The Games Fusion Project: Competencies for Game Design

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Abstract—**The Games Fusion Project was an experimental learning experience that mirrored commercial realities and processes in order to wrap the core game-making skills in a fusion of wider industry-relevant competencies. This provided both contextual knowledge and exposed participants to failure and reflection, foregrounding the importance of iterative learning loops, foundational in creative digital industry design processes as well as (experiential) learning paradigms. This project has explored how the relevance of game design for education lies not only in the creative, communication and project management competencies exposed in the game design process but also how this can be abstracted to inform project curriculum development more widely.**

Keywords— game design, Agile, fusion, iteration, education

I. INTRODUCTION

The Games Fusion Project (GFP) grew out of the observation that while game design requires a fusion of creative, strategic and technical skills, the contextual knowledge to apply these in commercial projects demands further professional competencies. The aim of the GFP was to provide an opportunity to model a Game Design Journey on the design and production pipeline associated with the games industries as well as with other digital creative spheres. The project was led by University of the Arts London (UAL) partnering with Queen Mary University of London (QMUL). Students from the Game Design degree at London College of Communication, a college of UAL, worked in teams with QMUL students study on Design Innovation & Creative Engineering, Creative Computing and Computer Science degrees, responding to an industry brief.

Most commercial game teams and studios now utilize an 'Agile' approach for development – one which focuses on adaptive planning, empirical knowledge, iterative development and continual improvement – to improve both project and team effectiveness as well as studio sustainability. The Game Fusion Project emphasized and mirrored these mission-oriented, project-based, highly iterative and heuristic ways of working. The activity blocks – Curriculum Sprints – were based on 'Scrum' [1] – the most utilized Agile development methodology deployed within game development – as well as incorporating complimentary elements of Lean Software Development [2] and the Lean Startup approach [3]. These were further integrated with applied strategic creativity toolkits such as Design Sprints [4][5] and creative 'Gamestorming' tactics [6]. The integration of these approaches and methodologies exposed participants to the production, leadership and management logics and experiences increasingly common throughout the games industries.

Responding to the challenge of nurturing the creativity required by the games industry through the education and skill system, discussed in a report on the creative industries for the UK's industrial strategy [7], the GFP sought to demonstrate the importance of game design for educational practice. However, the impact of game design on education can be explored from multiple perspectives: the GFP was not intended as a project to design games to inform the teaching of a particular domain, for example games to educate on climate change [8], nor for enhancing student learning e.g. by gamifying the student experience [9]. Neither was the intention to explore the situated learning experience such as when playing a well-designed game [10]. The focus instead was how the process of game design and development, i.e. the pipeline not the final artefact, could enhance learning environments, as explored in [11]. These findings could then be used to inform the design of industry-focussed projects, i.e. mirroring real-world practice, for game design as well as for e.g. software-engineering team projects for where collaboration and iteration are just as relevant for students. This does not aim to ignore or negate differences between game and non-game software development discussed in [12], but instead aims to share practice such as communication between divisions/roles, the application of creativity and user-focus, identified in that research as strengths in the games industries. While participants on the GFP framed their experience explicitly through a "Request for Plaything" set by a games studio, a key GFP output is a curriculum template that can be translated to a range of project and learning settings. We would also hope that these findings can inform more informal game design or learning scenarios, such as game jams.

The Fusion Module Curriculum Template is pedagogically rooted in Kolb's Experiential Learning Theory (ELT) [13][14]. This approach is closely aligned to the heuristic and adaptive principles of the (games) industry toolkits and methodologies. Therefore it constitutes the most appropriate pedagogical technique that maps to industry practice and the identified skills gaps without sacrificing academic integrity. Like Agile and Lean, ELT emphasizes iterative and heuristic 'loops of learning' that cycle through Active Experimentation, Concrete Experience, Reflective Observation and Abstract Conceptualization. Influenced by the pedagogic approaches of Dewey, Parker-Follett, Piaget, Rogers and Freire, ELT's focus on mission-oriented, experience driven, contextual learning that forms a nexus for

personal development, education and work is suited for a game design curriculum which aims to develop student participants to be entry-ready for the professional workplace, within an educational environment.

