Play Your Way Into Production: Game-based Skills Development for the Screen Industries

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Abstract: Screen industry employers report they are unable to recruit graduates with the right skills for entry level roles in film and television (e.g. runners or production assistants), citing a lack of business awareness and various 'soft skills' as barriers to employment (Grugulis and Vincent 2009; Carey et al, 2017; Jones, Swords and Brereton, 2022). Traditionally such knowledge and skills are obtained through in-person work experience on set, but work experience is usually unpaid and therefore inaccessible to many students and graduates. However, research in the use of applied/serious games and extended reality technologies for training purposes has indicated that situational skills training can be facilitated using these approaches (Ebner and Holzinger 2007; Connolly et al, 2012). This paper presents an analysis of the design process behind a game-based learning intervention, developed to enable players to experience a day working on a film set and to allow educators to open up discussions about working practices and employability/progression within the screen industry. The simulation gives players the opportunity to take on a junior role in a film studio, respond to typical requests on set, interact with other crew members and observe proceedings. The study draws on interviews with educators and an ethnographic account of playing the game and using the complementary educational resources. We argue that a serious game can function as a meaningful intervention allowing potential new entrants to the screen industry to understand the tasks and duties of job roles in the industry. This approach also improves access to the development of skills and knowledge which are traditionally gained through (unpaid) work experience.

Keywords: Serious Games, Educational Games, Skills Gaps, Screen Industries

1. Introduction

1.1 Skills Gaps/Shortages in Film and TV

Skills training and work-readiness in the UK screen industries has been a topic of concern, debate and research for many years (Creative SkillSet, 2014; Carey et al, 2017). From retaining skilled workers as they age to the freelance nature of many roles, skills gaps and shortages pose real issues to the success of the UK screen sector (Van Loo et al, 2001; Allen and De Grip 2007; BFI 2023). As film and TV production continues to grow it is estimated that the UK screen industry will require between 15,130 and 20,770 additional full-time equivalent employees (FTEs) by 2025 (ScreenSkills/Nordicity/Saffery Champness 2022), meaning the question of skills development is a growing concern.

Despite the many practical further and higher education courses and training programmes available, employers and the workforce state that these do not always provide the skills required (BFI 2017; Animation UK 2018; ScreenSkills 2019). In particular, training was criticised for not providing the professional skills required in the workplace, including team-working, communication and confidence. However, there are often barriers to developing these skills for under-represented groups, compounded by the prevalence of 'on-the-job' training, which is often obtained through unpaid work experience or internships which are inaccessible to many (Jones, Swords and Brereton, 2022). Research into film/media qualifications in the UK indicates that even those registered on formal programmes of study face difficulties in securing work placements (Allen et al, 2013; Mayne, Zborowski and Macrae, 2024).

1.2 Use of Applied Games for Training

Connolly et al, (2012) provides strong evidence of the benefit of computer games on knowledge acquisition, understanding and affective/motivational outcomes, while Ebner and Holzinger argue that "games are often closer to simulating real life experiences than more traditional educational media" (2007: 875). Further, game-style simulations are often-used in training contexts where 'virtual' mistakes do not have the critical impact that errors in the real world would, especially in medical and health research (Shorey and Ng, 2021; Chen et al, 2020).

Given the issues around accessing work experience and training in the film and TV industry, an educational game – Play Your Way into Production (PYWIP)– was developed, primarily for use in further and higher education settings. PYWIP offers a gamification and simulation of the experience of working on a TV or film set, together with some gamified elements, and was designed to help develop a range of professional and situational skills which might otherwise be traditionally gained through work experience.

2. Co-Creating the PYWIP Game

2.1 The Collaboration

Play Your Way Into Production[1] is a collection of digital educational resources to support skills development and employability for new entrants to the screen industry workforce and comprises:

- A scenario-based educational game based around a virtual TV studio for PC or Mac,
- An additional virtual reality (VR) experience that allows users to explore the virtual studio, with detailed information about the studio equipment and roles of crew members,
- Downloadable 'character cards' outlining the crew members, their skill sets, roles and responsibilities,
- Short films of interviews with both film/TV students and recent graduates working in the industry,
- An Educational Resource Package (ERP)[2] with learning activities focussed on the skills developed in the game.

