

Enabling relationships in a co-creative process with children

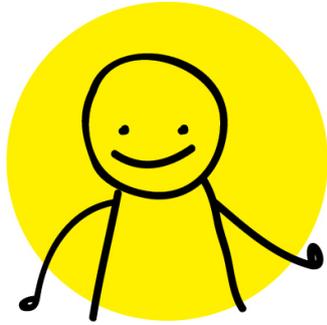
Roberta Bonetti ¹, Nitzan Cohen² and Seçil Uğur Yavuz²

¹ University of Bologna, Faculty of Arts, Humanities, and Cultural Heritage, Bologna, Italy
roberta.bonetti3@unibo.it

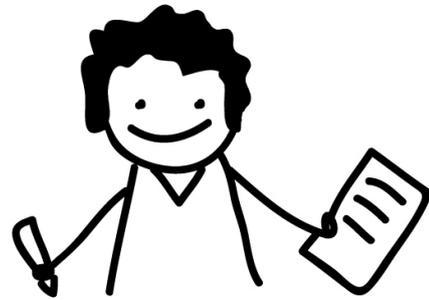
² Free University of Bozen-Bolzano, Faculty of Design and Art, Bozen-Bolzano, Italy
nitzan.cohen@unibz.it
secil.uguryavuz@unibz.it

Abstract: The aim of this paper is to describe methods, instruments, and the entire iterative process of an action-research realized by a designer and an anthropologist. The project was conducted through co-design workshops together with 324 participants (8-15 years old) and as a result an interactive object “Emotion Capsule” was created. The project raises critical questions about the use of artefacts and digital technology while involving children in the design process, inviting them to explore their needs, desires, and dreams through creating a new object. In our process, various artefacts and tools were used, as pretexts to explore needs and to facilitate motivation and co-participation. The Emotion Capsule was realized as a working prototype, which then was used in 12 classrooms. The prototype is embedded with sensors and actuators, collecting the participants’ unexpressed emotions and sharing them with others anonymously. It turns intangible things like sentiments into a tangible experience in which participants can freely express themselves and reflect on their common problems. The qualitative data obtained during our activities were analyzed through design and anthropological perspectives. The paper reflects on the iterative nature of the collaborative design process and how human and non-human entities co-create themselves in a sustainable way.

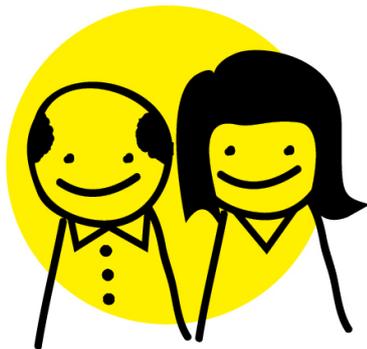
Keywords: co-design; interaction design; action-research; anthropology of education; design ethnography



