Module: Industrial Psychology 132
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Context
Background overview
After teaching the module for a few years, the lecturer decided to change the prescribed textbook and used this as an opportunity to redesign the module. A gamified learning environment was therefore developed on SUNLearn. The purpose of this was to provide enrolled students with challenging, fun, interactive learning opportunities both individually and in groups. Practical formative activities that were based on theory and covered in selected topics of the module content formed the basis of the gamified learning platform.

Subject area
Industrial Psychology 132 is a six-credit service module for first-year Occupational Therapy students. In this module, they are exposed to the general principles of industrial psychology. This includes psychological theory (i.e. motivation, individual differences and research aspects) and human resources-specific processes (i.e. labour legislation, recruitment, selection, training, performance management and leadership development) that are involved in the study of individuals and groups in the workplace.

Established practice and the challenge
The module was initially structured as a purely face-to-face approach. Two of the three contact sessions per week were allocated to theory and the third was used for practical activities. Later, the lecturer placed the activities, with clear instructions, on SUNLearn and students could complete the learning activities in their own time. SUNLearn was then used as a repository, since it was the easiest mode of communication with the group. The lecturer had been teaching this module for more or less three years and felt that it was time to try something new and interesting.

Advantages associated with the integration of technology
It was important for the lecturer to create opportunities in which students could translate the theory into practical applications and experiences. She also wanted to give them the opportunity to draw links between occupational therapy and industrial psychology. The gamification of SUNLearn offered the opportunity to present information in a more engaging format. Making use of this new educational approach also gave the lecturer the chance to evaluate and redesign the learning activities, where necessary.

Gamification is a way to engage students in higher-impact practices, such as collaboration and authentic learning opportunities. It allows students to start thinking practically about content. The theory does not make much sense to them at first, since they are only first-year students. Gamification brought the students' learning activities closer to what they would actually experience.

Student overview
In 2016, about 48 students were enrolled for this module. Students enrolled for the module are all first-year Occupational Therapy students completing Industrial Psychology 132 as a service module. They go through an intense selection process and, as a result, are more diligent and attentive students than those in an average class.

Students are exposed to industrial psychology, since occupational therapists often work not only in hospitals and schools but also in rehabilitation centres. A lot of their work involves equipping people with skills to go back to their normal or their pre-accident functioning, which may include a career or work environment.

Learning and assessment activities
Educational approach
It has been argued that gamification is a pedagogy that can be linked to experiential learning depending on its use and application (Banfield & Wilkerson, 2014). Moreover, combining game elements with learning objectives in a gamified module, one can create a "hands-on learning pedagogy that is student centric" (Banfield & Wilkerson, 2014). Experiential learning theory states that a new skill is best learnt when individuals **understand** it both conceptually and behaviourally, have opportunities to **practise** it, receive **feedback** on how well they are performing it and **use** it often enough for it to become integrated into their behavioural repertoire (Osland, Kolb & Rubin, 2001).

The lecturer approaches the content in much the same way. The learning content that is presented in class is closely linked to the learning activities and the assessments. These activities also engage students in lower and

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Learning activity:
Gamification

Learning technology:
SUNLearn

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higher order thinking skills (Bloom, Engelhart, Furst, Hill & Krathwohl, 1956) while applying the content to a scenario. Students are furthermore often asked to put the theories that they learnt in class together in such a way that the theories answer a question or solve a problem presented to them. Feedback is provided on all the learning activities, either through the use of automatic grading, a rubric or commentary.

Learning and assessment activities
To begin with, students were introduced to the concept of gamification in a short in-class presentation. The objective and purpose of the gamified learning activities were also discussed, as were the instructions and guidelines. SUNLearn served as a platform for the game titled OT Tycoon, where students could move through different levels and complete short knowledge checks and quests (Figure 1).

You have completed your B degree in Occupational therapy and registered with the HPCSA and have established yourself as a successful Occupational Therapist. You have gathered a number of years of experience and decide to open your own practice. A number of challenges await you and your ability to successfully navigate them will determine whether or not you have what it takes to build a world class, successful practice and be the next... life changing ... rehabilitating ... OT TYCOON!!!

