Say Cheese! Games for Successful Academic and Student Networking

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ABSTRACT
Networking is a vital but stressful aspect of academic life, one which digital games may be able to make more playful. Existing examples of networking games require players to interact as part of the game-play, and therefore do not bypass the stressful part of networking. In contrast, many other games successfully encourage interaction between players whilst avoiding causing stress to the players. Flashbulb is a networking game that only requires a photograph of another player to be taken in order to progress. Players can choose whether to start a conversation depending on the target and situation. Thematic analysis of interviews with Flashbulb players found that despite not including an icebreaking *requirement,* it encouraged networking and widened the scope of those spoken to. The act of photographing players promoted conversations without forcing players to engage in uncomfortable discussions. We make recommendations for the design of future iterations of networking games.

Author Keywords
Digital games; networking; icebreaker games

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous; K.8.0 General: Games; H.5.2 User Interfaces: User Centred Design; H.5.3 Group and Organization Interfaces: Synchronous interaction

INTRODUCTION
Getting to know new people within a community is a vital aspect of a successful career in research [33] and is one of the main objectives for attending academic conferences [38]. Similarly, new students stand to benefit from getting to know their classmates to share ideas, form professional relationships and work together effectively in group assignments. It can also serve less formal purposes such as feeling part of an academic community. However, many people find networking stressful and sometimes avoid it all-together [34]. Situations that involve meeting new people can be fraught with concerns about how to initiate and maintain conversations with other attendees whom you know little about. As a result, ice-breaking activities have become popular in course inductions and conference sessions which aim to overcome this problem by structuring the social interaction. Whilst such activities make it socially acceptable to initiate a conversation with a stranger, they do little to alleviate the discomfort felt by the participants. Moreover, these interventions are often met with a negative response. Previous studies show that students do not like ice-breaker activities on the first day of a course, despite wanting to get to know other students [17]. There is therefore a need to better explore ways in which networking can be supported as an integral part of events such as student orientations and conferences.

One possibility is to develop and utilize games which encourage and incorporate social interaction in a way that does not form a compulsory part of game-play, but is instead supportive of it. The recent success of games such as Pokémon Go highlight how this may be a successful approach; anecdotal reports suggest that while the structure of the game does not necessitate interactions between players, this is occurring regardless [13,15]. Players are put in a real-life situation as part of the in-game activity and when encountering other players, they have the option of capitalizing on the shared experience of playing and can easily strike up conversation. Alternatively, if they do not wish to do this, they can continue playing without talking to anyone without any detriment to the gameplay. This could result in a rather anti-social game, but to the contrary, numerous media reports suggest that players are often interacting, and relationships are forming from incidental meetings of likeminded players [13,15].

If these kinds of enjoyable, non-compulsory, interactions could be incorporated into games that are specifically designed to promote networking, this may be particularly effective. In this paper we describe the design and evaluation of a game, Flashbulb [11], that facilitates social interaction without forcing players into uncomfortable

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situations. This work makes several contributions. First, it examines whether Flashbulb itself is successful in supporting networking and identifies the areas in which it could be improved for future events. A second, wider contribution is to the field's understanding of whether games without an in-built conversation requirement can still be successful in providing opportunities for conversations to occur. We argue that a focus on breaking the ice is not necessary within the game itself, as simply playing a game may be helpful in getting people to interact and get to know each other. Knowing that others have consented to play makes it easier and less stressful for individuals to engage in related social interaction, especially when it is apparent that most people's motivations for playing will involve wanting to meet or talk to other people.

The paper subsequently outlines several design implications derived from the findings of these interviews, which stand to benefit those designing games with a similar aim of promoting social interaction. For example, the awkwardness of taking photographs of one another was for many a catalyst for self-driven conversation, and this has interesting implications for the kinds of tasks these games should involve. We suggest initial low barriers of entry should be incorporated together with additional incentives for deeper conversation (beyond those relating to the immediate task) and that future game design should aim to bridge the gap between game and non-game interactions by making it easier for players to communicate once the game has finished.

RELATED WORK

Networking

There are many contexts in which networking and meeting new people are both useful and expected. For instance, attending conferences and discussing research with peers is integral to a successful career in research [33], and evidence suggests that feeling a sense of cohesion and community can significantly impact on course retention rates [35,37]. This has been found to be particularly important for those who find themselves in the minority amongst their classmates, whether in relation to race or gender [8,37], but this can also be countered by programs that promote social interaction between students [8]. A substantial amount of learning (both as a student and in a professional context) occurs through the development and utilization of social networks, which also stands to benefit the wider organization to which connected individuals belong [23]. Therefore, encouraging networking and informal discussions is something that needs to be supported at events such as conferences and orientation days. However, it is not guaranteed that this will happen in the most effective manner possible.

A primary issue is that at events such as orientations and conferences, impromptu discussions and networking opportunities do not occur at the same rate for all attendees. For example, those who are more extravert or are native speakers of the language spoken at the event are at an advantage, as are conference delegates of a higher social or professional status who already have an established reputation in the field [25]. Consequently, more junior attendees, who arguably stand to benefit the most from extending their professional network, may find it more difficult to strike up conversation. Studies into networking activities at these events also suggest that those who have presented talks are approached substantially more than attendees who did not present [32]. First of all, this suggests that delegates who are not giving papers may be at a disadvantage when it comes to meeting new people, but it also indicates that once a delegate has seen someone presenting their work, it becomes easier to strike up conversation with them; those in the audience will know the person's name, their affiliation and will have a good idea of their research interests. With such details, delegates may feel more comfortable approaching these people and will have a number of suitable topics or questions with which conversation can be initiated.

