

“Personalities”: a participatory approach for gender discussion

Completed Research

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Abstract

This paper reports a workshop using a Participatory Design technique called Future Workshop that uses democratic principles and values to promote the collaborative participation by different and diverse people. Our objective is questioning the normative computer culture through the development of the game “Personalities”. The game intends to promote a historical rescue of invisibilized personalities from the computing and technology areas and to foment discussions about the importance of cultural changes through participation and democratization of decision-making processes on technologies. We discuss the interactions on the resulting artifact with students and teachers to contribute to the inclusion of invisibilized people in the area and in a way to make this process richer and diverse.

Keywords

Computing Culture, Participatory Design, Gender Studies, Inclusion.

Introduction

Computing area¹ can be considered as a normative space. Some discussions problematize the computing culture² through feminist epistemologies. Authors like De Lauretis (1987) and Wajcman (2006) argued that questioning gender in standard spaces highlights that we have cultural, social and theoretical issues regarding to norms that are reinforced through discourses. These surround us as part of our experiences of being in society and have impacts in the way that we build science and technology.

¹ In this paper we consider computing area as a knowledge area, with many and diverse disciplines that involves academy, and industry.

² In this paper we consider computer culture as the interactions and relations between people, spaces and artifacts that are constructed in and by the area.

Wajcman (2006) identified power and gender relations in computing area and especially the lack of recognition of women who participate in it. Saboya (2009) argued that the power relations effects in computing are built from male and androcentric values. Lima (2013) also questioned male and androcentric values in computing assigned as scientific and universal truth that prevent the entrance and permanence of people who differ from the cultural standards that are present in the area. These researches have as common context discussion about normatives and androcentric values in computing area. These critic perspectives highlights a computing culture that shows itself standardized and reinforced by normative people, idea used as discussion purpose in this research.

Bardzell's (2010, 2018) researches discuss a feminist agenda in particular in the Human-Computer Interaction (HCI) area thinking about people's interactions and participation in use and development of computer technologies. Nevertheless, articulating a bias of gender studies for the computing areas is like stepping on quicksand since the theoretical support still focused on the women issues.

Gender discussions in these areas should to expand especially when thinking about appropriations, uses and technologies development. Researches such as S  niz (2016) report that when it comes to thinking about product, software and hardware design people's lack of participation in the process reinforces traditional and standard models by normative people which carries values that are mostly white, masculine and heteronormative.

HCI may be a perspective to address these discussions in computing areas once it is recognized for focusing on the human component in interaction with technologies. And having people as the focus of its discussions involves both technical questions and interface specifications for people's experience with the artifacts as well as social and cultural issues with discussions about how the implementation and appropriation of computer technologies influences people lives (Rogers, 2012). In this way, HCI is defined by Harrison, Tatar and Sengers (2007) as an area that interdisciplinarily addresses the interaction between people, computers and information systems not only as an informational process but, also as a way that reflects and refracts artifacts meanings, informations and contexts in which they are produced once these spheres are intrinsically related.

HCI discussions provides an approach with feminism, gender and queer studies (Light, 2011) to address people's experience issues with sociotechnical systems involving social, political, cultural and technical aspects (Bardzell and Bardzell, 2015). Researches as Star (1991), Bardzell and Bardzell (2015) build critiques and discussions about normative and male models as predominant in the area. These issues are central in our theoretical basis once these problematizations are the starting point for the discussions presented in this research.

According to Bardzell (2010), the mediation between people and technologies should also involve the central commitments of feminism. In this way, she articulates that it is necessary to consider “agency, fulfillment, identity and the self, equity, empowerment, diversity and social justice” (Bardzell, 2010, p. 1) in interactions between people and technologies. As for Merkle and Amaral (2013), the HCI area can be an intermediary to promote “the participation of groups that are repeatedly underrepresented, by class, gender, race and ethnicity, generation and capacity cuts” within the information technologies (Merkle, Amaral, 2013, p.1, our translation).