The Play Your Way Into Production game was co-created through an interdisciplinary collaboration between academic researchers and an independent production company under the auspices of the skills and training workstream of the Screen Industries Growth Network (SIGN)[3] The production company One to One Development Trust[4] is an independent charitable arts organisation who use film, game and XR to break down barriers and increase opportunities and aspiration.

2.2 Research-led Design

An academic advisory board of researchers from UK Higher Education Institutions steered the development and design of the materials to ensure that it was underpinned by research on a) previously identified skills gaps in the screen industry and b) the design of educational games and active-learning pedagogies.

2.2.1 Identified Skills Gaps

Research conducted by the Screen Industries Growth Network (SIGN) drew on 27 semi-structured interviews with a range of screen industry stakeholders, including training providers, production companies and employers and identified several themes relevant to new entrants in the screen industries (Jones, Swords and Brereton, 2022; Willment, et al, 2024). The most salient of these were:

- *Attitudes* – Some new entrants refused to accept criticism or suggestions for further improvement as they had obtained an undergraduate degree and felt they knew all they needed to.
- *Industry knowledge* – There was a perception among training providers that graduates knew how to write, edit or operate a camera but didn't understand the industry as a whole or how different roles worked together.

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[1] https://playyourwayintoproduction.com/
[2] https://subjectguides.york.ac.uk/PYWIP-ERP/
[3] https://screen-network.org.uk/work/skills-training/
[4] https://onetoonedevelopment.org/

- *Mental health and wellbeing* – The industry can be demanding with long hours and high expectations. The report identified that it was important to know about these issues as well as how to maintain a work-life balance and be resilient.
- *Professional skills (a.k.a. soft skills)* – Knowledge, and specifically technical knowledge, was seen as less important than being able to work in a team, communicate effectively or be assertive.

The skills gap areas identified here echo those identified in recent industry focussed research (e.g. Carey et al, 2017; BFI 2023, BFI 2017; Animation UK 2018; ScreenSkills 2019) and form the framework of skills that the PYWIP game addresses.

2.2.2 Game Design Principles

Games design theories are closely associated with the design and rationale for game-based learning. Gee (2003, 2007) purports that good games incorporate good learning principles, which are supported by current research in cognitive science. The PYWIP game was developed around a selection of design principles chosen to support and underline the overall aim of situational learning and skills development, as follows:

- *Probing* (Gee, 2003) – players probe the world through exploration, experimentation, testing and selecting options and various scenarios. They then form a 'hypothesis' (an object, skill, event or action) before reprobing the world with that hypothesis in mind. Depending on the consequent action or reaction, they then rethink their original hypothesis.
- *Stored simulations* (Gee, 2003; Reeve, 2011) – in games players form mental associations and make connections between "stored simulations" of previous experiences and adapt and apply these to new experiences. In cognitive terms, this is pattern recognition — the process of forming associations between objects. This applies to experiences and situations within a single game, as well as developing experience that translates to subsequent game titles.
- *Agency* (Murray, 1997) – the process of self-discovery and player autonomy. In good games, players are in control; they seek out tasks and decide how best to achieve them, and, when faced with conflict and combat, learn how to overcome them.
- *Reflection* (Iacovides et al, 2022) – an important first step for addressing attitudes and supporting behaviour change, but often overlooked in game based learning. Providing players with an opportunity to role-play within a relevant context promotes reflection.
- *Situated Cognition* (Brown, Collins and Duguid, 1989) – argues that knowledge is fundamentally linked to the activity, context, and culture in which it is developed and used. Comparisons between simulation-based training and lecture-based education in teaching situational awareness have also shown that simulations are more effective, particularly in improving perception skills essential for time-sensitive, critical decision-making roles (Chang et al, 2017; Zarraondia et al, 2015).

