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CHAPTER 4

Tabletop Games for Training

Teaching Soft Skills to Game Development Students

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ABSTRACT

Among the key competencies for game development that tertiary education provides, soft skills are among the most challenging to coach students on. In an active learning environment the expectation is that soft skills such as communication, estimation, and prioritisation are gained through experience when students undertake group project work. While appropriately scaled projects may provide an opportunity to engage with soft skills in a meaningful way, this learning is often a lower priority to the student presented with more tangible project outcomes that they expect to be graded upon. Engaged and enthusiastic students may reflect upon how their experiences have helped them to hone their existing soft skills as they have a basic understanding of their value, but most students are reliant upon direct involvement with a subject to recognise its benefits in any meaningful way. To facilitate this learning an activity was designed to encourage reflection upon soft skills and their value to games development. Trial By Fire is a tabletop card game that was developed through action research across the course of three years of iteration and qualitative testing with students. Students consistently expressed a clearer understanding of how soft skills are applicable in their projects and careers after just a few minutes of gameplay. Today this activity can be incorporated into university level lesson plans alongside a class discussion

after just a few minutes of gameplay and presents an opportunity for expansion into other disciplines or soft skills.

KEYWORDS:

Serious Game, Card Game, Soft Skills, Games Development, Leadership

THE SOFT SKILL PROBLEM

Game development is a highly technical industry that requires a great deal of collaboration between drastically different roles. Being highly technical, there is an expectation that new staff – even experienced staff – will require some degree of training and support to become familiar with a development studio's unique set of processes and techniques. However, the heavily collaborative nature of the industry means that studios will often prioritise soft skills over hard skills when considering potential staff for employment, due to the challenges of training soft skills to inexperienced staff (Zuniga, 2016). Despite the similarities between the industries, software engineering businesses fail to identify the requirements of soft skills in their job listings (Ahmed et al., 2012; Capretz & Ahmed, 2018). Each developer in a studio is expected to have the capacity to communicate and collaborate with their team; and to estimate and prioritise tasks individually or as a collective. The development of a game will go through a series of iterations with a particular focus on a specific outcome; pre-production to ideate and conceptualise, production to develop and test, and post-production to patch and support

Preparing students for entering the workplace throughout the course of their degree is a process that requires that facilitators identify and train skills that the industry desires. Usually such training is focused particularly on hard skills, which the SAE Institute delivers through active learning in simulated workplace units called studios (SAE Australia, 2021a). In addition to the essential hard skills, SAE also reinforces to students the value of transferable skills (SAE Australia, 2021b), which students are encouraged to engage with throughout their studies by way of reflection upon their experiences in the classroom. Transferable skills make up a mixture of hard and soft skills: the modern office will value a hard skill such as an

employee's word processing, in addition to valuing a soft skill such as their leadership qualities. Soft skills are widely recognised and desired among the creative industries, often more so than the hard skills that students come expecting to learn from a university (Brown et al., 2009; González-Morales et al., 2011; Kenwright, 2022). It's this high value attributed to soft skills that has led SAE to doing holistic grading that looks at what it calls the three P's (SAE Australia, 2020):

- Person, relating to interpersonal skills and quality of character;
- Process, particularly time and project management; and
- Proficiency, the hard skills students come to study.

Soft skills pose a particular challenge for facilitators to teach, however. Their successful delivery is reliant upon two key factors: that the student understands the value of soft skills, and that they can exercise the necessary self-awareness to internalise and reflect upon their behaviour and the behaviour of others. While facilitators can deliver content in such a way that a student may understand the value of these skills, self-reflection is itself a soft skill that is a base requirement for this learning to take place. A great deal of time and effort is spent teaching students Rolfe's reflective model (Rolfe et al., 2001) and reinforcing the value of self-reflection early on in a student's studies at SAE to encourage the behaviour. However, a substantial number of students reject the concept of self-reflexivity and will only engage as much as necessary in order to pass units. These same students as a result do not engage with soft skills, and often require a direct experience with them – either through a simulated studio workplace in their studies or professional experience after graduating – in order to begin to understand and respect the value of them as skills. This is a fact that many creative industry workplaces presently experience and are prepared for, as their expectation is that students have the essential hard skills to begin work but are yet to fully develop their soft skills that are the difference between working and working effectively (González-Morales et al., 2011; Kenwright, 2022; Zuniga, 2016).