Considering HCI third wave that discusses the participation and inclusion of underrepresented groups in computing area, it is possible to use this theoretical basis about the subject. Among these references we chose Participatory Design (PD). Through people participation in the development of technologies, PD addresses possibilities and alternatives, as well as proposals for solutions of current demands that cause or will unfold on people's life (B  dker and Kyng, 2018).

Participation through PD is relevant to this research because it has in its principles collaboration between designers and community by involvement and valuing the skills and perspectives of all involved people. Are also important for PD and the development of this research the redistribution of power and resources (B  dker and Kyng, 2018).

The development of workshops to discuss gender issues in the computing area is presented as a democratic way to enable and trigger changes in the area and in society (B  dker and Kyng, 2018). The authors point out the importance of a revitalization of PD to address issues that affect the whole society (B  dker and Kyng, 2018). This revitalization would occur to promote people to make decisions and

participate in the construction and distribution of current and future technologies, information systems, processes of use and developments that are relevant to them and their communities (Bødker and Kyng, 2018). This is an exercise to approximate the third wave HCI and PD.

In this context, PD acts as a tool to promote speech and acting spaces so that people involved can influence decisions about projects and actions that make a difference to their lives (Bødker and Kyng, 2018). In the case of this research it is related to cultural, practical and philosophical changes in computing area. In addition, the PD perspective indicates that the primary goal of participatory action is to attend demands and needs of individuals and their communities so that designers understand that artifacts or processes created together must primarily bring about relevant and lasting changes to these people and their communities (Bødker and Kyng, 2018). Bødker and Kyng point out that this type of participatory development involves political positions which can trigger power disputes. These PD characteristics are building blocks for this work, once it discusses changes in the computing area that can unfold on the community.

This research began in a discipline called “Computing, Society and Inclusion” offered by the Information Systems undergraduate course in partnership with the Postgraduate Program in Technology and Society of the Federal University of Technology – Paraná, Brazil. The discipline goal was to develop a project that involved the three pillars of the discipline in a social action. For this, three students organized workshops within the theme of gender and computing through PD and board or card games.

In these workshops participants created a game called “Personalities”, addressing the proposed themes. That game was implemented in a process based on a dialogue with gender studies in computing in an attempt of rescuing historical non-heteronormative figures and the problematization of norms within the area. The objectives of this research are fomenting discussions about the cultural normatives in the area and working with de PD techniques e values for participation and democratization. Based on this context, this paper presents the analysis of our participatory approach that involved: (a) an initial workshop, involving 4 undergraduate students, conducted for the creation of “Personalities”; and (b) two interactive experiences for iteratively improve the game. The first interactive experience involved 13 high school teachers, and, the second, 10 undergraduate students.

The approach between the HCI problematizations regarding gender studies and the people participation in the artifacts creation has shown an important way for new demands come to light in a field that has been reported in several spheres as closed to the differences. Inclusively, it acts in a positive way as a possibility to construct a problematization and reflection on collective solutions.

This paper is subdivided into the following 6 sections: The second presents the principles and techniques of participatory design that are considered in this paper. The third reports the workshops with the students to discuss the themes and to create the analyzed artifact. The fourth discusses the interactive experiments with the artifact presented in the previous section. The fifth presents our discussions about the artifact, its collaborative construction, and experiences with it. Finally, the last section presents our considerations about the results.

Participatory Design: principles and techniques

Also known as cooperative design, PD had its origins in Scandinavia in the 1970s more as a cooperative and political agenda than as tools or techniques (Bødker and Kyng, 2018; Spinuzzi, 2002). In this tradition, PD stood out for the cooperation between workers and unions in the discussions about technologies introduction in their work environments. In the case of adhesion of these technologies, people involved discussed about how these would be implemented and what changes would occur in the worker's processes and training (Bødker and Kyng, 2018; Spinuzzi, 2002). In this way, the Scandinavian PD may be recognized as a discipline that contributes to a democratic society, once its principles are cooperation and redistribution of power and resources (Bødker and Kyng, 2018).