STUDENTS

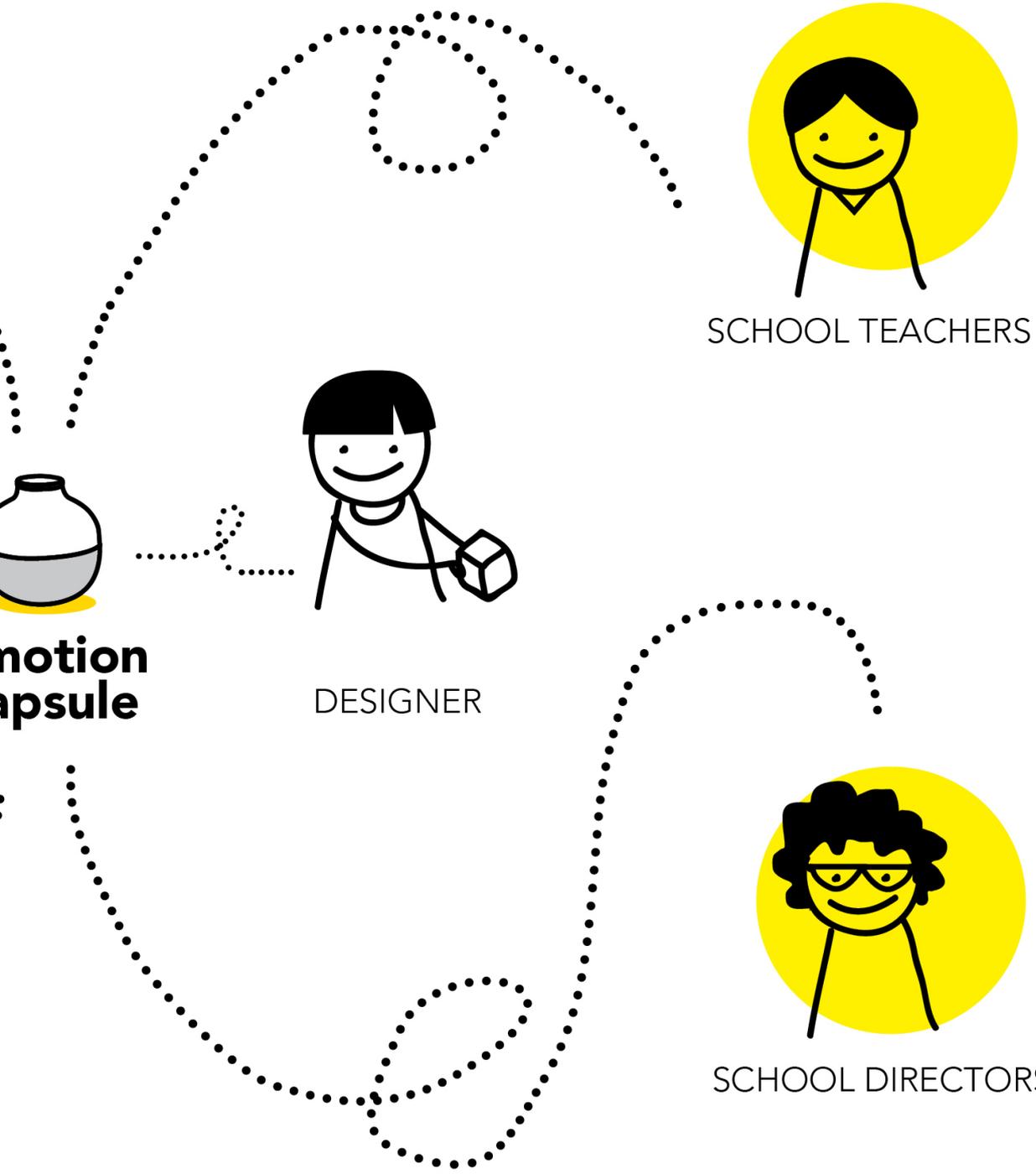


ANTHROPOLOGIST



PARENTS





motion capsule

DESIGNER

SCHOOL TEACHERS

SCHOOL DIRECTORS

Introduction

What does it mean to be born in a world where you spend most of your time writing messages to your friends rather than meeting them in a park, in a world in which your parents scroll their fingers on their smartphone screens during the dinner rather than talking to each other, or where you continuously post your life and seek for the highest number of followers? Today, all these scenarios are happening in almost every child's life. Digital technologies have been entering daily life routines in a subtle way while creating substantial impacts on our behaviors and relationships. Children of this era are the ones who live with these significant changes in society. They are the ones who "grow up with an expectation of continuous connection: always on and always on them." (Turkle 2011, 17). Prensky (2012) proposes an optimistic perspective to this phenomenon of "digital natives" by introducing the concept of "digital wisdom", which leads to the use of technology to become better and wiser. Wisdom can be gained through not only pure knowledge but also real experience, which makes us understand what it really means. Today there are many initiatives on how to teach children to build, hack and play with technology in order to be able to understand its principles (Posch and Fitzpatrick 2012, Blikstein 2013). Besides these emerging activities, there are also toys and kits for individual use for building prototypes and making programming easy (Littlebits 2018, SAM Labs 2018). While all these splendid tools and platforms enable children to be knowledgeable about technology, they are not always raising critical discourses concerning the use of technology.

In our experience, we aimed at bringing a critical viewpoint towards the use of digital technology by merging design thinking methodology with an anthropological perspective through a series of co-design workshops conducted with children and teens. This project aims at making children be pro-active and create "wise" solutions to face the circumstances and the problems that digital technology is incorporating in their social lives.

The co-design workshops here described were part of an action-research project, in which the anthropologist was commissioned by the Municipality of Florence in order to find solutions to anti-social behaviors in the school settings. Through the listening of the protagonists, first the kids and their families and the schools, the research project was operated anthropologically on social problems like discrimination and bullying behavior among kids through disciplines such as geography and new technologies. While working on geography eased experiences of decentralization and complexity, concrete and critical knowledge of new technologies has made it possible for the kids to be aware of their personal resources in order to face the problems mentioned above. As it emerged from ethnography, the kids themselves report forms of growing unhappiness and saturation with the relations carried out through social media and claim that the most important feelings cannot be expressed elsewhere if not in face-to-face relations (Bonetti 2019: 12). All this finds its own outlet in the social media, due to the fact that it is the social space in which the kids spend most of their time. Unlike eliminating the technology that would only cause the problems to resurface elsewhere and in other forms, this project aimed at finding a solution by envisioning a "wise" way of using technology through co-designing a new smart object together with children and teens. By being the co-designers, the children not only brought their problems in evidence but also gave rise

to a new object – the Emotion Capsule- that could resolve these problems (Bonetti 2019: 13).

Co-creative process

In order to understand the deepest needs of the users and to empathize with them, the researchers should go beyond the explicit knowledge coming from the users' own verbal expressions towards an implicit knowledge by "accessing people's feelings, dreams and imaginations" (Sanders and Dandavate 1999). In our co-design process, as Druin (2002) addresses, the users - the children and teens- are involved actively in each step of the design process: not only as mere testers, but also as design partners who work collectively in the very first stages by reflecting their own needs and desires in form of design scenarios and concepts. We tried to go deep into the real needs of children through collaborative storytelling sessions (Ugur Yavuz, Bonetti, Cohen 2017) and by the use of tangible imagination triggers - interactive probes. Our aim was to do a "collective dreaming" (Sanders and Stappers 2014), rather than a simple design process, therefore the co-design workshops were organized in form of various activities in which the participants were actively creating fictional scenarios about future smart objects. The co-creative process is composed of preparation of the tools, main co-design workshops, prototyping and sharing stages.