2.3 The Play Your way Into Production Game

The Play Your Way Into Production game is set in a virtual film/TV studio where Pink Sprout Productions, a fictitious production company, are making a CGI-rich dinosaur documentary. The game includes a film studio that is populated by 17 crew members with varied backgrounds and experience, a green room containing a kitchen area and office equipment, and an outside area with a catering van. Small details have been intentionally included to enhance the realism of the studio context including real posters on the corridor walls, changes to the weather, and the in-game camera monitor playback screen reflecting the scene being filmed (*situated cognition*).

During game play all technical equipment and other items in the studio can be explored by selecting to bring up a 365-degree view mode with text-based info (*probing*). While exploring the set, players can eavesdrop on conversations between other characters/crewmembers about different aspects of working in the industry (*industry knowledge*).
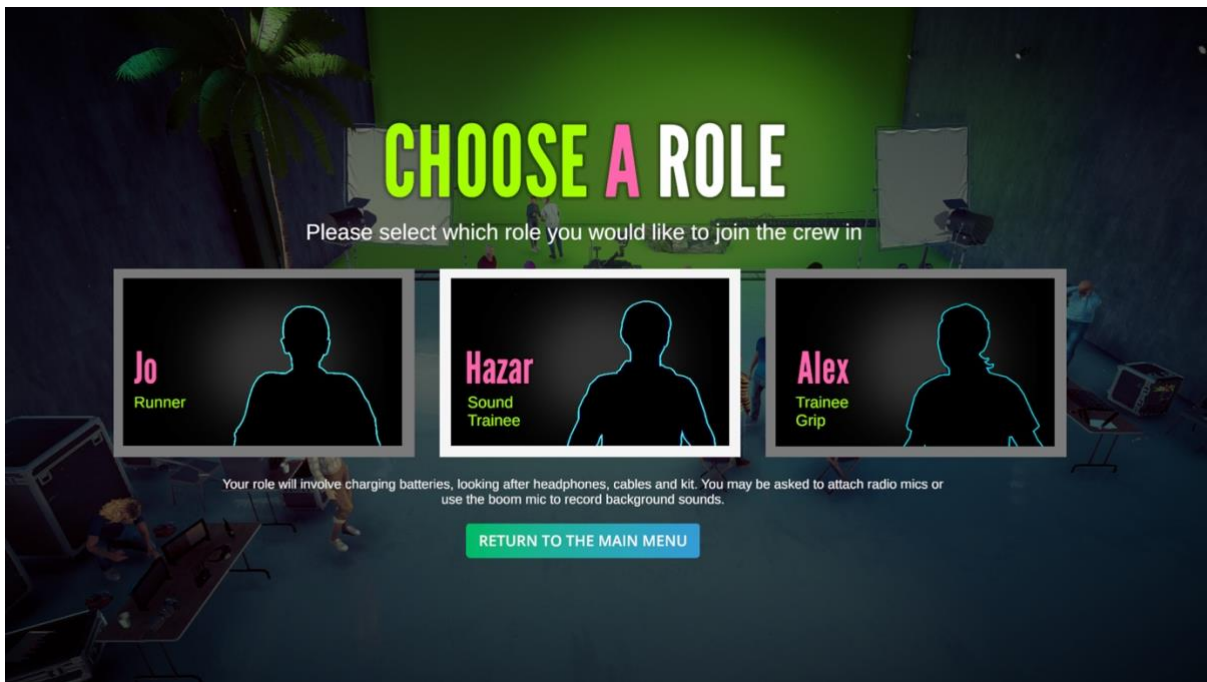
Figure 1: The three entry-level roles players can choose.

