Tackling implicit and explicit bias through games that teach workplace diversity

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Abstract: Even when diversity is perceived as an asset for organizations, powerful biases work to prevent equality in the workplace. In this paper, we discuss the mechanisms behind such bias, how we have designed games to address it, and what our playtesting has revealed to work well in teaching workplace diversity in India. Diversity in the workplace has been increasingly recognized as a competitive advantage for organizations as well as a social value in modern societies. Nevertheless, entire sectors of the economy are far from achieving parity with regards to diversity in gender, disability, ethnicity, and age, among other dimensions. Past research consistently reveals bias in hiring and promotion processes, even if the decision makers do not explicitly, or even consciously, betray that bias. Stereotypes, both positive and negative, are ingrained in culture and permeate the way people reason about the world. In addition, confirmation bias and historical precedent serve to reinforce large gaps in access to jobs. Due to the implicit nature of bias, it is difficult to directly address it by teaching the importance of diversity in the abstract. However, research points to the impact that concrete measures can make in correcting this bias. We have applied game-based learning to promote the values of diversity in the workplace within companies, NGOs, and governmental organizations in India, the world's largest democracy. We prototyped 12 game designs, both digital and tabletop, on a variety of platforms. We measured 10 designs through post-playtesting surveys within our target groups. Our results favor designs that teach using concrete rather than abstract terms, designs that lead people to discuss within a group about the play experience, and designs that allow people to share and to connect to each other across social boundaries. This paper discusses relevant research in economics and social psychology as well as how we incorporated these findings into our game designs. We hope the paper can serve as a useful starting point for others building games that teach diversity, inclusion, or related concepts.

Keywords: game design, game-based learning, diversity, inclusion

1. Introduction

Diversity poses challenges for an organization. As Phillips (2014) writes, *"Research has shown that social diversity in a group can cause discomfort, rougher interactions, a lack of trust, greater perceived interpersonal conflict, lower communication, less cohesion, more concern about disrespect, and other problems."* Perhaps it is simply easier for people of similar backgrounds, experiences, and education to understand each other and cooperate together in a group (Stevens, Plaut, & Sanchez-Burks, 2008). And yet, there are strong forces that are pushing organizations to diversify their workforce. Our modern societies value social justice, in which all citizens should be treated fairly, and given similar opportunities. But perhaps a more compelling reason, from the point of view of an organization, is that diversity is increasingly perceived as a competitive advantage.

Firstly, a company that strives to market to diverse customer groups stands to gain by having representatives of those groups within their workforce (Nair & Vohra, 2015). There are a number of amusing examples of public relations blunders when translating product names into other languages, for example, such as when *"The American Dairy Association replicated its 'Got Milk?' campaign in Spanish-speaking countries where it was translated into 'Are You Lactating?'"* (James, 2014). Secondly, an under-employed group can represent an economic advantage for any organization that can include them. As an example, the startup company ConBody was started by a former prison inmate with the goal of bringing "prison-style" workouts to the public. Running contrary to most companies, ConBody searches out ex-cons as they are released from prison as a way to bolster their credibility, as well as serving the socially-useful role of reintegrating them into society (Hansen, 2016).

Thirdly, diversity within teams leads them to make better decisions. For one, a diverse crowd brings additional viewpoints and experiences to the table. However, the quality of the interaction appears to change as well. Racially diverse teams did a better job sharing information to solve a murder mystery puzzle (Phillips, 2014). Other studies found that participants worked harder to find evidence to convince people of different races or political parties than they did for those of their own group (Wang, Williams Phillips, Loyd, & Lount, 2006). In addition, participants

may take dissenting opinions more seriously when they come from someone who looks different than themselves (Phillips, 2014).

Fourthly, diversity is linked to success. Diversity in top management and corporate boards has been shown to improve a firm's value and growth (Credit Suisse, 2012; Nair & Vohra, 2015). The findings extend to the business-unit level as well, where gender diversity independently predicts financial performance (Badal & Harter, 2014).

1.1 Bias

Diversity is therefore both a social and business goal. But it is not sufficient for organizations to declare their intentions of improving diversity to make it a reality. A body of research in social psychology and cognitive neuroscience details the many cognitive biases at work against heterogeneity. Biases are thought to serve an evolutionary purpose, that of a cognitive "shortcut" that enables people to make important choices quickly, without pursuing and weighing all available evidence. Indeed, some researchers argue that our very ability to reason may have evolved primarily to convince others of our ideas rather than to make logical decisions (Mercier & Sperber, 2011).

