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Participatory Arts-based Game Design: *Mela*, a Serious Game to Address SGBV in Ethiopia

S M Hani Sadati
Centre for Community Based Research
hani.sadati@mail.mcgill.ca

Claudia Mitchell
McGill University
claudia.mitchell@mcgill.ca

Abstract

The emerging body of work on participatory game design (PGD) highlights the significance of working with end-users' voices as the starting point. This is particularly critical in serious games that seek to impact social change in areas such as sexual and gender-based violence (SGBV). This article, which is based on fieldwork with 16 college instructors in four agricultural colleges in rural Ethiopia, draws together concepts of participatory visual methods (particularly cellphilming), PGD and a game universe perspective to offer an engaging and interactive approach to the design of serious games. We refer to this as 'Participatory Arts-based Game Design' (PAGD), an approach that was used to create *Mela*, a serious game designed to address SGBV in Ethiopian agriculture colleges. By exploring *Mela* game's participatory and engaging design process, this article offers a framework for serious game development to address critical social change issues that go beyond the game itself. It has the potential to not only place the end-users at the centre but to recognize the critical role of engagement and immersivity in a field oriented towards impact and sustainability.

Keywords

Participatory Design, Serious Games, Sexual and Gender-based Violence.

Introduction

In recent years, increasing attention has been paid to engaging participants in the participatory process of serious games design. The main concern of Participatory Design (PD), which dates back to socio-political movements of the 1960s and 70s, where civil society demanded more participation in decision-making (Simonsen & Robertson, 2013) is to engage those who will be affected by the designed technology in a co-creating process in order to make it more responsive to their needs. One of the key ideas in PD is that "disempowered user groups should be empowered, and that diverse knowledge should be integrated" (Mildner & Mueller, 2016, p. 76). In this framework, the emerging body of work on participatory game design (PGD) highlights the significance of working with game users' voices as the starting point. This concept aligns well with creating serious games that seek to impact social change in areas such as sexual and gender-

based violence (SGBV).

To date, challenges remain regarding how or when to involve participants in the game design process. Khaled and Vasalou (2014) found the notion of involving end-users in the PGD process complicated, specifically in serious game design, where knowledge of the content should be coupled with the knowledge of game mechanics design. Bridging these two parts is a challenge because game design technicians might not have enough knowledge of the content, and community members and researchers who are aware of the content might be lacking knowledge of game mechanics. Simonsen and Robertson (2013) referred to "genuine participation" as "the fundamental transcendence of the user's role *from* being merely informants *to* being legitimate and acknowledged participants in the design process" (p. 5). Achieving this level of participation requires a deeper engagement of users, to involve them as more than just interviewees (Simonsen & Robertson, 2013). How can the users of serious games be genuinely engaged in the participatory design process?

This article aims to introduce into PGD, and the field of serious games design, the idea of what we term the 'Participatory Arts-based Game Design' (PAGD) method as an artistic and collective game creation practice. Arts-based research is defined by McNiff (2008) as the:

> "systematic use of the artistic process, the actual making of artistic expressions in all of the different forms of the arts, as a primary way of understanding and examining experience by both researchers and the people that they involve in their studies" (p. 29).

As we highlight in our case of the participatory design of the serious game, *Mela*, this approach builds on the use of participatory visual and arts-based methods and tools such as photovoice and cellphilming (cellphone + filming). These tools have been used across a variety of disciplinary areas in health and social sciences, seeking to see "through the eyes" (Mitchell et al., 2018, p. 88) of participants as the starting point for addressing social issues. In this article we explore questions of how participatory arts-based tools, alongside other methods can be at the centre of the PGD. How can this work draw together the 'participatory' aspects of game design and the 'participatory' aspects of arts-based research? What do the findings tell us about the use of these approaches in relation to addressing a serious national and global issue such as SGBV in the context of the Global South?

Serious Games for Serious Social Change

Serious games, a term coined by Abt in 1987, are digital or board games with entertaining aspects alongside additional agendas that create informative environments for the players/audiences. They are part of innovative educational technologies that can be a promising platform for social change intervention programs.

Aligning with the focus of our design work on gender inequalities and SGBV, we noted that serious games to address gender-based violence and sexual health have been gaining attention. Gilliam et al. (2016) developed and evaluated a narrative-based digital game called *Lucidity* to foster knowledge about sexual violence and health topics among youth in Chicago. Targeting adolescent

dating violence, *Green Acres High* was developed as an intervention for school settings, aiming to address the "risk factors in adolescents' attitudes to abusive relationship dynamics and empowering adolescents to both take action within their relationships and support peers' actions in reducing abuse" (Sorbring et al., 2015, p. 128). The results of this study also showed a positive perception among young people towards using a game as an intervention method for socio-culturally sensitive topics. *Campus Craft* is another game aimed at sexual assault prevention within universities by situating the player in simulated real-life scenarios. Using participatory game design methods, scholars at Indiana University created a prototype of this game, where the results showed that "computer-based gaming may be a viable avenue for sexual assault prevention education" (Jozkowski & Ekbia, 2015, p. 1). Hieftje et al. (2019) developed and tested *One Night Stan* as a non-digital game-based learning tool in the form of a social card game prototype for HIV prevention and sexual risk reduction for young black women in Connecticut, United States. The researchers concluded that *One Night Stan* is a feasible approach for interventions that aim to help players protect themselves against HIV risks.

In the Global South, games on SGBV are limited, and as Ismail et al. (2019) showed, PGD practices are scarce in the context of Low- and Middle-Income Countries (LMICs), but there is a growing recognition of how serious games could be relevant to addressing knowledge and attitudes concerning sexual and reproductive health. For example, *Family Values*[1] and *Moraba*[2] are two digital games that aim to address gender equity mostly in an African context (Fisher, 2017). In Kenya, Winskell et al. (2018) created *Tumaini* ("hope for the future" in Swahili), a smartphone game-based intervention to address HIV among participants aged 11-14. In Uganda, Bada (2013) adopted a participatory design approach to explore the effect of digital learning through "computer games, video drama, and virtual classroom" on HIV prevention (p. 2). These samples point to the increasing importance of 'self-educating tools' (Sadati, 2019 b) which rely more on learner engagement and less on access to other training resources[3].

