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Bodystorming: lessons learnt from its use on a service design undergraduate discipline

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Abstract

This article explores the use of Bodystorming on the classroom, presenting the results of a case study on a discipline carried out at Federal University of Paraná, Brazil. Bodystorming could be defined as a technique wherein designers and other stakeholders use their bodily expression to create or represent ideas about the interactions and configurations around a given experience. The paper compares this case study with key guidelines and heuristics identified on the literature, pointing suggestions for other lecturers interested on adopting the tool on the classroom.

KEYWORDS: bodystorming, service design, teaching, creativity

Introduction

“Infusing creativity and arts into service innovation” processes are one of the research priorities that have the potential to advance the service field and benefit customers, organizations, and society (OSTROM et al., 2010). On this matter, Service Design can benefit from the adaptation of existing creativity methods and tools derived from conventional product and graphical design. However, in many situations these tools are not capable to deal with the multiple, and often simultaneous, interactions that occur throughout a service and the complexity of bringing together, on an empathic fashion, the perspectives from various stakeholders. Bodystorming is a tool that seems to be adequate to such characteristics and it is the focus of the current paper. Thereby the focus of the current paper is about a case of an application of the bodystorming tool by undergraduate Design students, during an optional subject of Service Design at the Federal University of Paraná - Brazil.

Besides of Design, Bodystorming has been applied in other fields of knowledge. Oulasvirta et al. (2003) has adopted the tool on ubiquitous computing where they claim that the tool enabled a more accurate understanding of contextual factors such as the physical, social, interactional and psychological that are not readily observable. In the biology field Flynk & Odde (2012) have sought to understand cellular and molecular processes, using bodystorming with human ‘movers’ acting as molecules that diffuse, undergo reactions, and

generate/absorb forces. From a Design perspective the tool has been explored at the Design & Sustainability Research Group of Federal University of Paraná (NDS/UFPR) through industry-led research projects on Product-Service System (PSS) as well as on undergraduate disciplines on Service Design.

Life Cycle Design (LCD) was the initial research focus of NDS/UFPR on its foundation in 2003. However, although LCD is still on the research agenda, such focus showed to be insufficient to tackle the need for develop solutions that could contribute to shift fast growing consumption in the Brazilian booming economy towards more sustainable patterns. The challenge of developing truly effective solutions demanded new concepts, methods and tools that could deal with the complexity of systemic innovations required by sustainable development. Based on the results of a literature review and on some preliminary pilot studies developed within an academic setting, the research team concluded that the body of knowledge around the theme of PSS presented the best prospect and such premise has resulted on the introduction of PSS as the main research topic at NDS/UFPR ever since.

More recently NDS/UFPR initiatives on the topic have been carried out within the LeNS (Learning Network on Sustainability). Currently the network has an EU-supported (ERASMUS+) project involving 36 universities from Europe, Asia, Africa, South America and Central America, aiming at the promotion of a new generation of designers (and design educators) capable to effectively contribute to the transition towards a sustainable society for all. LeNSin ambitions to improve the internationalisation, intercultural cross-fertilisation and accessibility of higher education on Design for Sustainability (DfS). The project focuses on Sustainable Product-Service Systems (S.PSS) and Distributed Economies (DE) – considering both as promising models to couple environmental protection with social equity, cohesion and economic prosperity – applied in different contexts around the world. LeNSin connects a multi-polar network of Higher Education Institutions adopting and promoting a learning-by-sharing knowledge generation and dissemination, with an open and copy left ethos.

Halen, Vezzoli & Wimmer (2005) provided the initial methodological framework adopted at NDS/UFPR, with the integration or other approaches, methods and tools throughout the years in order to cope with the peculiarities of an emerging context. One of the rich sources of knowledge expansion was identified on the bridge between the PSS research community and the Service Design research community, particularly regarding methods and tools. The Service Design research community presented a broader range of Ideation tools that could contribute directly to the PSS research community. Bodystorming is one of such Ideation tools that is further explored on this paper.

Understanding Bodystorming

Definition

Bodystorming could be defined as a technique wherein designers and other stakeholders use their bodily expression to create or represent ideas about the interactions and configurations around a given experience. This tool enables a better understanding about the relevance, main requirements and adequate configuration of a service by means of an empathic approach, allowing the designer to put him/herself on the role of the other stakeholders. According to Simsarian (2003), this group practice can be a complementary to the design techniques that are more usual because it could provide an additional team dynamics and insight that can bring the process to another level.