The game offers players a choice to play as one of three different entry-level roles – a runner, a sound trainee or a trainee grip (see Figure 1). Choosing a role encourages player *reflection* by a) providing relevant context for the role and the tasks they are likely to encounter and b) offering some distance from their own personal, subjective identity (Iacovides et al, 2022). Interactions with non-playable characters (NPCs) form the basis of scenarios in which the player is presented with a task and various options to choose from (*stored simulations*) – all scenarios are based on the lived experiences of people working in the industry. Some choices affect the story flow (see Figure 2) and trigger immediate feedback, whereas most result in gameplay continuing (*agency*). Feedback on player interactions, and their performance in all tasks and scenarios encountered are summarised in appraisal from their line-manager at the end of the game (*reflection, situated cognition*) (see Figure 3).
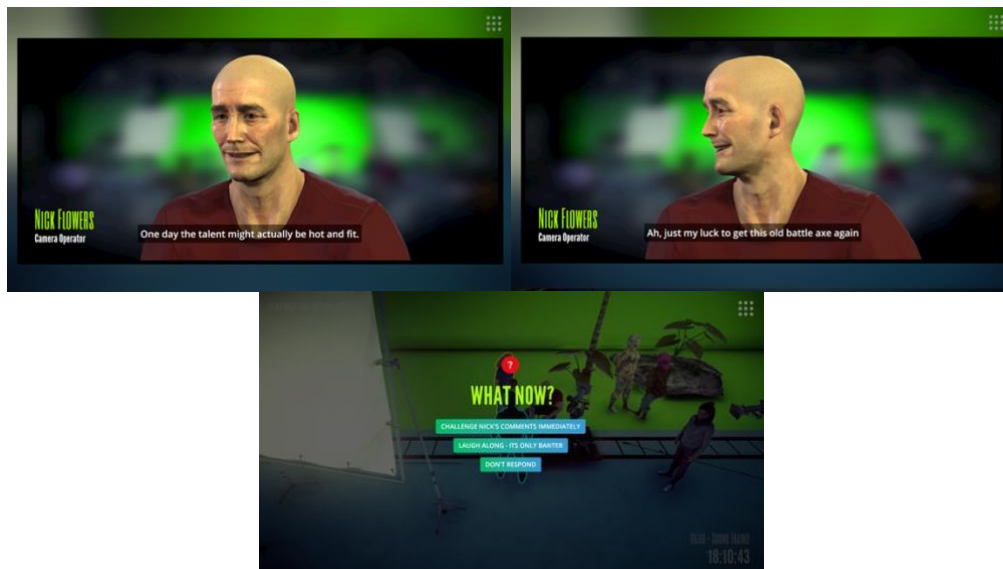

Figure 2: Example scenario players are faced with while playing as Hazar.
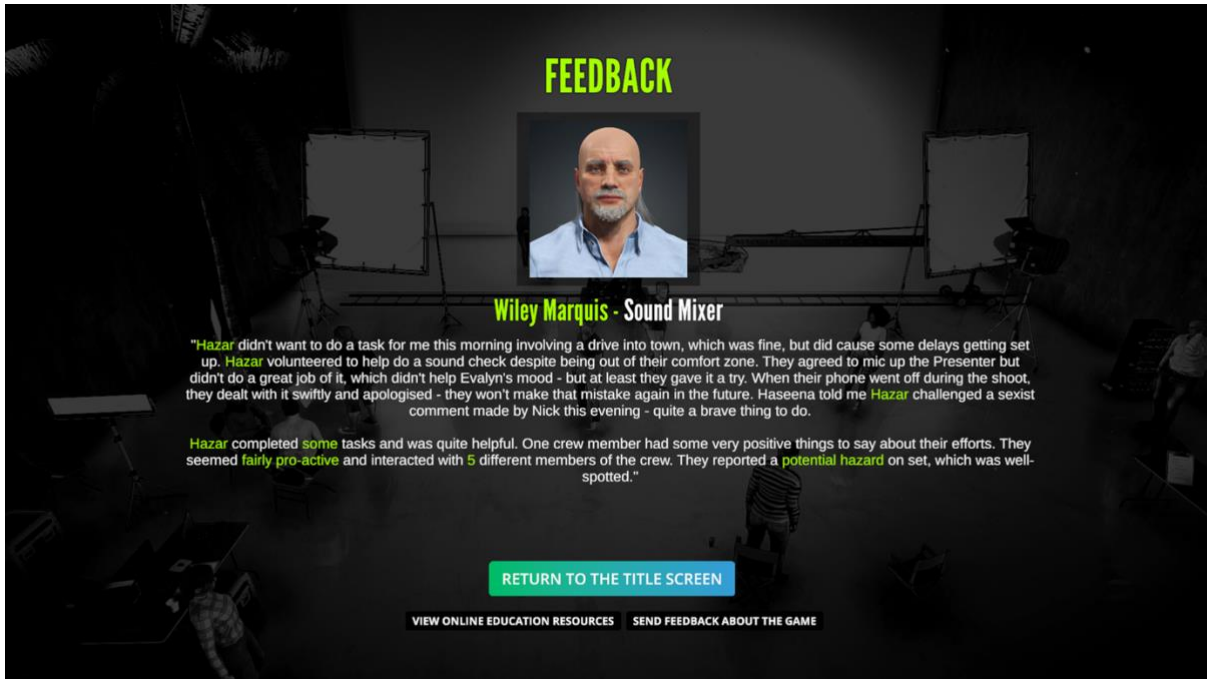
Figure 3: Feedback offered to players while playing as Hazar, dependent on scenario options selected.

