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Pilot Evaluation of a Narrative-Based Listening and Communication Skills Game: Oracle

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Abstract:

Gamification in an educational context has been shown to be a valuable tool to learners and educators in a diverse range of environments both inside and outside higher education. We have invented a narrative-based card game called “Oracle” that can be played by between 2 – 5 players, intended to aid development of both listening and communication skills through play. We provided the game to a mixed gender group of pre-university students as part of a larger session on developing communication skills to explore their perceptions of a game-based approach to this. We asked for anonymous self-evaluated perceptions of both listening and communication skills pre- and post- gameplay using a 5-point Likert scale. Our pilot data shows a positive perception of our game-based approach to engaging with listening and communication skill development, as well as positive perceptions of improvements in communication and listening skills. We therefore hypothesise that using a narrative-driven game to support and develop communication and listening skills offers a range of positive benefits that may be transferable to other disciplines, such as medical and legal education. Our future work will look to refine and develop Oracle to better capitalise on these benefits, as well as to explore different learning contexts where the use of Oracle could be adopted or adapted.

I BACKGROUND

Gamification in higher education is the application of a trend, widely used in further education for a number of years, as a development in supporting small group learning as a scaffold for exploring and demonstrating knowledge (Nevin et al, 2014). By adopting a gamified approach to learning, the inherent rules that exist within the game mechanics allow the play to be experienced in a structured, contextual and thematic way (Miller, 2013). This, together with a design of layers of strategy depending on complexity of game design and the ability to freely make “mistakes” through play, means that the benefits towards enhancing learning are easy to imagine (Iosup and Epema, 2014).

There are more recent indications in the pedagogic literature that games enhance a broad and useful range of skills such as communication, logistics management, history, interpersonal relationships and team building (Veltsos, 2017; Bodnar and Clark, 2017). Given the discipline neutral stance of a gamified approach to learning in the abstract, we postulated that a gamification ethos would be of value in a range of disciplines, including law and medicine, where communication and listening skills are inherent to professional identity and where best practice within these disciplines frequently require communication during times of crisis and thus empathy and compassion are critical components.

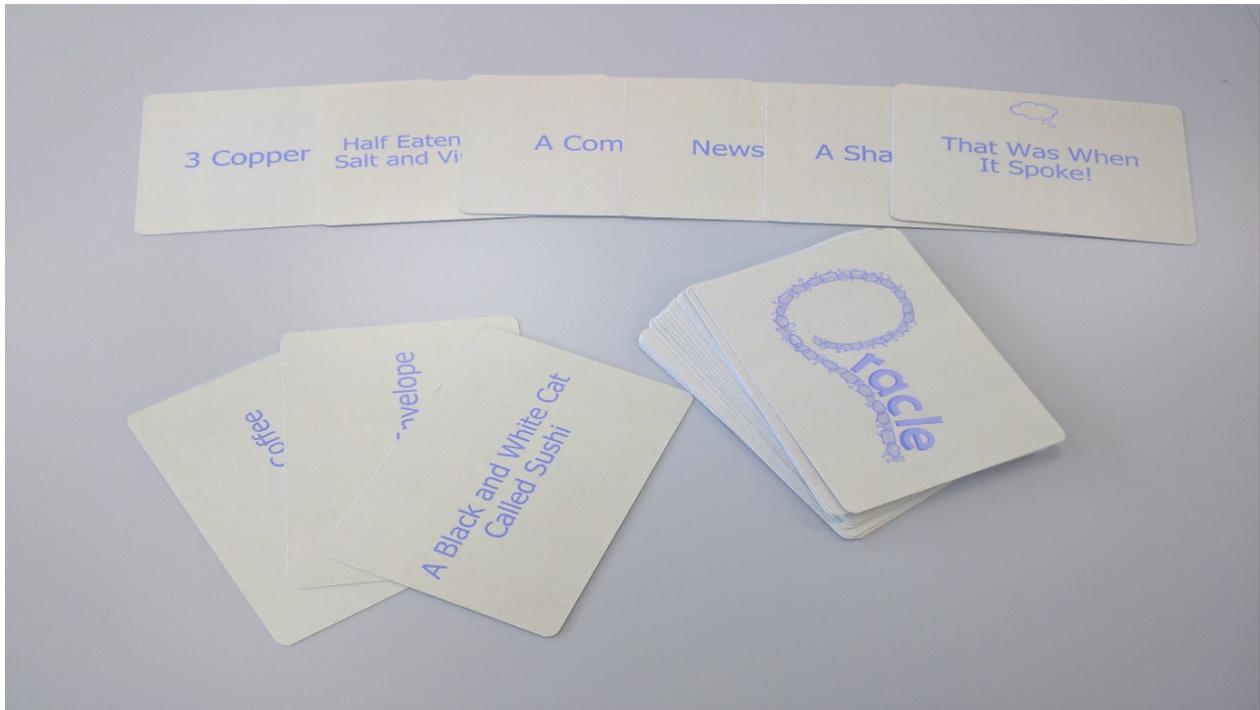
II WHAT WAS THE IMPETUS FOR ORACLE?