This initiation of conversation has been argued to be the most difficult aspect of networking [34]. In part, this is due to the need to overcome the sense of awkwardness associated with approaching new people, but also due to having to identify the best way to start conversation without any prior knowledge. Guidelines on how to successfully network at conferences suggest a range of openers depending on who you are approaching (e.g. [34]), such as asking for opinions on conference keynotes or bringing up an interesting topic of debate relating to one of the talks. Nevertheless, even with such conversations in mind, it remains difficult to find a reason to approach a particular person, as well as mitigate the risk that they will not be receptive to such an out-of-the-blue introduction.

Technology for networking

These issues, as well as other practical restrictions of academic events (such as the inability to discuss the current presentation with other people watching it), have led both individuals and organizers to utilise technology in these contexts. The ubiquitous nature of smartphones and WiFi connectivity mean that smartphones have been the main focus of technologies that enhance the conference experience. Technology has been developed to supplement other aspects of the conference experience, for example by providing information on the conference sessions and presenters, and contact information of other delegates [1]. Furthermore, the use of Twitter is well documented. Research suggests that attendees use it as a "back channel" [7,24,31], although Chen [7] reports that this is primarily used to notify attendees of information and not to promote discussions between them. While using Twitter in this manner may increase an individual's visibility (or highlight others they should try to meet) at an event [22,31], it does not necessarily support or encourage real life interactions. Existing social networking applications may therefore not

be best suited to creating new connections, and as a vital and difficult aspect of conference attendance, specialist applications have been designed to fill this gap.

The majority of applications and technologies that have been developed for conferences have focused on sharing information of the event itself (such as Conferator which also shows the location of attendees [1]), exchanging contact or profile information based on proximity (e.g. MobiClique [26]), or indeed both (e.g. Find & Connect [38]). These are undoubtedly useful in maximising time spent at the event through ensuring that interesting talks can be attended and that connections that have been made can be followed up on later. However, considering that it is the initiation of these conversations that can be the most challenging part of the process [34], technologies are also needed to support this aspect too.

Games for networking

One possible approach that has demonstrated promise is the use of digital games. There is a growing body of evidence to suggest that in-game socializing can have a number of benefits, including a more immersive gaming experience [6] and more effective stress relief [9] than non-social games. Social games have also been argued to ease some of the anxieties associated with talking to people in offline contexts, particularly for people who find socializing especially stressful (e.g.[10,18,20,21]).

This may be particularly useful for networking, and introducing playful components in these contexts has shown to be effective [5,30] and there is a rising trend of utilising digital games in these contexts [27,36]. Games like Snag 'em [27] and CHI PLAYGUE [36] have been developed with this application in mind, and have shown success in encouraging and supporting interactions [14,27]. However, these games tend to require the player to initiate some form of social interaction in order to play the game. Snag 'em requires players to create a profile and select tags that apply to them which could refer to hobbies, interests or something else that is relevant to the situation in which it is being played, such as workplace or research team. Then, they are presented with "missions" that ask players to find others with a particular tag. For example, players might have to identify someone who plays guitar. While this promises to assist with the task of locating particular attendees of interest, this might still be difficult for those who find the initiation of the interaction daunting. Similarly, CHI PLAYGUE, which was originally developed for the CHI PLAY'15 conference, requires players to scan barcodes on the badges of other attendees in order to "infect" or "cure" players, depending on whether they are aiding the Earthling or Alien teams. Once again, while this provides motivation to approach people and an excuse for starting a conversation, there is still the requirement that players actually start a conversation in order to play the game. This cannot be avoided, irrespective of the personality of the player, the people they are playing with or the situations in which they are playing.

Conversely, games that tend to encourage socializing rarely have inter-player communication at the centre of gameplay; the focus tends to be on a central task that is enhanced or facilitated by interaction, but not dependent on it. For example, the recent release of Pokémon Go has seen numerous media reports discussing the social nature of the game and how relationships are being forged as a result of playing [13,15]. This is despite no in-game requirement for socialising.

Games such as these further demonstrate the success that integrating gaming features into real world behaviours can have in a number of areas (e.g. in encouraging reductions in sedentary behaviours [16]). Moreover, they establish the ability of such games to incentivize and normalize behaviours that may otherwise feel unappealing, awkward or stressful [2,27], which could include networking.

THE GAME: FLASHBULB

Flashbulb (the focus of the present paper), takes a different approach to existing networking games. It is a social game designed for large groups of people in order to maximise the opportunities to meet and to break the ice. It is played on mobile devices, and players take on the role of a "paparazzo". The game provides assignments to photograph other players (chosen at random), the successful submission of which results in points.

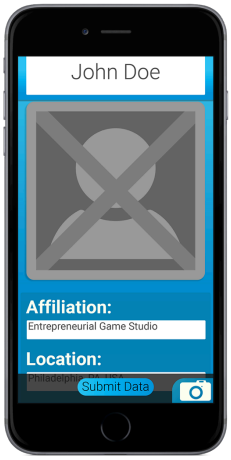

Figure 1. Account creation screen for Flashbulb.