Preparation of the tools

In order to be used during the co-design workshops, a Futuring Box was designed containing design tools and probes that helped the participants to go beyond their conventional way of thinking about technology and to ask critical questions. The first version of the Futuring Box that contains six 3D printed objects with abstract shapes and

inspiration cards was tested in a trial workshop with 55, 13-16 years old participants (Bonetti, Ugur Yavuz, Cohen 2018: 88). The children were asked to create a story happening in 2050, in which the 3D printed objects had a smart functionality. For this activity, they also used the inspiration cards which were designed to give suggestions for creative thinking. In this workshop, we observed that the participants had some problems in collaborating, since they did not have any defined roles in the group, so they naturally formed group leaders, and some of them were withdrawing from the conversation and idea generation task. This observation gave us insights about group dynamics which further was considered for the main co-design workshops. The inspiration cards were used mostly when the participants had difficulty creating stories as a trigger for their imagination. We observed that some of the 3D printed objects were easier to tinker with, while some of them were limiting the imagination of the participants. For instance, a bracelet shape object was only associated with a smartwatch function. Therefore, three objects that were more open to interpretation were chosen among the six to be used in the main co-design workshops.

Based on the results of this trial workshop, a final version of the Futuring Box was designed, containing three 3D printed objects, the inspiration cards, a Round-Table paper indicating the roles and design questions, role stickers (Team Captain, Mediator, Reporter, Recorder) and 'MyTechDiary' a reflective diary with 10 activities (interviews, observations and short imaginative exercises about the use of technology) (Fig.1). The box is closed with a stripe of paper that can be opened only by the four participants who would receive it and is kept by these four until the end of the workshops.

Co-design workshops

After the preparation of tools, the main co-design workshops took place in a public secondary school with 24 participants (14-15-year-old). The workshops were conducted consecutively for four weeks by an anthropologist and a design researcher with the presence of the class teacher. Each workshop lasted 3 hours and following activities took place: reflections on the previous workshop (except the first day), introduction and execution of the new activity, presentation of ideas and short discussion. We used cooperative learning method (Cohen 1998) to give each participant the chance to have equal roles in decision making. To do this we used the role stickers (depicting the profile of the role) which the participants stuck on their clothes during the workshop and exchanged them in the next session of the workshop with another group member.

On the first day of the workshop, the Futuring Boxes including all tools and probes mentioned above were given to each group. The participants kept the reflective diaries during the whole workshop period and made the exercises at home. The 3D printed objects were circulated between participants during the workshop period. Each participant kept the object with him/her for three days at home and wrote a fictional story about its future smart function. The diaries and the stories of 3D printed objects were collected at the end of the workshops.

Besides these side exercises, the co-design activities were done in the classroom by using the other tools in the Futuring box. The workshop was started with a brainstorming session in which the participants used the round-table paper and answered the questions (why, what,

who, where) indicated on this paper in order to brainstorm about various smart object ideas. Each group's reporter presented their result to others and a discussion session was done about the emerged themes and ideas. Based on the results of this brainstorming sessions, the design researcher developed 9 different interactive objects - "things to act with" (Brandt and Grunnet, 2000) - to be used in the following workshop to turn the concepts into tangible ideas and enact their scenarios with an instant interaction (Fig.3). These interactive objects were modular geometrical shapes embedded with Bluetooth-connected sensors and actuators (SamLabs 2018) in order to help participants to pass to a more hands-on stage with the scenario building. While the modularity of the objects gave them the possibility to de-construct and re-construct the objects, the sensors and actuators helped them enact the interaction. In the second workshop, each group created a story for their smart object and visualized/textualized their scenarios on the sheets provided. At the end of the workshop, each group's reporter presented a scenario in which the future smart object was depicted (Fig.2a,b).



Figure 1. The items inside the Futuring Box.

From ethnography done during the workshops, it emerged that every group tackled with the need of developing and enhancing the communication, especially expressing emotions. Hence, the Emotion Capsule idea was born in this stage based on the results and scenarios answering the need of expressing emotions that was a focal point of all participants.

Prototyping of the Emotion Capsule

Starting from this general need of being able to express emotions addressed by the participants and based on the future scenarios depicted by them (see fig 2), we came up with the Emotion Capsule idea that is a digital/physical container of emotions felt by children and teens. It is a capsule that reveals the unrevealed, a tangible form that gives a voice to intangible feelings. The Emotion Capsule was designed to be used in a classroom setting as a container that collects and at the same time reveals the unexpressed emotions. After a series of self-expression activities –explained in the following section- conducted by the anthropologist, the participants write their feelings in a short text. These texts are collected and recorded as a sound file with an anonymized voice. The sound files are put into the capsule within a processor and played back via a speaker embedded inside the capsule. In the following session the participants sit in a circle and each of them activates the capsule to hear a random phrase written by someone else in the classroom. When the capsule completes the circle, the anthropologist forms a discussion about the lived experience. The capsule becomes a focal point of a new ritual, passing from one hand to another to utter the untold emotions. The tactility of the artefact and the activation (touching & opening) process gives an embodied experience to a conversation.