In recent years several PD techniques have been used in projects that do not reflect its democratic values in a way that these developed projects point out to specific demands (Bødker and Kyng, 2018; Muller, Haslwanter and Dayton, 1997), or to serve interests that do not relate to the decision-making power of all persons involved, as in contextual design (Spinuzzi, 2002). However, PD's democratic, political and

cooperative principles still hold in other ways and in other instances, and can be used as inspiration for initiatives that aim to provide significant changes in people's lives.

Inspired by the PD principles and with the purpose of discussing situations involving the society and their interests, this paper uses a PD technique as a guide for the workshops whose objectives involve questioning the normative culture of computing area, especially related to gender studies. Thus, the workshops carried out questions about the normative computing culture, once this theme involves changes for several people in different moments in the area, such as students, teachers and researchers, which can lead to changes in the area beyond academy.

In addition to the principles and values of PD, the workshops carried out in this research use PD techniques because they act as methods that expand or introduce people participation in project decision making (Muller; Hastonway and Dayton, 1997), which in this research context address questions about changes in the computing culture. In this way, PD techniques may contribute to dialogue spaces construction with more democratic principles, providing people participation, greater knowledge diversity, social, cultural and political perspectives, once people participation can provide several points for discussions (Muller; Hastonway and Dayton, 1997).

PD techniques are not rigid, linear and well-defined specifications rather means to assist communication between people that can result in iterative and flexible actions (Muller; Hastonway and Dayton, 1997). In addition, for these techniques application be considered PD actions they must be in accordance with the principles, values and democratic motivations that basis PD, otherwise even this application appropriate PD techniques it should not be considered participative, which may result in the exploitation, objectification, manipulation or illusion of involved people (Muller; Hastonway and Dayton, 1997).

Among several PD techniques, especially those presented by Muller, Haslwanter and Dayton (1997), we chose the technique called Future Workshop (FW) (Jungk and Müller, 1987). This technique was originally used as a tool in structured meetings between German citizens in the 1970s for the political participation of groups that, engaged with their interests, sought to create desired futures. The initial objective in FW use was for people to identify daily problems in a collaborative, democratic and participative way, to prepare proposals for a desirable future, also considering strategies for presenting changes to that ideal future (Vidal, 2005).

FW's first version organized by Jungk and Müller (1987) consisted of five phases of development: (1st) “the preparation phase”, deals with the discussion of themes, methods, organizers, rules and duration; (2nd) “the critique phase”, based on a brainstorming technique, the problem is critically discussed and presented, so that participants write down topics about the presented problem; (3rd) “the fantasy phase”, people imagine an ideal (utopian) future for the scenario debated in the critical phase; (4th) “the implementation phase”, the ideas found in the previous phases are checked and evaluated in order to plan changes and ways to achieve them; finally, (5th) “the follow-up phase”, all people discuss possibilities for changes in the workshop and, if necessary, possibly new workshops (Vidal, 2005).

FW presents an open path, a guide with phases for its use. However, like other PD techniques it can be modified according to appropriation of each group and for each specific purpose. In this research the FW was organized into four phases, presented and described in the next section. Next section presents the results of the workshop which objective is to raise and instigate discussions about the computing area through people participation. The workshop concludes with the artifact development as a means to consolidate these discussions and the participants' perceptions regarding the theme.

Participatory Workshop

Based on the original FW phases, we designed a workshop with one instance of this PD technique. The workshop main theme was to think about and create artifacts that promote computing area presentation without reaffirming its normative culture.

Although we invited students from different areas to participate in the workshop just students from the computing and design area participated. Table 1 presents the two design students, out of the four who participated in the workshop, that participated and developed the artifact “Personalities” presented in this paper.

