the workshop: Do you think co-creation is useful in education? Could you give examples where do you think it can be useful?

After it, a presentation was done to them. In this presentation, they got information about how co-creation worked in education and affected the different actors (companies, teachers and students). This information was taken from the literature and the interview with the expert in co-creation in Finland. After this explanation, an example provided by the expert was shown to them. Finally, they had to answer the question: Do you have any ideas or needs that could be covered with co-creation in education? Which ones?

Participants answered all the questions in individual post-its they stuck on a canvas. In this way, each one of them gave her feedback.

It was so interesting that after the activities, participants started a debate about how co-creation could work in education and what were their viewpoints about the topic.

All the workshop material is collected in Appendix 4.

In workshops, the information comes from the interaction within the group (Morgan 1988, 9). Workshops take advantage of the collective rather than the individual views. In this way, "it is from the interaction of the group that the data emerge". As said before, it was so interesting that after doing their reflection, a debate came out and some collective views appeared which were also taken into account.

The third methodology used is a questionnaire sent to early childhood, primary and secondary education teachers to get to know their viewpoint when talking about co-creation in education. One only kind of questionnaire was sent through different teachers' groups in a social network platform. The questions were based on which knowledge teachers had about co-creation and which are their beliefs relating to how useful and viable it is in the educational field. Also, in which kind of situations do they think co-creation is useful making them reflect if there has been any situation where they consider co-creation would have had a great paper in their working life. They also had to talk about the advantages and disadvantages they thought co-creation could have and think about

possible examples of co-creation in the educational field. For this questionnaire, thirteen responses were received. The questions can be seen in Appendix 5.

According to Cohen, Manion & Morrison (2018), questions need to be directly presented, comprehensive, "concrete, specific, unambiguous and able to be answered". This ensures that respondents know the answer. It also needs to be taken into account that the effort to answer is not too great and that recollection and memory are reliable. For it, the questions in the questionnaire were designed in a way that participants only had to think about a topic that was previously presented and reflect and relate it to their own experience. Ensuring also short answers and making the reflection as easy as possible.

There is also the need to take into account that the question types fit a purpose (Champagne 2014 cited in Cohen, L., Manion, L., & Morrison, K. 2018), focused, concrete and that allows them to be measured, avoiding the "questions to which the researcher already knows the answer". That is why the main point of the questionnaire was to get participants' viewpoints and experiences instead of looking for concrete answers.

The different material was analysed in the following way: Both interviews have been analysed according to the answers they provided to the question and the content in them but also concerning the attitude the respondents had in front of the question and how did they go through the interview. Taking into account the length of the answers, how aware they were of the topic and how confident they felt with the interview.

For the workshop, the answers given were analysed to see which are their viewpoints and feelings about the topic but also the attitude they had when doing the workshop as it also showed how motivating the topic was for them and which is their position when talking about the topic.

For the questionnaire, different criteria have been taken into account. First, the age of the participants and the educational level they work in has been analysed to guarantee that there is an equilibrium in the answers. Also, the different answers have been analysed by compiling their opinions and viewpoints on the topic, getting information in this way about which was their knowledge about the topic and which are their feelings and thoughts when talking about it.

4 FINDINGS AND CONCLUSIONS

This chapter includes an analysis of each of the methodologies. In it, there is an explanation of which was the objective of the activity, how was it organized and which is the result obtained from there. Also, as the impressions and feelings while doing the activities.

4.1 Interview 1: Expert at co-creation

The first interview was done with an expert from the Helsinki Education Hub. The objective of this interview was to get to know how co-creation worked in Finland as it is a topic that works in this country since at least five years ago. The interview questions are collected in Appendix 1 and the material provided by the respondent is in Appendix 2.

The interview questions went through how co-creation is organized, which are the resources they have, which is the role of the person in this position, how schools and companies get the projects and how they feel about it. More questions than the ones answered were planned but as explained in the methodology, the main objective was to let the respondent express her subjective feelings as spontaneously as possible, to talk about the subject and to be free to guide the interview. This means that despite more questions being designed, they got answered as the conversation went on and even more questions appeared.

After making the interview, the summary and conclusion taken are that the way they work with co-creation in the education field is through a project organized by the city of Helsinki and supported by a European fund. The interviewee works on a project organized by the city of Helsinki. The project began from the wondering of how cities can collaborate when developing learning environments. Also, in the beginning, it was difficult for companies to get users' needs and they tested their products with people "illegally". This project provides an easy way for companies to collaborate with teachers and learners.

They work through different modules to get adapted to the different needs. The project is also organized so that different people work in different fields of the project. The common denominator is the Helsinki education hub which is organized by the project.

Both schools and companies can propose projects and they collaborate in office time. The projects have a prefixed duration and if after the project they want to continue with the collaboration they can do it but there is no anymore, collaboration of the Helsinki education hub.

After this interview, it is clear that the Helsinki education hub has a very well-organized program to connect schools with organizations to co-create. The experiences provided prove that it is a system that works and has real benefits for society and both the participants through co-creation.

4.2 Interview 2: Person from outside the educational field

The second interview was done with an employee of a telecommunications company. This interview aimed to know the point of view of someone working in a company that is not related to education. In this way, we could get a view on co-creation outside the field of education and also of someone in a company that maybe could take part in a co-creation in education project in the future. The interview questions are collected in Appendix 3.

In the interview the questions were organized through his knowledge about the topic, how is the collaboration of his company with others if it exists, which was his viewpoint on the co-creation topic and if he thought it could be applied to education. The questions were also about how these co-creation projects could be organized and how could it benefit the society.

At the beginning of the interview, he did not know what co-creation was. Then he watched a video about co-creation. The same video was also shown in the workshop. Even after watching the video, the concept was not very clear to him.

The interviewee is an employee of a telecommunications company. According to the interviewee, the company collaborates with other organizations and people because his company provides other organizations and people with tools which can be used for communication. These tools include for example access to the internet and phone network.