The outer shell of the capsule was designed through an iterative process which was fed by continuous feedbacks of the first 24 participants. Four types of prototypes were produced by using different materials, techniques, and technologies, and were used/tested by the same group of participants until it got its final shape (Fig.5). The first one was a transparent capsule-shaped container that was actuated with a conductive surface on the top of the capsule by using the Bare Conductive Touchboard (2018). When the capsule was touched, one of the sound files was played randomly through the micro-speaker

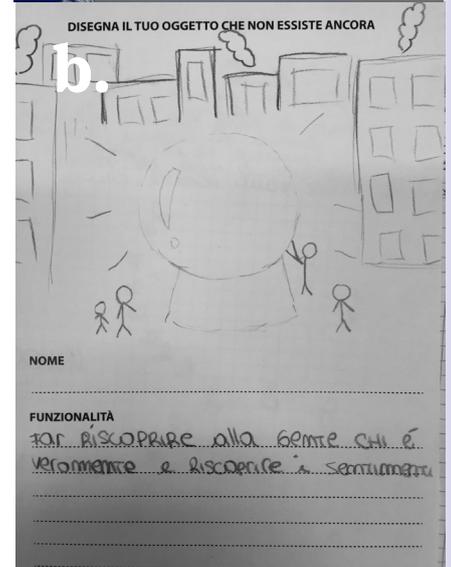


Figure 2a The workshop with interactive objects, participants tinkering with the object.

b. The story depicted by the participants which gave rise to the Emotion Capsule idea.



Figure 3. The interactive modular objects to be used in the second workshop for participants to enact their stories and create fictional scenarios for future smart objects.



inserted in the capsule. Since the micro-speaker had an embedded LED, it was visible when the capsule was held. Although the light was unintentional, the participants found it attractive and stated that a colourful light could be added into the capsule to give feedback about the activation. One participant stated: “The light inside the capsule makes it seem alive”. Therefore, in the second prototype, an RGB LED was inserted as an actuator besides the audio output. In the second prototype, we used a different type of technological module, SAMlabs (2018), in order to avoid cabling and a big battery pack. We used a light sensor, instead of a capacitive sensor and all sensors and actuators were connected via Bluetooth and operated by the SAMlabs software. The form of the capsule became a more animal-like shape, with four legs based on the comments of the participants in the previous testing. The total transparency and the coldness of the plastic material of the first and second prototypes were not applauded by the majority of participants, therefore as a third prototype, we created a capsule which was covered with conductive felt with a wooden base. With the third prototype, although the tactile feeling was pleasurable for the participants, the light was not visible enough. In the last iteration of the prototype, the participants came up with the idea of a bottle shape rather than a closed container by making a sketch of a bottle and naming it “the bottle of thoughts”. Therefore, the final prototype was designed as a bottle shape capsule that was a combination of a plastic and a wooden structure. While the semi-transparent 3D printed PLA (plastic) make the light glowing, the wooden

Figure 4. The Emotion Capsule last prototype

Iterative nature of the co-design process.



part was creating a tactile and warm feeling when it was held in hand. The capsule had a lid which worked as a switch. When taken off, it was activating the system to play a random sound file and turns the LED on with a certain color. SAMlabs modules (light sensor, RGB LED light) and a Bluetooth speaker were inserted in the capsule and they communicated with SAMlabs software via Bluetooth. This version of the capsule became the final prototype that later used by other participants and turned into a tangible element of a big sharing (Fig.4).



Apprehending to share

After the Emotion Capsule prototype was completed and used in the first group of participants during the co-design workshops above mentioned, the capsule travelled to 12 different classrooms in various schools in Florence, even to Istanbul to a pilot classroom. We called this stage in which we brought the Emotion Capsule into various classrooms as “sharing”. In this stage, the capsule experience was expanded to other children who were not directly involved in the first co-design stages. By being shared, the Emotion Capsule has become a relationship enabler, creating connections

Figure 5. The four prototypes, showing the iterative feature of the project. Emotion Capsule in different forms, materials and with different technologies.

between children and teens.

It is fundamental to address the experience of action-research and the activities conducted by the anthropologist to fully understand the efficacy and the modes of use of the capsule. In fact, the co-design workshops done together with 24 participants was somewhat correlated and intertwined with the activities carried out by the anthropologist together with 300 participants.

The activities that the anthropologist conducted on the vision of geographical maps in a multicultural perspective, the experience of the border and the creative use of space and time proved to be the fundamental premise for the final production of the Emotion Capsule (Bonetti 2019). The Emotion Capsule then became a tangible part of these activities, in which the experience they acquired turned into a reflection.