Putting People in the Picture in Game Design

Participatory methods have been applied to various fields and practices, such as teaching (Joseph, 1978; Rubio et al., 2018), research (Hall, 1979; Trickett et al., 2020), developing intervention programs (Holliday et al., 2020; Nastasi et al., 2000), leadership (Mehra & Braquet, 2014), and design (Bakos et al., 1976; Huybrechts et al., 2020). A common area that gathers these various fields under the concept of 'participatory' is their attention to the idea of community voice. As Chambers (2008) highlighted, participatory methods, focus on changing power dynamics and contribute to transforming the communities.

Participatory visual methods: A transformative approach

The growing range of innovative digital technologies has provided researchers with the

[1] Funded by USAID and created by Half the Sky Movement (HSM) to reach low-cost mobile phone users in India, Kenya, and Tanzania.

[2] Funded by Southern African Regional Office of UN Women and created by Afroes, a Kenya and South Africa-based gaming company.

[3] We recognize that even though many of these Serious Games are produced in the Global South (and perhaps even with the Global South as co-producers), there are likely to be broader issues of colonization and 'whose development' (See for example Crewe & Harrison, 1998)

opportunity of working with participatory methods in which the visual is key. A sample of these participatory visual methods (PVM) includes photovoice, drawing, participatory video or cellphilming, and digital storytelling (Mitchell et al., 2018). Given the critical role of 'art-making' and creative expression attached to this work, there is increased recognition of these methods and tools as arts-based as well as visual (Knowles & Cole, 2008).

Mitchell et al. (2018) argued that these arts-based and visual methods are particularly helpful when researchers work with marginalized groups and communities whose voices are often silenced, and in relation to issues that are difficult to put into words or are taboo and hard to discuss in public. Mertens (1999) classified participatory approaches under the umbrella of transformative paradigm, which also includes perspectives such as emancipatory, anti-discriminatory, Freirian approaches, and those built on the viewpoints of feminists, racial/ethnic minorities, people with disabilities, and people who work on behalf of marginalized groups. As Mertens (2012) described, the paradigm has four sets of assumptions: axiology, ontology, epistemology, and methodology. Its ontological assumption "defines the reality as a social construct that defers per locality" (Corine Van Veen, 2014, p. 32). From a social constructionism perspective, our knowledge, or common ways of understanding the world does not originate from objective reality; instead, we as humans, build our social world in a joint effort (Leeds-Hurwitz, 2006) and give life to words, phrases, narratives, concepts and meanings. Creswell (2014) considered the transformative paradigm as an action agenda that tries to change the lives of participants, participants' affiliated institutions, and researcher(s).

Participatory visual research is particularly appropriate in a transformative paradigm as a type of "research as intervention" or "research design for social change" (Mitchell et al., 2018, p. 21) in community-based research, where resources are limited and based on local resources. In this framework, research turns into a facilitator of dialogue within the community as well as between the community and two groups: policymakers and the researchers.

Participatory Game Design

Applied to the game design field, PGD engages the end-user in the game creation process, which otherwise often remains limited to professional game designers. However, there is no standard way of conducting PGD, and the process can vary based on the setting or the participants' backgrounds and prior knowledge. As Sanders and Stappers (2008) noted, "opinions about who should be involved in these collective acts of creativity, when, and in what role vary widely" (p. 6). For example, when the participants of PGD have software development skills, it would be possible to engage them not only in the content development of a game, but also in developing actual digital prototypes/games. However, when the participants do not have the technical game development knowledge it limits their involvement possibilities. This can be seen in Bardaran and Kim's (2019) work with ninth grade Career and Technology students, where they explored participants' activities through an interest-driven participatory design framework by asking them to engage in "designing and developing games in various forms from physical card games to 3D video games" (p. 391). Working with participants who did not have the technical game development knowledge Cucinelli et al. (2018) used Scratch "a popular entry-level [block-based] visual programming language that allows users from all ages to think creatively" (p. 152) and engage in creating digital stories, animations and games. They aimed to enhance the engagement of the participants from just being users or testers to active participants in a PGD process.

Nevertheless, many participants recognized their lack of programming knowledge as an obstacle during their participation, and some chose focusing on different parts of game design (Cucinelli et al., 2018).

Mildner and Mueller (2016) highlighted four common ways of involving stakeholders in the serious game design process: a) Stakeholders as users; b) Stakeholders as testers; c) Stakeholders as informants; and d) Stakeholders as design partners. The last point is considered the "highest level of involvement" and "the common techniques used here are contextual inquiry and participatory design" (p. 77). In this framework, collaborative prototype development could be a method for participatory design. For example, in their participatory game prototyping sessions Ampatzidou and Gugerell (2019) invited the research participants to gather around a basic prototype (developed by the research team), and involved them in different non-scripted activities, such as "the adoption and debate of 'extreme' scenarios, the improvisation of new rules, and suggestions about the appearance of the game." (p. 348).

One of the strategies for shedding light on 'when' and 'how' to involve participants in a participatory design of a serious game is to identify the design stages. The serious game design process encompasses various steps, each of which offers a potential venue to involve participants. In their Game Design for Lifelong Learning Playful Experience (GD-LLL-PE), Romero et al. (2017) identified five steps in the serious game design process: a) context and learner analysis; b) game design; c) pedagogical integration; d) play; and e) experience. They also recognized four perspectives that should be considered in each of these five steps: a) learning perspective; b) game universe perspective; c) gameplay perspective; and d) user experience perspective. Each of these steps and their associated perspectives (taken together or separately) can provide a potential venue for involving end-users in a PGD processes based on their background and prior knowledge.