When talking about schools he confuses co-creation with service offers. However, when he was made to reflect, he said that he thinks that managers from his company should get in contact with school principals and look for ways to co-create.

He also says co-creation could be beneficial for his company because everything done in a group to look for a good solution can be beneficial for the company. According to him, the one in charge of these kinds of projects should be the communication department. However, when answering another question, he says the one in charge of the projects should be a department working with other organizations in charge to organize this kind of project. When it comes to the products to be co-created, he says that the products created could be related to the telecommunications field. He also states that if the product is beneficial for both organizations it will maybe also be beneficial for the society.

To conclude with this interview, I think that as he has never lived an experience like this, he does not have a very clear opinion about it. Despite it, he realizes that it can be a good methodology as creating collective knowledge is usually beneficial for organizations and society.

4.3 Workshop with teachers

A workshop for teachers was organized to get different opinions at the same time and to get feedback from people who would be directly working with co-creation if it was applied in the education field. Also, to have feedback from them about the topic and how could it be organized. The workshop material is collected in Appendix 4.

In the beginning, a video about the co-creation definition was shown to the teachers participating in the workshop. It illustrated what co-creation is for them to get a first definition of the topic but taking also into account that the topic is not related to education at all. In this way, there were no spoilers about how it would work in the education field. The same video was shown to the second interviewee. The video explained a story as if it was a tale about a shepherd who had a problem with his sheep because every night a wolf ate one of them. Then, he acted with the resources he got at the university and put the sheep in a fence but it did not work. The day after, a sheep showed the statistics to the shepherd and they realized something had to be done. They organized a meeting with sheep and shepherds of the zone and they looked for a solution together.

After the video, the participants were asked how did they think co-creation was useful for education and they were also asked about some possible examples. Looking at the results, it seems that some of them did not understand what co-creation was as they thought about it as a collaboration and taking into account different points of view but co-creation goes further than this. Despite it, some seemed to understand the essential idea of co-creation as they talked about something that will work with co-creation because in co-creation there can be a need for the participation of other companies/users who are not related to our school.

The participants were next explained the benefits of co-creation in the educational field and showed an example of an experience in Finland provided by the person in interview 1 to make them realize co-creation is possible and very useful. After this explanation, they had to respond to the statement:

Ideas and needs to be covered with Co-Creation. The ideas given were the following: Spaces that cover real needs, formation and assessment to teachers, creation of projects and activities, support and accompaniment to children, youngsters, families and teachers to improve the diversity attention, mental health and reduce the scholar assessment. The creation of better-adapted materials to the learning situations, educational innovation, more real individualized attention and more complete projects for the diversity of visions. Innovation in classroom materials and the contents in other to make them more significant for students. Finally, teachers to strengthen their talents.

Based on the responses, they seemed to have understood better what co-creation is and how it can help students, teachers and companies. This was the main objective of this task. Also, after doing the workshop they started a

little debate about which should be the companies that work together with schools. They reached the conclusion that should be mainly public organizations which co-create with schools because of the repercussion these projects can have in politics. They also thought this because working with public organizations makes the network bigger because more schools and organizations can be connected than if we just work with private organizations.

The conclusion that can be taken from this workshop is that people realize co-creation is so beneficial in the educational field but they are afraid of starting to work with it especially if they do not know how the projects are organized and the amount of work it will suppose. Despite it, if the organization is clear and provides security to the participants, they would be into it.

4.4 Questionnaire to teachers

The questionnaire was sent to teachers from early childhood education, primary education, secondary education and baccalaureate. The questions in the questionnaire can be found in Appendix 5.

This questionnaire aimed to see which vision teachers had about the topic of co-creation and how useful did they think it can be. Taking into account that the questionnaire was sent to teachers from Catalonia (mainly), Balearic Islands and Valencia which is the target group for the project as there are no organizations which would work using co-creation in the education field as the Helsinki education hub does.

The form was sent to different groups on social media where lots of participants are. Of them, thirteen answered the questionnaire. It is also worth noticing that not all thirteen respondents answered all the questions. This could indicate that they do not know much about the topic.

However, in the form there is a balance of the respondents' ages, having four participants between twenty-one and thirty years old, three participants between thirty and forty years old, two participants between forty and fifty years old and four more participants over fifty years old. As we can see above, the respondents were evenly distributed in terms of age. In addition, they worked in the field of early childhood (four respondents), primary education (four respondents) as well as secondary education and baccalaureate (six respondents). Thus, they were fairly evenly distributed when it comes to their workplaces. Still, nobody worked at a university.

At the beginning of the questionnaire, there was a little definition of what co-creation is and it appears most of them confused it with collaboration.

As seen in the answers, almost half of the participants knew what co-creation was before filling out the questionnaire. Despite it, they may have confused co-creation with collaboration as said before according to further answers. What is clear and so nice about the project is that all of them think co-creation is able and useful

for education or some of them think they do not know but none of them think it is not useful or able.

When asked about the situation's co-creation could be useful, there were various suggestions. These included providing practices to students, making the learning more significant, working on aspects of the society students have an interest in, at any time the school is connected with other organizations and designing educational games.

When asked about situations where support from experts in other fields would have provided a more comfortable situation, there are also various suggestions. These include reaching some special needs students' behaviours, which is more enriching for students as they get a more global vision, in situations with conflicts where the teacher does not know how to act with the student, applying some of the school projects into the reality, to give support when there are educational changes and to give support in certain topics as teachers are not experts in all the fields.

When asked about the advantages co-creation can have in the educational field, there are various suggestions. These include that the teacher is not the centre and cannot reach all students, to allow students to be out of their comfort zone, to provide more realistic solutions as it gives a more holistic viewpoint of society and the challenge, to prepare and help students to get better adapted to society when they grow up, to increase the quality of the teaching teachers offer, to create more significant learning closer to students' daily life and to motivate them and to get to know other professions.