Stereotyping is the process of categorizing people based on superficial criteria such as gender, clothes, age, wealth, skin color, disability, etc. Depending on the stereotype, a person can imbue a group of people with either positive or negative attributes, or even a mix of the two, such as groups that are simultaneously respected and disliked, invoking envy, or groups that liked but disrespected, invoking pity (Fiske, Cuddy, Glick, & Xu, 2002). When a person is dealing with someone who falls into a group that both "disliked" and "disrespected", neuroimaging studies suggest that a part of the brain that deals with social cognition is not even activated. In other words, they will be considered as an object rather than as a person (Harris & Fiske, 2006).

Importantly, although people may perceive bias in others, they rarely do so in themselves. These "implicit" biases still shape decisions about one's capabilities and role in society. Even biases as small as 1% can have a large effect in employment, due to compounding effects of previous success (Martell, Lane, & Emrich, 1996). Researchers have demonstrated biases within the hiring process again and again, such as through experiments involving sending out pairs of fictional resumes for job applications, where only the name, age, or place of birth is modified (Moss-Racusin, Dovidio, Brescoll, Graham, & Handelsman, 2012). To counterbalance the power of implicit bias against hiring women, musical orchestras began running "blind" auditions by hiding candidates from the jury's view behind a screen. This change is credited with a 50% greater chance of a woman being selected for the job (Rouse & Goldin, 1994).

1.2 Social impact games

Although at first glance games may not appear to be "serious" way to attack entrenched social problems such as racism, xenophobia, and discrimination, video games now tackle important social issues. Excellent social impact games have addressed violence against women (*Finding Zoe.* Take Action Games, 2007), the impact of war on civilians (*This War of Mine.* 11 bit studios, 2014), climate change (*Climate Challenge.* BBC, 2006), clinical depression (*Depression Quest.* Zoe Quinn, 2013), the refugee crisis (*Against All Odds.* UNHCR, 2005), and acceptance of homosexuality (*LongStory: A Dating Game for the Real World*. Bloom Digital Media, 2014), amongst many other pressing issues.

We believe that games are a promising vector for promoting the values of diversity within the workplace and for teaching practices that lead to more inclusive work environments. As compared to other media, games have the advantage of interactivity, letting players make choices and analyze the results of their actions. Games offer a safe environment for people to confront the problems of diversity and inclusion. Finally, games released on the mass market have the potential to be more scalable, though perhaps less personalized, then diversity trainings for each organization.

2. Related work

Many organizations have turned to diversity training to improve diversity and inclusion within their workplace. Diversity training within the USA has its roots in the 1960s and has evolved over the years from a focus on strict

compliance with law to improving working relationships and leveraging diversity to strengthen the organization (Anand & Winters, 2008). Diversity training has also been criticized for being too reliant on the skills of the trainer or simply ineffective (Bergen, Soper, & Foster, 2002).

Within the scientific community, a number of interventions to combat bias and stereotypes have been developed. Informing women about stereotypes can improve their performance at math (Johns, Schmader, & Martens, 2005). Implicit race bias can be treated like a habit to be broken (Devine, Forscher, Austin, & Cox, 2012). Conscious mimicry of black actors by non-black subjects reduced their implicit bias against black people (Inzlicht, Gutsell, & Legault, 2012). Even just imagining intergroup contact with an outgroup member can reduce intergroup bias (Turner & Crisp, 2010).

Virtual embodiment using avatars have also known to reduce implicit racial bias (Peck, Seinfeld, Aglioti, & Slater, 2013). However, there is also evidence that the ability of perspective taking to increase or decrease stereotyping is mediated by an individual's need for cognitive closure (NFC), a sort of "closed-minded" way of thinking. People with a higher NFC may instead *strengthen* their stereotype based prejudiced as a result of a perspective taking exercise (Sun, Zuo, Wu, & Wen, n.d.).

Games have also been used to tackle the subjects of diversity and inclusion. Jane Elliot's landmark "Blue Eyes/Brown Eyes" experiments in the late 1960s is an important example (Peters, 1987). Nevertheless, diversity has been under-addressed by digital games, with only a few notable contributions. Among them, *Parable of the Polygons is* an online simulation that demonstrates how slight preferences for one's own group can lead to massive segregation (Vi Hart & Nicky Case, 2015). A very different approach has been taken by *Lim*, an abstract movement game in which the player controls a coloured square that must "blend in" to avoid being attacked by differently coloured squares (*Lim.* Merrit Kopas, 2012).