The term “bodystorming” was first coined by Burns et al (1994) while designing a computer workstation for a hairdresser who insisted that a computer “would not help her to run her

business”. In order to tackle the need for more empathy the design team produced an acting performance around low-fidelity mock-up. Based on that study Burns et al. (1994) presented bodystorming as an approach to explore ideas through a technique called “informance design”, where ideas are explored through improvisational acting. Later Burns et al (2002) defined bodystorming as “re-enacting everyday people” performances and living with data in embodied ways by performance and improvisation”. The technique allowed real situations to be simulated by real people, involving stakeholders in the process. In this way, the application of bodystorming allowed both the evaluation of human reactions in a design process, and an actuation of real experience to the designers involved.

There are some techniques to prototype design services, the Bodystorming is one of them. For Plattner (2010), the prototype is made to think and solve problems, communicate, start a dialogue, test possibilities and manage the process of building solutions. This phase can be characterized by the generation of artefacts, systems or services with the intention of enabling the interaction of the designer in order to experience the applicability of alternatives that lead to the final solution. According to Blomkvist (2011), into the Design world, prototyping has been used in many different contexts and disciplines because it is commonly believed that it can benefit the design process since clients and other stakeholders can understand the progression of different activities in the project. The tangible things, such as scenarios, provide security for the stakeholders and allow them to collaborate and evaluate the design suggestions. Modifying it as a very important tool into the Service Design world. Therefore, any prototype can be a service prototype if it is tested in the intended “place, situation and condition”.

A Service can be seen as a journey where customers can interact with the service provider in many ways as through conversations, webpage, phone call, service scenarios, and etc. Blomkvist (2011) affirms that these interactions can turn into something tangible (visible in the surface) that can improve the service experiences across these touchpoints and services moments, across physical spaces and social interactions. Hence, Bodystorming can be a technique that could help in the ideation, creation and prototyping phases.

In this context Bodystorming can be seen both as “design in place”, with creativity performed at the site; a “prototype in place”, with an emphasis on the representation of the interactions on the system; or as a “embodied performance” where prototyping happens on a location with actors taking on roles on the activity (SCHLEICHER et al., 2010). Therefore, this tool can be seen both as a tool to generate creative ideas as well as a data collection tool to understand stakeholder’s needs, system constraints and requirements for key touchpoints within a service (SMITH, 2014).

Specifically, the fidelity level encompasses visual physical aspects, interaction behaviours, navigation flow, and other aspects of the user experience that reflect the content and scenario for prototyping. Therefore, it is possible that a prototype has varying levels of fidelity for the different contents of the prototype scenario. By deliberately making some high-fidelity elements, the audience is more able to focus on the items of superior fidelity, giving them an uneven weight and thus the main focus. In this way, prototyping can reveal major problems (ARNOWITZ, J; ARENT, M; BERGER, 2010). Therefore, it is best to start early before it is too late, in a prototyping service even if low fidelity can demonstrate failures in the interaction between the actors and users of the system, allowing adjustments in prototyping of less fidelity and later, if necessary prototyping scenarios of greater fidelity.

Advantages

This tool calls for a higher level of empathy, enabling the designer to take the role of other stakeholders. Indeed, designers acting as if they were the client/users, or showing how their concept would behave, allows them to understand options and issues that arise from their bodily and felt experience (SEGURA & VIDAL, 2016). On a similar way Smith (2014) argues that this technique uses forms of performance and improvisation to help designers become more aware of contextual issues that may not be revealed in traditional

brainstorming exercises. Mehto et al. (2006) argue that bodystorming can be used in working with data in embodied ways that is, representing the actual participants in the process.

Therefore, one of its advantages is the possibility of immediate feedback about how a particular idea would fit the target context (SEGURA & VIDAL, 2016). On a similar way Lane (2003) argues that it enables the designer to rapidly access the qualities of his/her ideas, as well as the identification of key issues for further exploration by more traditional approaches (LANE, 2003; FLINK & ODDE, 2012).