When asked about the disadvantages co-creation can have in the educational field, there are various suggestions too. These include that some people do not want to work and all the project has to be done by a little group, to get out of the educational objectives, the need of more time for organization, the difficulty to get coordinated, that there is maybe not the interest from organizations not related with the educational field to collaborate, that it is a so slowly process and teachers do not have time, to try to fix this co-creation inside the school time and it adds more work to students and teachers.

When asked about examples where co-creation can be useful in the educational field, there are various suggestions. These include giving variety in the contents and how we teach at school, in research, artistic, technological and social projects and creating projects that have a real impact on society.

4.5 In conclusion

This chapter includes a comparison between the findings with the literature, to detect common points and also to see some differences between what has been found and what has been written by experts. Also, some outcomes of the project will be reflected in this chapter, as a table including co-creation enablers to

summarize the previous information.

In conclusion, everyone agreed that co-creation would be an interesting tool in the educational field but both teachers and the employee agreed that they did not know how to organize it but that for sure it needed a good organization inside the school time. In this chapter, some proposals to fix this idea will be presented.

4.6. Comparing the findings with the literature

In this chapter, there is an analysis of a comparison between how the different concepts discussed in the literature have been seen by participants in the research. Also, which are the roles that could be seen in the practice to get to some conclusions when putting findings and literature together.

Starting from the very beginning, the definition of co-creation presented in the theoretical framework states that we refer to co-creation when we talk about any "act of collective creativity" (Sanders & Stappers 2008) where customers and suppliers collaborate "in the co-ideation, co-design and co-development of new products activity" (Tajvidi, Wang, Hajli & Love 2017). And, as discussed in the questionnaire findings, when talking about how teachers who answered the questionnaire see co-creation as a definition, they mostly understand it as a collaboration between schools and an organization or an expert in a field but, most of the time, they do dismiss the part of ideating something together. The same happened in the workshop, despite it, they went one step further than teachers in the questionnaire as they proposed examples where different points of view were taken into account. Indeed, the part of not only getting different viewpoints but ideating / creating the final product together was missing. Also, the telecommunications employee did not have a clear idea of the concept which suggests that it is a topic that is perhaps not well-known in the Barcelona area, at least, to the people participating in the project. Taking also into account that both people in the workshop and the employee in the telecommunication company watched a video that explained the co-creation concept and the ones in the questionnaire had a short definition at the beginning of it.

It is true that even though they are not aware of the co-creation concept, they have a basic idea of some of its supported theories as the social support theory presented by Gottlieb & Bergen (2010, 512). They (ibid.) refer to "Social resources that persons perceive to be available or that are provided to them by non-professionals in the context of both formal support groups and informal helping relationships". "This theory explains how social relationship influences individuals' cognitions, emotions and behaviours" (Lahey & Cohen 2000). Looking at it, most of the people in the questionnaire agree that having the support of an expert could provide a more enriching vision to students, also helped when wanting to apply a project to reality, to have an expert vision in certain topics and also as guidance in times of educational changes.

Another of the topics to be discussed is the relationship quality theory which "refers to the idea that intensity and tightness of a relationship are based on trust, satisfaction and commitment" (Hennig- Thurau, Gwinner & Gremier 2002; Palmatier, Dant Grewal & Evans 2006). This relationship quality plays a crucial role in influencing a customer's intention. The expert from the Helsinki Education Hub referred to the topic when talking about the way they propose the different modules where organizations get in contact with schools. Also, they are the intermediaries between the different organizations and look for this tightness of a relationship to be guided.

In co-creation, customers become active partners working with suppliers instead of being a passive audience as they used to be. (Grönroos 1997; Payne & al. 2009; Prahalad & Ramaswamy 2000, 2004; Vargo & Lusch, 2004). This makes a change in the vision it used to be by changing "from a goods dominant to a customer-centric logic". (Prahalad & Ramaswamy 2000). This is what people in the questionnaire, teachers in the workshop and the employee in the telecommunications company are starting to see but do not have very clear. Despite it, the expert from the Helsinki Education Hub talks about the topic clearly as the main characters in the co-creation proposals they provide are the organizations and the way they work together. The Helsinki Education Hub as experts in co-creations only provides support to the process.

Also, in the theoretical background, a real example from a telecom company is provided by Steen, Manschot & Koning (2011) who talk about an experience of co-designing "with children to generate ideas for new telecom services" to stimulate creativity and innovation in the business creation department. This can be related to the telecommunications company employee interview who said that the communication department should be in charge of these sorts of projects. As we can see in the experience provided in the theoretical background, it was organized from the marketing department or even another role was in charge of it because what the children did with these dynamics was to ideate something that could work in the real world. This makes us see that there is maybe the need to open organizations to the community and to make people take part in different projects.

Also, what teachers in the questionnaire and the workshop say is that teachers are not the experts in every field and there is a need to collaborate with others to provide tools for all the students' needs and interests. This is so linked to what Burkett says, as nowadays, with the growth of social media, citizens are "more actively engaged in communicating their experiences" which helps to the development "of citizen-led advocacy and service design". This perhaps means that it is also time for people to start not only communicating their experiences but participating in the creation of them as the Helsinki Education Hub tries with their projects.

On the other hand, according to Sanders & Stappers (2008), "co-design refers to the collective creativity

of designers and people not trained in design working together through the whole design process". This means that someone who is not used to working on a "design process is given the position of the expert of his/her experience" (Sleeswijk Visser & Al. 2005) position supported by researchers who provide them tools for ideation because of the importance of design skills in the tool's development. That is why co-creation with schools especially with children can maybe be so useful. As the expert in the Helsinki Education Hub said, some of the experiences in the Helsinki Education Hub include situations where companies explain their products to children and these children then give their opinion as they are experts in their experience and, in the end, they will be the product end-users.