Mela, a Serious Game

Building on both participatory research and a transformative approach, and working with participatory visual and game design methods, we frame in this section a collaborative research project at Ethiopian agriculture colleges to address SGBV and contribute to building a safe learning environment for college students and staff/faculty.

SGBV in Ethiopian post-secondary institutions

The Eastern Africa sector of United Nations Office on Drugs and Crime (UNODC) on 12 January 2020 reported: "violence against women and girls is still a serious problem in Ethiopia and one which is fueled by persistent gender-biased attitudes and practices" (UNODC Eastern Africa News, 2020, para. 1). In Ethiopia, violence against women and girls is common throughout the country (Kassa & Abajobir, 2020) and continues to be a significant challenge and a risk to women's empowerment (Central Statistical Agency - CSA/Ethiopia & ICF, 2017).

In patriarchal settings such as post-secondary institutions in Ethiopia, SGBV is one of the major problems faced by female students (Arnold et al., 2008; Shimekaw et al., 2013). A study among female students of Mizan-Tepi University (Henok et al., 2015) shows that two-thirds of respondents experienced sexual harassment, and one-fifth of respondents experienced attempted rape after joining the university. Other studies at post-secondary institutions in Ethiopia have

confirmed these results: Wolaita Sodo University (Adinew & Hagos, 2017; Tora, 2013); Madawalabu University (Takele & Setegn, 2014); Hawassa University (Meleku & Sendo, 2015), Jimma University (Demise et al., 2002); Ambo University (Bekele & Deressa, 2014); and in Technical and Vocational Education and Training (TVET) colleges (Rai & Joshi, 2020).

Although there is a growing recognition that learning institutions should be places for transformation (Leach & Mitchell, 2006), the findings from much of the global research on SGBV demonstrate how learning institutions are often reproducing grounds for power imbalances that result in high rates of SGBV. While much of the work at educational institutions has focused on getting at the magnitude of the problem, increasingly we are seeing intervention programs in Ethiopian post-secondary settings. Tora (2013), for example, suggested creating a safe learning environment for female students by implementing prevention and empowerment programs. Meleku and Sendo (2015) recommended anti-harassment policies in universities to prohibit all types of sexual violence, and Mat (2016) suggested Comprehensive Sexuality Education programs, emphasizing the need for broader school policies' support and the inclusion of community members. Peer education intervention programs also have been suggested by Takele and Setegn (2014) in Ethiopian educational environments.

Still there often remains a silence around sexuality issues in education settings (Altinyelken & Mat, 2018), and there is clearly a need for interventions that engage a broad range of community members, including instructors, as key players of educational institution. The serious game, *Mela* (meaning "find a solution" in Amharic) is a self-educating tool that aims to create a playful learning experience for instructors of the agricultural colleges in Ethiopia and improve their capacity in combating SGBV on campuses. Using the transformative approach, we show how the concept of game-based learning can act as a 'research as intervention' in Ethiopian agricultural post-secondary institutions to facilitate a dialogue around gender issues and contribute to the elimination of SGBV from their campuses.

Mela, a game-based intervention to address SGBV in Ethiopian agriculture colleges

In the context of Agricultural Technical and Vocational Education and Training (ATVET) colleges in remote and rural areas of Ethiopia, the need for self-educating tools and resources that can engage the college community is particularly relevant. A survey at four of these agricultural colleges (Wolaito Sodo, Woreta, Maichew, Nedjo - the four targeted colleges in this article) showed that the rates of different types of sexual violence against female students (many between the ages of 17 and 20) are very high (Mitchell & Starr, 2018). In response, some scholars emphasized the instructors' potential role in tackling SGBV in Ethiopia (PHMIL, 2014).

However, there are some challenges for agricultural colleges' instructors because of various restricting conditions (such as long distances from larger institutions, where there could be professional training support), that prevent instructors from having a consistent access to professional development. These agricultural colleges are unique in that they typically attract rural students, who live on their own for the first time at very young ages (16 or 17), and who are younger than those in universities (students can enter colleges with only grade 10). The programming itself is specialized in that students do much of their learning at demonstration (practice) sites, where they might be particularly vulnerable. In outdoor courses students are involved in physical activities and instructors' control over the class might become minimized.

Also, the fact that the majority of instructors and leaders are male means that patriarchal structures prevail. Although there are now gender structures in place in many of these institutions (such as Gender Offices or Gender Clubs), the training opportunities are few. These conditions call for innovative approaches that acknowledge the critical role that instructors in particular can play in the lives of this demographic of young people.

Developing Mela; a Participatory Arts-based Game Design (PAGD)

Research Participants

In this project, the data were gathered from instructors of four agricultural colleges in four different regions of Ethiopia: Maichew (North), Nedjo (West), Wolaita Sodo (south-central), and Woreta (North-west). The participant instructors of this research were the end-users of the *Mela* game.

The number of participants in each college varied, making a group of three instructors in the smallest group and five instructors in the largest one. Out of 16 participants, six were female, and 10 were male, with the age range between 23 to 60. Participants' work experience varied from 3 to 31 years, and all of them were connected to the Gender Clubs of their colleges. Participation was voluntary, and the instructors had the right to withdraw from the process at any time during the research.

Design process

The PAGD process included five main phases: a) individual interviews and cellphilm production; b) a participatory game universe design workshop; c) pedagogical integration; d) prototype development and feedback collection; e) game development and feedback collection. The fieldwork, including organizing and facilitating multiple stages of design processes was led by the first author. In this article our focus is on cellphilm production and participatory game universe design along with a brief overview of the pedagogical integration.