3. Evaluation of the Play Your Way Into Production (PYWIP) game and Educational Resource Pack (ERP)

3.1 Methodology

The experience of students and tutors playing the PYWIP game on a PC and using material from the ERP in 2 UK higher education settings was evaluated, drawing on data from teaching observations, an auto-ethnographic account and interviews

Lecturers at two UK higher education institutions were asked to identify an existing module in which they could teach a 2-hour seminar based on the PYWIP resources as part of an existing undergraduate BA degree programme. Students were told they did not have to take part in the research, and if they did choose to participate there was no right or wrong feedback, or expectation that students would view the game and resources positively. Sixteen students took part in the study across 3 seminar groups, with the majority having had no previous work experience in the industry despite being enrolled on a media studies-related degree.

At the beginning of the taught seminar, the students were asked to complete an on-line skills audit [5] to provide each student with an opportunity to self-assess their own professional skills and knowledge of the Screen Industry. The PYWIP skills audit is based on the Worklink Skills and Values Assessment Tool (WLSVA) (Dershem, 2020), which is a validated tool designed to measure skills development among youth and young adults.

The lecturers were not given specific instructions on how to use the PYWIP game and ERP, and instead were told to use the resources however they felt best within their seminar.

3.1.1 Interviews

A week after one of the seminar sessions took place the lecturer who ran the session was interviewed (designated L1 below). Exploratory questions focussed on how they used the game, what they found useful, what ERP modules they used (if any), and if they thought the PYWIP game and ERP resources could help students who want to work in the industry.

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[5] https://york.qualtrics.com/jfe/form/SV_78TLMCEcobjRdci

3.1.2   Analytic Autoethnography

Two of the three seminars were taught by the research associate involved in designing the game and ERP, and as such required an autoethnographic approach to data collection and analysis (designated AE below). Autoethnography, as Méndez notes, "can range from research about personal experiences of a research process to parallel exploration of the researcher's and the participants' experiences" (2013, 281).

As the researcher was both a member of the research team at the University of York and an hourly paid lecturer at one of the institutions taking part in the research, they were able to transcend "empirical data to gain insight into some broader set of social phenomena than those provided by the data themselves" (Anderson 2006, 387) – in this case the use of an educational game for teaching skills required by the screen industry. The researcher was also able to discuss the use of the game with the students during the seminar, making notes and recording comments made by those students who had agreed to take part in the research project.

3.2   Results and Discussion

The two data sets, interviews and autoethnographic, were analysed separately using an inductive/deductive hybrid thematic approach (Proudfoot, 2023) to identify themes. As a result, three broad inductive themes were identified: '*game efficacy', 'engagement with the ERP'* and '*contextualising the game'*. Deductive themes from the game design principles and skills gaps areas are highlighted in (*italics*).

3.2.1   Game Efficacy

Lecturers started the seminar by introducing the game and its development context to the students, who were then left to explore it on their own (*probing*). Both lecturers noted they gave no explicit instructions on how the game should be played, but both told students to play through the game as at least one of the entry-level roles. Once they had done that, the students were free to play as another character or explore other aspects of the game such as the crew profiles or interviews (*agency*). Students progressed at their own pace throughout the game, with the research assistant (AE) noting that the 3rd year students needed some more guidance due to the language barrier (the students who attended this seminar were solely international students). The other cohorts navigated the game with ease, although one third year student felt that a map should be included as it was difficult to find out where they needed to go to complete certain tasks (*agency*).