Experiencing the limit and the border

Body activities, as part of the preliminary work that has produced an extensive ethnography, deserve to be highlighted, as they allowed the participants to 'experience of their own borders'. This was a central aspect of anthropological research and what has crucially contributed to give the Emotion Capsule its symbolic and functional character. Without this preliminary work, quite possibly the capsule would not have been what it eventually is. The concept of the border was known to the teens, according to the ethnographic enquiry, only at an abstract, cognitive and bookish level. Moreover, they have highlighted its meaning as something that separates, never as connecting, permeable threshold. For this reason, in response to what had emerged, we





have carried out a series of role play and laboratory activities so that everybody could make an experience of their personal and corporeal border. In fact, without a full experience of the border, we cannot activate the experience of listening to and sharing with the other.

The game of the line

Among the various experiences centered on the topic of 'border', it is worth mentioning at least the 'game of the line'. Not only because it was preferred by the participants, but also it seemed to be the one that gave a greater impulse to their free expression of personal thoughts. It was exactly these kinds of role plays that facilitated imagination by serendipity that eventually brought to a new 'use' of the capsule, before the prototype had been finalized.

The game of the line has simple rules: a dividing line is drawn on the ground (Fig.7) and questions are asked to the participants; those who intend to answer 'I do, or yes' shall move on its right, those who intend to respond 'I don't, or no' move to the left. The game leader invites to think about how one feels when crossing the line, of being a minority, and of looking others who are the majority. Two basic rules were set before the start of the game: The participants were asked to respond according to their own feeling and not according to what the others would have done. If they wished (if they felt embarrassed while saying the truth) they were allowed to lie. This contributed to an amused and relaxed mood, as the main goal was to be able to feel free when they realized themselves in relationship to the others. At the end of the first round of the 'game of the line', the idea was born to ask the participants to share anonymously what they had felt. The license to 'lie' was to be respected by the anthropologist, even in the phase when they shared their thoughts. The same mode of action, and the same roles, as they proved conducive to positive freedom of expression, was repeated with every other group. (Bonetti 2019: 214-217).

Legitimizing the free expression in a school context

If we consider that the 'game of the line' used to terminate right before the end of the time allotted, the time allowed for writing down their thoughts was limited, between 3 to 10 minutes. Among the instructions that the anthropologist gave to the participants for the activity was not to care about grammatical correctness of what they were writing. The anthropologist then invited them to give free course to their thoughts; these thoughts might or might not be connected to the game and suggested that they pay attention and value any feelings that could arise and confirmed that they could hand in their writing by signing it or anonymously. The anthropologist reassured them, in fact, that she could not identify their writings, as she was not their teacher.

During the game (as in life), people lie for a sake of homologation, to look and seem like anybody else, for not being mocked or ridiculed; when one finds oneself in a position of minority, feels s/he is different, embarrassed, ashamed. In general, this is an ac-

Figure 6. The use of the capsule in a circular setting.

tivity that allows to talk about oneself in a straightforward way, without being judged, and therefore exposing aspects of oneself and discovering others' aspects that are usually kept secret.

The topics that were addressed in the game through form of questions, have been chosen for their variety, and allowed reciprocal knowledge, and the participants revealed themselves and perceived their peers as much more similar than they had imagined, as one of them wrote: "everybody has written different things, but it is as if they were all the same, as all are equal, we are equal".

These activities gave rise to the content and the innovative use of the capsule and became a fundamental stage in order to start the process of sharing and collective comprehension. The efficacy of the capsule has to be thought not with regard to its outcome, but to the whole educational process, as long as the kids name the problem and give it a symbolic qualification. In this particular sense, a wise approach to the capsule would not have been possible without the legitimation to express oneself freely and the freedom determined by the "game of the line".

The capsule, only later and thanks to the process described has become an enhancer, an object allowing to keep that safety distance that makes it possible to manage one's emotions, but also allows, in the conditions of anonymity, to face the risk of listening one's own voice together that of many others, of feeling vulnerable and wounded. The capsule allows getting out of our comfort zone, stepping into the world (Bonetti 2019: 295-296).

Among the positive experiences that have preceded the use of the capsule there is the legitimacy to express oneself freely allowed by the anthropologist in the course of the whole process in a context with different roles; their active participation, their engagement, and the trust of participants in the ethnographer and her own trust in the collective researcher. From an anthropological point of view, constant feedback was fundamental to motivate the participants and was required to closely monitor the activities to provide them with a key to understand what was emerging from the group. All this has led to an innovative and "wise" use of the capsule. The research process itself and the mode of usage of the capsule made it extremely innovative, not just the capsule per se.

From anonymity to individuals

The activities ad-hoc created by the anthropologist have activated forms of free and creative writing whereby anonymously they could narrate personal stories and thoughts, all with high emotional content, about free topics. In the following meeting, the anthropologist proposed the use of the capsule to listen to their thoughts, provided they would have stayed anonymous and none of their thoughts could be attributable to anyone. For the method of research, the anonymity adopted by the anthropologist was chosen for enforcing the "contract" based on trust that the teens had subscribed with her.