Phase 1*: Cellphilm production:* Cellphilming is a Participatory Visual Research method (MacEntee et al., 2016; Tomaselli et al., 2010), where participants use cell phones (or other recording devices) to make short videos in response to prompts, questions, community issues or challenges. The work with cellphilms comes out of a long tradition of community or participatory video (Mitchell & DeLange, 2019) and is based on a simple 'no editing required' approach[4] to making two-to-three-minute productions, where it is possible to complete the entire production in only a couple of hours. The process of cellphilm workshops generally includes six steps (Sadati 2018). Step One of the process is 'Introduction and objectives', where participants are provided with a brief overview of PVM and the concept of cellphilming. Moving on to Step Two, 'Ethics and grouping', participants are guided through ethical considerations related to the process and introduced to different genres and formats of cellphilms. Additionally, this step involves grouping participants if necessary. Step Three, 'small group work or brainstorming', is a 'getting started' component considering the critical issues of the community, which in our case were SGBV issues in the colleges and instructors' roles in addressing them. Here, we started off with group discussions where instructors could discuss and list SGBV issues of their colleges, specifically around two prompts, the "Instructors' potential roles in addressing SGBV in the college", and/or

[4] Monica Mak and Claudia Mitchell coined this term 'N-E-R' in a workshop at McGill University, May 2005, to describe a process of creating participatory videos based on careful planning through storyboarding and no editing apps.

"Barriers that prevent instructors from addressing SGBV in the college". Then participants in each college, who were working collectively as a group, selected one or two of the listed issues to create their cellphilms by following the next three steps, 'Storyboarding', 'Filming', and 'Screening and reflecting'.

One-day cellphilming workshops in each of the four colleges were conducted to reach two goals: **a)** to provide an opportunity to participants to generate participatory knowledge on SGBV issues in their colleges, and to think deeply about the SGBV situation, the reasons, the consequences and potential contributions that instructors can have in solving the issues; and **b)** to generate a knowledge base that can inform a potential digital serious game that aims to build instructors' capacity in combating campus-based SGBV. The data in this phase was gathered from instructors' group discussions and video narratives (see Sadati & Mitchell, 2021 a).

Phase 2*: Participatory game universe design workshop:* In their GD-LLL-PE framework, Romero et al. (2017) presented the concept of 'game universe' as one of the game design perspectives. The game universe concept refers to multiple aesthetic "game narrative elements like the story, characters and settings" (Romero et al., 2017, p. 6). Game universe preferences can be influenced by participants' previous game-related experience, age, beliefs and values, aesthetics, technological favourites, or their "preferences for different forms of interactive engagement" (Romero et al., 2017, p. 5).

Involving agricultural colleges' instructors in the participatory game universe design workshop provided them with an opportunity to collectively create knowledge in the form of a game universe to be used in *Mela*. In this workshop instructors first learned about the concept and main elements of serious games and their applications in learning environments. Instructors of each college (as one group) then selected a potential role from the list of roles they had made in phase 1, and created a possible game universe to show how that specific potential role could be practised in real life. This process included scenario writing, drawing of the settings and locations (e.g., college campus, practice site environments or office space), and identifying the characters and the potential options of choice and their consequences (see Table 2).

The data in this phase were stories and their associated settings that instructors developed during the workshop to show how an instructor can support students regarding SGBV issues. The stories were non-linear, 'choose your own adventure' style, with two-choice and two-ending decisions. These stories were sources of inspiration in writing *Mela*'s scenarios.

Working with the discussions and stories

In **phase 1**, the production of cellphilms provided two sources of data: transcripts of group discussions and stories of instructors' lived experiences regarding SGBV issues on campuses.

Group discussions revealed a variety of issues and concerns about the potential roles of instructors in creating an SGBV-free learning environment for students. Thematic analysis of participants' group discussions resulted in nine general themes as potential roles for instructors. For example, research participants believe "awareness creation" is one of the key roles that an instructor can play on campus, and this can be toward five groups: female students, male students, both genders together, faculty members and staff, and the community (students' parents). See Table 1 for all

general themes and their subcategories.

Table 1
Thematic analysis of potential roles of instructors to address SGBV on campuses

The general themes	Subcategories
Awareness creation	For male students specific (e.g., Minimizing superiority behaviour)
	For female students specific (e.g., Training on leadership skills)
	For both genders (e.g., Reporting processes for both victims and witnesses, like how to report an SGBV incident?)
	For faculty and staff (e.g., codes of professional practice)
	For community (e.g., tackling taboo issues and gender stereotypes in the community.)
Gender and HIV mainstreaming	Incorporating gender issues in the curriculum/courses
Providing extra tutorials (especial treatments)	For female students to help them to improve their academic performances
Creating a safe environment	Physical environment in practice or demonstration sites.
	In the courses that there is danger of chemical incidents (e.g., for pregnant females.)
	Psychological
Being Gender-inclusive	In distributing the protective resources and learning materials
	In the college registration' gender ratio
	In designing rules and regulations
Providing counseling and guidance to students	Considering both males and females (e.g., Consulting the females who have been harassed.)
Reporting to concern bodies	Such as reporting incidents to gender office and/or student dean
Conducting research projects related to gender issues	For example, developing proposals to start projects on income-generating activities which will help female students
Supporting needy students (Specifically females)	For example, by providing stationary materials to decrease the transactional sex;