When asked how they used the ERP, the lecturer (L1) said:

> The short version is I went in and I picked the bits that I thought were the best and would work best with my cohorts. So I wanted something that would. That they would see was relevant but also was potentially kind of fun. So I was kind of going for balance and engagement and a bit of information. [L1]

Students appeared engaged with the game, with several 1st year students across both seminars viewing the additional resources after they had played the game once, and felt it was a valuable tool. L1 noted that "there wasn't any kind of cynicism towards the game or the scenario, you know, it seemed like people could genuinely see this is a good way of learning about the stuff that goes beyond the technical elements of a role" (*situated cognition, attitudes*) while AE highlighted feedback from a student who said "I like how even though I played it [the game] wrong I still learned stuff". This student deliberately chose scenario responses which were the least appropriate (*agency, reflection*), including refusing to get out of the presenter's chair, and ultimately being asked to leave the set. However, they still felt that the game was helpful in developing their knowledge (*industry knowledge*).

Feedback from students was broadly positive: the game was "useful", "interesting" and "good for seeing what it's like" (*stored simulations*), suggesting that the game could be an effective tool for addressing skills gaps identified by the research. Lecturers also felt that the scenarios in the game, coupled with the activities from the ERP could provide students with a bank of examples or scenarios that they could use in future job interviews (*industry knowledge*).

3.2.2   Engagement With ERP

Both lecturers chose elements from two different ERP modules, one covering communication and the other assertiveness, and adapted these for use in the sessions. As AE noted:

> I know the game really well and I had an idea of what scenarios might work in a session where I hadn't taught the students before and didn't know their depth of knowledge and experience. I went through the modules and decided I wanted to look at communication but I also really like the scenario between Hazar and Nick and used that to discuss different people you can communicate with if you're in that situation on set and don't feel comfortable about calling someone out. The communication and assertiveness modules had aspects I could choose to be able to include that scenario.

Students were able to highlight examples of good and bad communication (*reflection, attitudes*) within the game which were then used to facilitate discussion. Both lecturers used the "director's dilemma" exercise in which two lead actors have creative differences during filming an important scene. Students were asked to discuss how they would resolve this, what communication skills they might use and why. Students engaged with the activity, explaining why they might include the full cast and crew in the conversation, film two versions and decide which was best, or take the actors to a private room to discuss the scene, which for L1 led into a broader discussion about different management styles (*professional skills*).

Seminar tutors were also asked to reflect on their use of the ERP, particularly regarding whether they thought it was a useful resource to use alongside the game. L1 thought it was, not only because it was efficient and saved them time but because of the way it was structured, with high level practical skills and more in-depth scenarios (*industry knowledge*). L1 highlighted the reasons behind why they felt it was useful, saying:

> before the session it was actually quite useful, partly for, like, the hyperlinks for the consent, forms and stuff, I put them all on Canvas pages that they could navigate through. I copied and pasted sort of judiciously chosen bits of the text from the ERP pages, you know, that gives you sort of background and categories of different kinds of communication, and so on. And I put those on Canvas pages so that I didn't have to sort of go through it verbatim. But the students had it there and for sort of catering a little bit for neurodiversity, and so on. I wanted. I was sort of telling the students what we were doing, but also, if they needed it, they had it there on a page so they could go back and say, 'Okay, that's what we're supposed to be doing'. (*mental health and wellbeing*)

Both tutors felt the ERP was a useful resource which could smoothly be slotted into existing modules. L1, in particular, felt that the ERP was "a bit of a gift" because the resources "slide quite easily into sessions" while AE noted that having pre-written modules was helpful for teaching students they hadn't previously been engaged with.

Neither of the tutors used the additional resources – such as interviews or crew profiles – provided on the website in their seminars, however AE suggested them as a resource students could engage with if they finished playing the game as one character while L1 noted that some students watched the interviews without being prompted to (*agency*). AE suggested that time was a factor:

> I wanted the students to play at their own speed without rushing them. They've got the option to explore the set, pick up bits of kit and see what they're used for, as well as carrying out the tasks and while there is a timer in the game the point of it isn't to finish as quickly as possible (*probing*). Asking the students to look at the other resources once they'd finished playing one character meant they could do things at their own pace, especially because I was going to spend the second half of the session going through a module (or parts of two modules) that are suggested to take 50 minutes). Maybe I prioritised the module over what I thought could have been useful? But then the crew profiles and videos are more about getting into the industry and would work better with a module like getting your foot in the door or leadership (*industry knowledge*).