Through the safety of anonymity, the teens were able to accept the anxiety and vulnerability that led them to withdraw their thoughts and feelings, so that they could write without impediments. The written texts were collected and recorded as a sound file with an anonymized voice. The sound files were uploaded into the capsule and in

the following session, the participants sat in a circular setting and one by one activated the capsule to hear a random story written by someone in the class (Fig.6). They heard the sentence written by their fellow classmates without being able to ascertain who wrote what. The capsule session finished with a discussion on the actual object and how this object should be called, such as emotion capsule, story capsule, a mirror of the soul, etc. Through the capsule experience, they could express themselves anonymously to others, and they could hear/feel other children's thoughts. The object helped them to reflect on themselves and connect with other kids. 'Listening/Seeing', as a fundamental characteristic of the anthropologist in action, became a feature of the group, not just an individual trait. Everybody, in the course of the communicative/sensorial experience with the prototype listened, touched, observed what came out of the capsule, entering into relation with the most intimate and corporeal dimension of their peers. If the most authentic mode to get to know someone «is that of understanding him/her from his/ her viewpoint», once aware of not being able to perfectly understand the other, the participants had the opportunity to experience a mutual relation.

After such activity, as emerges from the reports collected, the general perception in the classroom changed substantially. Even the shier teens debated among them, and they looked visibly transformed when they were about to leave the classroom; the conversation did not address the activity in which they participated, rather their own interests.

The acquired knowledge immediately turns into an action and a new behavior. Through a «creative, active, participative, accurate, empathic and

above all, not moralizing and judgmental» communication, it was possible to reach that satisfaction that Rogers (1969) writes about when one manages to be oneself, to be understood and to understand the others, it was also possible to reach a sense of community and liberation that was variously voiced by the participants. The ethnographic analysis has allowed to capture the transformative process set in motion by this experience; it often happened that from the request of anonymity they expressed a need of greater openness, and of been recognized with their own story in front of their fellows, of been acknowledged for what they were.

A sentence written right after the round of the capsule, one among many others, expresses clearly the sense of liberation felt from its use, and the feeling of wellbeing derived from the experience of contact and sharing:

“Not knowing who had written the message would be useful in classroom setting, especially for shy kids who do not express their thoughts. To me it’s useful, as I am one of those who fear others’ judgements... when I heard the sentences taken from my text, it was like a liberation and I was about to cry, but not only for my sentences, also for those of the others. Concerning the object itself, I think it should be made of glazed plastic, so that one can see the light that changes colour”.

Anonymous (Secondary school of second degree – high school)

For many, listening their thoughts through the capsule that reproduced also other students’ thoughts, has provided the opportunity to confess a secret feeling, to express their rage, to come to terms with an emotion to them unacceptable; or others have seen in it as a tool to facilitate the interpersonal and intergenerational dialogue.

Reflections

At first, the action-research (Barbier 1996) originates from the request to face problems aroused during the co-project phase from teachers, parents and school directors, who have reported difficulties in interpersonal relations of their children, bullying behavior and altered perception of oneself and of the other. From a methodology point of view, instead of facing bullying behaviors directly - something that may jeopardize the efficacy of the action- the action-research has faced the issue obliquely, through lateral tools as described above, though central to the resolution of the problem. Among them, enhancing a creative and critical approach to new technologies aimed at growing their awareness and finding personal resources to solve the issues mentioned above. A fundamental reason for such approach is also that actual needs are almost never explicitly expressed at the beginning of the process by those who have followed the first co-design workshops, but they only emerged during the process. The needs of children and teens have been substantially different from those the adults expressed, and they were focusing on their desire to activate a bodily communication among them.

The process of authoriality that characterizes the method of action-research brings the researcher (students, teachers, professional researchers) to produce together with others. In such a context, the teacher too abandons a rigid posture of control just to become a co-actor or co-actress in the production of knowledge of the group. On the other side, Cooperative Learning (Cohen 1998) was used as a method to give each participant the chance to have equal impact in

decision making and designing the final object. We know that this method has an important impact on learning new skills to accomplish a common goal when working in groups, with the aim to make students actually present in class, socially active, aware and responsible.

“We are not dependent on nor in love with new digital technologies”

At first anthropological sight, such modality has allowed an approach to the activities based on a more relational and collaborative mode, to which the participants were not used in their schooling routine. In fact, despite they live the experience of closeness in the classroom, such activity has evidenced their reluctance to collaborate and the embarrassment provoked by a working mode more free and where physical contact is stronger. Such aspect emerged already in the course of the first class activity, where the participants changed from a rigid posture and physical detachment to a more relaxed one (for example their bodies were relaxed, leaned on their desks), in search of a visual and bodily contact with their schoolmates working in the same group. Concerning technologies, the very fact that teenagers use them with great ability does not mean that they know them or that they are ‘in love with or



Figure 7. The game of the line

dependent on' them; quite the contrary, these are conceptualizations that mirror common-sense considerations and the picture given by media, rather than accurate analysis of the reality as we have carried out. What emerges is that they are no passive subjects or alienated people. They have revealed to feel to be trapped in a digital communication system, and even if they would desire to get rid of it, they cannot live without. They express unease about their use and at the same time they are aware of the heavy consequences they bring about regarding their relations, also with reference to the indiscriminate use of technology by their parents and the world of adults made of them. In the course of activities 'on the border', they have expressed the need to use these objects to actively build their social identities, to express their emotions, to communicate, to interact emotionally.

"Why hiding beyond a mask? Why not being ourselves?"