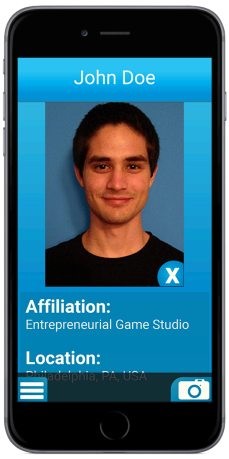

Figure 2. The "target" screen on which players are shown who they need to photograph next.

The first stage of the gameplay is an account creation screen (see Figure 1). Here, the players enter their name, contribute a photo of themselves and enter in other profile information such as their affiliation and research interests. Once this is completed, the user can start playing, and will be shown their first target (see Figure 2), a randomly chosen user from the same event. The player will be able to see their target's photograph, their name and the information they entered when creating their account. The task for the player is to locate this person and to take and

submit a photograph of them in order to receive their points. A manual assessment process consequently judges whether the photograph submitted is indeed the person it is supposed to be, and if not, the player is informed that they should submit a different photograph.

The player also has the option to skip their target if they cannot find the person, although if they choose to do this, that target will never appear again and so this reduces the potential for scoring. Players have access to information on the time remaining at the event, leaderboards (see Figure 3), and their current rank within the game. They can also update their profile information at any point during the game.

Figure 3. The scoreboard for Flashbulb showing the names of the top players and their scores.

In contrast to other games with the same aim, players only need to take a photo of another person in order to participate in the game. This could feasibly occur in the absence of the awkwardness of starting conversation with a stranger, but would also leave subsequent social interaction open as a possibility. This approach provides a low barrier to entry and one that might feel less stressful (and thus more appealing) to participate in, particularly for individuals who feel less comfortable in social situations. For these people, knowing that there is a way of playing that does not require constant initiation of communication may make it more attractive to play, and may increase the opportunities for networking when they do choose to start a conversation. That said, it is not just the more introverted people that may find this approach beneficial. For many people, willingness to participate socially is not something that remains fully consistent in all situations. Although an individual's behavior will remain somewhat consistent with their overall personality traits, the exact manner and extent to which these traits are expressed will differ depending on the wider context [29], and on the personality of the conversation partner [12]. Additionally, even an extravert who feels very at ease in social situations may encounter some people that they will find intimidating and may be reluctant to speak to. For instance, a postgraduate student being asked to interact with a high ranking conference organizer or head of department could be a very difficult situation for the student to navigate, and they may wish to avoid having to do this. Therefore, in Flashbulb, players have the option to alter the way they play the game on a target-by-target basis, and could therefore choose to strike up conversations with certain players but can also avoid being penalized if one target is someone they simply feel unable to converse with.

The ability to adjust the level of difficulty within the game is an approach that is well-documented in a range of existing games. If a game is too difficult or stressful to play, the game risks losing its ability to be entertaining, and the player may simply quit. As a result many games allow for variations in the level of difficulty, provide cheats that permit players to bypass certain obstacles or, in the case of many role-playing games, let them avoid tasks they do not wish to pursue in favor of those they enjoy. For instance, Mass Effect [3], a third person shooter game, allows players to spend resources in lieu of completing mini games in order to pick locks, should they wish to move on quicker or if they find the mini-games too difficult. Similarly, in Metal Gear Solid V [19], if a player's character dies too many times, the game provides the option of making the character invisible to enemies (through the use of a chicken hat) in order to make the mission easier to complete.

Flashbulb has the capability of following a similar route: whilst it aims to motivate and assist people in engaging in conversations, it also allows users to avoid this should they wish to. The game has a low barrier to entry; points are accrued by taking photographs of other players, which can be achieved by initiating conversation if the player is willing and comfortable, or alternatively, they can just take the photograph and move on.

There are several possible outcomes of incorporating a voluntary social component. One possibility is that it will players to adapt their strategy, thus relieving some of the stress of networking; individuals can approach those they feel comfortable with but will also not be at a disadvantage if they do not wish to strike up conversation with a particular target, perhaps because they are too senior or because they are in the middle of a group conversation. Players can continue to accrue points and the game could still support networking in a less forced and stressful manner.

However, the lack of encouragement to actually converse with other players may also make it an ineffective icebreaker; simply photographing other players and not developing any of these interactions into a conversation would not be useful to individuals hoping to find out more about the other people at the event.

We therefore investigated whether such a game might be able to encourage and support networking. The first stage was to determine whether people engaged with the game. In order to investigate this, we deployed it at a conference and at a postgraduate student program orientation day, two

situations in which networking are main goals of the attendees.

DEPLOYMENT EVENTS

The game was deployed at two events. In September 2015 a group of students and academic staff were asked to play as part of a student orientation day. They were encouraged to download the game at the start of the day and a specific time in the schedule (a networking lunch) was identified for playing the game.

In October 2015 the game was also deployed at the CHI PLAY 2015 conference. The game was made available for download during the first day of the conference. The game was played throughout the second day of the conference.

	Student orientation	Academic conference
Profiles created	47	16
Active players	45	16
Profile updates	6	11
Photos submitted	397	106
Photos accepted	338	86
Targets skipped	19	1

Table 1. Descriptive statistics for players at the student orientation and academic conference.

Although there were very different numbers of people playing at the two events, Table 1 demonstrates that, of those who expressed an interest in playing by downloading the game and creating a profile, almost all became active players.

