

ORIGINAL RESEARCH ARTICLE

Playful learning: tools, techniques, and tactics

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Over the past decade, there has been an increased use of playful approaches to teaching and learning in higher education. Proponents argue that creating ‘safe’ playful spaces supports learning from failure, management of risk-taking, creativity and innovation, as well as increasing the enjoyment of learning for many students. However, the emergent field of playful learning in adulthood is under-explored, and there is a lack of appreciation of the nuanced and exclusive nature of adult play. This article will first examine the theoretical background to the field, providing an initial definition of ‘playful learning’ through the metaphor of the ‘magic circle’ and presenting a hypothesis of why play is important for learning throughout the life course. Second, it will frame the field by highlighting different aspects of playful learning: playful tools, techniques, and tactics. The third section of the article provides two case studies that exemplify different aspects of play: the *EduScapes* escape room design project, which uses playful failure-based learning, and the *Playful Learning Conference*, which employs playful principles to rethink the conference format. The article concludes by highlighting three central issues for this emerging field: lack of a research trajectory; the language of play; and unacknowledged privilege inherent in the use of playful learning.

Keywords: play; playful learning; failure; magic circle; escape room

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Introduction

Despite, or perhaps as a reaction to, an environment of increasing performativity and instrumentalism in education (Ball 2012), there is growing discussion around the value and appropriateness of playful approaches in higher education (e.g. Nerantzi and James 2015). Examples of these playful approaches include: digital game-based learning (Bolliger, Mills, and White 2015); traditional games (Khan and Pearce 2015); gamified learning systems (Markopoulos *et al.* 2015); game-building (Cheng 2009); role play (King, Hill, and Gleason 2015); simulations (Pelletier and Kneebone 2014); the use of mini-games and playful interludes (Crocco, Offenholley, and Hernandez 2016); murder mysteries (Jennings 2002); quest-based learning (Dijkers 2016); physical block play (James 2013); escape rooms (Clarke *et al.* 2017); and playful curriculum re-design (Aguilar, Holman, and Fishman 2018). While many pedagogic approaches described in the research literature might broadly be defined as types of playful learning, it is common that they do not self-identify as such.

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Of these approaches, there is the broadest literature base in the use of digital games over the past 20 years, typically employed to enhance learner motivation (Boyle *et al.* 2016). However, digital games are often expensive, impractical and there is little robust evidence that they are more effective than traditional teaching in the long term or that they motivate adult learners (Whitton 2014). The engagement strategies used typically by educational games and gamification techniques focus on providing extrinsic rewards for measurable performance, which simply echoes the systems and structures of an increasingly metric-driven higher education sector in an increasingly quantified society (Nørgård, Toft-Nielsen, and Whitton 2016). In contrast to this and with the tightening of academic budgets over the past decade, there has been a renewed focus on traditional games in education, and a developing emergent field of practice and research in playful learning in higher education, highlighting a shifting focus from the use of games to a wider range of playful approaches. However, as an emerging field, playful learning in higher education lacks a robust foundation; there is a dearth of research evidence as to its applicability and effectiveness, and a lack of understanding of the underpinning mechanisms that support the hypothesised links between play and learning, creativity and innovation. Playful learning in higher education currently lacks a coherent definition, evidenced pedagogic rationale or framework of implementation approaches.

This article attempts to provide an initial analysis of the domain of playful learning, particularly in the context of adult learning, as a starting point for discussion in the field. In the following section, the metaphor of the ‘magic circle’ will be used to provide a definition of ‘playful learning’ in adulthood, and a pedagogic rationale will be suggested for its use in higher education. The article will then provide an overview of ways in which playful learning might be implemented, exploring the differences between playful tools, techniques and tactics. Two short case studies are included, which provide examples of different playful approaches: the *EduScapes* project, which uses escape room design as a pedagogic model, and the *Playful Learning Conference*, which is an attempt to rethink the conference format playfully. Finally, the article will conclude by considering some of the more problematic aspects of playful learning approaches and highlighting areas for future research.