We hide ourselves through the social media. We have to post everything new we do or we are with. Who has more followers is the best, is an example to follow... People spend hours in front of a mirror. They think they are too fat, this dress covers too much, I am too ugly, and compares herself to those iconic figures that, according to them, are at the top. And they do everything to resemble them. A mirror should, in my opinion, reflect what we have inside ourselves, which really counts. Being oneself. Break the masks that we create and being honest to whomever is before us. And, from time to time, repeating aloud in front of a mirror: I am what I am, and it is fine, I like it."

Title: Humanity hidden under a mask. Anonymous, (written by a participant at Secondary school).

Artefacts as Communication and Relationships Enabler

The most urgent and pressing problem that emerged during the activities carried out in various classes was the need of contact and relationship among children and teens. We have tried to make the output that had emerged in the various groups of students common and shared, and the capsule that was imagined and designed by the participants in collaboration with us has made this connection possible. It has created a link between all participants in a common project of their needs and voices. Briefly, the great contribution of this project to the participants has been not only to be able to express their real needs, but also to experience an active process, facilitated by the anthropologist and the designer, to find out a creative answer to their questions and problems. The most significant theme that emerged during the collaborative idea generation session of the group working on new technologies was in fact "communication". The groups were developing future object concepts resolving problems of communication, lack of physical contact, giving voice to whomever needs to express themselves.

Enhancing the process of communication

After a semester of activities conducted by the anthropologist with the capsule, a final event was organized to communicate the urgent issues voiced by the participants, so that they could be heard, shared and legitimized by the adults (teachers, educators, parents, relatives). A bigger scale capsule was made and placed on the stage of a theater accompanying with a visual animation projected directly on the capsule to create an augmented reality. The participants entered the stage as groups, and opened the lid of the big capsule. When opened, an anonymous voice message was heard with a graphical representation that seemed like a shadow rising and flying out of the capsule.

The event was also meant to favor the emotional coping of the detachment between the anthropologist, the designer and the participants, as there had been a high level of emotional involvement among them. Also in this specific case, though for a short time, the capsule emerged as an object capable of improving social sharing with the public of the theater. It was possible to notice how the capsule could dialogue with others and the emotions that this dialogue would provoke.

Final Thoughts

The innovative outcome of this project was a collective work done together with the participants (children, teens, school teachers, etc.) and the researchers. Another important aspect of the research lay also in the collaboration between the anthropologist and the designer. Their synergy, rare and uncommon as it is, has made it possible for the former to define the framework of the whole project, whereas the latter has spent her know-how and professionalism in defining and designing the product. A sustainable and meaningful design process (for a real innovation) cannot happen without a pedagogy of personal growth of its users. Therefore, the whole project was a kind of learning process not only for the participants but also for the researchers. The Emotion Capsule is an artefact born from this "collective dreaming", a tangible touch point where all the intangible experiences done in the course of anthropological activities came onto the surface. The capsule is more than a mere design prototype, it becomes an enabler of relationships revealing the urgent need of contact rising from a generation. This project made us again question the smartness that we tend to acquire through technology, and reflect on our own wisdom that has the power to solve our problems by in-

venting new use of technologies, as seen with the Emotion Capsule.

References

Barbier, R. (1996), *La recherche-action*, Economica, Paris.

Bareconductive Touch Board. (2018). Available from <https://www.bareconductive.com> [Accessed on 18.10 2018].

Blikstein, P. (2013). Digital fabrication and 'making' in education: The democratization of invention. In *Fablabs: Of machines, makers and inventors*, J. Walter-Herrmann and A.C. Büching Eds. Transcript Publishers., Bielefeld.

Bonetti R. (2019), *Etnografie in bottiglia. Apprendere per relazioni nei contesti educativi*. Meltemi, Milano.

Bonetti R., Cohen N., Yavuz Ugur S., (2018). Emotion Capsule: A New Form of Communication Designed Together with Teenagers in "Conf. Proc. The Future of Education", Libreria Universitaria, Padova ,pp. 86-90.

Cohen, E. G. (1998) Making cooperative learning equitable. *Educational Leadership*, 56, 18-21

Druin. A. (2002). The role of children in the design of new technology, *Behaviour & Information Technology*, Vol. 21, Iss. 1.

Eva Brandt and Camilla Grunnet. (2000). Evoking the future: Drama and props in user centered design. In *Proceedings of Participatory Design Conference (PDC 2000)*. 11--20.

Little Bits. (2018). Available from <https://littlebits.com> [Accessed on 18.10 2018].

Posch, I & Fitzpatrick G. (2012). First steps in the FabLab: experiences engaging children. In *Proc. of OzCHI '12*, ACM, New York, NY, USA, 497-500.

SamLabs. (2018). Available from <https://www.samlabs.com> [Accessed on 18.10. 2018].

Prensky, M. (2012) *From Digital Natives to Digital Wisdom: Hopeful Essays for 21st Century Learning*, Corwin, A SAGE Publications.

Rogers. C. R. (1969). *Freedom to Learn*, Columbus, Ohio, Merryl Publishing Company.