Figure 1: Screenshot of the introduction to the game OT Tycoon

Students were led through a story wherein they were to build their own occupational therapy practice. Each new topic represented a new level wherein students had to engage in different activities. The module itself is made up of eleven themes but only six levels were created. Each level combined certain themes or focused only on themes that had a more practical application (Figure 2). Each level contained a knowledge check and group or individual learning activities that were referred to as quests. The knowledge check could be attempted three times at any point during the semester. Each quest contained a short description of a challenge (in the form of a small assignment) that needed to be completed and an explanation of how it contributed to the final objective of the game.
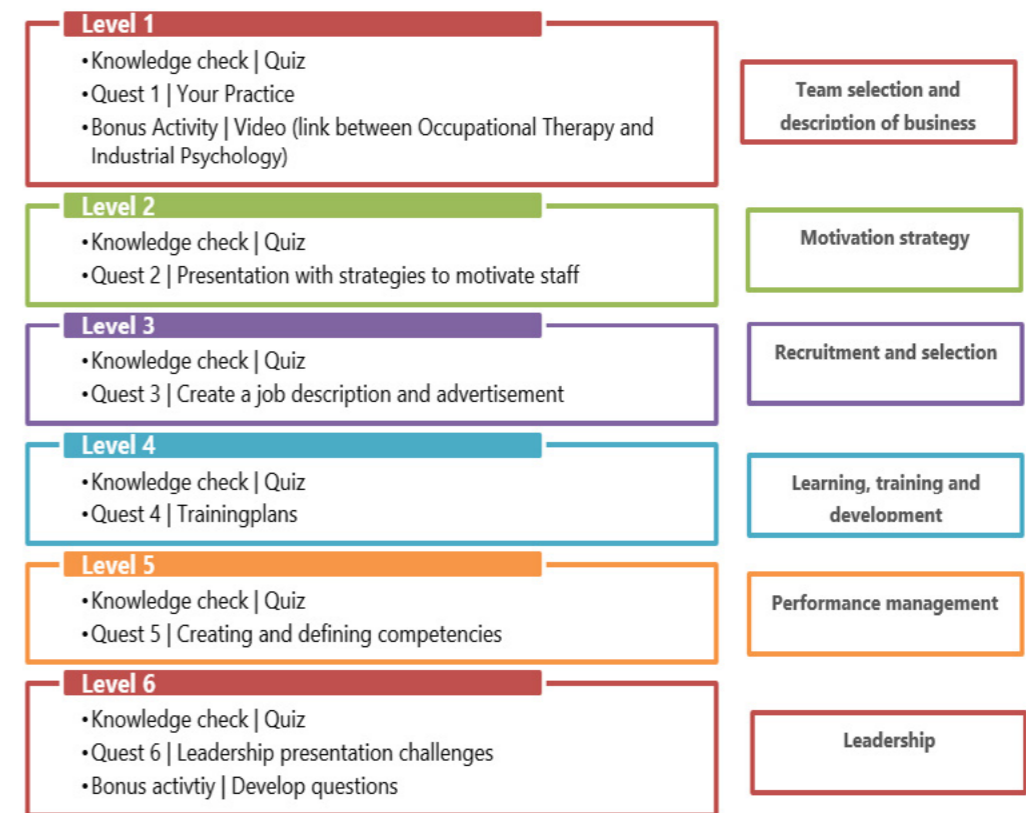

Figure 2: Themes for each of the six levels of the game

Feedback practice
Automatic grading was used on activities such as the quizzes (knowledge checks), which means that students received immediate feedback (in the form of marks). Other learning opportunities were graded by the lecturer and therefore took longer to mark, students sometimes waiting a week or two before receiving feedback (see *Opportunities and challenges*).

Student self-regulation
To place the responsibility of learning back into the students' hands, they were given more freedom in terms of timelines for activity completion. For all online activities, there was only one hard deadline: the end of the semester. There was, however, a proposed deadline for each activity (for the end of a level or section). If students completed the activity on or before the proposed deadline, they received bonus points.