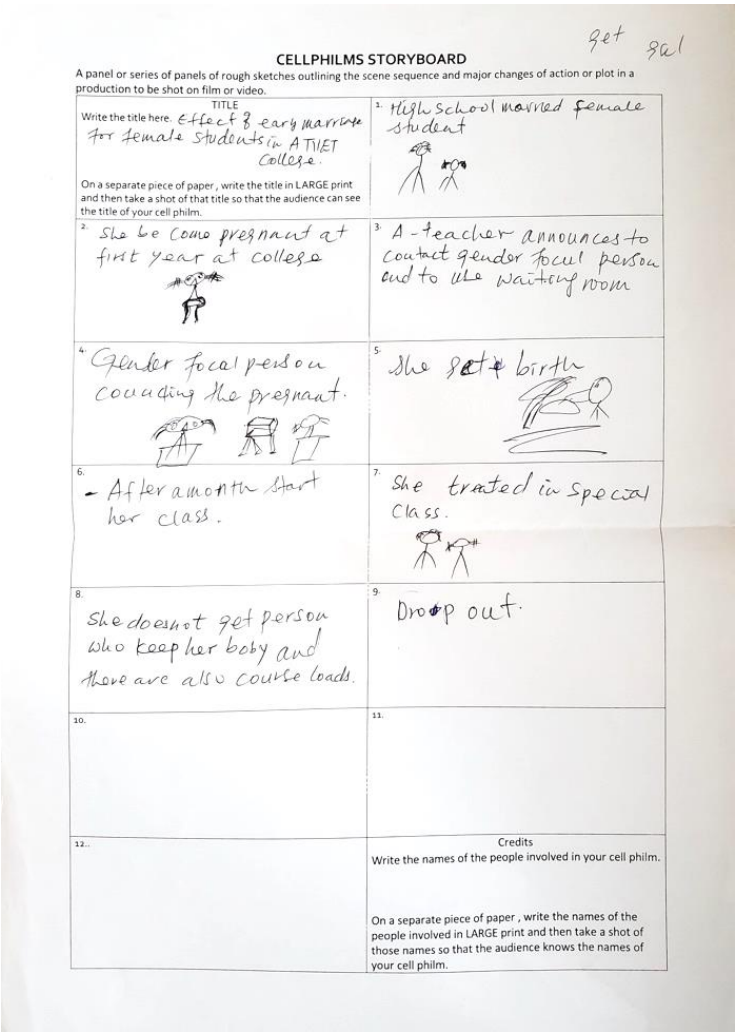
Participants also reflected on the barriers that stop the instructors from fulfilling their potential roles. Thematic analysis of group discussions regarding obstacles identified nine general factors:

"lack of resources (which can lead to restricted applicability level of the knowledge)", "lack of enough information, training and awareness", "time shortage", "lack of commitment in some instructors", "cultural restrictions", "lack of organizational structure", "lack of a health expert", "shortage of financial capacity in students", and "lack of interest of some female students to participate in trainings".

Creating the lists of potential roles and their barriers opened both participants' and researchers' eyes to the various ways that instructors could address SGBV incidents on the campuses. Each item on the list was a potential topic for a short cellphilm video. The goal of creating these videos was to learn how participants put their suggested potential roles into practice in simulated real-life situations. Due to the time limitation, participants in each college selected one or two items from their lists to create a storyboard. In the storyboard, instructors assigned a title for their cellphilm and created a scenario divided into multiple sequences, each of which shows the event's location, characters and incident. Figure 1 is a sample of storyboarding.

Figure 1

Sample of a storyboard for the cellphilm: Effect of Early Marriage on Female Students in Agriculture College'



In total, the participants created six short cellphilms, lasting between 2:05 to 3:42 minutes. In these cellphilms, participants showed their perspectives on how instructors can support female students by various forms of involvement, like 'providing advice', or guiding them through the process of reporting an SGBV incident. These pieces provided local working material to develop *Mela*'s scenarios based on true stories. See Table 2 for the cellphilms' topics and focus areas.

Table 2
Titles of cellphilms and their focus areas, created by research participants

Title of Cellphilms	***Focus area of the Cellphilm***
Providing Advice	To raise awareness on instructors' potential role in intervening and solving some SGBV problems of the colleges.
How to Report GBV	How instructors can support female students in reporting incidents to gender clubs or other concerned bodies.
Supporting Survivors	To inform instructors of their potential role as active bystanders and female students' advocates.
Rural Female Student and Communication	To target the communication difficulties and shyness that some female students have which lead to their lack of participation in the class. The cellphilm aims to show how instructors can address this issue specifically in relation to girls from traditional settings.
Effect of Early Marriage on Female Students in Agriculture College	To highlight two ways of supporting pregnant students (who might have difficulties on the campus and in their studies) by instructors: informing them about Gender Club facilities and providing them a special tutorial class so that the student can catch up.
Lack of Instructor's Commitment to Respond for GBV Problem	To address the lack of commitment and sense of responsibility among some instructors regarding their college's SGBV issues.

Overall, phase 1 group discussions provided an informative landscape of instructors' capabilities and obstacles towards playing a meaningful role to prevent SGBV in agriculture colleges. Also, the cellphilms offered authentic scenarios to clarify the issues, and contributed to evolving the game universe. Learning about instructors' potential roles alongside the data from cellphilms provided useful perspectives to capture their educational needs and develop the game's 'learning objectives'. For example, through these cellphilms the themes of being an active bystander, effective classroom organization and management, professional code of conduct (on-campus and off-campus), gender-responsive advocacy, breaking gender stereotypes, and cyberviolence all emerged.

In phase 2, participants went one step further in their efforts to develop *Mela*'s game universe, and especially to help make the stories more interactive. In this phase more scenarios were developed based on the list of potential roles created in phase 1, but with two specific differences: a) The

workshop was game-oriented, and participants developed the stories while being conscious from the beginning that they might be used as game scenarios; b) The stories in the workshop were offered in a non-linear model (including branches in stories) versus cellphilms that followed a linear narration. Linear stories do not provide options for the audience to make decisions and consequently change the scenarios' directions. Table 3 provides a brief description of the game stories developed by participants in the workshop.