The workshop was organized in four phases, adapted from the FW proposed by Jungk and Müller (1987). In the first one, “the preparation phase”, the organizers presented the context to be problematized considering the central theme already presented - the construction of artifacts that promote the presentation of the computing area without reaffirming its normative culture. Participants discussed about the several society spheres in which the computing area is present, for example, education, politics, health, among others. In this context, participants were exposed to two questions for discussion: a) “who has broad access to computational resources?”; and (b) “who is included in the construction of these artifacts?”

| Identifier (initials) | About the participants |
|-----------------------|--|
| LR | She is graduated in graphic design, has a master's degree in Technology and Society and is studying PhD in the same area. Has experience in the Industrial Design area, with emphasis on Graphic Design. Her research interests have focused on Gender and Feminist Studies and its intersections with the studies and development of digital games. |
| JL | He is graduated in Design with emphasis both in Visual Communication and Product Design. He studied Game Design & Development at the University of Applied Sciences in Oulu. Has been working in the creative market for the last ten years, with knowledge and experience in visual communication, strategic marketing and branding. In addition, is proficient in game development, project management and multidisciplinary collaborative work. |

Table 1. Workshop participants' profiles

After the context was presented, the participant LR said that “a company abolished bathroom gender and at the beginning it was strange to all people use the same space, but from that, people began to realize that bathroom has no gender and, based on this perspective, we can reflect that people also not should/need to be classified by their gender and/or sexuality”.

In “the critique phase” the group discussed about the problematizations that involve the computing area due to social and cultural aspects. At the moment of socializing discussions LR commented about “binarisms and segregation that evidence or underestimate a group's intellectual faculties, ending in essentialism and biological determinism. This implies in choosing one career and not another. An example would be games that reinforce gender stereotypes, games for boys and girls, which should be simple, because the girls can not keep up and this is essentialized. At the same time, women social construction as multitasking who takes care of the children and the house; a characteristic that men do not have”.

During the third phase, adapted and called “the development phase”, the participants worked on the artifact prototype creation that were related to the problematizations listed by them in the critical phase. They thought about the main goal dynamic of creating artifacts that brought people’s differences, involvement and engagement in computational doing, looking for future perspectives in this sense. In this way, LR and JL talked about the people issues who influenced the computing area and ended up being historically invisibilized.

In the fourth phase, called “the playtest phase”, LR and JL socialized with the other students their artifact characteristics. They presented the production context: (a) the idea was stimulating computer professionals and students to discuss about invisibilized people in the area; (b) present computing area for people who are not included in it. The idea that women have their contributions historically erased in computing, for example, is a fact used in artifact dynamics when players need to find out how that person's work contribute to the computing area. The artifact built in the workshop is described in the next section.

“Personalities” Conception

The artifact created in the workshop, called “Personalities” (Figure 1) was designed so that the players begin their experience knowing the personality's name and a brief description about he/she. However, the artifact do not present what the personality did neither how he/she contributed to the computing area, so players are invited to try to discover their contributions. During the match it is possible to ask for a hint about something related to that personality but, each hint decreases player points that she can reach in the end. For example, if the person does not ask for hint she earns 10 points, otherwise she loses points according to hints type requested. The score system was implemented through exchange of coins so that the cards could be bought. The 'challenge' cards present information about the personality personal lives and could be requested as hint. Other hint cards present information about how the personality's contributions influence other technologies and unfold in computing areas.

