Food is an important commodity, is essential for our survival and people usually interact with food on a daily basis. In this paper, we motivate design for serendipitous playful interaction with biscuits by describing the designs of two interactive games based on food and fun. The affordances of the food, and the affordances of the specific food, that being biscuits, on the design is discussed. As an Alt-HCI paper the work then goes on to consider the role that biscuits might have in the HCI space of the future.

1. INTRODUCTION

Interaction design is all about designing compelling interactive experiences using the affordances of the technologies at hand and the behaviours of the human users. In general, interaction designers begin with three constraints – these are the technology to be used, the users who will use the technology and the aims or objectives of the interactive experience. Using heuristics and design guidelines, knowledge of the users, and some information about the constraints of the technology, designers create storyboards, sketches and prototypes to convey their ideas.

The design of games is a huge area of interest with there being multiple games genres and multiple game purposes. Games can be used solely for entertainment, can include a training or learning aspect or can be designed to promote certain behaviours.

In this paper, the design team posed a challenge to a set of students to design a game, for students or teenagers, using food as the underlying technology. The initial aim of the work was to elicit design ideas and also to determine how the affordances of the food were built into the games.

A further aim for the work was to consider the role of the biscuit as a central HCI component.

2. BACKGROUND

Games imply playfulness and the intention in many games is to provide a playful experience whilst also including some challenge and some ‘tension’. Whilst a game is always played, play is not always a game. There are many instances were play has been initiated through the use of convenient props and items to create a sense of play around ordinary objects. Examples include the flicking of a beer mat, and the semi-competitive origami-esque folding of a napkin are two such things that come to mind. This sort of play can be termed serendipitous as it is not designed into a situation or into a product, however it does rely on the affordances of the materials.

The importance of serendipitous play for social interaction is reported in the literature and has been shown to be especially pertinent in the cases of teenagers and young adults [9]. Commentators write of the need for young people to have ‘spare time’ experiences ([6]), and in a world where time is programmed and schedules are full, these experiences become very important [7]. Interaction designers have realised the importance of designing in this space with, for example, socially close mobile phone games that begin when two or more phones come into close proximity [4].

In terms of places and situations where serendipitous and spare time play can take place, mealtimes feature large. Clearly the appropriation of and consumption of food is essential for our survival and humans interact with food and with one another through the preparation and eating of meals. Food, and the habits around it, also play a role in defining cultures, our nationality and ethnicity [1].

Within HCI there has been a growing interest in the use of technology in a wide variety of aspects related to food from sustainability issues through the development of growing communities [8] the development of interactive applications to aid the cooking of wild food [2] and the use of food as a...
messaging medium [10]. It has been suggested that to open up the design space and design positive and meaningful interactions it is essential to identity daily food practices [5].

Focusing on the consumption of food, the family and friends are an important factor to consider when looking at the social aspect of food. Within the western society food is consumed at set meal times throughout the day and often through snacks. Families usually establish patterns of eating and it is through these patterns and eating norms that their identity is defined [3]. Family meals are social occasions and enable the members to discuss each other’s lives, strengthening their bonds.

The biscuit – cooked twice – epitomises social eating in so far as without a biscuit there is little point in having a cup of tea, that a meeting without biscuits is somehow deficit and that biscuit eating is seen as a semi-naughty but essential activity for people of all ages. Thus, this work looks at making a playful interaction around biscuits by giving students a design challenge to create an interactive game that could be used in a serendipitous way as a social activity.

3. DESIGNING THE GAME

Two groups of students participated in the design activity. One was a group of French students who were visiting the University; the other was a group of MSc students. The students had all been previously instructed in the general principles around the design of recognition based systems and had been shown some of the technologies in that space, namely RFID technologies, bar code readers and QR code readers. At the end of the instruction, the two groups were shown the QRCookies idea, shown in Figure 1.

3.1 Design Procedure

The students were given a packet of biscuits each and a set of three tubes of chocolate icing. They were told to design a game that would use some recognition technology on the biscuits that could be played by small groups of students who would be eventually aiming to eat the biscuits. The games were designed to be short five to ten minute games and intended for casual play at a college or university canteen.

The two teams were given just 25 minutes to design their games and then describe them to the other groups and to the two instructors of the class.

In the design activity the students were very engaged being full aware of the limits on their time. There was a lot of chatter and negotiation and some biscuit eating. The next two sections describe the games that the students developed.

4. THE GAME

Without any intervention from the researchers, the students developed two game ideas RisKit and SuggestIt DigestIt and these are described below.

4.1 RisKit (For a Biscuit)

The first game, Riskit, was designed on rectangular Nice biscuits. Each biscuit contained an image of a character, a weapon or tool. The game was loosely based around a card game in which each biscuit can either be a character or an item which the character can use to upgrade various parameters such as armour or weapons, see Figure 2.

The upgrading of characters with abilities is a common feature of role playing games and it could be that some of the biscuits with more desirable features are limited.