Our previous work has focussed on evaluation of a gamified approach to improve pharmacology learning in medical students, with our pilot data showing positive student perception of gamification as a mechanism of learning as well as increased awareness of their own knowledge level following play (Aynsley and Crawford, 2017). Our follow-up research demonstrated measurable learning gain in testable pharmacology knowledge recall following game play up to 48 hours after using the game (Aynsley *et al*, 2018). What emerged from the free-text feedback from players in both those studies was that they valued the communication and active listening skills which they perceived as also being a benefit of a gamified approach to learning. Building on this empirically identified theme, we designed a version of our game exclusively aimed at developing and supporting active communication and listening skills that could be played by any student, no matter their discipline background. Our pilot work focusses on exploring perceptions of playing our game with pre-university students, precisely because of their lack of subject specificity, in order to test whether our gamified approach works in this context. Our future work will then investigate potential benefits of using Oracle with undergraduate legal and medical students specifically and allow a useful comparison as well.

III ORACLE GAME DESIGN

We decided to make Oracle a physical game rather than a digital one because this mode of delivery better fits with our narrative-based ambitions for the gameplay, drawing on adult learning theory pedagogy and encouraging communication skill enhancing aspects of gameplay in person (Wood, 2013; Knowles, 1984). Oracle was designed such that two to five players engage and collaboratively create a verbal narrative-driven story using prompts from the game cards (Picture 1). Each player has three cards, each card has a trigger word or words that the player seeks to build naturally into the evolving narrative, proceeding sequentially around the members of the group. This requires both active listening skills, to keep track of the evolving narrative and active communication skills (and imagination), to build their target word(s) into the narrative when the opportunity arises. To clarify, only 1 card can be used by each player at any time and, once used another is drawn from the deck of cards in the centre of the players so that as a narrative progresses it utilises the entire deck of cards across any given game. This narrative continues to

evolve sequentially around the group of players until an “ending” card is drawn from the deck. The “ending” cards can be shuffled in or placed at the bottom of the deck as the players wish. Once drawn, the players must resolve the story in a single rotation of the group, using all remaining cards, in turn order, until the story ends on the phrase on the ending card.



Picture 1: Each player continually has three cards (bottom left) they can play, as the narrative story unfolds (left to right on top) the cards are incorporated into the story until an “ending” card is drawn (top right) from the deck (bottom right).

The pedagogic aim of Oracle is to engage players in active listening and communication skill development in order to continuously build and develop their living narrative using the game cards to scaffold the story until an ending card allows the game to be brought to a close. The expectation here is for the players to increase their confidence in both progressing the narrative (communication skills) and in their planning of how to use their game cards most effectively by steering the narrative in real time (listening skills).

IV EXPERIMENTAL RATIONALE AND APPROACH

We used a single cycle of action research to collect pilot evaluation data from 15 pre-university sixth form college students interested in a diverse range of higher education courses. Fully informed consent was given by each student and they were provided with an information sheet outlining that their anonymous feedback of the game was being sought under an ethical evaluation framework. All students had access to the game in the session and were free to either offer feedback or not without question or comment *via* our anonymous question instrument (Appendix 1).

V OUR EVALUATION INSTRUMENT

Our evaluation tool uses a Likert scale (with space for free-text comments), intended to collect data on self-evaluated player perceptions of listening and communication skills pre- and post-gameplay. For the Likert scale, we selected a five point scale where participants indicate the relative strength of opinion to pre-set descriptor statements (Bowling, 1997). This method assumes a linear relationship in strength of feeling. Whilst this may not be the most accurate way to measure this parameter, a 5-point scale (from “strongly agree” to “strongly disagree”), with the

middle point on each scale indicating a neutral opinion, is be useful in gauging relative strength of opinion (Likert, 1932).