3.2.3   Contextualising the Game

Both lecturers discussed how they had contextualised the game in relation to the research carried out by SIGN, highlighting to students that they were testing the game and how useful it was. As AE wrote, reflecting on their session:

> It was important for me to make clear my role in the development of the game and to express that we were interested in their [students'] responses because we want to know if the game works. If not then that's a research finding in itself.

The background to the game is only briefly mentioned in the ERP introduction module, however, and isn't highlighted in any of the modules (*industry knowledge*). L1 suggested that including that either in the ERP or as a brief intro card as you enter the game could be valuable to highlight the game is grounded in what the industry needs rather than a generic skills exercise (*industry knowledge, professional skills*), making it more relatable to specific modules and to students' career plans.

Feedback from the first three seminars was therefore broadly positive from both the students and the lecturers who agreed that the game helped them address the skills gaps identified in the research. Indeed, L1 noted that was its major virtue:

> imagine if you've gone through your whole degree, and this is like your first working experience. And all of a sudden, like the ground would shift beneath you. It's like, okay, so I know all this stuff about editing and camera, but I don't understand the flow of working on a set. So yeah, I think, I think in that respect, that's kind of the game's USP for me in a way. (*industry knowledge, mental health and wellbeing*)

Further data collection is scheduled to take place with students, lecturers and industry professionals, but initial responses are positive.

4. Future Development of PYWIP

While the initial responses were positive, there are opportunities for improvement and further research. For instance, the underutilization of additional resources such as interviews and crew profiles suggest potential areas for enhancement in future sessions. Additionally, the integration of contextual information from other SIGN research into the ERP or game introduction could further enhance its relevance and application within industry settings.

Several areas of the game design have been identified for further development of the game such as: improving digital accessibility, producing similar games based on different working environments including live events, theatre or a Virtual Production studio.

Further data collection with students, lecturers, and industry professionals will provide valuable insights into the long-term impact and effectiveness of the game and ERP in addressing skills gaps within the screen industries.

5. Conclusion

A pedagogical approach to gamified simulation harnesses the cognitive benefits associated with gameplay situations. Play Your Way Into Production is designed to encourage users to probe and to store simulations that they can apply to future real-world situations requiring familiarity, confidence, agency, and choice-making. At the same time, a simulation environment encourages exploration and risk-taking that would be too costly in a real-world situation, potentially leading to loss of face, or even loss of earnings or future employment possibilities. Lowering the real-world stakes increases the space for reflexivity, and for learning.

Lecturers have played a pivotal role in framing the PYWIP game and ERP within the broader context of the screen industries and specific research objectives. The deliberate decision not to provide explicit instructions on gameplay allowed students to explore the game freely, promoting autonomy and curiosity. Despite language barriers faced by some students, the overall impact on student engagement was positive, with most cohorts navigating the game with ease.

Both lecturers demonstrated effective utilisation of the ERP by selecting relevant modules that underpinned a balanced approach that catered to various learning styles and the needs of their cohorts. This strategic selection process aimed to strike a balance between relevance, engagement, and the conveyance of essential information. The integration of ERP modules into the sessions facilitated meaningful discussions around communication and assertiveness, providing students with practical examples and scenarios to enhance their learning experience.

The combination of the PYWIP game and ERP modules proved to be an effective tool for addressing skills gaps identified by the research. Student feedback highlighted the game's value in providing insights beyond technical aspects of roles within the screen industries. The interactive nature of the game encouraged students to actively engage with scenarios and reflect on their experiences, contributing to a deeper understanding of industry practices and challenges. Lecturers also noted the positive impact on student learning, emphasizing the game's

unique selling proposition (USP) in bridging the gap between theoretical knowledge and practical industry experience.

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