The challenges of teaching soft skills, along with their importance in industry practice, created a problem in the delivery of one unit taught in the games program at SAE. Games Studio 1 is a unit particularly focused upon

production and project management processes, with learning outcomes around project management, time management, estimation, and communication (SAE Australia, 2021c). These learning outcomes were expected to be achieved as a result of a student collaborating and building a project within a team through an active learning framework (Bonwell, 1991), and tutoring from the facilitator about project management and communication techniques. However, getting students to a stage that they could execute upon the technical aspects of the unit requires a great deal of class time and training. This meant that content inadvertently reinforced the wrong skills as the major priority of the unit. The less time that is spent on delivery and discussion of the soft skills, the less clear to the student what the desired outcome of their learning should be. Without clear prompting to help students understand the value of soft skills, they would spend all their time focused on building up their technical skills on the project.

ITERATIVE ACTIVITY DESIGN

A method needed to be developed that could prime the students with an understanding of the soft skills expected as graduate outcomes of their work, while not detracting from the time necessary to teach the hard skills required to undertake a technically complex project. As SAE is ostensibly an active learning-oriented educator, creating an interactive learning activity that could deliver soft skills to prepare students for a better understanding of the unit's outcomes was a must. There was also potential for the activity to tie into or reflect actual games production practices in a way that was relevant and familiar to the students; while also providing additional learning opportunities in the realm of industry practice and process. These key points would become the goals for the activity design:

- The activity must be interactive, to fit within the active learning environment.
- The activity must be short, to not detract from the necessary time for technical skill building.
- The activity must reflect real games industry practice, in order to

feel relevant to learners.

Based on these goals, a game was designed that could be played in the classroom in just a few minutes. The game is broken up into three phases: pre-production, production, and post-production. In pre-production, students are separated into teams where they must choose from a variety of game development roles with different responsibilities and actions. They then prioritise a list of development tasks into a desired completion order. When production begins, students attempt to resolve all the development tasks within a given time limit. Students must discuss and decide the most appropriate actions to take in order to complete their given tasks before time runs out. In the post-production phase, students discuss and compare the results of the activity with other teams. Specifics of the game's design would change over every iteration based on observations and feedback from students; however, these core structural elements of gameplay remain largely the same.

THE RISKS OF PARODY

Design of the game began in earnest in 2019 to the backdrop of widely known game development news. Bioware's Anthem (Bioware, 2019) had been released in February in a clearly incomplete state, and a subsequent article by investigative journalist Jason Schrier (Schreier, 2019) made clear the extent of the problems in the studio that led to the game's failure. Anthem would be used as the initial inspiration for the game now named Trial By Fire, placing students in the role of developers working on Anthem to try and develop the whole game and change its fate in just 5 minutes. Students would get into teams of two to three and fill one of two roles: Producer or Developer. Producers would be provided with a list of features from Anthem that they would need to write onto sticky notes and organise into what they felt were the priorities. Developers would be provided with dice that they would have to roll every thirty seconds to attempt to complete the top priority task set by the Producer. Failure to roll high enough would result in the creation of a bug, which the Producer would have to write onto a new sticky note and choose where it fell in terms of the list of other priorities. Part-way through the game, students would get

an opportunity to add another task to the game – Microtransactions – in exchange for more time to try and finish the full product.

As simple a concept as this iteration of the game was, it proved to be a hit with students. It got the classroom thinking about and discussing the whole process of game development, they understood the importance of communication in their process, and they were keen to return to the activity again to see what they could potentially change. This was already an improvement over the previous iterations of the unit without the game, as now students were entering into their projects early with a greater understanding for how their work could go wrong and what they needed to look for in order to improve their outcomes. There were also detriments to the game, however, as noted in figure 1; the framing of the activity resulted in conversations primarily around the studio and game that inspired the activity, and bugs were largely ignored on repeat engagement. The game showed great potential, but the initial feedback and analysis made it clear that there was room to improve.