VI RESULTS AND DISCUSSION:

Figure 1 (Panels A, B and C) show the collected data from the three questions asked in the question instrument. In all cases, the Y-axis for each panel denotes the number of participants for each response from a total of 15 student who played the game and offered feedback.

Panel A shows the responses to answering the question: ***I enjoyed playing Oracle***, with 1 – Strongly Agree, 2 – Agree, 3 – Neither agree nor disagree, 4 – Disagree, 5 – Strongly Disagree. All participants answered either 1 or 2 for this question, indicating complete agreement in their enjoyment of a gamified approach. We reflect on this trend in our discussion below but it was a useful question to include based on findings from our other gamification work, which indicated that the gameplay aspects are critical for positive perception of the value and replay of the game.

Panel B shows the spread of responses (1 – 5) to the question regarding ***confidence*** in participant communication skills, both pre- (blue bars) and post- (orange bars) gameplay. Our data shows a general increased trend towards positive perceptions from players starting position, where half the cohort indicated they felt confident in their communication skills pre-game and the rest distributed themselves along the remaining scale. When we compare this distribution to the findings post-game, we observe a positive change in a number of players feeling more strongly that their confidence had increased and observe none of the players strongly disagreed. We interpret this positive trend post-play to indicate that players' perception of their own confidence in communication skill was enhanced by the game.

Panel C shows the spread of responses (1 – 5) to confidence in participants ***listening*** skills, both pre- (blue bars) and post- (orange bars) gameplay. Akin to the trend displayed in the previous question, players pre-game mostly indicated agreement in their baseline confidence level of listening skills, with this becoming more positive post-game. We found a number of players felt stronger in agreement post-game indicating that playing Oracle augmented their self-perception of confidence in listening skills. Other players also felt an improvement in their confidence level such that no-one used the "disagree" or "strongly disagree" options on this question after playing the game.

Overall, our questionnaire data indicates that playing Oracle was perceived to improve player confidence in both communication and listening skills as well as being a fun way to work on developing these skills.

Emerging from the free-text comments came three central concepts that we believe both reflect the overall experience of playing Oracle as well as highlight developmental opportunities to enhance the core gameplay emerging from our pilot work.

A ***Enjoyment***

The free-text comments back up our data from Figure 1, Panel A, where students felt that they enjoyed the game and the most succinct comment was that ***"It was fun"*** to play. It is critical that we do not lose sight of this aspect of "serious games" by over-engineering the complexity at the cost of the fun aspect of playing a game as a learning catalyst (Walsh *et al*, 2014). Whilst we fully accept that enjoyment of a game can be a subjective experience, across our current and previous work using gamification to enhance knowledge and skill development, the feedback that the game itself needs to be fun to play has remained a fundamental and critical finding. In our opinion, development of a gamified approach to enhance learning needs should take this into account at the game development stage. Indeed, the importance of the game 'being fun' cannot be underestimated given its relationship with contemporary pedagogic threshold learning theories (Meyer and Land, 2003). Our work here and elsewhere would indicate that a careful balance needs to

be struck between the pedagogic dimensions of a game and the playful aspects of that game to ensure players are presented with a “golden window” of fun-facilitated learning (Aynsley *et al*, 2018).

B Imagination

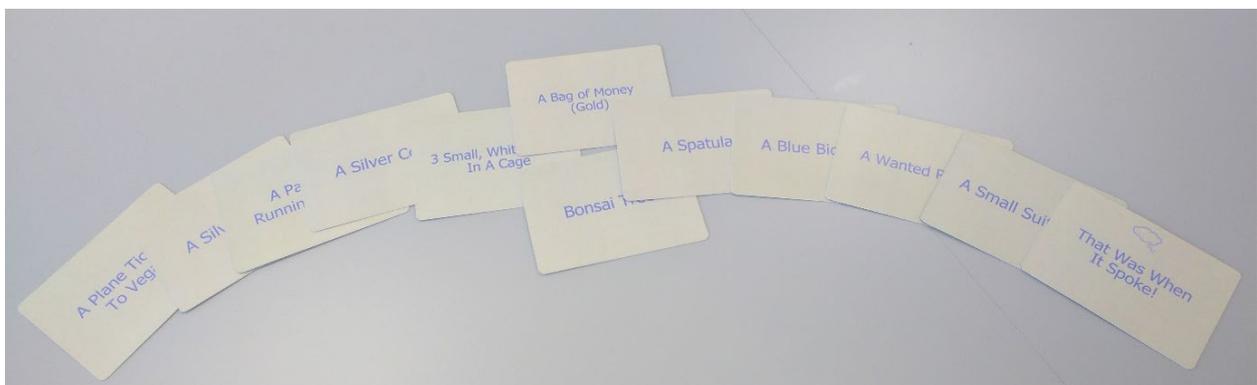
Whilst watching the participants playing the game and weaving their narratives, we observed that some groups were initially very reductive in their imagination, having their stories unfold in a linear and predictable way. We observed this changed with number of games played in most instances (every group played the game at least three times, some up to five times in the session). Our free-text feedback suggested that **“It may be reasonable to set a minimum word count per player to make it more challenging”**. We feel this is an insightful suggestion as it accomplishes two things.