When looking at the Helsinki Education Hub programmes we realize that their objective is shared with Roschelle & Penuel (2006), who define co-design in education in the following way: "Co-design is a highly-facilitated, team-based process where teachers, researchers and developers work together in defined roles to design an educational innovation, realize the design in one or more prototypes, and evaluate each prototype's significance for addressing a concrete educational need". This is mainly what the Helsinki Education Hub does when proposing the different modules.

When talking about the different roles in co-designing, we realize that the Helsinki Education Hub takes into account the researcher role and this role should also have to be done for the person in charge of the project in the company as the telecommunications company employee indicates. As written in the theoretical part, the researcher is intermediate between users and the design.

In co-design, the researcher becomes a facilitator to the users. "This means that researchers need to learn how to lead, guide, provide scaffolds and offer a clean slate". (Sanders & Stappers 2008).

Going back to the theoretical framework, it is said that "teachers often see researchers' solutions as too theoretical and not practical for real classrooms". On the other hand, "researchers often see teachers' limited content knowledge as a barrier to contribute to design efforts". (Brown & Edelson 1998 cited in Roschelle, Penuel & Schechtman 2006). This makes us realize that there is the need of these two agents to co-create or at least to have an organization as the Helsinki Education Hub is in charge of working as an intermediary between organizations.

4.7. Implications

As seen through the project, co-creation in education is a topic that is already working in Finland through an organization that is part of the city of Helsinki. The Helsinki Education Hub provides support to organizations and schools to work on different projects together. Maybe, this is what is needed in

Barcelona, because as we can see through the interview with the employee of the telecommunications company, the questionnaire sent to teachers and the workshop sent to teachers, people are encouraged by the idea. They feel it is useful and makes a lot of sense as the school needs to be related to society but they all do not know how to organize it. Related to it, there is the need to have an organization that ensures that the projects will be done during school time as both teachers and employees have a lot of work in their daily life. For it, schools could provide time in their schedules to work on this sort of project.

With these co-creation projects, we create relationships between the different sectors of society; companies work with the end-users of their products, and schools work on a real-life project which is interdisciplinary, motivates students and develops critical thinking. The final product also is created between the different agents that will interact with the product, both as the designer/developer and the user which provides his/her experience and viewpoint too.

Nowadays co-creation is indeed a topic that is starting to become a trend in the corporate field, but if we manage to get it to education, there would be an important improvement in the society, beginning also a mentality change in the educational field.

4.8. Factors enabling co-creation

For structuring the following table, the same guideline by Pirinen (2016) was used for determining how the twenty barrier-enabler couples of co-design services can be used in a co-creation process as it also needs collaboration, organization, process, implementation and method which are the different topics in the presented table. This table helps to have a summarized vision of what co-creation is and which are the different topics to take into account when thinking about the topic.

Table 4: Twenty barrier-enabler couples for co-design services inspired in Pirinen (2016)

Types	Main points
Collaboration	<p>To co-create there is the need to have a relationship between organizations that look for the development of a concrete project</p> <p>The aim of this collaboration needs to be the creation of a product that is beneficial for the different agents participating in the project and that provides an improvement for the society.</p>

Organization	<p>The projects could be proposed by one of the organizations who participate in the project or by an organization in charge to organize from an external viewpoint. These organization will lead the way the project should work and becomes a link between organizations.</p> <p>Also, co-creation projects should be integrated into participants' actual timetables ensuring that no extra-work is added to their daily lives.</p>
Processes	<p>The process as the Helsinki Education Hub does could be divided in two main parts divided in sections:</p> <p>PLANNING</p> <ol style="list-style-type: none"> 1. Collaboration idea is brought to the organization in charge to organize the project. 2. Innovation agents discuss about the co-creation idea with the education division. 3. The innovation agent looks for schools and other possible stakeholders. 4. The organization and the city sign a contract of the pilot. <p>ACCOMPLISHING</p> <ol style="list-style-type: none"> 1. Kick – off meeting <ul style="list-style-type: none"> - Presentation of the solution - Agreement on mutual goals for the pilot, schedule and responsibilities for both parties. 2. co-creation <ul style="list-style-type: none"> - Conducting the pilot 3. Closure meeting <ul style="list-style-type: none"> - Discussion about the process, the outcome and feedback of the pilot. - Short, written report of the pilot. <p>HELSINKI EDUCATION HUB (2023)</p>
Implementation	<p>It could be implemented by making organizations and schools aware of the value co-creation in the educational field can have and having the support of an organization like the Helsinki Education Hub which provides the support to the participant organizations and to the process.</p>
Method	<p>Co-creation should be included in daily planning of both schools and companies and it should be a way to have the school connected to the reality.</p> <p>The way the projects are done needs to be adapted to each situation, organization or planning realizing that every project is unique.</p> <p>There is the need also to look for effective and well-structured methods to make this process as easy as possible for organizations and schools.</p> <p>Reporting also needs to be done in order to reflect and improve in the way projects are done. Also, because reported experiences can also be useful for other agents.</p>

5. DISCUSSION

The topic of this thesis came from a lecture about co-creation in Helsinki, Finland. The author had never heard about the topic and in that lecture got fascinated by it. That is why the author decided to look at it deeply trying to bring it closer to her environment and the city where she lives.

While doing the research, the author got surprised some workshops about co-creation were announced and some information came out but all of them related to the corporate field and there were just a couple of information sources that talked about it related to education but at schools or list in the school the author works no one knew about the topic. What surprised her the most is that nowadays schools collaborate a lot with the town hall, other schools etc. but the concept of co-creation in the way it is seen in Finland is not applied yet.

The process has been so interesting and people seemed open to participate and interested in the topic. Also, while working on the methodological part, the author wondered if she was doing it properly as the answers were not completely aligned with the theoretical part but when comparing findings and literature, some conclusions came out at the end which became an achievement in the goal the author had. Also, everyone participating had to reflect on the topic and generate some questions for themselves.