Using an embodied approach to represent ideas increases the efficiency and efficacy of the ideation process. Aligned to pro-service prototypes arguments, Oulavirta et al., (2003) argues that many potentially important aspects that are omitted from documents may be directly observable in a bodystorming session and erroneous conceptions may be identified and rejected. Since it produces embodied sketches, it carries a fundamental attribute of a sketch which is the capacity of providing immediate feedback to the designer and as such, it can be a “catalyst to stimulate new and different interpretations” (BUXTON, 2007).

Under the perspective of bodystorming as a creative tool, perhaps one of its greatest advantages is the fact that it brings into the ideation activities a great ally of creative thinking: play and playfulness. Play comes into place when exploring new ideas, embracing divergent and lateral thinking; enabling hands-on experience on building up the set for representing ideas; using role play to stimulate the designer to put him/herself on the stakeholders perspective (BROWN, 2009; SEGURA & VIDAL, 2016).

Research Method

The research attempted to answer the question “*what would be the protocol for adopting bodystorming within the classroom of an undergraduate discipline?*” A broad literature search on various platforms using the keyword “bodystorming” has shown only 50 peer reviewed papers published in journals since 1984, of which a total of 20 papers have been published in the period between 2015 and 2017. The scope of these journals testify the multidisciplinary nature of the theme, ranging from ergonomics (Applied Ergonomics, Cognitive Processing), computing (Computers in Industry, Digital Creativity, Future Internet, Interacting With Computers, Personal And Ubiquitous Computing, Procedia Computer Science, Simulation & Gaming), HCI (Interactions, International Journal of Mobile Human Computer Interaction, Journal of Ambient Intelligence and Humanized Computing) and natural sciences (Physical Biology, Science Scope, Trends in Cell Biology). Hence the conclusion from this review is that the theme of Bodystorming is still on an exploratory stage on the evolution of knowledge.

The study adopted a Case Study research method to investigate the research problem, focusing on the direct observation of Bodystorming within an undergraduate discipline. The overall sequence of activities on this discipline was previously planned by the main author, based on the experience of previous pilot courses of the LeNS (Learning Network on Sustainability). The data collection consisted on direct observations, video-recording and gathering of documents produced by the students prior, during and after the Bodystorming session. The results were confronted with the propositions obtained from the literature review, enabling the development of key guidelines for lecturers that do intend to bring this tool to the classroom.

Results and Analysis

Overview

The Case Study was developed within an intensive two weeks discipline (30 hours), as part of an initiative of the Learning Network on Sustainability. For the period between 2015 and 2019 this network has got funding from the Erasmus+ Programme to implement an action plan on curriculum development aimed at promoting a new generation of designers (and design educators and researchers) capable of DfS focused on S.PSS (Sustainable Product-Service Systems) applied to DE (Distributed Economy).

This discipline occurred between 16th and 27th October 2017 at the Design Undergraduate Course of Paraná Federal University. Based on the experience of previous pilot courses developed in Mexico, South Africa, China, India and Brazil, within the LeNS partners, the syllabus for this discipline focused on a selection of key tools that could enable the students to have an introduction on the process of designing Product-Service Systems.

The didactic approach was heavily practice-based. All theoretical contents, including the theory of Bodystorming was previously made available on the LeNS platform (lens-brazil.org). It included slide with audio/video classes using the Camtasia® software, case studies, links to videos on the web, templates of tools and textbooks. Most classes began with a discussion with students to solve doubts regarding the theory of the theme of the day. This discussion was then followed by a period of practice and, at the end of each day, students were requested to present the evolution of their work through pitch presentations or open discussions (Figure 01).

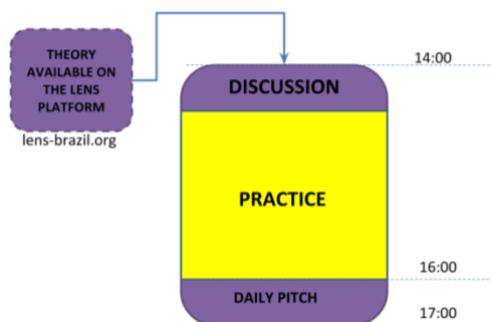


Figure 1 – Daily teaching routine

A total of twenty students have enrolled on the discipline, most of them from third and fourth year of UFPR’s Product Design undergraduate course. The challenged presented to the students was open: proposition of innovative and sustainable solutions for people on wheelchair living on the city of Curitiba. Students were divided in four groups, which should choose a specific and relevant problem within the target public.