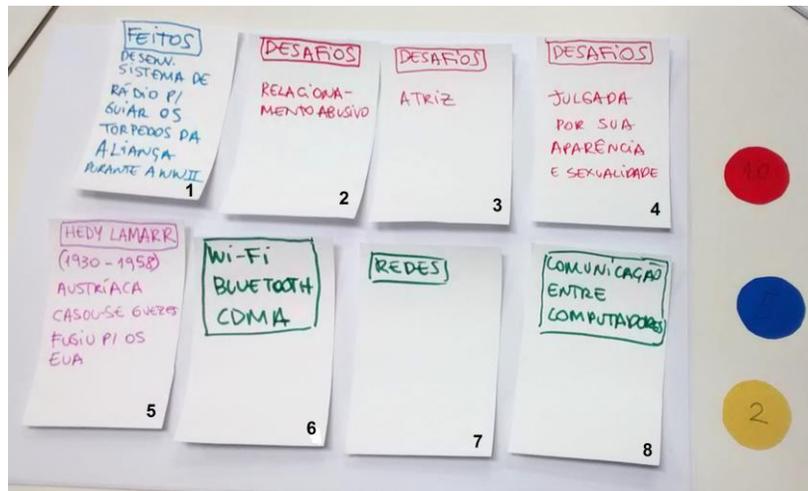


Figure 1. Artifact created in the workshop called “Personalities”³

Interactive experiences with “Personalities”

After artifact creation in the workshop, we organized a session for interactive experience aiming to observe it in a use situation to verify whether its goals was achieved. Thus, the artifact was experimented by two different groups: the first group involved teachers from public high school and elementary schools in Curitiba, Brazil; and the second group was composed of undergraduate and postgraduate students from courses in different fields such as law, psychology and computing.

First Interactive Experience

In the first interactive experience with the artifact 13 elementary and high school teachers interacted with the “Personalities”. We performed some adjustments in relation to the version created in the workshop (described in section “Personalities” Conception) in addition to having been digitally recreated and subsequently printed.

“Personalities”, as presented in Figure 2, went through the following modifications: the rules were changed so that the hints (called facts and influences) costs were explicit in the cards (this avoided the need for elements other than cards, such as the coins of the original artifact), and implemented a simplified and intuitive point system; it was included information and photos about two other people Alan Turing and Ada Lovelace, in addition to Hedy Lamarr, who was originally presented.

³ Cards translation: (1) Creations/Contributions: development of a radio system to guide the torpedoes during the 2th World War; (2) Challenges: abusive relationship; (3) Challenges: actress; (4) Challenges: Was judged by her appearance and sexuality; (5) Hedy Lamarr (1930 - 1958): austrian, married six times, ran away to the USA; (6) Wifi, Bluetooth, CDMA; (7) Networks; and (8) Communication between computers.

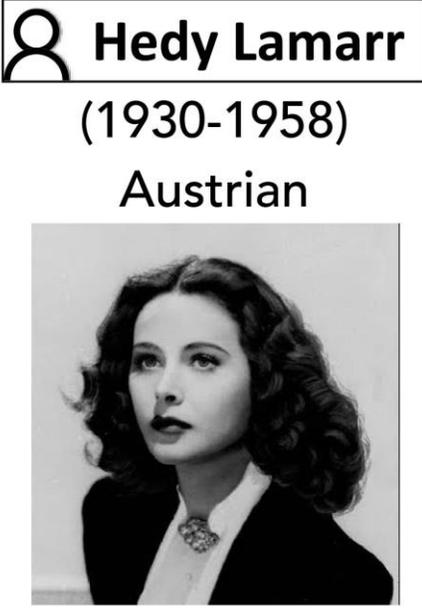
| | | | |
|---|--|--|--|
|  <p>Hedy Lamarr (1930-1958) Austrian</p>  |  Contributions +10 pt |  Fact -1 pt |  Influences -2 pt |
| | Developed a radio system to guide the Alliance's torpedoes during World War II. | Abusive relationship | Wi-fi Bluetooth CDMA |
| |  <p>Ada Lovelace (1815 - 1852) British</p>  |  Contributions +10 pt |  Influences -2 pt |
| Made the description of the first computer and the first software | The formalization of an algorithm | | |
|  <p>Alan Turing (1912 - 1954) British</p>  |  Contributions +10 pt |  Fact -1 pt | |
| Created a theoretical model for a universal computer | Worked for British intelligence in a center specializing in breaking codes | | |

Figure 2 – Some “Personalities” cards first version

After being played by teachers, “Personalities” presented failures that made people's experience difficult, and in some cases even frustrated. The main problem identified refers to the artifact functioning, because it required players to provide the correct personality's name to be successful, frustrating them, since participants were not aware of computing history. Despite the existence of cards about the personalities' life, facts and influences of his/her contribution to the computing area, people who tested the artifact argued that it was almost impossible to figure out the correct answer with the information provided. In addition, the hints costs was pointed by them as a demotivating element, since the player always seemed to lose points, until eventually presents the correct answer.