Firstly, it encourages less confident players to engage in their skill development using the “rules” of the game rather than relying on intrinsic motivation, or indeed pressure from other players, supporting our aim to make the gameplay as inclusive as possible without unduly pressuring players. This could be of significant benefit if, for example, one or more of the group were not taking part in their first or native language or if there existed significantly differing levels of communication ability within a group of players. In these instances, having the expectations clearly established up front in the game rules would reduce any anxiety or pressure, thereby further enhancing the identified positive benefits of gameplay.

The second benefit we interpret from this suggestion is that a minimum indicative word count associated with each narrative contribution manages the expectations of the players in such a way that an increased complexity of game is possible by agreement before play. We believe that this increases the re-play value of the game and further allows the learners to set their own developmental targets as a group. This would obviously add value in that players are, in essence, communicating and negotiating before even playing the game in earnest.

C Complexity

Whilst a “safe” (ie, logical, but unambitious) narrative was usually adopted on the first play through of Oracle, once players’ confidence levels started to rise, we observed (usually on a second or third play through of the game) that players were almost testing themselves by weaving increasingly fantastical and complex narratives in an attempt to use all their cards. Clearly, the more complex the narrative, the more active listening is required to keep track of the story and the more communication and forward planning required to steer that story towards use of your own cards. Interestingly, for some groups this complex narrative was entirely verbal and “existed” in the space between the players; however, we did observe a few instances of groups actually laying the discarded cards out in a linear progression, thereby effectively documenting their narrative as it evolved with the discarded cards.



Picture 2: From left to right, an observed layout of the game cards showing the order and evolution of the narrative along with any branch points, working towards the ending card (right).

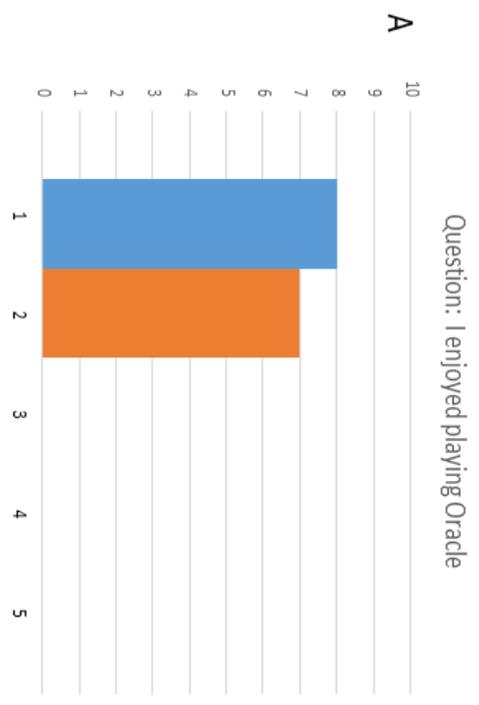
We thought this was an ingenious and effective way to retain control of even the most imaginative narratives, as at any point you could use the progression of discarded cards as an aide-memoire (Picture 2). We will look to include this as a core game mechanic with the Oracle rule set, so as to encourage and facilitate players to take greater risks with their narratives and, thereby, further augment their skill development through variable complexities of gameplay (Banfield and Wilkerson, 2014).

Comments like **“More cards for a longer story to be developed”** also emerged from this pilot. The Oracle deck has 52 cards, with 4 of these being ending cards, leaving 48 cards to contain the word prompts to use in the game. The typical Oracle play group comprised three players meaning that each person could use up to 16 cards each across a game that utilises the entire deck. We were excited to hear that even with this capacity in the core set of game cards, some players felt that they would like to expand and grow their narratives beyond this. Clearly, future iterations of Oracle could have more cards, but we will explore the possibility that players might recycle used cards amongst each other as a way to extend the playtime, should the group decide to play in this way.