The research questions planned for the project were the following: How to make schools and companies collaborate to design solutions together? How co-creation can be applied in the author's environment? After the research has been done, the questions can be answered in the following way: The model used in Finland works properly to make them collaborate because there is a group of people in charge of these relationships and to guide the project through the process which makes the project easier for both companies, organizations and schools and also gives them security as someone who is an expertise in these sorts of relationship is giving support. This means that if in the author's environment, there was an organization that works with co-creation as the Helsinki Education Hub does, maybe companies, organizations and schools would start to co-create with each other.

Related to the following, the author wondered if there is a need for a concrete organization to work in co-creation or if can it be organized by an organization or the city hall. Answering that if it is an organization working exclusively for co-creation or it is inside another organization or the city hall, does not affect the product. It is true that if this organization is inside a bigger one or is part of the city hall, the co-creation part of the organization will have more resources, facilities and contacts to work with. That is why the author considers it is better in this way, despite it, if it is an organization working exclusively for co-creation that

has the support from different organizations, companies and schools can excellently achieve the objective too.

The author also wondered which are the advantages and disadvantages of co-creation what would answer that creating a network in society, working on real-life projects and developing design skills would work as advantages and the need of a lot of organization and teachers and students with a big amount of work would work as a disadvantage.

Finally, some more questions came out: What will be the protocol when selecting a company to work with? Will there be a partners list? Do they have to be local? To what the author would answer that for sure if there is a partner list the collaboration will be easier but thinks other criteria need to be taken into account as the background this organization has, which is their working methodology or who will be in charge of the project and how does he/her plan to do it. It is true that if a collaboration has been done and it worked properly, these organizations and schools can be added to a partners list to make the matching process easier in the future. About the local organizations' question, the author would answer yes, at least at the beginning. The organizations need to be local to make co-creation easier for both organizations. If the organization that is in charge to organize this co-creation considers that projects with locals are working properly and have a good background of co-creating experiences maybe some non-local experiences can be tried but not at the beginning as said before.

Regarding ethics, some questions came to the author's mind, especially those related to schools. For example, how do we ensure that people in companies will have appropriate treatment with children? How can the meetings between teachers and organizations be fitted into the school timetable? Will the companies be aware of the authorisations from families these children have (image...)?

Related to the organization who is in charge of conducting the project: How does the organization ensure that the presented project will be useful and enriching for children and schools? Which are the criteria taken into account when selecting the companies?

New research could be done about how the organization in charge of conducting the project has to be as adapted as possible to the context of Barcelona and its metropolitan area. The new research questions will take into account the ethical questions presented above but also, how does this organization has to be organized? Where does it have to be? Does it have to be related to another organization? Which one? How does this relationship have to be?

REFERENCE LIST

- Buchanan, R. (2001). Design research and the new learning. <https://www.ida.liu.se/~steho87/desres/buchanan.pdf>
- Burkett, I. An introduction to co-design. Knode. <https://www.yacwa.org.au/wp-content/uploads/2016/09/An-Introduction-to-Co-Design-by-Ingrid-Burkett.pdf>
- Carr, A. (1997). User-design in the creation of human learning systems. Educational technology research and development, 45(3), 149-164
- Cohen, L., Manion, L., & Morrison, K. (2018). About research in education (both qualitative and quantitative): Research methods in education (Eighth edition.). Routledge, Taylor & Francis Group. https://web-s-ebshost-com.ezp.oamk.fi:2047/ehost/ebookviewer/ebook/bmxlYmtfXzE2MTQ2MzRfX0FO0?sid=b920ecf6-2ab6-4f1d-a144-45a83ac6721b@redis&vid=0&format=EB&lpid=lp_1&rid=0
- Delve. Semi-Structured interviews definition. <https://delvetool.com/blog/semi-structured#:~:text=A%20semi%2Dstructured%20interview%20is,and%20the%20topic%20of%20i nterest.>
- Dorst, K. & Cross, N. (2001). Creativity in the design process: co-evolution of problem–solution. Design studies. Volume 22. Issue 5. <https://www.sciencedirect.com/science/article/pii/S0142694X01000096>
- Gottlieb, B. & Bergen, A. (2010). Social support concepts and measures. Journal of Psychosomatic research. https://www.academia.edu/6604251/Social_support_concepts_and_measures
- Grönroos, C. (1997). Value-driven Relational Marketing: from Products to Resources and Competencies. Journal of marketing management. https://www.researchgate.net/publication/215915791_Value-driven_Relational_Marketing_from_Products_to_Resources_and_Competencies
- Hatch, M. & Schultz, M. (2010). Toward a theory of brand co-creation with implications for brand governance. Journal of brand management. https://www.researchgate.net/publication/45786172_Toward_a_theory_of_brand_co-creation_with_implications_for_brand_governance

Henning-Thurau, T., Gwinner, K, & Gremler, D. (2002). Understanding Relationship Marketing Outcomes: An Integration of Relational Benefits and Relationship Quality. *Journal of service research*.
https://www.researchgate.net/publication/237654136_Understanding_Relationship_Marketing_Outcomes_An_Integration_of_Relational_Benefits_and_Relationship_Quality

Johnson, D.W., & Johnson, R.T. (2018). Cooperative learning: The foundation for active learning. *Active learning – Beyond the future*. 59 – 70.
https://www.researchgate.net/publication/330952938_Cooperative_Learning_The_Foundation_for_Active_Learning

Krippendorff, K. (2006). The semantic turn. A new foundation for design.
<https://www.tandfonline.com/doi/full/10.1080/17493460600844157>

Lakey, B. & Cohen, S. (2000). Social support theory and measurements. *Social support measurement and intervention*. https://www.researchgate.net/publication/286288765_Social_Support_Theory_and_Measurement

Lee, T. (2005). The impact of perceptions of interactivity on customer trust and transaction intentions in mobile commerce. *Journal of electronic commerce research*.
https://www.researchgate.net/publication/228621560_The_impact_of_perceptions_of_interactivity_on_customer_trust_and_transaction_intentions_in_mobile_commerce