Trial By Fire Iteration 1	
Noted Behaviour / Comment	Analysis / Design Impact
Students required at least two plays of the game to understand how to play	Create print-out rule sheets to provide to students to guide them. Create playing cards to simplify the preparation step of the game.
Students could identify the importance of communication and discussion around priorities	The activity is effective at rapidly highlighting the importance of communication during development.
Students got competitive about which group had gotten closest to making the game with the most complete features and least bugs	Add point scoring mechanics to future iterations of the activity for students to discuss and compare strategies.
No teams managed to complete every task while also getting rid of every bug	Students stopped trying to squash bugs and focused less on the simulated process in subsequent plays of the game.
"We are EA, we will just hire some unpaid interns to finish the game."	Remove any reference to Anthem or Bioware as it derails conversation about the process. Encourage students to empathise with the developers they are roleplaying as.
"At least we got everything in, we can patch out the bugs later."	Students do not seem to care about bugs as they do not have any real impact on the outcome of the activity

Figure 1. Student feedback and analysis of iteration 1 of the activity.

BUGS IN THE MESSAGING

The second iteration of the game built upon this feedback and the solid foundation that had been established with the first iteration. Taking the observations of how students interacted with the activity and the feedback they provided, the next iteration would be developed with five tweaks and additions to the formula:

- Simplify the gameplay and get into the activity faster by creating Feature and Bug cards rather than having students write out

sticky notes.

- Add point scoring to the game by giving feature cards positive and negative points dependent upon their being completed, and bug cards only negative points for being left incomplete at the games end.
- Get students invested in the outcome of the activity by allowing them to choose from a variety of the provided feature cards to define a game concept.
- Focus the conversation more upon the process and outcomes by adding a product owner role, and removing references to EA, Bioware or Anthem.
- Create conversation about developer wellbeing by giving the producer the ability to tell the developers to crunch.

The product owner's role in this iteration of the game is to choose the features that the game would include from the provided feature cards. The game would then play out much the same way as in the first iteration, with the producer tasked with collaborating with the product owner to define priorities after every attempt at resolving the current top priority task. The crunch ability added to the producer role would allow developers to roll the dice twice, enabling them to potentially complete two tasks in rapid succession; at a cost of permanently reduced dice rolls on all future tasks.

While this iteration of the game was more rapidly deployed to students and succeeded in introducing more concepts of game project management, it came with a new set of challenges. As noted in figure 2, bugs became rapidly insurmountable based on the luck of a dice roll in this iteration of the game due to a small tweak on the table of dice roll outcomes. A roll of five or less would result in the addition of a bug to the game, and students still needed to roll the dice in order to attempt to resolve a bug task – meaning that attempting to resolve a bug would have an 83.3% chance of generating an additional bug. This was by design, as the intent was to highlight the necessity to balance the benefits of completing features with the detriment of ignoring rapidly growing bugs; however, it had the opposite of the intended effect, as students ended out just ignoring the insurmountable number of bugs their project would inevitably gain to

instead prioritise completing as many features as possible to offset the score loss.

Trial By Fire Iteration 2	
Noted Behaviour / Comment	Analysis / Design Impact
Students require multiple playthroughs to understand the basic game rules.	Investigate simplification of the game rules, inclusion of symbols in rules to help students identify cards.
Randomness is too much of a factor in students' ability to succeed at the activity.	Provide students with more tools through the game to control the outcome.
Students felt that bug generation and management was outside of their control and could too easily proliferate.	Dice rolls to resolve bugs can generate bugs too, which isn't necessarily unrealistic but can proliferate out of control. Need some means of bug management.
Students would focus on completing all of their features and then pick off the remaining bugs until the game ended.	This behaviour seems to be a result of the sheer number of bugs being generated and students attempting to maximise their scores.
"Are bugs really this constant and this all-encompassing of development?"	Currently bug management is vastly more important than anything else.

Figure 2. Student feedback and analysis of iteration 2 of the activity.

