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Introduction
This project will develop a series learning and teaching environments for deploying a serious game. The Reading Game will be used in courses from all faculties at Macquarie, with different class sizes, diverse content and delivery methods. The aim of the project is to measure the effectiveness of the game by using the content and analytics from the game to create new teaching opportunities and student participation. Every learning and teaching technology needs a pedagogy and vice versa.

![Figure 1: The Leaderboard on the Reading Game home page shows only the player above and below you, with details of how you can improve your position and scoring. This is all a player needs to indicate their overall position in the game.](image)

What is the Reading Game?
The Reading Game is a question and answer game built by a class of participants, to create a collective learning space where every action serves to introduce, build, or clarify concepts from the course material. The quality of the questions and the contents of the quizes are up to the participants who receive points for their efforts in both asking and answering questions. The game leverages game mechanics to make the participants’ interactions with the game, fun. Participants can rate questions, which directly impact the contents of review quizzes, while also activating a secondary reward called ‘stars’ for participants whose questions are deemed outstanding by their peers. Participants can progress on to the next level of asking open questions directly to the teachers and their cohort, by using their accumulated points.

![Figure 2: The Reading Game was inspired by conversations with Richard Buckland (UNSW) and Kira Westaway (Macquarie University) in December 2011, about engaging learners in the content of their course. This is the original set of rules I scribbled down immediately after a meeting with Kira, discussing how to reward or praise students who had not read the lecture notes.](image)

Approach
The unusual presentation of question asking, the points, the stars, the rating system, how the questions are answered and commented on, are designed using game thinking rather than a traditional pedagogical model. The aim of this game is to make learning fun and challenging at the same time, while taking advantage of the widely reported enthusiasm students have shown for game play. We are looking at student behaviour and question creation in the game and how this relates to the threshold concepts in the course. We are looking at the type of questions being asked and the improvement or otherwise of individual student’s question-asking and participation levels. The investigation will also measure whether it deepens student understanding by a closer reading of the course content and improved outcomes in the assessments.

![Figure 3: “Scholars at a Lecture” is William Hogarth’s satirical commentary on the institutions of higher learning. A professor (probably William Fisher, the Regent of Oxford University) is delivering his lecture entitled, “Dider Vacuum.” (“A vacuum is greatest”). Surrounding him are his students who exhibit a variety of responses to his lecture. Indifference, boredom, analogies, observation, distraction, incredulity, offense, irritation, yawning and distress are portrayed. Most reactions are drawn, except genuine interest, particularly the wonderfully obscure individual appearing immediately after the professor. This original engraving was designed, engraved and published by William Hogarth March 3rd, 1736, Price Six pence. (Source: Wikimedia) ![Figure 4: To start playing the game, you must ASK QUESTION. This is the primary act in the game. The menu bar is for navigating through the game. The Progress Bar shows the minimum requirements to play the game, it engages the player with the same cognitive stimulation (desire-to-win and status-building), by breaking the work down to achievable steps, so it ends up being a fun experience because it creates self-discovery.](image)

Theoretical Background
The key claim in the Reading Game is that creating questions is one of the fundamental cognitive elements that guide our conscious reasoning. For example, in the game, the act of asking is recalling; answering is recognising; quizzes are reviewing; an open question is researching; commenting is collaboration and reflection; and rating is feedback. These explicit acts in the game form the architecture for continuous formative assessment and meta-cognition that are implicit in the Reading Game, by creating webs of coherent reasoning that are built around the difficult questions we ask and the iterative answers we give to these questions. Explanatory reasoning is derived from questions, such as why-this-and-not-that, how-to-do-this-with-that, and what-if etc., that invite the construction of causal chains of explanation, and understand hierarchies and logical arguments or mere justifications. They can be mapped onto learning taxonomies to observe the progress a learner undergoes and the nature of their reflective practice.

What is the value or need for gamifying course content?
The gamification of education lines up with the cognitive processes associated with learning and teaching taxonomies. Serious games if well targeted, pull students through the detailed information onto making higher order judgments in a continuous gamification loop (challenge-achievement-pleasure-cycle). If a game is well designed, then irrespective of the nature of the work (knowledge acquisition and progression-to-mastery) required to play the game, it engages the player with the same cognitive stimulation (desire-to-win and status-building), by breaking the work down to achievable steps, so it ends up being a fun experience because it creates self-discovery.

![Figure 5: A question on the Reading Game reads “What is the value or need for gamifying course content?” Followed by options: “fun” “challenge” “pleasure” “achievement” “desire-to-win” “status-building.” The learner selects “challenge.”](image)

Answer Questions
The question is: “What is the value or need for gamifying course content?”

Question Comments
The question is: “What is the value or need for gamifying course content?” Followed by options: “fun” “challenge” “pleasure” “achievement” “desire-to-win” “status-building.” The learner selects “challenge.”

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