Perhaps the most interesting recent work promoting diversity through games is the card-game *Buffalo: The Name Dropping Game* (Kaufman & Flanagan, 2015). In contrast to the many prosocial games that advertise their message overtly, Buffalo was specifically designed with a "stealth" approach, meaning that nothing in the packaging or description of the game makes it clear what the message is, in this case that public figures from diverse backgrounds are missing or unknown by most of the public. The creators have demonstrated that the stealth approach improves both "social identity complexity" and "universal orientation" as compared to a control condition in which the players know the purpose of the game before playing.

3. Process

The goal of this work was to create games to promote diversity within the workplace in India. The games were designed to be used within workshops with a variety of different organizations, such as companies, NGOs and governmental organizations. In addition to diversity in terms of language, culture, and religion, our audience were also diverse in terms of background, age, and their level of digital expertise. Thus, our strategy was to keep the game format open to both digital and non-digital games. It was also expected that some non-digital games may later evolve into digital games.

Our design process drew on User-Centered Design (UCD), which is a philosophy as well as a set of methods to allow end-users to influence how a design takes shape (Abras, Maloney-Krichmar, & Preece, 2004). The essence of UCD is to minimize the mismatch between the user's mental model and the designer's mental model. Such a mismatch may arise due to a difference in socio-cultural differences, technological understanding or prior knowledge. One of the commonly followed design processes in User Centered Design is the double diamond design process, which involves 2 alternating divergent and convergent phases (Design-Council, 2007).

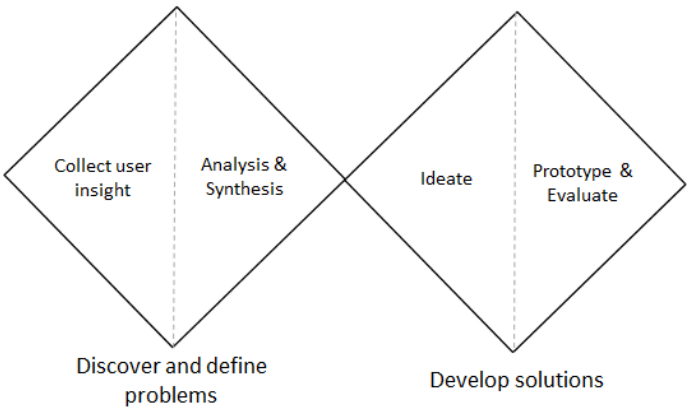


Figure 1: The double diamond design process (Design-Council, 2007)

Our design process was a hybrid of iterative design and the double diamond design model. In the first phase, the focus was on understanding the users through extensive user research. User research was conducted through a series of stakeholder interviews with our on-site partner ZMQ. To get a deeper understanding of end users' mental models and attitudes, a survey was conducted across users in our target organization. In the second phase (convergence), the data from the surveys were analyzed. Analysis revealed that age and gender are considered the most important kinds of diversity in the workplace. The third phase involved ideation of various game (and game-like) concepts. In this phase, a participatory design approach was used. A series of game jams were conducted in India and in France with various stakeholders. The power of participatory design is in bringing the expertise of various stakeholders into the design process. While the game jams in India gave us the opportunity to gather direct end user input, the game jams in France helped bring in the knowledge and creativity of a community of game creators, with expertise in game design, programming, and art.

In the fourth phase, prototypes were developed based on a combination of sociology, economics, psychology concepts based on literature and the ideas from the various game jams. These prototypes were then sent to end users in India who evaluated each of the games.

Figure 2: Game jams with the target audience in Delhi (left) and with a community of game creators in Paris (right).

The ideation and prototyping processes were carried out iteratively to ensure that the concepts that resonated best with the end users were refined while the less promising ones were filtered out. The first iteration most often took the form of a low fidelity paper prototype, which allowed us to quickly adapt to playtesting results before building more high fidelity prototypes over 2-3 iterations.

4. Game design

Given the difficulty and novelty of creating games that would both promote diversity and be appropriate for our target audience of the Indian workplace, we set out to create a large number of prototypes in the first phase (roughly 1-year), that would be then whittled down through playtesting results. In other words, we began with the assumption that most of our game concepts would not work, and that we needed to test many different ideas to find what did.