Two variations of games were designed which could be played using either single player or multi-player modes. To start either game a character would be scanned via the camera on a phone or tablet. This character would then appear in the game world and interaction would take place through various gestures on the device (phone or tablet)
Taking the Biscuit – Playful Interaction

Read ● Sim

tablet). In single player mode several quests would be presented to the player which would have to be completed. To enhance their abilities players would have to obtain upgrades that would be found on other biscuits in other packets. There were health concerns with this game as it did seem to encourage the consumption of the entire packet of biscuits in order to progress.

The multiplayer mode enabled players to compete with friends within the same spatial proximity (i.e. at the table) and let players win their characters (biscuits) and items in their upgrades. The students did not discuss whether they would actually be prepared to eat the biscuit once it had been passed around several people. However, they did suggest that duels could also be played with the winner getting to eat the biscuits. Once a character was lost (eaten) the player would have to obtain and scan another biscuit in order to re-enter the game.

4.2 Suggestit Digestit

Suggestit Digestit was designed using round digestive biscuits. This was intended as a learning / exploration game in which each biscuit had a pattern made up of lines and small circles. Four games were designed covering mathematics, shape recognition, general knowledge and memory. The first game was a two player game in which the biscuit was scanned using a phone and then a question would be presented to the player (on the phone) whom would then have five seconds to answer, if this player gets the question wrong the other player gets to eat the biscuit.

The next game involved a number being presented on the phone and then the players having to create that number with the biscuits available. For example if the task involved addition then 12 might be presented to the player who would need to find biscuits with the right total number of dots that would provide this answer. For example in Figure 2 the biscuit on the left would have a value of 8 and biscuit on the right 5 therefore this would be identified (on scanning) as an incorrect match.

A matching game was also incorporated into the gameplay, again the biscuit would be scanned and a picture would be revealed. The packet would contain an even number of biscuits and each biscuit would have a picture that matched another. After the first biscuit was scanned another biscuits would need to be scanned to find a matching pair. Once two biscuits were matched the winner would get to eat them.

The final game involved the biscuit packet being scanned which would reveal an image that the players would have to recreate using the lines on each biscuit, see Figure 4.

Figure 3. Suggestit Digestit biscuits with recognition patterns

Figure 4. iPhone showing image that needs to be created

The players would then need to arrange the biscuits in the correct order to make the same image as displayed on the mobile device. The players were required to build a house, in Figure 5 the biscuits are arranged in the correct order.

Figure 5. Biscuits used to create a picture of a house
It is anticipated that this approach would improve problem-solving skills and help them identify patterns.

5. TAKING THE BISCUIT

In this brief study, the affordances of the food items were evident in both games. Eating as a reward was a theme across both games. This might not be the only way to play with biscuits, as it could be argued that eating biscuits might be something that one might look to discourage rather than enforce, therefore eating as a punishment may be an alternative idea.

The shapes of the biscuits were also used in the design: the rectangular nature of the biscuits in RiskIt suggested the idea of a card playing game whereas the rotatability of the digestive biscuits was used to facilitate the shape game (shown here as a house) in Suggestit Digestit.

The students did talk about the breakability of the biscuits but did not specifically design for this. For example, if the biscuit with a player broke in the RiskIt game, it might not play the game on the device. Therefore, the consumer/user might feel rather aggrieved that they can no longer play the game due to the fragility of the biscuit.

The RiskIt team did consider including an option to ‘bake your own’ biscuits – this was a nice idea. This would also encourage the interaction with family members, especially if it is younger children baking with their parents.

Beyond this study, the role of biscuits in the future of HCI needs to be considered. Firstly as an interactor they have the advantage of being edible and so as playthings they leave no litter. Emulating the Wonka Golden Ticket model where maybe only one or two biscuits in the pack would be interactive could enhance their possibility for serendipitous interaction.

For interaction designers and HCI practitioners there could be scope for special design biscuits marketed and made for creative designers to use in their team breaks. These biscuits would need to disrupt the current space by being both interesting as interactors but also interesting to eat. There is the possibility to design recognition-based activities around elements of biscuits remaining after the main biscuit has been eaten (the crumbs). During design, where individuals write on bits of paper, a table top of biscuits could be used for that same scribbling and then eaten at the end having already been captured by recognition technologies for future manipulation in a software package.

6. CONCLUSIONS AND FURTHER RESEARCH

Students were able to come up with two game ideas for biscuits that were both feasible to implement with recognition technology. The games did have their limitations and whether the need to consume and handle an entire packet of biscuits to play the games is questionable from a health perspective.

The follow on from this work is to consider how the biscuits might interact with coke cans and cups of tea. Future work will explore some of the potential for biscuits as design props as well as for serendipitous social play. It might also be worthwhile investigating the extent to which the design props, in this instance chocolate icing influenced the design ideas. It is anticipated that this might have acted as a constraint.

7. ACKNOWLEDGMENTS

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5. REFERENCES


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