The 47 people who downloaded the game at the student orientation day represented approximately 98% of the people in attendance. In contrast, the 16 people who downloaded the game at the conference represented just ~9% of the people in attendance. This difference is not so surprising. Those at the student orientation day were primarily new students who did not know anyone else: their motivation to get to know each other was likely to be high. However, the conference delegates consist of an existing community of academics, many of whom already know each other from other events.

There is a large difference between the two groups in terms of the number of profile updates that were made during the gameplay. Only ~13% of players at the orientation day updated their profile, whilst ~69% of the players at the conference did so. This further suggests different motivations for playing in the two groups. Perhaps students were motivated in order to get to know who everyone was whilst conference delegates are more concerned with projecting a particular image, communicating particular information about themselves or connecting with people with similar research interests.

The mean number of photos submitted by players at each of the events is very similar (student orientation = 8.8, conference = 7), suggesting comparable levels of engagement with the game. Similarly low percentages of targets were skipped at the two events. We therefore concluded that it would be reasonable to interview players from both events and look for common themes across the transcripts.

The descriptive statistics presented in table 1 suggest that the players at both events were engaged in and perceived value and enjoyment in the game. However, these data do not enable us to determine whether players felt that the game achieved its aim in terms of facilitating networking, or whether they had chosen to adapt their game strategy depending on the targets they had been assigned. In order to investigate these aspects we decided to interview players about their experiences.

EXPERIENCE EVALUATION

Participants

A total of nine participants were recruited (five of whom were female) to be interviewed about their experiences of playing the game. Five were recruited from the student cohort who had played Flashbulb at their course orientation day, and four were conference delegates who had played the game at the CHI Play'15 conference. All were given a £10/$15 Amazon voucher in exchange for their participation in the study.

Procedure

Semi-structured interviews were conducted, mostly over Skype due to the geographical location of the interviewees. However, two of the student sub-group were instead interviewed in person at their university as per their request. Interviews took between 20 and 45 minutes and were recorded and transcribed for analysis.

The interview questions covered motivations for playing, experiences and strategies in relation to different aspects of the game, and whether the game resulted in conversations, as well as probes for more details of how and when they occurred.

Analysis

The transcripts were analyzed using Thematic Analysis in line with the procedure outlined by Braun and Clarke [4].

Results

Several themes emerged from the interview data. These were:

- *Starting conversations* - Flashbulb was most appealing for and apparently successful at allowing individuals to start conversations;
- *Consenting to awkwardness* - Players felt that the task was potentially awkward but that it became fun as everyone taking part had consented to it;

- *Continuing conversations* - Conversations tended to remain superficial and did not always continue beyond the task*;*
- *A need for greater support* - Players wanted the game to assist more in taking conversation beyond the immediate requirements of the task;
- *Fit with the event* - Players noted that the game's success in encouraging networking relied on it fitting well with the event's geography, nature, cohort and schedule.

We outline each of these below.

Starting conversations

Participants reported that the application was especially useful for providing an excuse to strike up conversations in situations that would normally require a specific reason to start talking to someone. This appeared to be the case for people who found socializing enjoyable:

"While I don't mind talking to most people it was really nice to have an additional reason to just start a random conversation so I really liked excuses to just go around to everyone and be like "hi how are you?" – P1, student

But also for those who were less comfortable with social situations:

"And for somebody who is on the shyer side it makes it easier to approach people. You know who you are approaching, you know their name and also when you see them in the program then you've made a facial, you recognize that person." – P6, conference attendee

"I don't interact with people very well so it was a good excuse for me to chat to people and have a reason to go up to people and start talking to them. Sometimes, especially in things like that you…it can be difficult to go up to people and know what to say, and initiate a conversation with them." – P2, student

This is in line with previous research which has argued that people find it easier to introduce themselves to others when it is as part of a game-based task rather than simply for the sake of networking [27].

Conversing with a wider range of people

Because of this lower barrier to starting conversations, participants also reported that the application encouraged them to talk to people they may have otherwise not interacted with. This could be due to a perceived lack of shared interests:

"…You would eventually get to know the people that interest you at the end, like if you had similar backgrounds or interests, I don't know, but the other ones that you would never have to contact them. Maybe this was a chance to talk to other people as well" – P8, student

Or the person being well-known or in a position of authority:

"I had my supervisor as one of my targets so it was good talking to her more. I guess with people who are more higher up it's a bit intimidating but I still think it's a good way to start talking to them." – P5, student

This suggests that games which go above and beyond simply matching players based on interests may be especially beneficial. Although players express a preference for meeting like-minded or similarly employed people, it appears that this diversity in networking opportunities is one of the particular benefits of a game-based approach. Opportunities for discussions and socializing between people of different levels (for instance, students and educators) has been argued to be invaluable for the professional development of both parties [23], and this therefore appears to be a particular benefit of this kind of system.