As the figure has shown (Figure 2) the use of Bodystorming occurred halfway on the discipline. The preparation to get to the ideation phase involved a general introduction to the foundations of Product-Service Systems and Distributed Economy; the development of Personas based on demographic data and the literature; the development of a System Map representing the existing situation, with the identification of all key stakeholders and their main flows (information, material, finances, work); the development of a Blueprint that represent the status quo of the existing situation, including current user activities, the main touchpoints as well as on-stage, backstage and supporting services; the environmental, social and economic assessment of the existing system using the heuristics of the Sustainable Design Orienting Toolkit (SDO). By them the students should have an initial ideal about the “unit of satisfaction” of their intended system or, in other words, the central value that should be delivered to the customer.



Figure 2 – General Programme of the Discipline

Bodystorming occurred on the fifth day of the course, in a second session of creativity. Before that, students had already held a first creative session of PSS and DM tools. To represent these early ideas students used Lego Serious Play as a tool for creativity. In this way, the initial ideas generated in the first creative session were elaborated and staged by the students in the second creative session using bodystorming as a tool. The lecturer requested that all teams revised the key aspects of the PSS concepts that derived from the previous day, including the information associated with the Personas as well as the results of their sustainability assessment through the SDO tool. Each team should choose on the on their revised blueprint of the new proposed system the vital interactions that would result on the provision of satisfaction to the customer. So, the materials for the scenes were set, as well as the scripts of what they should contain in each scene. The focus of the Bodystorming was on generating alternatives for these interactions.

Building up empathy with the problem

Oulasvirta et al. (2003) proposes that a preliminary observation and documentation should be conducted prior a Bodystorming session, depicting interesting phenomena and easily readable design questions. Hence, producing video-personas or booklets about the context of the service/product might be a useful output of this preliminary phase (RODRIGUEZ et al, 2006).

In the first day of the course the students were presented with key information about the challenges faced by people on wheelchair in Brazil, particularly those with Spinal Muscular Atrophy. The scope of this information also included a market assessment about the range of products and services available on the Brazilian market for people on wheelchair. Besides this preliminary information, the researcher also provided contact information of a person on wheelchair that was willingly to provide further information.

Additionally, all four teams of students have developed their own desktop research, gathering key information that enabled an initial understanding on the main problems faced by people on wheelchair in Brazil. The example below shows some issues that one of the teams has identified regarding clothing provision.



Figure 3 – Example desktop research findings presented during a pitch session

Building up Personas, a System Map, a Blueprint (see image below for the team that focused on mobility for health care treatment) and assessing the existing system using the Sustainable Design Orienting Toolkit (SDO) has pushed the students to get closer to the problem.