KNOWN UNKNOWNS

Key among the objectives of the development of iteration 3 was bringing some balance to the game. It was clear from observations of student behaviour and feedback that the number of bugs they faced each game were a detriment to their learning experience. Removal of bugs as a concept from the game was not an option, as the underlying learning surrounding them was good: that a team needs to attempt to account for unknowns in their development processes. The objective then became to

change how students managed both bug and feature cards in the game. Rather than allowing students to see and handle all the cards to define their order, they would now only be able to see the current top priority task. The remaining feature cards would be placed face down in a stack called the backlog deck, in reference to the task backlog used in kanban boards and their digital equivalents. The design of the backlog deck and how it was handled by students was heavily influenced by Pandemic (Leacock, 2008), and how it ensures a fair and even gameplay experience by artificially spacing out detrimental cards through the card deck. While this iteration of the game would not artificially control the location of bug cards, it would allow students to estimate just how likely they would be to draw a bug card from the deck.

The game would play out with a few key differences that obscured the current state of play, while also providing students with more control over that state. At the start of the game, the product owner would decide the current top priority task and place the remaining features into the backlog game. Dice rolls by developers would generate bugs (although with a slightly reduced chance from previous iterations). The generated bugs are added to the backlog deck, and the backlog deck would then be shuffled. This encouraged students to try and keep track internally of how many bugs they had versus features, in order to estimate their odds of pulling a bug or task card the next time it was necessary to define the top priority task. This doubled as a great example of known unknowns (Chua Chow & Sarin, 2002; Knight, n.d.); the bugs in the backlog deck are a risk that students are aware of. However, additional actions added to the producer and product owner would allow them to circumvent this need to blind draw in exchange for using up precious development time to go through the deck and hand pick the next top priority card rather than leave it to chance. The final necessary addition was in the form of a new role: quality assurance, who could continuously draw bug cards from the backlog until they came to a feature card. These removed bugs would be eliminated from the game, allowing students to wipe out large amounts of bugs in a single action – if they organised themselves well enough.

As hoped from a major change to the gameplay such as this, the improvements to the game were clear and feedback from students was

strikingly specific as noted in figure 3. Where iteration 1's discussions focused on the studio and game, and iteration 2's discussions focused on the unfair balance of the game, conversation around iteration 3 now looked deeper at how teams achieved their results and made use of their time. The producer of one team noted the challenge of keeping track of time along with the state of the project. All teams agreed that the limitation of acting every 30 seconds resulted in either moments of boredom with nothing to do, or frantic rushes to get themselves organised and decide upon a course of action. However, the activity was notably vastly more balanced, with all teams reporting that they had either squashed all or most of the bugs generated throughout their gameplay within the five-minute deadline of play.

Trial By Fire Iteration 3	
Noted Behaviour / Comment	Analysis / Design Impact
Point scoring is needlessly complicated and time consuming. Students are only interested in the game score and not the project score.	Reduce the complexity of point scoring and the maths involved.
Crunching became a joke to one team.	Need to consider how to better communicate the cost of crunch upon an individual, rather than just the score at the end of a project.
"It became really hard to keep track of time with everything going on, and I'm not sure if that's the point."	Time management should absolutely be a lesson taken away from the gameplay.
"We ended up just sitting there chatting, waiting for the timer to run down every 30 seconds."	The timer is clearly a problem for students, but there's a potential for the game to become a race to finish without some sort of gating that encourages students to communicate.
Students require multiple playthroughs to understand the basic game rules.	Further refinement on the rules and scoring, creation of cards with instructions for individual roles, changes to time keeping.

Figure 3. Student feedback and analysis of iteration 3 of the activity.

THE PRODUCTION GAME

With the core mechanics stable and balanced, this placed the game in an excellent state for the fourth and most recent iteration of play. This version of the activity looked at building upon the balanced mechanics of the previous iteration to reduce the overhead and explanation time, while also capturing a greater feeling of what it is like to manage a games development project. Planning, collaboration, and communication were the key goals of this version. Budget tokens were added to the game, with each player action costing a single budget token. At the start of the game

in the pre-production phase, students estimate their necessary budget tokens. Roles now come with a card that describes their job and the actions they can take, with each role action flowing well into the actions of other roles. The rules were simplified and opened up, enabling students to decide what to do next within the provided framework. The dice were replaced with card draws that students can control through actions on their role cards, reducing the random factor. Each member of the team must choose the next team member to act after them, encouraging collaboration and strategising during turns. The enforced thirty second timer is gone and replaced by an overall 5 minute limit that can be increased just once through a player action, adding to a sense of urgency as it's not entirely clear how many turns are remaining. A game board has also been added, themed as a Kanban board with columns for the backlog deck, in progress tasks, and completed tasks. Each task starts in the Backlog and makes its way through each column to Completed.