Liang, T., Ho, Y., Li, Y. & Turban, E. (2011). What drives social commerce: The role of social support and relationship quality. *International journal of electronic commerce*.
https://www.researchgate.net/publication/259909751_What_Drives_Social_Commerce_The_Role_of_Social_Support_and_Relationship_Quality

Newell, A. & Simon, H. (1972). Human problem solving.
https://learnlab.org/wiki/images/1/1d/Human_Problem_Solving.pdf

Normann, R, & Ramírez, R. (1994). Designing interactive strategy. *Harvard business review*.
<https://hbr.org/1993/07/designing-interactive-strategy>

Palmatier, R., Dant, R. & Grewal, D. (2006). Factors Influencing the Effectiveness of Relationship Marketing: A Meta-Analysis. *SSRN Electronic journal*.

<https://www.researchgate.net/publication/228987559> Factors Influencing the Effectiveness of Relationship Marketing A Meta-Analysis

Payne, A., Storbacka, K, & Frow, P. (2009). Co-creating brands: Diagnosing and designing the relationship experience. *Journal of business research*. <https://www.researchgate.net/publication/24017043> Co-creating brands Diagnosing and designing the relationship experience

Pirinen, A. (2016, December 31). The barriers and enablers of Co-design for services. 27 – 42. Aalto university. <https://research.aalto.fi/en/publications/the-barriers-and-enablers-of-co-design-for-services>

Prahalad, C., & Ramaswamy, V. (2004, May 1). Co-creation experiences: The next practice in valuecreation. *Journal of Interactive Marketing*, 18(3), 5–14. <https://doi.org/10.1002/dir.20015>

Ramírez-Montoya, M. S., & García-Peñalvo, F. J. (2018, January 1). Co-creation and open innovation: Systematic literature review. *Comunicar*, 26(54), 09–18. <https://doi.org/10.3916/c54-2018-01>

Reiser, B. J., Spillane, J. P., Steinmuler, F., Sorsa, D., Carney, K. & Kyza, E. (2000). Investigating the manual adaptation process in teachers' design of technology-infused curricula. In B. Fishman & S. O'Connor-Divelbiss (Eds.), *Fourth international conference of the learning sciences* (pp. 342-349). Mahwah, NJ: Erlbaum.

Roschelle, J., Penuel, W.R & Shechtman, N., (2006). Co-design of innovations with teachers: definition and dynamics. 606 – 612 <https://www.researchgate.net/publication/234819849> Co-design of innovations with teachers Definition and dynamics

Sanders, E.B.N. (1992). Converging perspectives: product development research for the 1990s. *Design management journal*, 3 (4), 49 – 54.

Sanders, E.B.N. (2006). Design research in 2006. *Design research quarterly*, 1 (1), 1-8

Sanders, E. B. N., & Stappers, P. J. (2008, March). Co-creation and the new landscapes of design. *CoDesign*, 4(1), 5–18. <https://doi.org/10.1080/15710880701875068>

Sanders, E.B.N., & Westerlund, B. (2011). Experiencing, exploring and experimenting in and with co-design

spaces. Nordic design research conference 2011, Helsinki.
<https://archive.nordes.org/index.php/n13/article/view/110>

Schön, D. (1983). The reflective practitioner. How professionals think in action.
<https://rauterberg.employee.id.tue.nl/lecturenotes/DDM110%20CAS/Schoen-1983%20Reflective%20Practitioner.pdf>

Shepard, L. (1997). Insights gained from a classroom-based assessment project. CSE Technical report 451. Los Angeles, CA: National center for research on evaluation, standards and student testing.

Shrader, G., Williams, K., Lachance, Whitcomg, J., Finn, L. E. & Gomez, L. (2001). Participatory design of science curricula: The case for research for practice.

Soloway, E., Guzdial, M. & Hay, K. (1994). Learner-centered design. The challenge for HCI in the 21st century.
<https://papers.cumincad.org/data/works/att/952f.content.pdf>

Steen, M., Manschot, M., & De Koning, N. (2011). Benefits of Co-design in Service Design Projects. International Journal of Design Vol.5 No.2.
<http://www.ijdesign.org/index.php/IJDesign/article/view/890/346>

Tajvidi, M., Wang, Y., Hajli, N., & Love, P. E. (2021, February). Brand value Co-creation in social commerce: The role of interactivity, social support, and relationship quality. Computers in Human Behavior, 115, 105238.
<https://doi.org/10.1016/j.chb.2017.11.006>

Vargo, L, & Lusch, R. (2004). Evolving to a new dominant logic.
https://www.researchgate.net/publication/272566759_Evolving_to_a_New_Dominant_Logic

Wilkström, S. (1996). Value creation by company-consumer interaction. Journal of marketing management.
https://www.researchgate.net/publication/232994100_Value_Creation_by_Company-Consumer_Interaction

Zamenopoulos, T., & Alexiou, K. (2018, September). Co-design as collaborative research. University of Bristol and the AHRC Connected Communities Programme. <https://oro.open.ac.uk/58301/>

APPENDIX 1

Interview to Helsinki Education Hub

1. How do you work with co-creation in education in Helsinki?
2. Is it organized from the city?
3. Which resources do you have for it?
4. Which is your role as an organization in co-creation?
5. Are schools the ones who apply for the project?
6. Do the schools participate actively in the process?
7. Do they work together in office time?
8. How do the companies feel with it?
9. Does it go on?

APPENDIX 2

Material provided from the Helsinki education hub

Testbed activities



We provide agile ways for companies of different sizes and at different stages of development to co-develop and test new solutions.



We are accelerating the digitalisation of learning and the development of new innovations in a user-oriented way.



Learners and teachers are active players in the development of new technologies. The experiments are excellent learning experiences for all members of the ecosystem (companies, teachers, learners, museums etc.).