Opting out of intimidating conversations

However the apprehension associated with talking to other, more well-known players did sometimes restrict the extent to which this opportunity was utilized:

"At first there were some people that were like I guess bigger names that I was shy to approach and there wasn't lots of conversation there but mostly because I was shy!" – P7, conference attendee

"Amongst students it was OK but then I had [a staff member] once…I'm sure some people would embrace the opportunity to go up to him, but for me I was a little shy and so…I dunno…it made me feel kind of weird." – P5, student

This indicates that players are utilizing the option to just play the game and not continue conversation beyond this if the situation does not feel right. One conclusion to be drawn from this might be that the game should attempt to not only open up a line of communication between people of varying statuses, but also mitigate the anxiety associated with acting on this. However, in practice this would be a very difficult task considering how well ingrained academic hierarchies are. Consequently, ensuring that opportunities are present to interact with better-known players and providing an opportunity to opt out of conversations if necessary may be sufficient. One possibility might be to attempt to integrate suggestions for openings or appropriate conversation topics for players of different rankings according to job titles, for example. Advice on how to network at conferences tend to differentiate the kinds of conversation starters that would be appropriate for delegates of different levels (for example, fellow PhD students and professors) [34]. Therefore applications such as this may wish to similarly provide more tailored support, appreciating that an individual's networking strategy is likely to depend a lot on the person they are approaching.

Consenting to awkwardness

Although participants did find the actual act of taking photographs or having theirs taken strange *("I personally don't like being…having a photo taken of me, so I just kind of felt awkward"* P5, student), many participants felt that this was not as stressful as it otherwise would have been due to the fact that it was incorporated in the game:

"It's always a bit embarrassing having your photo taken but it was so quick and everyone was doing it so you didn't feel like you were in the spotlight or anything." – P1, student

Moreover, they knew others would have needed to have been aware of the requirements of the game when signing up. They were consequently able to perceive participation as consent in relation to being approached and having photographs taken:

"Felt a little bit awkward but y'know, we're all playing it, right, so it's kind of fine." – P9, Conference attendee

One possible conclusion to be drawn from this is that the actual task does not need to be something people naturally feel comfortable with in more conventional contexts for it to be effective. In fact, as we will discuss in the following section, it may be beneficial for the task to feel somewhat awkward.

Continuing conversations

Whether or not these initiated conversations resulted in longer discussions seemed to differ very much between participants. Most participants did report to continue conversations beyond simply asking for a photograph

"You wouldn't just snap a photo and not say anything at all, you'd at least say Hi how are you, can I take your picture." – P1, student

"With some people I talked about some paper sessions or some other unrelated things so sometimes I just went to people that I knew, that I know from before, and I had to take a selfie of them, and I used the chance to talk about them when are we going for lunch today or where are we going for dinner tonight, or when are you flying back."- P4, conference attendee.

Consequently, despite no game-based incentive for initiating conversation, players still chose to do so. This was sometimes because it made the interaction less awkward.

"I tried not to [just take a photograph and leave] because I felt awkward when people did that to me so like, "oh, I hope that was a good picture…ha ha" y'know? Just sort of awkward about it so I tried to always make some sort of conversation about something" P7, conference attendee

This suggests that conversation was initiated as a way of countering the awkwardness, whereas in more conventional networking situations, this in itself is the most difficult [34]. Subsequently, it is possible that incorporating an additional, slightly unusual task (in this case, taking a photo of a stranger) distracts from the stress caused by needing to start a conversation. Moreover, the fact that the game itself did not directly incentivize continuing communication between players may have had the effect of making it feel like a personal choice; removing any sense of coercion or direct expectation could have reduced some of the stress usually experienced in these situations. This once again provides support for the use of games in these situations, as providing a distraction and allowing for what feel like incidental interactions are not usual features of conventional networking.

Conversations taking over from the game

Some participants reported that at one point, conversations actually took over from the game and this was therefore what they shifted their attention to.

"Initially I wanted to do that, like I need to be one of the top three people, but as I interact with people around and the students around who are playing the same game, I begin to seek out more interaction and just get to know them better, so the gamification was less prioritized and I just wanted to socialize." – P3, student

"I kind of played it at the start and then I kind of forgot about it because I was getting into conversations" – P1, student

"My one single reason for playing was to beat [the conference organizer] at the game. But I think in the end the score wasn't as important to me as, like, I just want to play and meet people" – P7, conference attendee

This also has the implication that while scoring is a necessary part of the gaming experience in this context, it is not the only incentive. Support for this also comes from several participants that reported a dip in interest once it became evident that they would not be ranking highly in terms of score. Therefore highlighting the importance of and positive outcomes of the social aspect may be especially beneficial in encouraging players to continue to use the came for socializing.

Depth of conversations

However, the majority reported that the resultant conversations tended to remain superficial.

"Just small talk - hey did you enjoy the conference, will you go to the next session…Not really deep philosophical topics, but small talk is OK I think". – P4, conference attendee

"Yeah but not long conversations, like oh yeah where are you from, or I don't know, what is your background, or how are you, or is it your first time in London, something like that and then OK, bye. This kind of thing." P8, conference attendee

"Since everybody knew what was going on, we were just kind of like "hey! My name is [participant 5]" and like a short introduction, but nothing beyond just names." – P5, student

Increasing familiarity

And therefore, the outcomes tended to be more to do with familiarity than growing friendships.

"It was fun trying to track up the points and introduce yourself to the other person but it didn't lead to the deeper connection I would have hoped for, in the way that other parts of the conference did, the non-playful parts maybe." - P6, conference attendee.

"I think it depended on the classmate, some there would be talking afterward but I think for the most part, not too much. I think it did help though to break the ice. At least you're familiar with people's faces and names kind of, so in that sense I think it definitely helps." – P5, student

"The interactions with the game was like a precursor to later, longer interactions but the longer interactions I don't think were directly part of the game experience at the time, like instant." – P9, conference attendee

This is not necessarily a bad thing, as evidence suggests that familiarity with an individual can eventually lead to more favorable opinions [28], and sometimes simply being aware of who someone is may be beneficial. However, there was also a widespread awareness of there being participants who simply were not interested in any interaction beyond those directly relating to the game itself.