Table 3

Game storylines developed by participants in the participatory game universe design workshop

Story Title	***Summary of the storyline***
Instructor providing advice to students affected by SGBV	A female student approaches an instructor at her/his office regarding a male student's insulting behaviour. Here the instructor is given two options to choose: a) to call the male student and inform him about his bad behaviour or b) to ignore accepting the female student's experience as a problem. The first option results in conflict resolution between male and female, and the second option ends with continuity of the problem and, finally, a drop in female's grades.
Female students' participation	An instructor asks a question in the class but notices that although the number of female students is higher than the males, mostly male students raise their hands to answer the questions. The instructor is given two options to choose: a) to ignore and pass or b) to provide the chance (random chance or lady first) for female students or encourage them to participate more. If the instructor selects to skip the situation, the story ends with having female students failed or withdrawn from the course, but if they select to address the issue somehow, the story ends with increased participation of females in the class.
Active Bystander	One female student was physically harassed by a male student in the practice site. She did not report it to the instructor, although the instructor noticed it. Now the instructor has two options: a) to ignore what happened, assuming if there was something serious the girl would report; b) to acknowledge that there is a case and she/he needs to take action. In this scenario, the branch (a) continues with the female student no longer attending the class. The instructor contacts her friends and family to inquire about her. Her family also starts blaming the girl. The female student feels sad and starts looking for a job. The instructor finally finds her and takes her to the Gender Office so that she can get help. In branch (b), the instructor relates the incident to another instructor, who guides the girl to the Gender Office to learn more about their services. In the Gender Office, the girl feels safe to report the harassment incident, and then the Gender Officer takes her to the class. The instructor invites the Gender Officer to the class to advise students.

"How to report, whom to report GBV"	A female student who is on her way to the class is stopped by a male student. The male student forces her to talk with him. The instructor who is on the way to the same class notices the situation and has to choose between two options: a) to ignore; or b) take an action. Ignoring this situation affects the female student in different aspects of her life, such as physically, academically and socially. However, in the second option, the instructor decides to talk to both students and mediate.

These stories and scenarios were generated as part of "context and learner analysis" and "game universe design" based on the GD-LLL-PE model (Romero et al. 2017, p. 5).

Phase 3: *Pedagogical integration*: In this phase, the learning objectives were developed by the authors based on the collected data from prior phases, particularly the group discussions. As well as consulting experts from education and gender fields (in Canada and Ethiopia), various practice-based resources (e.g., toolkits, guidelines, government documents) in the areas of gender and teacher education (e.g., Afolabi & Abatan, 2014; Baker, 2015; FAWE, 2018; Mlama et al., 2005; UNESCO, 2009; USAID, 2009) were reviewed.

Since developing *Mela* was an iterative process of research-creation (for details see Sadati & Mitchell, 2021 b) there is no clear temporal boundary between scenario development and pedagogical integration stages. These two practices proceeded simultaneously in collaboration with a team of eight young people from Ethiopia's gaming community (D5gamecon group), who supported the technical aspects of the game design/development.

The story of this roleplaying game occurs in one academic year of an Ethiopian agricultural college, where the player takes an instructor's role. On the first day, the player meets her/his colleagues at the faculty lounge, where instructors are gathered to have the year's first meeting. While having an informal talk with colleagues, the player is invited to the college orientation session. Here is the first decision-making spot for the player whether to accept or decline the invitation. Then the player enters a class to start a course. From the first weeks, the player faces different SGBV-related challenges on the campus that threaten or impact female students. The challenges are offered throughout the game in the format of multiple progression options, where the player needs to make a decision from a set of alternatives. Each option has a separate consequence and can take the player into a different direction/scenario. This format enables having two different endings in *Mela* game. The game mechanics and feedback system have been designed in a way that when the choice is more appropriate, in terms of promoting gender equality or preventing SGBV issues, the player not only receives a certificate (as an incentive) but also students' grades (specifically female students' grades) improve in the exams. This feedback system aligns with what some participants suggested in their game storylines. The gameplay duration can vary between one to two hours, but ideally the player should repeat the game to experience all the scenarios and collect all the certificates. As Mildner and Mueller (2016) noted, making branches in the game, where players can decide which path to follow, increases the game's re-playability and complexity.

Here we offer two samples of scenarios from the data collection phases that were incorporated into

the game stories after pedagogical adjustments by the authors and gender experts.

In “Active Bystander” the course instructor witnesses a male student's insulting behaviour toward a female student and needs to decide to intervene or ignore. Figure 2 shows how participants described the situation in text and in drawing of the practice site setting. The adjusted version of this story, its characters and setting, and possible options for actions were incorporated in the game considering the overarching storyline context. Figure 3 shows how story and setting (agriculture college demonstration site) were designed in the game.

Figure 2

Text and drawing of research participants for ‘Active Bystander’ scene

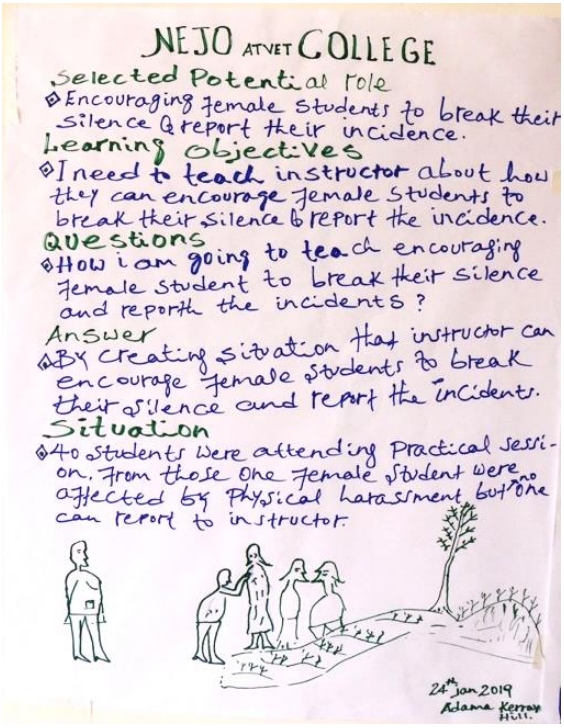
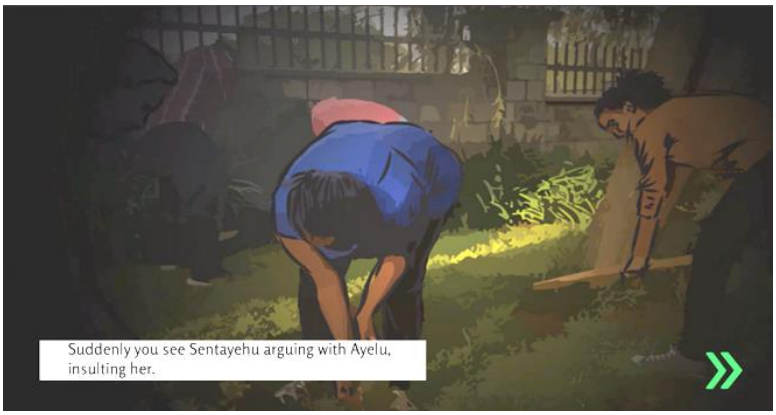