Schools get to test the latest technologies.

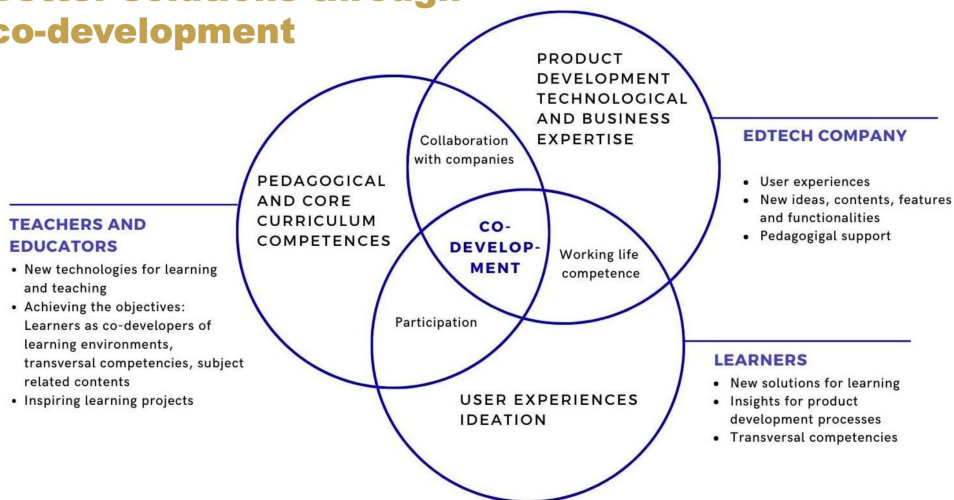
Helsinki

21.3.2023



3

Better solutions through co-development



EdTech Testbed Helsinki activities

1 **Testing opportunities** at Helsinki Education Hub (HubLessons, e.g. 1-3 workshops)

2 **Company-driven pilots** and co-creation opportunities in City of Helsinki's learning environments (Easy Access Co-Development EAC, 1-6 months)

3 **Innovation competitions** and pilot procurements for developing new innovations in the field of Education (3-12 months)



Helsinki

21.3.2023

5

EdTech Testbed Helsinki activities

4 **Innovative procurement** based on the needs of the city (competitive procurement process, 12-18 months)



5 **ERDF and other project cooperation**, e.g. based on innovation ecosystem agreements (2-3 years)

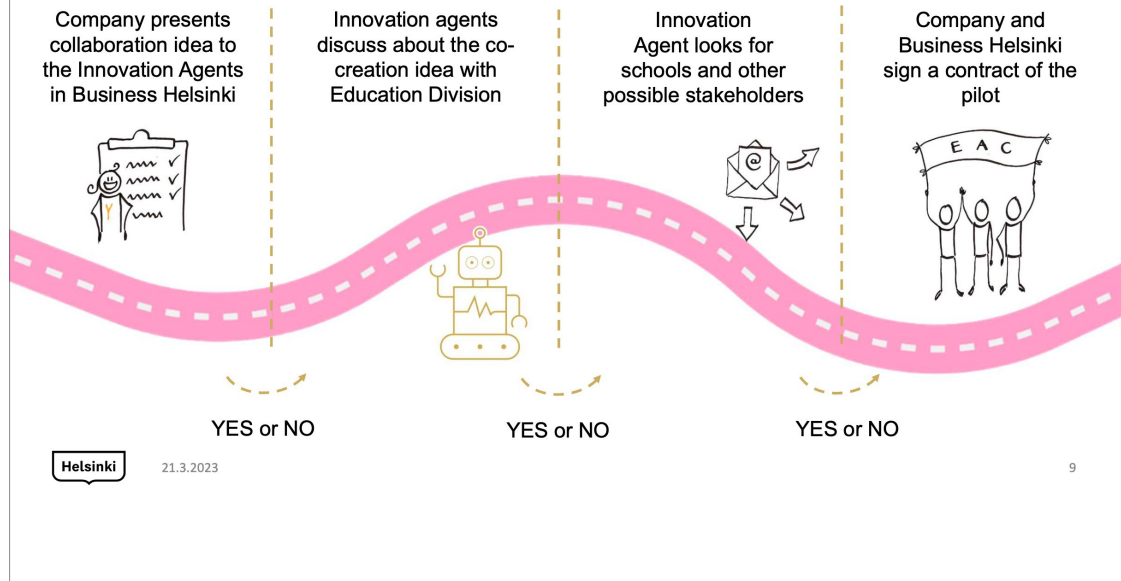


Helsinki

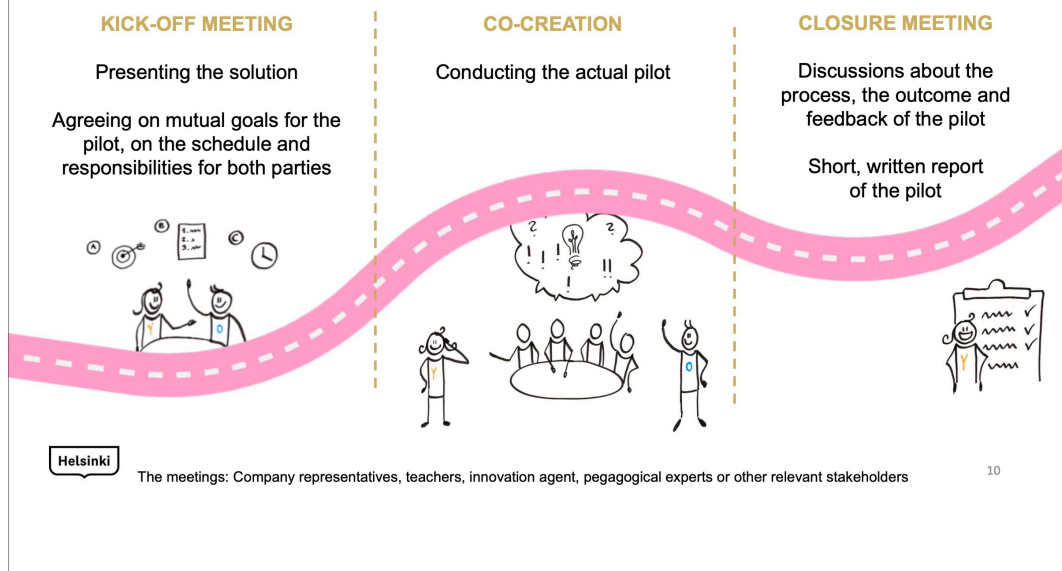
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6