II. GAMES FUSION LEARNING JOURNEY

The Games Fusion Project was built as a learning project at every level of the stack. It was designed to be agile, mission-oriented and actively adaptable. It occurred over intense, week-long sprints designed to gain understanding, maximise learning and develop professional mental models by testing a series of assumptions. Initial research conducted with students, educators and industry consultants, both prior to and during the initial, diagnostic "Project Design and Orientation Sprint", revealed that awareness of industry studio environments and ways of working – e.g. applied creativity toolkits, strategic design and project orientation, collaborative team-working and communication, highly iterative and heuristic project management, client relationship, persuasive communication and pitching techniques – were limited. From this first sprint came six observations about the limitations of game design education:

- games (design) education has a linear logic that undermines heuristic learning, failing to reward creative exploration and reflective critical thinking over outputs;
- it has a problem realising a diversity of aspirations;
- it lacks a meaningful and equal relationship with industry;
- it fails to design industry relevant collaborative projects;
- it is hindered by institutional rigidity;
- it can be monocultural in terms of both thinking and representation.

This sprint informed Impact Statements: for example, "we aspired to establish learning loops which would disrupt the linear logic of education". This, we hoped, would impact participants by enabling them to develop professional mental models and personal resilience. Finally, the team – students, educators and games industry participants – prototyped learning strategies, tactics and scenarios that would help achieve our aspirations and impacts for the Games Fusion Learning Journey (GFLJ).

Over the three iterative sprints, the learning journey featured daily iterative cycles of creation, critical thinking, reflection and learning plus designed moments of jeopardy. The careful integration of the industry-favoured development approaches and methodologies exposed participants – both explicitly and implicitly – to the production, leadership and management logics and experiences increasingly common throughout the game industries. Creative curiosity, continuous learning, intensive iteration, active adaptability and professional resilience were considered key competencies for the Game Design process, and indeed for future work in diverse industries. However, the standard educational pathway familiar to the participants, is built on a logic that focuses too much on linear progression through graded 'checkpoints' – where failure is to be avoided. Existing structures tend to favour long summative lines rather than tight learning loops. This can also be true for shorter initiatives such as game jams, rewarded e.g. for the final artefact rather than key aspects of design and development, such as storytelling or the divergence and convergence of the design process. Like all creative fields, failure – or more accurately managed failure, i.e. learning from this – is a crucial part of the game-making process. Agile and Lean ways of working emphasise learning and improvement in service of building adaptive and resilient teams: good game-makers work in loops, not lines, informing the learning journey, shown in Fig.1.

The iterative structure presented a challenge to participants who – either in assessed projects, hackathons or game jams – are accustomed to project briefs set at the start, followed by a rush to development. A key decision early in the sprints was to delay the Request for Plaything – provided by the Chucklefish games studio – to allow teams to self-form after individuals interrogated their own attributes and ambitions. By doing so teams became composed not only of the abilities that individuals brought, but their beliefs, cultures and ways of working. This in turn informed mission and vision statements. Roles were not assigned – neither by mentors nor team members in order to allow behaviours/roles/leadership to emerge (see Findings below). Another crucial design decision, again informed by Agile practices and games industry design sprints, was to structure the outputs around industry-relevant milestones: pitches, 'attract mode' and green-lit performances, working towards a minimum playable experience. These milestones were points of jeopardy, where teams had to review ideas, pivot or, for red- or amber-lit projects, decide to merge with others. It was vital to avoid aiming for a finished game/plaything as this risked leading participants back into familiar linear routes, with a rush to complete playable artefacts rather than to observe and reflect within the ELT cycle. Mentors supported this using techniques including plus/deltas, fast-track post-mortems and sprint planning. In turn there was a transition from the mentor-lead experience, more similar to debriefings as discussed in [15] to student lead and owned reflections.