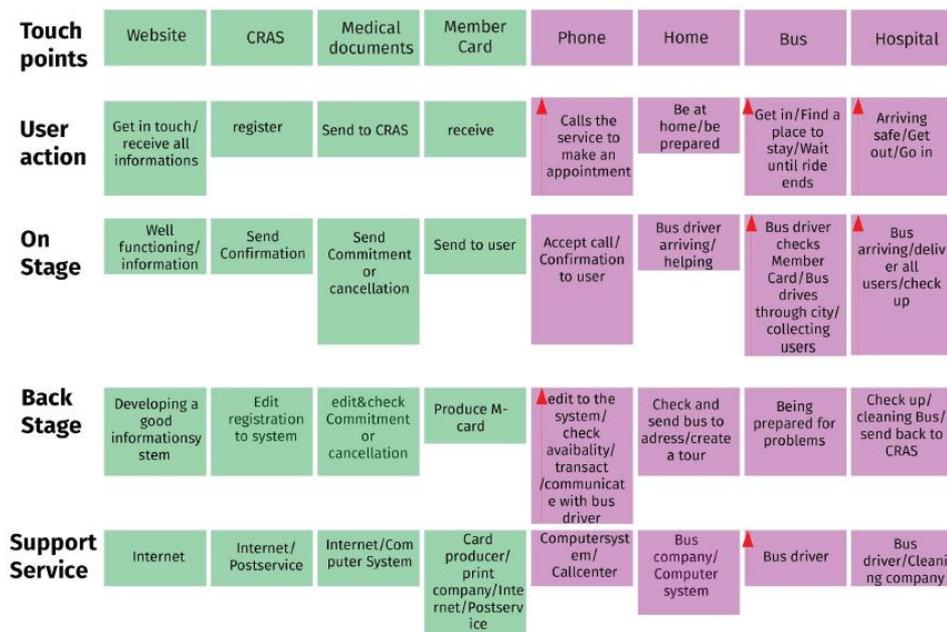


Figure 4 – Work-in-progress blueprint of the team of student that worked on health care mobility for people on wheelchair

Due to logistical constraints a visit to people on wheelchair occurred only after the Bodystorming session. Hence, further empathy with the challenge proposed by the discipline, prior to the ideation phase, relied heavily on the students own initiatives to get direct contact with people on wheelchair.

Developing Concept Ideas Prior to the Bodystorming

The actual ideation phase has initiated with the use of the Product-Service Systems for Distributed Manufacturing Idea Generation Tool, developed by Aine Petruilaityte (PhD candidate at Brunel University) (Figure 05). This activity resulted in a series of ideas on concepts on PSS/DM and contributed to refine the “unit of satisfaction” adopted by each team of students. The concepts explored all typologies of PSS, from product-oriented, to use-oriented and result-oriented and were all oriented towards the wider concept of Distributed Economy.

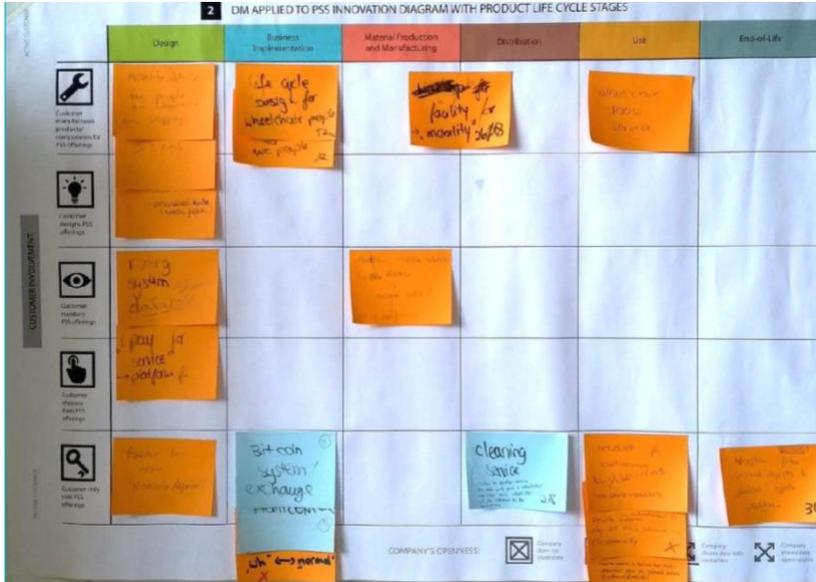


Figure 5 – Results from the Product-Service Systems for Distributed Manufacturing Idea Generation Tool

The ideation activities, prior to the Bodystorming session, also involved further development of concepts through the use of the Lego Serious Play®, as illustrated on the next image.



Figure 6 – Using Lego Serious Play® to represent key scenes of the system concepts

The tool was used in three cycles of ideation where on the first cycle the students represented three scenes of their concept; on the second cycle the teams change table and

could then intervene on each other concepts and, finally, the team would come back to their original table and develop the final proposition. Each cycle was followed by a pitch presentation with everyone able to point good aspects, flaws as well as contributions to the ideas of each team.

The Set for the Bodystorming Session

The setting to carry out a bodystorming can range from a theatre style, relying on the imagination of the participants to fill up the missing parts, to a high-fidelity prototype, with space that resembles the real setting (SCHLEICHER et al, 2010), and, finally, to the actual setting where the service will take place (OULASVIRTA et al., 2003).