"I wanted to get to know these people better but sometimes someone would be really focused on the game, and so it would get glanced over and they'd run away." - P3, student

"Well, most people just like called my name and then took a picture, or said 'smile' or something like that. There was a couple of people that were like "Oh, hi, have you met… blah blah, nice to meet you!" which was really pleasant but sometimes I'd be like "why are you taking my picture? Oh yeah, the game"." – P7, conference attendee.

A need for greater support

Many of the participants felt that there needed to be more support from the application, particularly in relation to prompting players to continue conversations beyond taking the photographs.

"I think I kind of forgot about the feature where it says 'ask me about…', maybe that could have popped up after you took the photo or something just to give people an extra sort of conversation starter, or a conversation continuer or something like that." – P1, student

"If you had to ask a person a question, or I don't know, tell them something other than "can I take your picture" or something like that. So you had a purpose for asking them something about themselves or something like that." – P8, conference attendee

"I could see a potential in it. I feel like if there was some more facilitation around it, or some more information in it, it could be a great networking game." – P6, conference attendee

Fit with the event

There was also an appreciation for the notion of fit.

The group

Some participants mentioned this in relation to the group, in particular that a minimum number of people playing to maintain interest…

"After one day you found all the people. I think the game would work best with a minimum of 40 or 50 people." – P4, conference attendee

…as well as the specific interests and commonalities of the group:

"It was easier to talk to people with Flashbulb and maybe it was just the fact that we all have the common…we're all on the same course." – P3, MSc student

"I think the real benefit of that was not networking but because it was a game and CHI Play was a conference about games, so it was an opportunity to try a game research prototype of another institution." – P4, conference attendee

Timings

Timings seemed to also be important to the interviewees, who argued that dedicated time to concentrate on playing and suitable opportunities to get engaged may have maximized the utility of the application.

"It also was during lunch time as well so people were hungry. If that time was truly dedicated to just playing the game I'm pretty sure people would have been more engaged but it kind of overlapped like break time and lunch time and so people were sitting down to eat." – P5, student

"Being at a conference, there are times when you can't do that stuff. You just can't! And so maybe unleashing that in a different time, like just before lunch when there is an immediate opportunity to be able to do that stuff" – P6, conference attendee

Geography of the venue

The nature of the rooms themselves were also highlighted as important:

"It was pretty nice as we were all in this one room and then we can identify people quickly just because we're not separated or in different parts of the building." – P3, student

"It seemed to kind of be people in the vicinity so like the next couple of people that popped up were standing quite

close to me anyway, so we didn't really have to…like if you were in a bit of a group chat for a minute, you didn't really have to break that which was quite good" – P1, student

"Well, I mean, right at the start, there were only so many people playing, you just sort of got everybody because we're all there at the coffee break together. The fact there were two coffee breaks sort of did break that up a little bit because it's like "oh they're not in this room, let me go look in the other room"." – P9, conference attendee

Therefore, implementation of these games also needs to consider the wider context beyond the game itself.

DISCUSSION

Flashbulb was successful in supporting players in *starting conversations* by providing an excuse to approach someone in order to take their photograph. This is despite the fact that photos that were taken from a distance were appropriate and there was no requirement from the game that players actually initiated conversations with other players. Players seemed to utilize this, adjusting the level of conversation to the situation (e.g. if the people they were talking to were in a group), and to the target (e.g. keeping stressful conversations with well-known academics brief), as well as interacting with people who were playing despite not wanting to engage in conversation. This suggests that the low barrier to play was successful in allowing for a wide variety of possible strategies that were able to be adapted to suit the individual situation of the player at that particular time. The game was also successful in supporting players in *continuing conversations* beyond the verbal exchange. However, conversations tended to remain superficial and did not always continue beyond the task and therefore participants identified *a need for greater support* in taking conversation beyond the immediate requirements of the task. Players also noted the importance of the game *fitting with the event* in that the game's success in encouraging networking relied on there being appropriate opportunities in the schedule of the event to take part in the game and to engage in conversation with other players.

Therefore, Flashbulb appears to be a successful tool in promoting networking at both student orientation days and academic conferences, with a few possible areas for improvement in terms of providing greater support and ensuring a good fit with the event. More generally, these findings also corroborate the notion that social interaction does not need to be at the core of the gameplay for this to be something the game can support. Giving players options to adapt strategies and to opt out of stressful situations while still providing an excuse or opportunity to strike up conversation if they so wish, may widen the appeal and improve the success of these games.

Implications for design

Based on these findings, there are two main suggestions for the future development of Flashbulb and other ice-breaking games.

Support further conversation (not just initial contact)

The initial act of starting conversation has been argued to be one of the more challenging aspects of networking [34]. However, participants in this study reported that despite Flashbulb making this aspect easier, there were still barriers that prevented these interactions becoming something more meaningful; the game provided a reason to ask someone for a photograph but it relied on the individual to take the conversation beyond this, something that still felt awkward or misplaced for some of the players. Therefore, we suggest that networking games include some provision for conversation continuing beyond the main task of the game (in this case, taking a photograph of another player). Participants interviewed in this study recommended including additional tasks that necessitated a discussion about hobbies or research interests, for example a mini-game that requires players to guess or find out specific details about their target before being awarded their point. Providing this extra level of in-game support above and beyond initiating contact may allow players to feel better able to extend conversation to a greater degree than observed in the present study.