Planning of the EAC pilot



Accomplishing the EAC pilot



APPENDIX 3

Interview to an employee in a telecommunications company

1. Do you know what Co-Creation is?
2. Which is your working field?
3. Which kind of collaboration does your company have with others?
4. Do you think it does not just collaborate but also Co-Creates?
5. Do you think your company could Co-Create with schools?

But this is not Co-Creation, this is to offer a service.

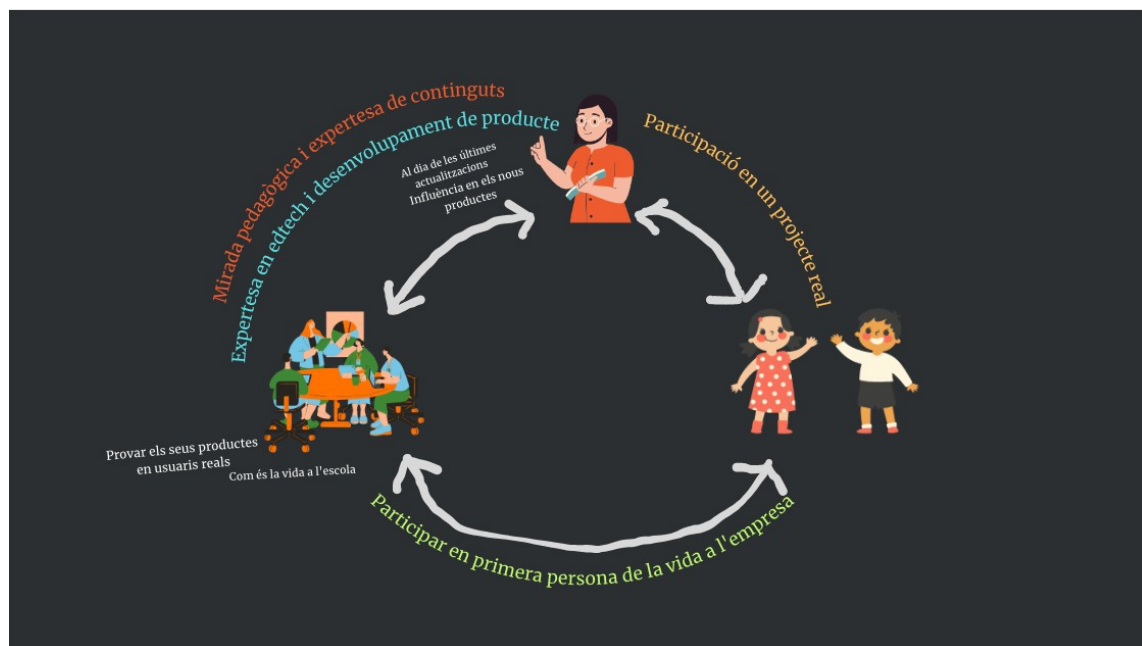
6. Do you think it would be beneficial for the company?
7. Which department do you think that should take care of these projects?
8. Which kind of products could be Co-Created?
9. How do you think it could be organized?
10. Do you think Co-Creation between your company and schools would mean a real improvement for the society?

APPENDIX 4

Workshop material and results

1. Co-Creation definition video:
<https://www.youtube.com/watch?v=wx6fQ1fJDHw>
2. Do you think Co-Creation is useful in the educational field?
3. Think about some examples where you think it can be useful.

4. Which are the benefits of Co-Creation in education



Companies:

- Try their products with real users.
- Realize how school-life is.

Teachers:

- Actualized of the different products.
- Influences in the new products.

Companies – Teachers:

- Pedagogical viewpoint and expertise in the contents.
- Expertise in EdTech and product development.

Teachers – Students:

- Participation in a real project.

Students – Companies:

- Direct participation in companies' daily life.
5. Example from Finland provided to the participants



3. Korkeasaari Zoo got an XR game developed together with schoolchildren

An innovation experiment by the City of Helsinki and the Korkeasaari Zoo

The content from pupils' ideas

The designing of the game began in workshops for primary school pupils.

A multidisciplinary working group then continued the design and conceptualisation based on the ideas.

The pupils tested different versions of the game and provided valuable feedback on the content and user experience.



Helsinki 21.3.2023 Marjo Kenttälä

Pupils' participation

“This was pupil participation at its best: a real-world project where the pupils’ ideas ended up in the final product. They got experience from various working life roles, such as developer, product tester and assessor. They genuinely felt that what they do and think matters.”

Helsinki

21.3.2023



6. Ideas and needs we could cover with Co-Creation in education

APPENDIX 5

Form questions and results

1. How old are you?
2. At what stage do you work?
3. Before answering this form, did you know what the Co-Creation concept mean?
4. Do you think Co-Creation is able in the educational field?
5. Do you think Co-Creation is useful in the educational field?
6. In case you think Co-Creation, can be useful, in which kind of situations do you think it can be?
7. In case do you think Co-Creation, is not useful, why do you think it?
8. Have there been situations where do you think you would have been more comfortable if you had experts in other fields support? If you think yes, in which situations?
9. Which advantages do you think Co-Creation can have in the educational field?
10. Which disadvantages do you think Co-Creation can have in the educational field?
11. Could you think in some example where Co-Creation could be useful in the educational field? Which one?