Oulasvirta et al. (2003) proposes that participants should go to an environment that has direct resemblance to the environment where the service would be implemented. They present this as brainstorming “in-the-wild,” in which designers sit and brainstorm in the same context that they design for. Smith (2014) also suggests that the environment for bodystorming might be the actual place where design interventions will be implemented, using in the activity the actual artefacts and people that would operate the service. Performing in real spaces might enhance the imagination and empathy and facilitating the communication of ideas in later stages of the design process (SMITH, 2014).

A bodystorming that uses a setting that closely represents the environment where the actual service will take place reduce the cognitive workload that would be demanded if the activities relied on the participant memory and creativity. Cues can be spread on the setting, stimulating participants to retrieve relevant personal memories, facilitating the recognition of analogies and directing attention to important features of the ideas (OULASVIRTA et al., 2003).

However, it is not uncommon that such environment is not physically accessible (ex: private homes), not cognitively accessible (requiring prolonged observation or training), not socially accessible (the actual presence of a researcher can change the studied activity) or even not ethically accessible (ex: health care center). In such cases staging might be the only option (OULASVIRTA et al, 2003) and that was the case of this didactic exercise. Students have used the classroom itself and a Photography Lab to set the stage of their Bodystorming session.



Figure 7: Bodystorming in action: creating solutions for a service directed to people on wheelchair (see video: <https://www.youtube.com/watch?v=36dC6ZZT9EA>)

Despite the precarious setting, the Bodystorming session followed Segura et al. (2016)´s proposition of principles for embodied sketching design practices:

- It employed an activity-centered approach;
- It used the physical and spatial context as a design resource;

- It used non-scripted hands-on activities, harnessing the participants' free ways of acting as a design resource;
- It used both movement and play as a method and design goal;
- It facilitated a sensitizing and design-conducive space, working at the same time towards problem understanding and a solution.

The setting for the scenes of the bodystorming session were prepared according to what was idealized in the application of Lego Serious Player. Important to emphasize that none of the students have any previous acting experience. All they have to support their embodied description of ideas were regular artefacts of a classroom and the Photography Lab such as chairs, lamps, tapes, etc (and a wig!). Despite of that high level of improvisation, the playfulness of this tool has proved to be helpful on creating a positive atmosphere with effective results on a highly inspirational ideation process.

Conclusion

The conceptual build up that occurred through the previous days of this case study have clearly provided students with greater confidence to generate a variety of ideas, with an adequate understanding on the problem and possible scenarios for solutions. However, the literature has shown that the implementation of a bodystorming session works better when stakeholders can take an active role in the design process, extending or criticizing ideas but also proposing and bodily sketching new ideas (OULASVIRTA et al., 2003; VAN AMSTEL & GARDE, 2016). Perhaps this is the one issue that would make a great impact on the results of the Bodystorming session as the students have little or no contact with the actual everyday lives of people on wheelchair. The involvement of representative of the target public occurred only after the Bodystorming session have been developed, which was useful but less effective on supporting the ideation process.

The Bodystorming case study could also benefit from Oulasvirta et al. (2003) proposition that that one design question at a time should be given to the participants, who then attempt to represent ideas to solve the problem. Across the four case studies presented by Oulasvirta et al. (2003) the inclusion of stories from user data to accompany design questions was considered useful to increase the quality of the results.

Flynk & Odde (2012) argues that the integration of Bodystorming into our educational system is still relatively unexplored. That is certainly the current situation in the Design schools in Brazil as Service Design is relatively a new subject in most universities. The use of this tool propels the opportunity of bringing design students to collaborate with students and teachers from arts and human sciences. Future initiatives at UFPR are on the way and will explore joint initiatives with students from Theatre, Cinema, Psychology and Anthropology. Bodystorming is a handy creation tool especially when combined with other design tools. The application of bodystorming allows the designer to perceive possible flaws and make changes to the proposed ideas. Its effectiveness is related to the experience of the reality of other people, in other words, the designer through bodystorming can put itself in the role of the user in which allows a better understanding about the user needs. Thus, it is possible to perceive that bodystorming is an empathic tool. This makes bodystorming essentially useful, especially on Service Design projects, in which experiences are created. For that matter a more dedicated "service prototyping lab" could enable a higher level of proximity to the real world, contributing to enhance further the result of the creativity process obtained through Bodystorming.

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