4.1 Prototypes

Over the course of this first project period, we created 12 game prototypes. The games span different forms, exploring both video games and board games, and different genres, including visual novels, cooperative multiplayer action games, platformers, and debates. The following list describes each in the order of their release, and they are compared in Table 1. Images of each are shown in Figure 4.

1. *Planes* celebrates a little-known accomplishment of India in terms of diversity, that of having a large percentage of women pilots flying commercial aircraft (Sinha, 2014). In the game, 2 players manipulate a mobile device together to maneuver a plane through a 2D environment.
2. *DuoBots* is a desktop platformer in which the player alternately takes control of 2 robots with complementary abilities. The goal is to stress the power of cooperation through the mechanics.
3. *Pin My State* encourages players to seek out information instead of generalizing based on stereotypes. Since people show a general tendency to assume that outgroup members are relatively more homogeneous than ingroup members (Quattrone & Jones, 1980), the core dynamic of this game is to create situations where the players' tendency to succumb to assumptions based on outgroup homogeneity effect is negatively reinforced.
4. *Tell Me About* is inspired by the traditional card game *Ace*. It encourages players to identify connections across various regions of India and their respective cultures and traditions.
5. *Pirate Partage,* first developed at a game jam event, is a 4-player cooperative board game where each player assumes a different physical handicap (one can't speak, another can't hear, another can't see, and still another can't use their hands). Players discover how to communicate despite these barriers.
6. *Hired!*, inspired by research into implicit bias in the hiring process, is a card game in which players collaboratively make hiring decisions. Each player has different biases that they are trying to abide by while simultaneously keeping them hidden and trying to guess biases of the others.
7. *Another Day* is an interactive fiction where the player takes on the role of an HR manager in an Indian company. She must resolve conflicts between her employees around food, religious practices, and clothes, in order to create an inclusive workplace.
8. *Weather Check* is a tool for opening a discussion about people's feelings on being excluded. It is essentially an online poll, but players' responses are visualized as rain clouds that float across a blue sky. This visualization is meant to be projected on the wall of an organization in order to show the hidden "weather" of an organization's inclusivity.
9. *All Stereotypes are Wrong - Indian edition,* is based on a game developed during a game jam event. The game generates random stereotypes by pairing two kinds of "opposites" together, such as "young-old" and "smart-dumb", and players vote on whether to associate young to smart and old to dumb or rather the opposite, young to dumb and old to smart. The game attests to both the arbitrary and yet pervasive nature of stereotypes.
10. *Parley* is a debate game, inspired by a podcast episode in which participants had to argue absurd positions with conviction. In each round, the players are divided into two teams with a moderator, and the two teams are randomly assigned to argue which of two personalities or professions is superior. By forcing people to support a viewpoint different from their own on diversity issues such as gender or handicap, the game is meant to give players a fresh perspective.
11. *Same Day Different Lives* is essentially a "social network for two", pairing up two anonymous players who are different on some demographic dimension, such as ethnicity or religion. Over a week's time, players are asked to exchange photos and audio stories with their partner, learning about their lives and backgrounds along the way. The game is meant to build empathy between strangers of different groups.

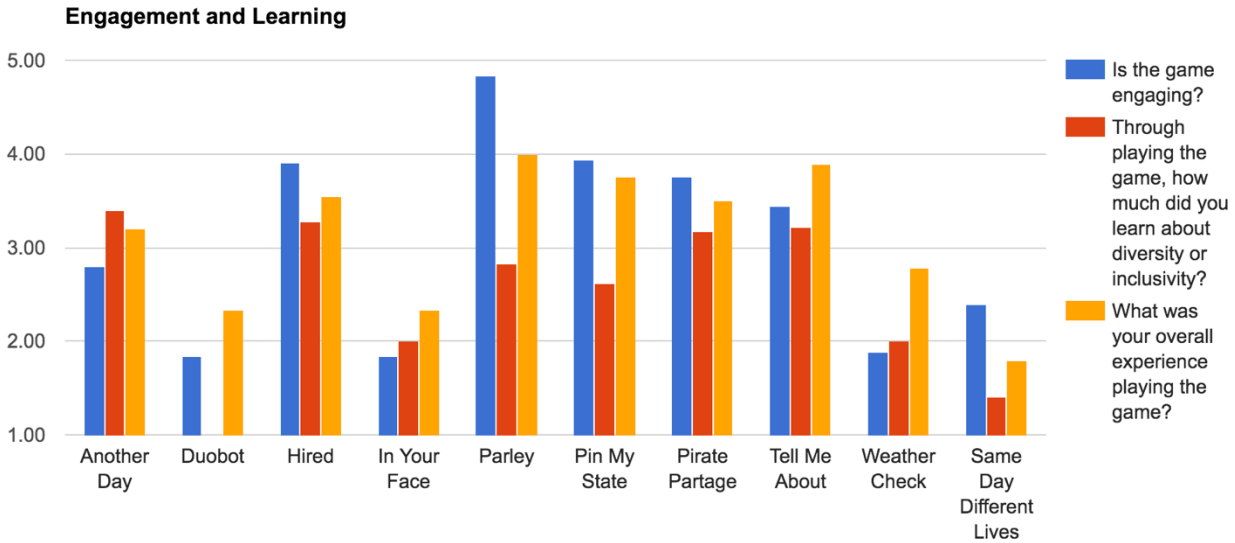
12. *In Your Face* is a web browser extension that leverages automatic face categorization to measure gender diversity in a professional social network. The results can then be posted onto a website and linked to from other social media.