The magic circle of play and learning

Playful learning practice in higher education is emerging and growing (James and Brookfield 2014), but there is a lack of underpinning theoretical and definitional work on which to explore or analyse this practice. This section will explore the use of the metaphor of the ‘magic circle’ used extensively in the field of game studies, as a way of defining playful learning in the context of adults and highlighting its core characteristics that are pedagogically beneficial.

The term ‘magic circle’ was originally coined by Huizinga (1955) as an example of a space in which play happens, and later expanded by Salen and Zimmerman (2004) as a way of explaining how people construct relationships and realities during play. The concept of the magic circle as a metaphor is party to critical discussions in the game studies community (e.g. Consalvo 2009; Stenros 2014), and the metaphor is debated as physical or ideational space, but is still a useful tool for gaining insights into play and learning. When considering the ‘magic circle’ in the context of learning, it is important to be clear that it is conceived as a play space distinct from the real

word by a (physical, virtual, or imaginary) boundary that is mutually constructed by the players; it is not a concrete boundary but a ‘fuzzy’ and permeable framing of an action space.

The magic circle demarcates a space of safety, where the rules of the real world do not directly apply; where different norms and codes of practice emerge; and where new rules of behaviour, belief or interaction are possible. In education, however, it is important to recognise that the ‘safety’ of these play spaces is contested, and that the rules of the real world are never completely forgotten as existing power relationships and tensions permeate the boundaries of the magic circle (Consalvo 2009; Jones 1998). It is crucial to recognise that the use of games or playful activities will not in themselves create safe playful learning spaces; participants have to construct them over a period of time in which they can build trust and develop relationships with their fellow learners. Magic circles, in the context of learning, are not transient but are continually developing, transforming and enriching. Negative behaviours within the magic circle, such as spoil-sporting, sabotage or cheating, can not only break the circle but also undermine the trust and safety of the game space (Remmele and Whitton 2014). Underpinning the concept of playful learning is then the notion that it must necessarily not only take place within a ‘magic circle’ but also that the act of ‘fair’ play in itself perpetuates and strengthens the circle.

Key to this theoretical construction of the magic circle of playful learning, and extending previous definitions, is that it is a safe evolving conceptual space, constructed and recognised by the players, in which many of the rules of the real world can be transformed, but in which existing power relationships and interpersonal dynamics cannot be wholly ignored. Within this definition of the magic circle, there are three key characteristics that highlight the pedagogic rationale for using playful approaches to learning in higher education: the positive construction of failure; support for learners to immerse themselves in the spirit of play; and the development of intrinsic motivation to engage with learning activities.

The positive construction of failure and the creation of learning environments where students feel able to fail is perhaps the most important characteristic of playful learning in the magic circle. In the contemporary higher education context, learners are under increased pressure to perform, owing to the rising costs of education and the increased competitiveness of graduate outcomes. Many students work long hours in addition to their studies; time is at a premium and failure is seen as a wholly negative outcome. However, in the post-university world, failure is an inevitable consequence of trying to achieve things, being ambitious and taking risks; dealing with disappointment and building the resilience to learn from mistakes and persevere is a crucial life skill. As in the real world, failure in play, and games in particular, is inevitable and essential; games are designed such that for the player failure is always a possibility, often unavoidable. Without failure, a game becomes pointless (Juul 2013); there is no challenge in a task that is too easy or where success is guaranteed. The magic circle of playful learning provides a space in which participants have freedom to fail, where failure does not have serious consequences in the real world, and where it is embraced as a necessary – and positive – constituent of the playful learning process. This reconfiguring of failure as a constructive learning condition helps build resilience to failure (Holdsworth, Turner, and Scott-Young 2017) and fosters the ability for students to take measured risks (Atkinson 1957), in turn leading to a greater ability to innovate and a focus on the processes and challenges of learning rather than the measurable outcomes (Dweck 2010).