“Personalities” Reviewed

Considering the results and feedbacks of the first experience, “Personalities” was adjusted to be considered a game, which can be defined as an artifact that has structured rules and objectives (Adams, 2010). Thus, the artifact was converted into a cooperative card game whose players try to designate the life facts and what contributions in computing area belong to two personalities (Hedy Lamarr (Figure 3) and Ada Lovelace (Figure 4)). Thus, the score cards presented in the first experiment are now used as a point counter for the correct answers. We also inserted a new card called “answer sheet” containing the correct answers.

Considering these changes the game has the following rules: (1) the players receive a deck of 25 cards (2 cards with names and photos of the personalities that should have their contributions and facts identified by the players; 3 cards of contributions - 2 of each personality identified in the deck and 1 of another personality; 9 fact cards - 3 about Hedy Lamarr; 3 about Ada Lovelace; and 3 about Alan Turing. These cards present information about the personal life of each personality; 9 cards of facts - 3 by Hedy Lamarr; 3 by Ada Lovelace; and 3 by Alan Turing; and 2 cards of answer sheet 1 by Hedy Lamarr and 1 by Ada Lovelace); (2) with the cards in hand the players must identify the contributions, facts and influences of the two personalities indicated in the cards that present name and photo; (3) After defining the corresponding cards of each personality, players check the answers with the answer sheet and count the points of the cards that represent correct information. The game can be played in competitive mode, in which players must indicate the facts and contributions of each personality and at the end of the answer sheet checking declare winner the one who scored more points.

| | | |
|--|---|--|
|  Hedy Lamarr (1930-1958) Austrian  |  Contributions 10 pts |  Fact 1 pt |
| | Developed a radio system to guide the Alliance's torpedoes during World War II. | Abusive relationship |
| |  Influences 2 pts | Answer Sheet - Hedy |
| | Wi-fi Bluetooth CDMA | <ul style="list-style-type: none"> - Contribution: Developed radio system to guide the torpedoes ... - Fact: Abusive relationship - Fact: Actress - Fact: Judged by her appearance and sexuality - Influence: Wi-fi; Bluetooth; CDMA - Influence: Networks - Influence: Communication between computers |

Figure 3 – Different types of Hedy’s cards second version

| | | |
|--|---|--|
|  Ada Lovelace (1815 - 1852) British  |  Contributions 10 pts |  Fact 1 pt |
| | Made the description of the first computer and the first software | Her parents were divorced in the 19th century |
| |  Influences 2 pts | Answer Sheet - Ada |
| | The formalization of an algorithm | <ul style="list-style-type: none"> - Contributions: made the description of the first computer ... - Fact: Her parents were divorced - Fact: Lost her father with 8 years old - Fact: Receive the name of her father's love - Influence: The formalization of an algorithm - Influence: Theorizing in Computing - Influence: Theorized about the process known as looping used in programming |

Figure 4 – Different types of Ada’s cards second version

Second interactive experience

In the second interactive experience, now considering “Personalities” as a game, participated 10 undergraduate students from different areas (8 of computing, 1 of law and 1 of psychology).