Results from this version of the gameplay testing were immediately apparent and positive. Students were provided with sheets that explained the rules, the deck of cards to play, and the kanban board. After reviewing the rules and understanding how the game was intended to play, students spent a substantial amount of time planning out their actions and strategy ahead of time. Other than questions about the phrasing of certain cards or edge case circumstances that the rules had not covered, students were self-sufficient in playing the game. Interactions in the groups were much more active, as it was clear to the students that the abilities on their role cards could allow them to manipulate and control the outcome of the gameplay through collaboration. Minor tweaks were made to the game balance ahead of a second playtest as it was discovered that certain abilities were powerful enough to reduce the challenge and communication required. The second playtest showed much less of these problems, with students requesting additional time to play after two rounds that enabled them to explore their strategies.

Trial By Fire Iteration4	
Noted Behaviour / Comment	Analysis / Design Impact
Individuals rarely chose who to act next without the input of other players during their turns.	Collaboration between players extended well beyond the planning phrase, which is a greater than expected outcome.
"It was very easy to lose track of time, I'm glad we had somebody responsible for doing that."	Validates the decision to make the "Producer" role a time management one with ongoing responsibilities.
"Time and budget felt rather meaningless".	This feedback resulted in a change before the second set of playtests to reduce the ability to add more time and budget.
"It was easy to feel frustrated with others taking so long until I was the one trying to quickly shuffle cards."	Quite exciting to hear students talking about empathy as a result of gameplay, as it was not the expected outcome."
"We lost but it feels like there's a way to win, and I really want to find it."	While it may be in reference to the game itself, getting students interested in time and project management skills are the key objectives of this game.

Figure 4. Student feedback and analysis of iteration 4 of the activity.

WHERE NEXT

Over the three years of development and iteration on this game, students have shown a great deal of enthusiasm for learning that simulates and engages with relevant real-world concepts. Trial by Fire has presented more than just a chance to play a game in the classroom with their peers, but also an opportunity to learn more about the medium they are studying in a way that is interactive and engaging. Involving students in the process of development of this project has also encouraged them to engage with other concepts that the university aims to teach, such as concepts of game balancing, testing, and research. Students rewarded transparency about the nature of the activity as an object of research and development with a higher level of engagement, excitement, and enthusiasm to be involved in

the active development of a game. Any educator that is interested in the creation of similar activities for the classroom would benefit from treating students as a collaborator in the development of the activity.

Probably the most important and interesting discovery of this game and its research is the finding that students engaged more with the desired behaviours the less rules that were presented. Typically, a serious game requires codifying the specific learning outcomes into the project design in some way (Catalano et al., 2014; Suttie et al., 2012; Westera et al., 2008). However, when approaching soft skill development in students, this research has found the opposite to be true; that students are more likely to engage with these concepts if placed in a simulated environment where they can explore with other people; and that the reduction of cognitive load is especially important (Catalano et al., 2014). It is the belief of this author that the experiences gained from students in this game would be challenging to replicate in a single player experience with dialogue options, due to the complexity of getting a student to empathise with a digital character and explore their interactions in a way that didn't lead them to the desired outcome. This should be a key consideration for the design for any game that seeks to teach or reinforce soft skills in its players.

Despite going into the design of this activity with a clear plan to capture the essence of project management for games students, it has the potential to become so much more. Facilitators from other disciplines outside of games have expressed an interest in the activity and its capacity to be easily transformed into a learning game about topics such as film or animation production. The desire from students for more opportunities to play what was designed specifically as a learning activity shows a clear potential for the game to expand into audiences outside of tertiary education. There is a possibility to develop the game into a full product for print that can be used in classrooms as a learning activity or for the broader public interested in games development. Until such a time as that happens however, the game will continue to be iterated on with feedback from the students that play it every year.

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