Bridge the gap between game and non-game interactions

Participants reported that the conversations they had as a result of the game tended to remain superficial and did not lead to any stronger relationships. We argue that this is not a failing of the game per se, as friendships are unlikely to blossom from one initial conversation regardless of the context. However, ice-breaking games should aim to facilitate further discussions and opportunities for contact; one participant in particular reported that although they met another player through the game itself, it was the subsequent chance meetings with that individual that led to the discovery of shared interests and the development of a professional relationship. Therefore, we argue that games such as this should supplement gameplay with opportunities to utilize this newfound familiarity. One way this could be included is through the application making it easy to share contact details or links to social networking profiles. Academic relationships (for both researchers and postgraduate students) are often maintained through social networks such as Twitter and Facebook, and applications with the sole purpose of sharing these details have reported success in assisting with networking [1,38].

Limitations

The present study has several limitations. The most notable is the small, self-selected sample who were interviewed. Alongside issues of generalizability, it is also possible that only those who especially enjoyed the game came forward to participate, skewing the present conclusions in a positive direction. As not all of the responses we analyzed were complimentary and suggestions for improvement were

outlined, we believe that this did not substantially conflate our conclusions. However, future research may wish to make more specific attempts to recruit players who were indifferent to or disliked the game in question.

As the interviews relied heavily on participants' memory of the event at which they played Flashbulb, attempts were made to interview them as soon after the event as possible. In practice, this was usually around a month after with the maximum amount of time being two months. Participants did not seem to have many issues recalling the game or their reactions to it, but it remains possible that certain details were forgotten. Therefore more immediate data collection would benefit future work in this area.

CONCLUSIONS

In this paper we describe the application of the networking game Flashbulb at a student orientation day and at an academic conference. Interviews with players after these events indicate that it is a promising tool in supporting networking particularly in terms of its ability to provide an excuse to approach a wide range of individuals. Arguably, it is precisely the low barrier to entry that is its success here, and the fact that social interaction is not the central aim of the gameplay. This means that players are able to apply different strategies for acquiring the photo of each of their targets, something that is rarely an option in games that have interaction at their center. If they are allocated a target who they feel particularly concerned about approaching they can choose either to skip that target all together, or else to photograph the target from afar. In contrast, when they are allocated a target who they do not feel intimidated by, they are able to use the game as an excuse to approach the target and start a conversation. Interestingly, the awkwardness of the task at hand (namely, taking a photograph) also appeared to enhance the game's ability to encourage networking, as players felt it was simply to strange a thing to do without also striking up conversation.

However, creating in-game incentives for players to continue discussions beyond the immediate task at hand and ensuring that it is deployed in suitable surroundings are important in its success as a networking tool. Moreover, future games with this aim should also consider addressing ways in which the game could provide an opportunity for players to continue to develop professional relationships beyond the game, such as allowing the exchange of contact details or social media profiles.

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REFERENCES

1. Atzmueller, M., Kibanov, M., and Scholz, C. Conferator – A Ubiquitous System for Enhancing Social Networking at Conferences. *Proceedings of the International UIS Workshop*, (2015), 1–4.
2. Baranowski, T., Buday, R., Thompson, D.I., and Baranowski, J. Playing for real: Video games and stories for health-related behavior change. *American Journal of Preventative Medicine 34*, 1 (2008), 74–82.
3. BioWare. *Mass Effect*. Microsoft Game Studios, Washington, U.S., 2007.
4. Braun, V. and Clarke, V. Braun, V ., Clarke, V . Using thematic analysis in psychology. *Qualitative Research in Psychology 3*, (2006), 77–101.
5. Butterfield, J. and Pendegraft, N. Gaming techniques to improve the team‐formation process. *Team Performance Management 2*, 4 (1996), 11–20.
6. Cairns, P., Cox, A.L., Day, M., Martin, H., and Perryman, T. Who but not where: The effect of social play on immersion in digital games. *International Journal of Human-Computer Studies 71,* 11, (2013), 1069-1077.
7. Chen, B. Is the Backchannel Enabled ? Using Twitter at Academic Conferences. *2011 Annual Meeting of the American Educational Research Association (AERA)*, (2011), 1–13.
8. Cohoon, J.M. Toward improving female retention in the computer science major. *Communications of the ACM 44*, 5 (2001), 108–114.
9. Collins, E. and Cox, A.L. Switch on to games: Can digital games aid post-work recovery? *International Journal of Human-Computer Studies 72*, 8-9 (2014), 654–662.
10. Desjarlais, M. and Willoughby, T. A longitudinal study of the relation between adolescent boys and girls' computer use with friends and friendship quality: Support for the social compensation or the rich-get-richer hypothesis? *Computers in Human Behavior 26*, 5 (2010), 896–905.
11. Drexel University Entrepreneurial Game Studio. *Flashbulb*. 2014. http://egs.excite.drexel.edu/projects/flashbulb/
12. Eaton, L.G. and Funder, D.C. The creation and consequences of the social world: an interactional analysis of extraversion. *European Journal of Personality 17*, 5 (2003), 375–395.
13. Feldman, B. Pokémon Go Is an Okay Game, But a Great Social Network. *New York Magazine*, 2016. http://nymag.com/selectall/2016/07/pokemon-go-is-an-okay-game-but-a-great-social-network.html.
14. Finkelstein, S.L., Hicks, A., Barnes, T., and Charlotte, U.N.C. SNAG : Using social networking games to increase student retention in computer science. *Proceedings of the fifteenth*

annual conference on Innovation and technology in computer science education, (2010), 142-146.