Figure 3

Image for 'Active Bystander' scene in Mela game



In another example, "Female students' participation", which happens inside the classroom, the instructor asks a question and observes less participation of female students even though there are more females than males in the class. The instructor needs to decide between solving this issue or leaving it as it is, hoping that it will be resolved naturally. Below, Figure 4 shows a sample of participants' drawing and options for decision making, and Figure 5 shows how a similar story is presented in the game.

Figure 4

Lack of 'female students' participation in classroom activities' scene in drawing of research participants

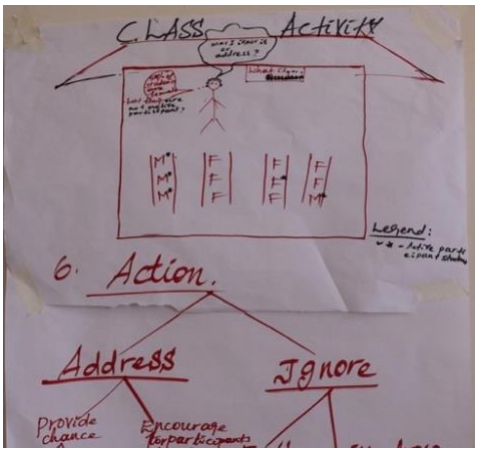


Figure 5

Lack of 'female students' participation in classroom activities' scene in the game

Phases 4 and 5: Our design process also included two other phases of 'prototype development and feedback collection' and 'game development and feedback collection'. The feedback was collected from instructors mainly to learn how they perceived the effectiveness of *Mela* in building their capacity to address campus-based SGBV. Almost all of the participants confirmed

the game's contribution to tackling SGBV issues of colleges; as an example, a male instructor from Woreta college noted: "*the game opens the door for me as to look at issues associated with SGBV*". Most of the instructors also mentioned that they will recommend the game to their colleagues.

A significant point in the entire story development process was to explore how instructors imagine themselves as agents of change in their colleges. The stories could be read as examples of what we termed the "narrative imagination" of instructors (Sadati & Mitchell, 2021 a).

Towards A framework for 'Participatory Arts-based Game Design'

We propose the idea of Participatory Arts-based Game Design (PAGD) as an innovative way of utilizing digital, visual and arts-based practices to enable an authentic participation of game users in game design. In the case of *Mela,* we explore how cellphilming, as part of PGD, can provide collectively created storylines of the serious games.

The widespread growth of digital technologies has changed the way people conduct participatory research and the way researchers "might think about involving participants in participatory processes" (Mitchell et al., 2018, p. 122). Various types of digital devices, along with online and offline platforms, pave the way for a variety of creative methodologies, specifically when the subject itself is an innovative tool such as a serious game. Here we explore the unique features of PAGD, and how this approach addresses some critical challenges in the participatory design of serious games such as: how and when to involve the end-users in the design process; how to make the participatory process thoroughly engaging and immersive; and how to bridge the content knowledge with game design knowledge.

In the PGD literature, there are some creative ways of engaging participants in design and data collection. For example, working with adolescents, Hieftje et al. (2014) used three innovative methods for meaningful data collection to create a health intervention videogame. First, they used the Storytelling Through Graphic Illustration method and made a professionally painted image as the centrepiece of their focus group discussions. Then they engaged their participants in the My Life activity, where adolescents envisioned their future decade on a paper by drawing a linear visual storyline. In the Photo Feedback Project method, they asked participants to take pictures of their environments, peers, favourites (e.g., clothing, hairstyles) and important people and objects. Although Hieftje et al. (2014) did not refer to the concept of 'game universe perspective' in their design, their methods (specifically the Photo Feedback Project) align with this perspective by collecting valuable data to be used in the script writing, character development and artwork/aesthetic of the game. The researchers recommend applying various creative strategies when engaging youth and creating meaningful interventions, so offering PAGD can be a response to this invitation.

At the heart of our idea of PAGD is the inclusion of at least one arts-based tool. As discussed above, it can take various forms, including photovoice, participatory video/cellphilming, drawing, and digital storytelling. What happens during PVMs is a process that Mitchell et al. (2018) called 'Critical Community Engagement' (p. 6). The essence of this approach is to use images or the arts as a common, easy-to-understand and aesthetic language to create a space, where community members collectively engage in a problem-solution discovery process, reflect on it, and turn it into

a policy changing dialogue. Different PVMs have different processes to create this critical community engagement. As we identify below, PAGD enables a Critical Community Engagement process through multiple features.

Producing multimodal material: In this research, participants became involved in a research-creation process (see Sadati & Mitchell, 2021 b), which started with creating cellphilms. These productions are original and locally-based content (SGBV issues, stories, college environment, and characters), which are valuable resources for game illustrators in creating a game environment that is authentic and realistic to the game audiences, who are the research participants. The cellphilms can also be a source of information for game script developers, inspiring them to think of scenarios that are more appropriate to game audiences' lived experiences. Following the work of Jewitt et al. (2016) and others on multimodality, the games can be read as artistic multimodal productions based on storylines, images and illustration, sound and other design features.