Table 1: Comparing the prototypes in terms of medium, the number of players and how they interact, and finally the estimated time per game session (not counting time to setup the game)

Prototype	Medium	# of players and style	Time per game
Planes	Mobile	2-player cooperative	5 minutes
DuoBots	Desktop	Single-player	20 minutes
Pin My State	Board	4+ player in teams	10 minutes
Tell Me About	Card	3+ player competitive	20-40 minutes depending on deck size
Pirate Partage	Board	4-player cooperative	5 minutes
Hired!	Card	3+ player cooperative and competitive	20 minutes
Another Day	Web	Single-player	15 minutes
Weather Check	Web	4+ player cooperative	3 min for poll, 20 min later
All Stereotypes are Wrong - Indian edition	Web	10+ player cooperative and competitive	10 minutes
Parley	Card	3+ player competitive in temporary teams	20 minutes
Same Day Different Lives	Mobile web	2+ player in temporary teams	5 minutes per day over 1 week
In Your Face	Web	Single-player	30 minutes, but in background

4.1 Playtesting

All the prototypes were first tested internally in India by our partner ZMQ. Of the 12 prototypes, 10 of them were then tested with partner organizations in India, and feedback was gathered through an online questionnaire that measured key demographic information about the player (age, gender, taste and frequency of game play) as well as qualitative and quantitative measures of their game experience. Prototype testing workshops were conducted with organizations, where testing of each prototype was facilitated by a team for giving instructions, player team management and explaining the feedback forms. See Figure 4 for a summary of a subset of the questions.