15. Francisco, E. Complete Strangers are Meeting By the Dozens Because of 'Pokémon GO.' *Inverse*, 2016. https://www.inverse.com/article/18049-pokemon-go-is-creating-real-life-friendships.
16. Gao, Y., Gerling, K.M., Mandryk, R.L., and Stanley, K.G. Decreasing sedentary behaviours in pre-adolescents using casual exergames at school. *Proceedings of the first ACM SIGCHI annual symposium on Computer-human interaction in play - CHI PLAY '14*, (2014), 97–106.
17. Henslee, A.M., Burgess, D.R., and Buskist, W. Student preferences for first day of class activities. *Teaching of Psychology 33*, 3 (2006), 189–207.
18. Hussain, Z. and Griffiths, M.D. Gender swapping and socializing in cyberspace: An exploratory study. *CyberPsychology & Behavior 11*, 1 (2008), 47–53.
19. Kojima-Productions. *Metal Gear Solid V: Ground Zeroes*. Konami Digital Entertainment, Japan, 2014.
20. Kowert, R.. and Oldmeadow, J.A. Social reputation: Exploring the relationship between online video game involvement and social competence. *Computers in Human Behavior 29*, 4 (2013), 1872–1878.
21. Kowert, R.. and Oldmeadow, J.A. Playing for social comfort: Online video game play as a social accommodator for the insecurely attached. *Computers in Human Behavior 53*, (2015), 556–566.
22. Kwok, R. A conference in your pocket. *Nature 498*, (2013), 395–397.
23. de Laat, M. *Enabling professional development networks: How connected are you?* Open Universteit, 2012.
24. Letierce, J., Passant, A., Breslin, J.G., and Decker, S. Using twitter during an academic conference: The #iswc2009 use-case. *Proceedings of the Fourth International AAAI Conference on Weblogs and Social Media*, (2010), 279–282.
25. Mccarthy, J.F., Nguyen, D.H., Mccarthy, J.F., et al. Augmenting the social space of an academic conference. *Proceedings of the 2004 ACM conference on Computer supported cooperative work - CSCW '04* (2004), 39-48.
26. Pietiläinen, A.-K., Oliver, E., LeBrun, J., Varghese, G., and Diot, C. MobiClique: Middleware for mobile social networking. *Proceedings of the 2nd ACM workshop on Online social networks - WOSN '09*, (2009), 49–54.
27. Powell, E., Stukes, F., Barnes, T., and Lipford, H.R. Snag'em: Creating community connections through games. *Proceedings of the 2011 IEEE International Conference on Privacy, Security, Risk and Trust and IEEE International Conference on Social Computing (PASSAT/SocialCom)*, (2011), 591–594.
28. Reis, H.T., Maniaci, M.R., Caprariello, P.A., Eastwick, P.W., and Finkel, E.J. Familiarity does indeed promote attraction in live interaction. *Journal of Personality and Social Psychology 101*, 3 (2011), 557–570.
29. Roberts, B.W. and Donahue, E.M. One personality, multiple selves: Integrating personality and social roles. *Journal of Personality 62*, 2 (1994), 199–218.
30. Rogers, Y. and Brignull, H. Subtle ice-breaking: Encouraging socializing and interaction around a large public display. *Workshop on Public, Community. and Situated Displays*, Citeseer (2002).
31. Ross, C., Terras, C., Warwick, M., and Welsh, A. Enabled backchannel: Conference Twitter use by Digital Humanists. *Journal of Documentation 67*, (2011), 214–237.
32. Scholz, C., Atzmueller, M., Stumme, G., Barrat, A., and Cattuto, C. New insights and methods for predicting face-to-face contacts. *WSM 2013*, (2013), 563–572.
33. Stobbe, M., Mishra, T., and Macintyre, G. Breaking the ice and forging links: The importance of socializing in research. *PLoS Comput Biol 9*, 11 (2013), 1–3.
34. Streeter, J. Networking in academia: Generating and enhancing relationships with your acquaintances and colleagues will create a diverse network of sponsors eager to help you succeed. *EMBO reports 15*, 11 (2014), 1109–1112.
35. Tinto, V. Taking retention seriously: Rethinking the first year of college. *NACADA Journal 19*, 2 (1999), 5–9.
36. Tondello, G.F., Wehbe, R.R., Stahlke, S.N., Leo, A., Koroluk, R., and Nacke, L.E. CHI PLAYGUE : A Networking Game of Emergent Sociality. *The ACM SIGCHI Annual Symposium on Computer-Human Interaction in Play (CHI PLAY)*, (2015), 791–794.
37. Treisman, U. Studying students studying calculus: A look at the lives of minority mathematics students in college. *College Mathematics Journal 23*, (1992), 362–372.

38. Zuo, X., Chin, A., Fan, X., et al. Connecting people at a conference: A study of influence between offline and online using a mobile social application. *2012 IEEE International Conference on Green Computing and Communications*, (2012), 277–284.