Immersivity: Immersivity refers to an engaging experience where people, in a sense, 'lose themselves' in the experienced environment in a way where they might not be aware of their surroundings or even of the passing of time (Jennett et al., 2008). Weik von Mossner (2020) referred to three routes of engagement and immersivity as character, narrative and storyworld. PVMs help in deepening an understanding of engagement in social science research. The process of 'putting people in the picture' specifically in *Mela* through cellphilming highlights the significance of these three routes of engagement as contributors to an immersive experience. The game universe design process includes these three elements and turns the process into an immersive experience both for participants and researchers.

Ownership: Through their involvement in different participatory phases of this research, the voices of participants were key in identifying the SGBV issues in their colleges. This means the participants 'own' the data and are more likely to bring the results back to their communities for actual use on the ground. This is something Ampatzidou and Gugerell (2019) referred to, noting that the participatory game prototyping process creates a sense of ownership among the participants, which "supports the rooting of the game in the local context" (p. 347). The use of participatory arts-based and visual methods to create *Mela*, with its potential to enable engagement, reflection, and the taking of action, supports a sense of ownership and enhances the potential for sustainability, even after the researcher team withdraws at the end of the project.

Leaving a tangible product in the community: Mitchell and Sommer (2016, p. 522) ask "What happens when the researchers depart?" and continue to ask "how can the use of participatory visual methodologies empower participants to continue their efforts beyond the study?" Within the framework of PVMs (regardless of the type of technique - photovoice, cellphilm, drawing, digital storytelling), both 'product' and 'process' are important. While the 'process' helps to engage participants and collect reliable data, the 'product', or what Mitchell et al. (2018, p. 121) called the "digital artifact", is an entity that could remain in the field and promote further dialogue. This tangible outcome in PVMs can be varied based on the applied technique. Some of these outcomes can be shown as photos/exhibitions (*Kupitia macha va Akina mama / Through the Eyes Of mothers*, 2016), videos/cellphilms (MacEntee et al., 2016) or digital storytelling (Mitchell et al., 2018). In this way, PVMs offer a 'getting out' strategy that does not abandon the community after the researchers depart.

Here, what is left in the community is the actual *Mela* game alongside the collectively constructed knowledge and experience of participants during the project's activities. In this context *Mela* is not only a self-educating tool for the professional development of instructors, but also a tool to generate other types of activities (e.g., game nights, quiz nights) that are meant to address the gender-based issues of the colleges. These activities have been introduced to the participants as "next steps" so the community could keep their engagement with the tool after the researchers departed from the field (see Sadati, 2019 a; Sadati, 2019 b). This method expands the boundaries of a project's viability in the field by planting a seed (in our case, a serious game) that will grow within the community that uses and interacts with it.

This process is in line with a transformative approach and the idea of research as an intervention that can be extended to the community beyond the research. Within a transformative framework, research is considered dialectical, as an intervention for social change and as a way of empowering the research participants. We echo Freire (1970), who said education is not a neutral act, and believe research also cannot be neutral. Research needs to serve the oppressed and the most vulnerable, otherwise, it either serves the researcher for individual academic/professional benefits, and/or the policymakers to justify making more oppressive policies.

Conclusion

In this article we have focused on Participatory Arts-based Game Design (PAGD) as a way to engage college instructors in developing a self-educating tool (a digital serious game) that could be used in colleges to address SGBV. The process of creating the game in a participatory way with the instructors (as research participants) is the first stage. How instructors use the tool in their own professional learning is the next stage of the design of pedagogical tools, and of course, ultimately it is critical to study the impact of this work on contributing to a safer environment for students.

Here we have argued for the idea of PAGD as an approach that brings together a participatory arts-based and visual method with a participatory game design process, focusing on a game universe perspective. Our experiences with the design of *Mela* show that this framework has the potential to create a venue for, as Simonsen and Robertson (2013) described, genuine participation of game users in the design process. It also can be an example of "highest level of involvement" of a "stakeholder as a partner" in designing a serious game (Mildner and Mueller, 2016, p. 77). PAGD not only places the end-users at the centre but recognizes the key role of engagement and immersivity in the field, a point that is likely to contribute to ownership and to promoting the game in local settings. It involves the research participants, who do not have the programing knowledge, in an engaging game universe design process and expands their role and the scope of their contribution to be more than just a feedback provider in the broader game development practice. This is particularly significant since the effectiveness of serious games has sometimes been criticized for not having an adequate or appropriate understanding of players' exact needs (Kalmpourtzis, 2019) or for being influenced by the specific goals and agenda of funding agencies (Fisher, 2017). Also, it is critical to consider the entire life-cycle of the game-design process, which starts with researching the issue and initiating the idea and can extend to launching and promoting the final product. Genuine participation of community members in the design and production process benefits various steps of this cycle. For example, having a sense of ownership could lead to promoting the product by participants among other community members.

More studies need to be conducted to explore various aspects of PAGD method and its impact in different settings, but the initial effect here can be understood from the research participants' responses to feedback forms during two prototype-test and game-test sessions, where the majority confirmed the success of the game in reaching its goals. As also explored elsewhere (Sadati, 2019 b) participants' testimonials showed that they found the *Mela* game to be an effective tool in building agriculture instructors' capacity in addressing campus-based SGBV. The feedback collection process was important since it specifically supported refining the user experience, gameplay (ways of interacting with game), and the provided content.

Finally, we see that there are many implications for how researchers, designers and communities work together, including the most obvious one of studying the game's impact on reducing the high rates of SGBV on college campuses. Applied to addressing sexual and gender-based violence in LMIC settings, this approach seems particularly relevant to ensuring that *Mela* is more than 'just a game'.

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