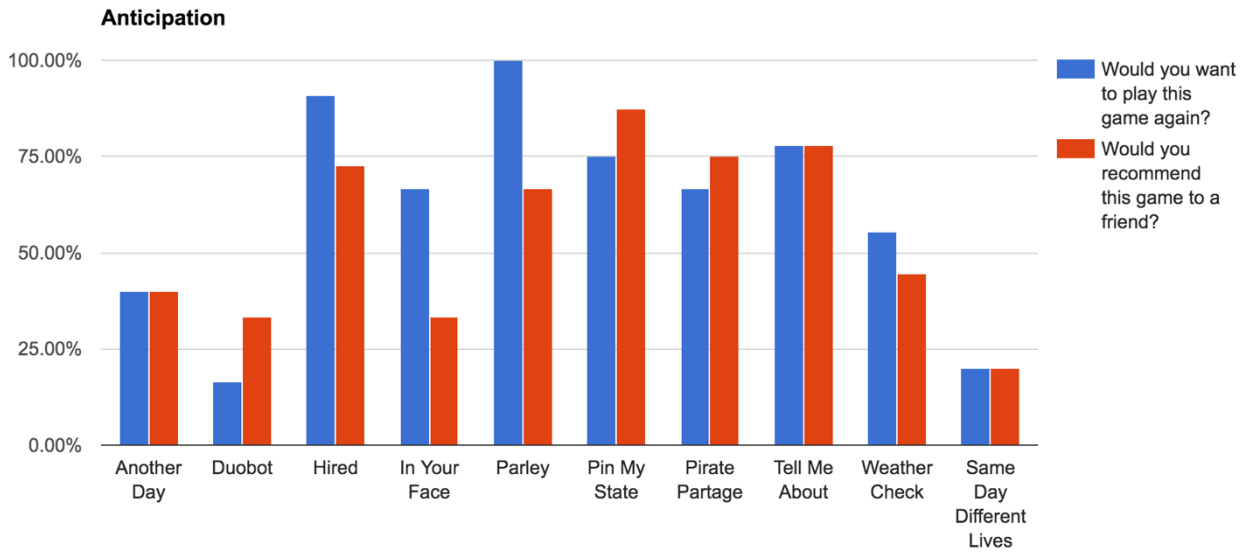


Figure 3: Summary of the quantitative playtesting results from a subset of the playtest questionnaire. Above, how engaging the players judged the game to be as well as how much they feel they have learned, on a 1-5 scale. Below, how interested they were in playing the game again, or recommending it to others, as percentage of positive responses to yes-no questions.

As expected, there was a wide disparity in the playtesting results, indicating that some of our prototypes worked much better than others with our target audience. The next step of our design process was deciding on a small number of prototypes (at most 4) to keep, and putting the majority aside. We began by rejecting those prototypes that tested poorly. *Same Day Different Lives* and *Weather Check* required specific play setups that made it difficult to integrate into a workshop format. *Planes* and *Duobots* were judged as too abstract. Our target users did not make enough use of the LinkedIn network to make *In Your Face* an appropriate exercise for them.

Among the remaining 5 games, we tried to strike a balance between different media and play styles in order to construct varied workshops. We decided to move forward with the following 4 prototypes: *Pin My State* as an icebreaker and as a way to appreciate the diversity of the country, *Hired!* for its focus on implicit bias, *Another Day* to address inclusion and conflict resolution, and *Pirate Partage* for a rambunctious experience that addresses disability.

5. Discussion

Based on our experience researching, brainstorming, creating, testing, and improving game designs to promote diversity, we believe that we can draw a few lessons that could be of use for future work on the subject. Our two initial designs (*Planes* and *DuoBots*) tried to promote diversity in the abstract, but this approach did not appear to resonate with our target audience. Instead, we found more success with game designs that address diversity in concrete decisions like negotiating workplace conflicts in *Another Day,* or concrete interactions like the alternative communication strategies in *Pirate Partage*.

We also found that some of our best game designs led to spontaneous discussions about diversity that went on after the play had ended. Perhaps the best example of this behavior in *Parley*, where after the debates, players tended to give their honest point of view on the subject, or continue to address points made in the debate. *Pin My State* and *Hired!* also led to such discussions. This “discussion-starting” aspect of games works particularly well with regards to the workshop format in which they are meant to be played. In such workshops, we can also bring in supplementary media such as videos, articles, and discussion questions to feed the conversation and to simultaneously anchor it to important facts about diversity in the workplace.

Regarding our target audience, our survey results revealed that they were receptive to messages promoting age and gender diversity, but much less interested in diversity with regards to religion or sexual identity. These results posed a conundrum. On one hand, we wanted our games to be welcomed by the target audience, but on the other hand, we realized that these more challenging subjects had a greater need for pro-diversity messages. Without a clear solution to this problem, we struck a balance between the two. We brought a greater focus to games discussing age and gender, while not completely abandoning the less popular topics. However, it is unclear what approach is the most appropriate for this delicate topic.

Finally, we have identified a few potential weaknesses in our project design. Although we have benefitted from an explorative process that allowed us to test a relatively large number of prototypes, our playtesting approach was not fully experimental. For one, there is likely a selection bias in the playtesters who volunteered to play our games and since our prototypes were released over a 1-year period, we were unable to enforce that the same playtesters tried each game. In addition, we relied on a player's own judgement with regards to how much they learned about diversity issues, rather than using a more objective measurement as done in (Kaufman & Flanagan, 2015). Another potential weakness could be our use of explicit messaging in our diversity workshops. Following on the results of (Kaufman, Flanagan, & Seidman, 2016), perhaps it would prove more impactful to adopt a "stealth" approach to our game interventions.

6. Conclusion

At the time of this writing, we are continuing this work by creating polished versions of the selected prototypes, and integrating them into diversity workshops in India. We are looking forward to studying the impact of these game designs over a larger period of time, since research has shown that impact of interventions tends to wane (Dobbin & Kalev, 2016).