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Points were assigned for various activities, including quizzes, class attendance, in-class activities and group quests. Points were earned for the completion of these tasks. Bonus points were also assigned at the discretion of the lecturer for additional activities or participation.
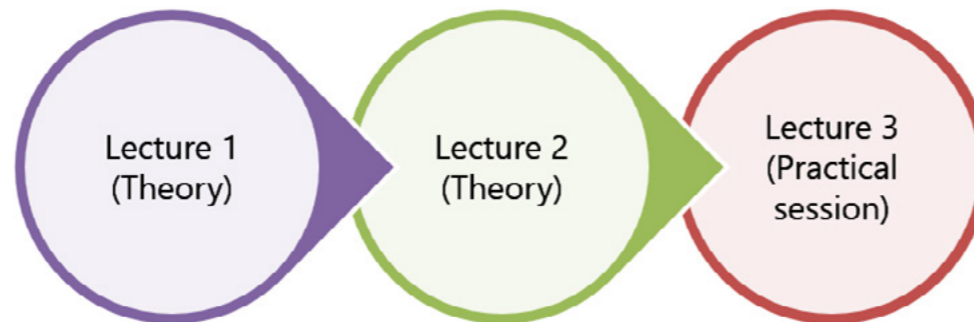
Learning environment
Learning setting

Figure 3: A typical week in Industrial Psychology 132

Three lectures are scheduled for this module every week. During the first two lectures, content is presented. The third or Friday lecture is occasionally used for a lecture but is more often made available to students to do group work. They then have the lecture hall available for them as a group to complete the week's activities. Attendance of these sessions is not compulsory but the sessions are made available since students mentioned that they struggled to get together as a group.

Collaborative settings
At the start of the semester, the students divided themselves up into groups of three using the Group Choice Tool on SUNLearn. During the semester, the students were not communicating issues about group member contributions but they were beginning to do so towards the end of the semester. As a result of these issues, the lecturer decided to make a buddy rating system available to the students. This system allowed the students to e-mail her the percentage that they thought the individual group members contributed throughout the semester, such as only 50%

or the full 100%. The individual group members' marks were then adapted according to the average of the percentages that they received from their peers.

Technology resources
All online activities and gamification elements were designed on SUNLearn. Various tools were used (Table 1).

Table 1: SUNLearn tools for activities and gamification elements

Learning and assessment activity	SUNLearn tool
Choosing of teams	Group Choice Tool
Knowledge checks	Quiz
Quests	Assignment tools
Gamification elements	**SUNLearn tool**
Points	Gradebook items
Levels	Sections

Figure 4: Typical level using various SUNLearn tools

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Student experience

Student feedback on the learning experience

A focus group interview was conducted with some of the students after they completed the module. During this interview, they raised various issues about competition, communication, the structure of the course, group work and the content and concept of gamification. They felt that the gamified approach was interactive and made it easier for them to learn the content; the knowledge checks (quizzes) helped them to learn the theory and the online tasks provided interesting ways to practise it. They also said that it was different and fun.

There were also some criticisms in the student feedback. Some felt that the module now contained too many tasks and that they did not receive feedback on the tasks fast enough. Neither did they want to work in groups as often as they were required to.

Assessment impact

Each learning activity (i.e. the knowledge checks and quests) was assigned points for completion and some contributed a portion to the final class mark. The knowledge checks contributed 5% to the final class mark and four of the learning activities contributed 15% to the final class mark. Although the lecturer did not see a difference in student marks at the end of the semester, students did report that they were more engaged with the content, which made the content more relevant to them.

General

Opportunities and challenges

From the student feedback and the lecturer's own experience, the following opportunities and challenges were identified:

- More guidelines were given for students to complete their activities.

- A student assistant was appointed to ensure that feedback on activities was provided more rapidly and that student points were loaded more rapidly.

- A SUNLearn plugin was identified and installed to manage student points.

Advice

The lecturer proposes the following advice for others who want to implement gamification in their modules:

- Leader boards can be used to promote competition amongst students but should be used with caution.

- The rules of the game should be clearly communicated and easily accessible or displayed as reference.

- Feedback should be immediate or provided as soon as possible for all activities.

- Levels provide structure and facilitate progression through the game.

- All learning activities should be meaningfully derived from the content and included in assessment if possible.

- The game should facilitate varied social interaction both face-to-face and online in order to minimise time constraints on the players.

- A clear distinction should be made between the allocation of points and marks for the completion of learning activities.

- Rewards should acknowledge the players' individual differences in motivation, be meaningful and tangible and have utility in the course.

The points above were also presented as design principles in a conference presentation made by the lecturer and her PhD supervisor (Adams & Du Preez, 2016).

References

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