In a similar vein, we also received feedback that related to the linguistic content of the words on the Oracle cards. The comment was a request to **“Add some adjectives”** to the deck (Oracle cards are predominantly nouns with very few adjectives present). We interpreted this as player appetite to add further complexity to the core gameplay as well as a desire from the players to offer linguistic colour to their narratives through better use of both adjectives and nouns together. One possibility we will explore from this is to have a second deck of adjectives available in an Oracle set that could see players’ select one card from each deck to increase the complexity and descriptive potential of the narratives. We anticipate that this will further enhance both the fun aspects of gameplay, as well as the communication aspects that Oracle augments.

VII CONCLUSION

Our pilot work with Oracle has shown that players perceived that adopting a gamified approach to develop communication and listening skills was both fun and useful and that by playing our game, self-perception of confidence in these skills improved. Our further work will repeat this experimental design with a diverse range of undergraduate students in both law and medicine to test its transferability. Law and Medicine are two arenas where communication and listening skills are fundamental to professional practice and we hypothesise that Oracle could be of significant value in these disciplines as undergraduate students develop their practices. Our further development of Oracle will also take into account our data indicating greater management of both the expectations and complexity of play so that players can tailor and develop their Oracle experience as their confidence grows during the game.



A: Number (Y-axis) of 15 participants who answered the question: I enjoyed playing Oracle, with 1 – Strongly Agree, 2 – Agree, 3 – Neither agree nor disagree, 4 – Disagree, 5 – Strongly Disagree. All participants answered either 1 or 2 for this question.

B: The columns show the spread of responses (as above) to confidence in participants communication skills pre (blue bars) and post (orange bars) playing Oracle. The Y-axis is the number of participants from the 15 total.

C: The columns show the spread of responses (as above) to confidence in participants listening skills pre (blue bars) and post (orange bars) playing Oracle. The Y-axis is the number of participants from the 15 total.

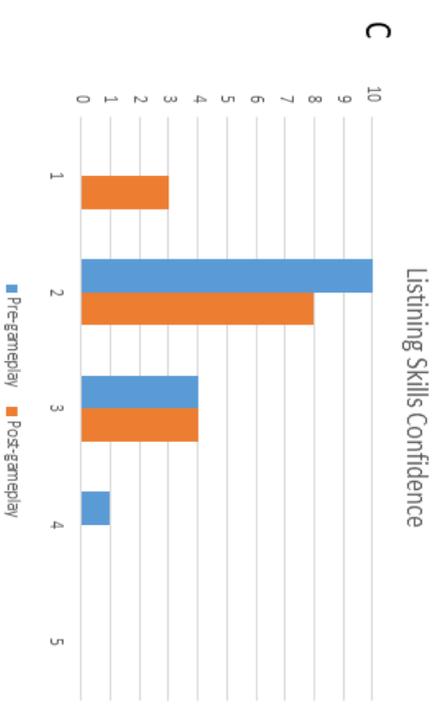
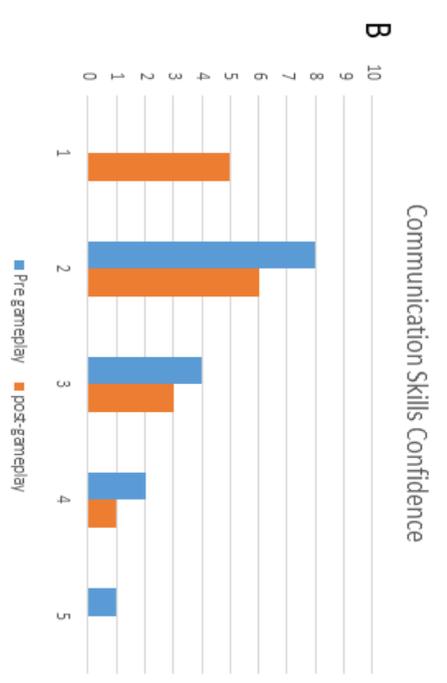


Figure 1:

Appendix A: Our Question Instrument

BRAINCEPT ORACLE – A Communication and Listening Game

INDIVIDUAL FEEDBACK FORM

How many times did you play the game?

I really liked playing Braincept Oracle.

Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree

Before playing Braincept Oracle, I felt confident about my communication skills.

Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree

Before playing Braincept Oracle, I felt confident about my listening skills.

Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree

After playing Braincept Oracle, I feel more confident about my communication skills.

Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree

After playing Braincept Oracle, I feel more confident about my listening skills.

Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree

Any other feedback?:

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