In future work, we are interested to pursue more game designs that open and promote discussion within participants. We believe that game-based workshops are a promising vector for social change, since games can encourage players to explore difficult concepts by allowing them to speak or behave in ways that aren't social acceptable under other circumstances, and by encouraging players to assume a different point of view.

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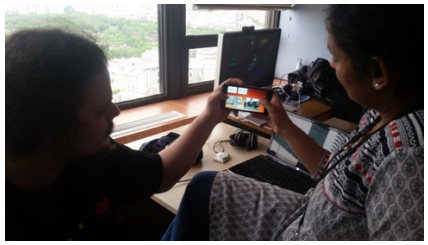

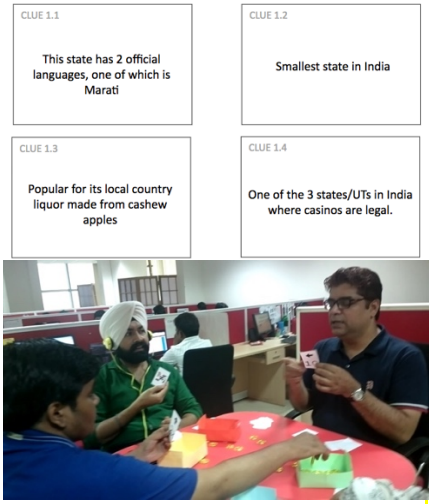

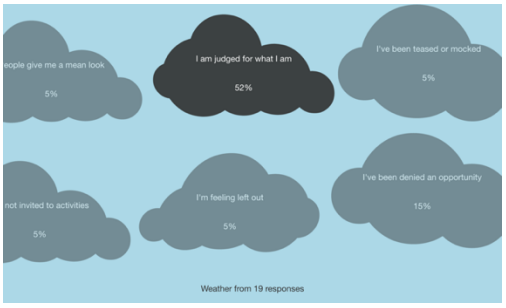

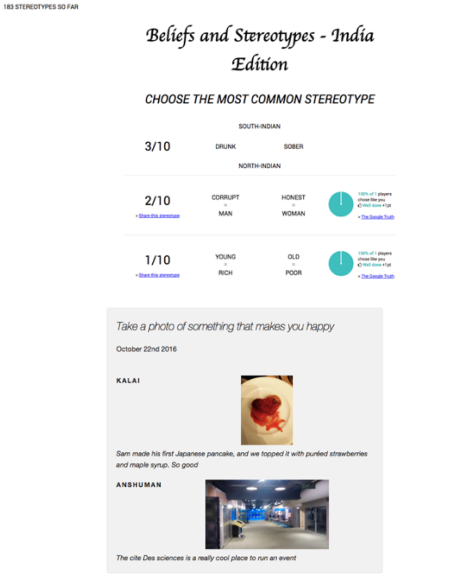

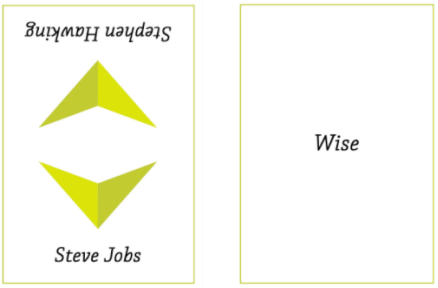

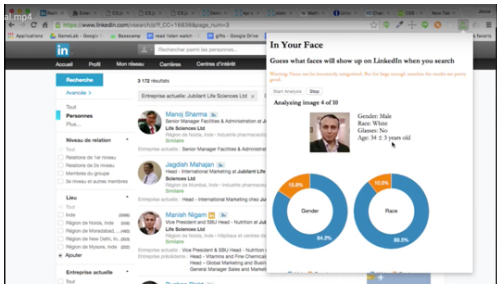

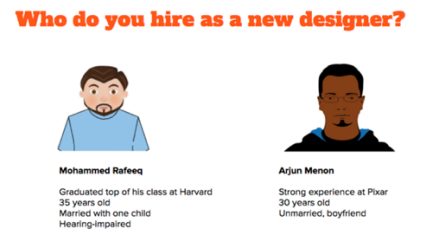

Figure 4: Images of game prototypes. From left-to-right, then top-to-bottom: *Planes, DuoBots, Pin My State, Tell Me About, Pirate Partage, Hired!, Another Day, Weather Check, All Stereotypes are Wrong - Indian edition, Parley, Same Day Different Lives,* and *In Your Face.*