Given the observations from the diagnostic sprint, equality was foregrounded. This perhaps was already embedded within
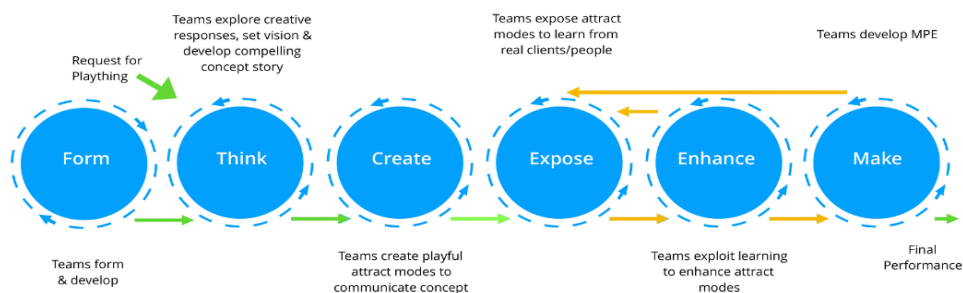

Fig. 1. The Games Fusion Learning Journey

that first sprint, with students co-creating the GFP expectations and experiences. With guidance from Marie-Claire Isaaman, CEO of Women in Games, we ensured the delivery team was gender-balanced and a code of conduct outlined a collective responsibility for equality. Furthermore, Chucklefish, the games studio providing the Request for Plaything, ensures that they have equal representation of genders in their game characters, with an equal ratio within the studio team, thus the vision of industry presented to participants was aligned with the GFP ethos.

III. FINDINGS

It was clear from the first diagnostic sprint that the student participants wanted 'meaningful' projects, i.e. ideally set by industry or at the least reflecting real-world demands. However, merely providing an industry set theme risks neglecting the range of competencies required in the design and production pipeline. Without daily reflections and the pinch-points of jeopardy, iterative loops can disappear. While the student teams enjoyed presenting their final minimum playable experiences at the Chucklefish studio, the final output was less significant for the findings of the GFP compared to observations about teamwork and process.

Having four week-long sprints was a constraint borne out of trying to work round two institutions' timetables. Intense week-long engagement focusing solely on Game Design is not viable for many participants – student or industry. Key practices from the sprints have been abstracted into a template that can be stretched round institutional frameworks. The Fusion Curriculum Module Template has been designed for incremental deployment in the UAL BA Game Design, modifying the extant Concept & Design 2 module. This template represents the vision – the idealised module structure – that builds on and extends the highly iterative learning logic of strategic and applied creativity thinking, and the Agile/Lean methodologies deployed and evaluated throughout the Games Fusion Project. It is also being adapted for the Design Studio and Creative Group Project modules taught to second year undergraduate Design, Innovation & Creative Engineering plus Creative Computing students at QMUL. A broader template for generic module deployment is in development. Ongoing research is testing the template using meta-cognition outlined by Kolb and Kolb in [16] for a game design project (analysis due end August).

Prioritising the establishment of a level playing field from project inception created the conditions for everyone to find a voice and contribute meaningfully. Female participants, students from BAME backgrounds, or indeed, those who were simply quiet and introspective initially, emerged as 'leads' in their teams. We ascribe this to allowing teams to self-form then operate as Agile, cross-functioning, non-hierarchical entities without defined roles. As a result, different people emerged as leads at different times of the project - depending on expertise needed - and also regularly changed roles as the project required. This flexibility, rather than demanding teams e.g. set a team leader etc., again is one of the competencies sought in the creative digital sector. While the process of self-forming teams is potentially time-consuming, e.g. in a time-constrained activity such as a game jam, we nevertheless consider it important to reflect how inclusivity is vital throughout the game design process.