Sanders, E.B.-N. & Dandavate, U., (1999). Design for experiencing: new tools. In: C.J. Overbeeke and P. Hekkert, eds. *Proc. of the first int. conf. on design and emotion*, 3–5 November 1999, The Netherlands: Delft University of Technology, Delft, 87–92.

Sanders, L & Stappers, PJ (2014). From designing to co-designing to collective dreaming: Three slices in time, *Interactions: experiences, people, technology*, vol 21, no. 6, pp. 24-33.

Turkle, S. (2011) *Alone Together. Why We Expect More from Technology and Less from Each Other*, Basic Book.

Ugur Yavuz, S., Bonetti R., Cohen N., (2017). Designing the 'Next' Smart Objects Together With Children in "The Design Journal", 20: sup1, pp. 3789 – 3800.

Acknowledgement

The article was written and reviewed jointly by the authors. Roberta Bonetti is however responsible for the sections: *Apprehending to Share and Reflections*; Secil Ugur Yavuz is responsible for the sections: *Introduction and Co-creative Process*. Roberta Bonetti, Nitzan Cohen and Secil Ugur Yavuz are responsible for the *Abstract and the Final Thoughts*. We wish to thank the anonymous reviewers for their insightful observations.

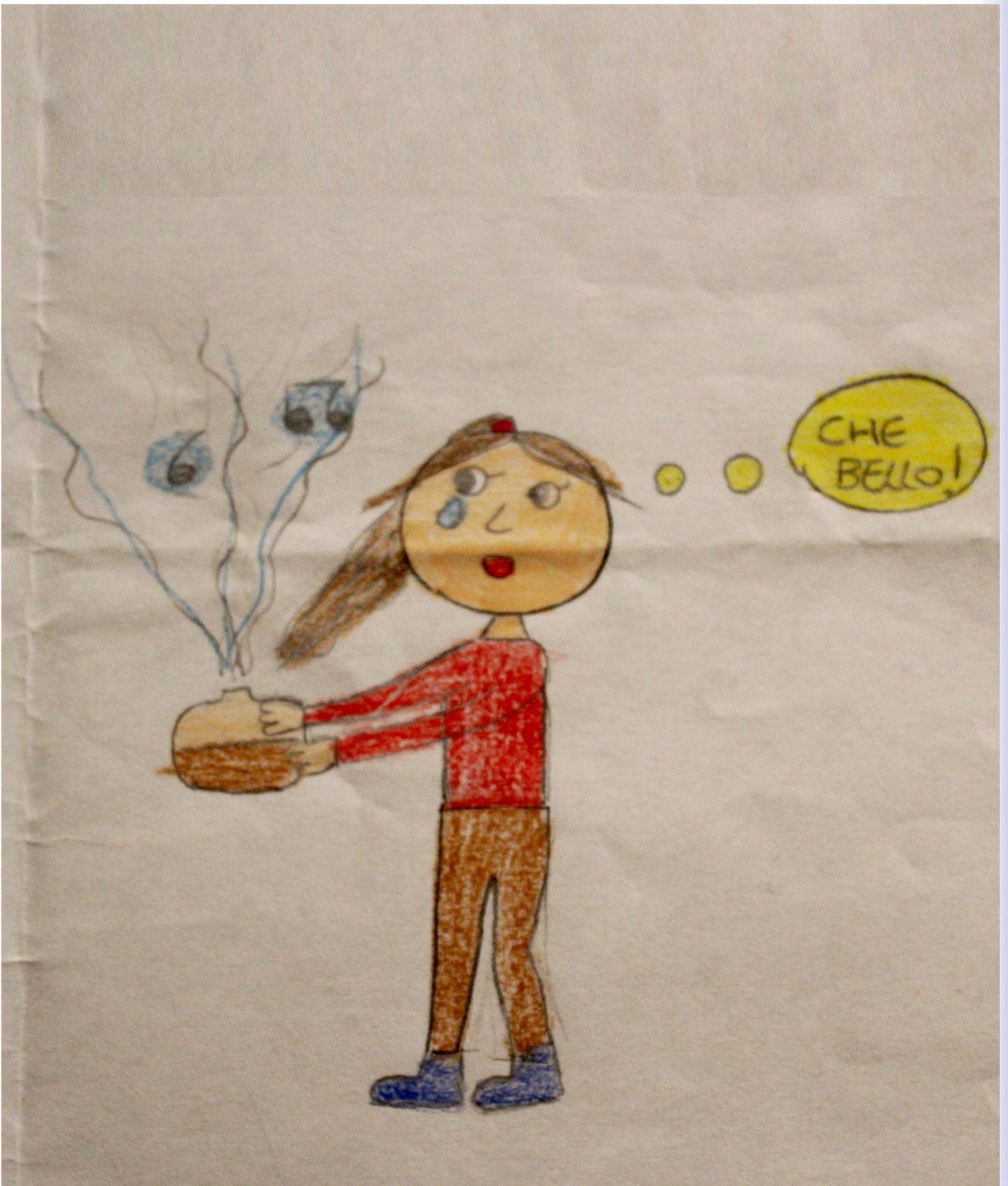


Figure 8. A drawing from a participant after the circular session with the capsule, expressing her emotional state -tears of happiness- after listening the capsule. She writes "how nice!".