With the described changes “Personalities” was experienced by these students whose besides proposing modifications to improve the game, presented other perspectives about game use to discuss and present the computing area in non-normative ways. Particularly because it aims to present facts and professional actions of people often invisible in the history of the area. In this experience, participants confirmed that the game can be a relevant tool to present facts about personal and professional life of invisibilized people in computing area. This is particularly important for students who are in the beginning to study in the area. Participants also pointed out that the game can be improved with personalities increasement, they

also indicated that it would be interesting to add a third personality as part of the game challenge. Participants also indicated that some people presented in the game may be better known in the area, such as Bill Gates and Steve Jobs, so that players know the differences (personal and professional) between them and the invisibilized ones. However, this would change the game purpose to show only invisibilized people in the area. This last observation raises questions about how people perceive the computing area and how they often reproduce their normative structure and culture, even at moments they are instigated to perceive new perspectives and facts, as discussed by Merkle and Amaral (2013).

These interactive experiences with the game created in the first workshop were important to reaffirm the values and principles of PD that based this research. It specially demonstrated how the participatory conception by different and diverse people can contribute not only to create artifacts but, also promoting discussions about issues surrounding these people and their communities.

The next section presents our discussion on workshop results, on the artifact created and experienced, as well as our insights into these actions.

Results and Discussion

Thinking about the computing area beyond its normative culture, LR and JL created “Personalities” game in order to recognize historical figures of these areas, to know about their lives and to problematize historical invisibilizations. Discussion on normative culture in these areas called up participants to search about people’s life, mostly women, as Ada Lovelace and Hedy Lamarr, who were erased from historical records. Besides Alan Turing who had his life interrupted due to sexuality prejudices.

“Personalities” address facts, contributions and influences of these people bringing cultural, social and historical rescues that permeate their lives, history and recognition of contributions to the area. The game development through a collaborative, participatory and iterative perspective according to the use situations brought the discussions to a implementation level that provided conditions for improvements in the game; discussions about it regarding to technology even though it is an unplugged artifact. It is important to highlight that the results (artificially, theoretically and conceptually) were achieved not only due to the use of a PD technique, but also by keeping PD values and principles during the iterative game development process.

The interactive experiences and the participatory workshop provided conditions for sharing and discussing critical standpoints through participants collaboration bringing their values, principles and experiences to game development. Besides engaging reflections on technology-related areas norms, the discussions promoted questions about plural and diverse participation by considering intersections among other social markers. The idea of expanding these discussions to people who are not in academic space was a highlight that influenced the techniques choices present in the game development. Thus, linking the academic discussions of HCI to communities that are not present in the university, as occurred in the first interactive experience with teachers.

PD techniques and approaches adopted in LR and JL artifact development as well as in interactive experiences with students and teachers strengthened the collective and democratic participation commitment, promoting the problematization from these perspectives and towards inclusion.

Final Considerations

Workshops and interactions using PD techniques based on democratic principles and values made possible to involve different and diverse people and contexts in order to questioning social, cultural, and historical problems, such as people who are invisibilized in computing history, through an artifact that aims to present this history.

By presenting and discussing “Personalities” creation and development process this research sought to value the connections between gender studies, HCI studies, and PD techniques in order to demonstrate the importance of democratization and participation in the technology development and for people from different realities (social, historical, economic, cultural and political) inclusion in themes that affect them.

Bardzell (2010) pointed out the importance of feminism mediation between people and digital interactions once these relations involve social, political and cultural issues. She indicates values as

commitments to think gender in the area: “agency, fulfillment, identity and the self, equity, empowerment, diversity and social justice” (Bardzell, 2010, p.1). For this research development through PD was the epistemic framework chosen considering the democratic, participatory and plural biases.

This perspective provided conditions for bringing Wajcman (2006), Saboya (2009), Lima (2013), and Bødker and Kyng (2018) problematizations to the spotlight during the research development, aligning both theory and discussions raised by the participants during the workshops. This reflects on the resulting artifact, once it has been designed with these values since its creation. Taking that into account, even if the artifact promotes a historical rescue of invisibilized personalities from the computing and technology areas, its proposal is beyond this; it seeks to foment discussions about cultural changes in these areas and not only stay in a superficial historical rescue. Through participation and democratization of decision-making processes on technologies, we expect to contribute to the inclusion of invisibilized people and yet to foment critical perspectives on the normativities of the computing culture.

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