Research on professional game development has indicated that creatives, e.g. game artists and animators, can be seen as

hostile to, or operating outside of, Agile project planning [12][17]. Students in the GFP sprints, by contrast, seemed comfortable integrating all tasks, including more artistic ones such as character or landscape illustration, within the Agile/Scrum iterations. This is perhaps another advantage of intentionally not defining student roles within the GFP. Finally, while the teams did develop ownership and responsibility, at times for some students being advised of something, rather than told to do it (or e.g. encouraged to do so via awarding assessment marks), resulted in little progress. Agile/Scrum project management approaches had to be explicitly foregrounded by mentors to increase productivity. This finding is reflected in the GFP template journey: once Agile principles and practices are exposed, incremental activities to build team responsibility become gradually less guided and reflection activities in turn become more self-directed.

IV. CONCLUSION

Working together on the GFP exposed industry principles, practices and mental models to educators and students. Adapting this further, perhaps also including higher-level academic students – masters and PhD – in turn further exposes research, scholarship and talent to industry. This enhances empathy and understanding of respective contexts and realities. And it highlights challenges, needs and opportunities, enabling us to find more creative, impactful and profitable solutions, together. It enables us to imagine what kind of educational experiences we want – then work backwards to achieve them. And it ensures that essential iterative, looping nature of the game design process is not only respected both for providing greater insight and experimentation, but also for enhancing the critical employability competencies demanded in the games, and other creative digital, industries.

REFERENCES

[1] C. Keith, Agile Game Development with Scrum. Upper Saddle River, NJ: Addison-Wesley, 2010.

[2] J.N. Rosenfield-Boeira, Lean Game Development: Apply Lean Frameworks to the Process of Game Development. New York, NY: Apress, 2017.

[3] E. Ries, The Lean Startup: How Constant Innovation Creates Radically Successful Businesses. London: Penguin, 2011.

[4] R. Banfield, C. Todd Lambardo and T. Wax, Design Sprint: A Practical Guide to Building Great Products. Sebastopol, CA: O'Reilly Media, 2016.

[5] J. Knapp, Sprint: How to Solve Big Problems and Test New Ideas in Just Five Days. New York, NY: Bantam Books, 2016.

[6] D. Gray, S. Brown and J. Macanufo, Gamestorming: A Playbook for Innovators, Rulebreakers and Changemakers. Sebastopol, CA: O'Reilly Media, 2010.

[7] P. Bazelgette, Independent Review of the Creative Industries. London: Department for Digital, Culture, Media and Sport, 2017.

[8] J.S. Wu and J.J. Lee, "Climate change games as tools for education and engagement", Nature Climate Change, vol. 5, pp. 413–418, April 2015.

[9] P. Buckley and E. Doyle "Gamification and student motivation", Interactive Learning Environments, vol. 24, pp. 1162-1175, 2016.

[10] M. Qian and K.R. Clark "Game-based learning and 21st century skills: a review of recent research", Computers in Human Behavior, vol. 63, pp. 50-68, October 2016.

[11] K.D. Squire, "Video games in education", Int. J. Intelligent Games & Simulation, vol. 2, 2003.

[12] E. Murphy-Hill, T. Zimmermann and N. Naggapan "Cowboys, ankle sprains and keepers of quality: how is video game development different from software development?", Proceedings of the 36th International Conference on Software Engineering , Hyderabad, India, May-June 2014.

[13] D.A. Kolb, Experiential Learning: Experience as the Source of Learning and Development. 2nd Edition. Upper Saddle River, NJ: Pearson, 2015.

[14] A.Y. Kolb and D.A. Kolb, The Experiential Educator: Principles and Practices of Experiential Learning. Kaunakakai, HI: EBLS Press, 2017.

[15] M. Pearson and D. Smith, "Debriefing in experience-based learning" in Reflection: turning experience into learning, D. Boud, R. Keogh and D. Walker Eds. New York, NY: Nichols Publishing Co. pp. 69-84, 1998.

[16] A.Y. Kolb and D.A. Kolb, "The learning way: Meta-congnitive aspects of experiential learning" Symposium on Simulation and Gaming vol.40, pp. 297-327, June 2009.

[17] D. Hodgson and L. Briand, "Controlling the uncontrollable: 'Agile' teams and illusions of autonomy in creative work", Work, Employment and Society, vol. 27, pp. 308-325, April 2013.