A second characteristic of the magic circle is that it enables learners to suspend their disbelief and immerse themselves in the spirit of play, or adopt a ‘lusory attitude’ (Suits 1978). This is a willingness to accept, and act in accordance of, the rules and goals of the play within the magic circle, alongside an acceptance of the necessity of possible failure on the path to achieving those lusory goals. This ability to enter a world of make-believe and accept alternate rules and realities is crucial to setting free the imagination and considering the possibilities for what might be and the potentials for what should be. This process of fostering imagination and ideation through play can lead to greater creativity (Bateson 2014) and a virtuous circle of play, imagination and innovation. Encouraging a spirit of play among learners allows them to have space to imagine, explore and create in new, exciting and playful ways, guided only by the boundaries of the magic circle, and without fear of ridicule or failure.

Finally, activity within the magic circle is voluntary and intrinsically motivated; participants enter by choice and shape the rules, actions and boundaries of the play space itself. Participation is for its own sake and motivated by the internal benefits of play, rather than for any external rewards for participation. Intrinsically motivated engagement creates the capacity for personal exploration, experimentation and discovery, leading to learning that is personally meaningful. However, this construction of intrinsically motivated play is problematic in the context of formal education where learning may be valued more for its measurable outcomes rather than its inherent processes, and the collaborative processes at the heart of most play experiences present a challenge in relation to assessment systems. While recognising that the construction of learning in the magic circle as intrinsically motivated may be problematic, it is important to appreciate its importance in both learning and play activities.

The ‘magic circle of playful learning’ with the three characteristics described here (i.e. learning that is intrinsically motivated, entered into with a spirit of play, where failure is constructed as a positive outcome) is an ideal theoretical construct, which can only messily be applied in the real world of higher education. In practice, it is impossible to create spaces that are truly ‘safe’ for all learners; mediating failure will always be a challenge for many people; achieving a truly lusory attitude or intrinsic motivation is not possible for all participants all of the time. However, this construction of playful learning provides a lens to explore these approaches and enables ongoing conversations on their potential pedagogic benefits (and drawbacks).

Aspects of playful learning: technologies, tasks, techniques and tactics

Playful learning in higher education is an emerging form of practice that includes many types of playful approach to teaching, learning, research and academic practice. An initial model for a signature pedagogy of playful learning in higher education (Nørgård, Toft-Nielsen, and Whitton 2017) has recently been published as a starting point for discussion. Signature pedagogies are a way of characterising teaching approaches within a specific discipline, or in a specific philosophical approach (Shulman 2005). They comprise three structures: the surface structure of operational acts; the deep structure of assumptions about the best ways to learn in the context; and the implicit structure of moral values that underpin the beliefs and attitudes of the field. In their analysis of the pedagogy of playful learning in higher education, Nørgård *et al.* (2017) highlight the relationship between the surface structures of playful learning and the mechanics of games, the deep structures and the activities of play, and

the implicit structure and the philosophy of playfulness. As surface (game) structures they identify ease of getting started, explicit progression, appropriate and flexible levels of challenge, engaging game mechanics and physical or digital artefacts. Deep (play) structures highlighted are: active and physical engagement, collaboration with diverse others, imagining possibilities, and the use of novelty and surprise. Finally, the implicit (playful) structures they identify are a lusory attitude, democratic values and openness, an acceptance of risk-taking and failure, and intrinsic motivation. This model makes an ideological case that playful learning is about more than tools: in addition, it encompasses a philosophical mindset that incorporates beliefs about ‘fair play’, social justice and inclusivity. This signature pedagogy provides an overview of the potential structures and philosophy of playful learning, but it does not offer specific examples of different approaches to playful learning or suggest an approach to classifying different implementations of playful learning.

Drawing on field literature and empirical experience, there follows an initial analysis and approach to categorising pedagogic approaches that could broadly be classified as ‘playful learning’ in the context of adults, specifically in higher education. This analysis was carried out by first identifying different forms of practice that could be considered to be ‘playful learning in the magic circle’, in that they facilitate positive attitudes towards failure, embody a spirit of play and experimentation, and enhance intrinsic motivation. By examining these different forms, these playful approaches were then categorised into three distinct groups: playful tools, playful techniques and playful tactics (see Table 1 for definitions and examples).

Playful tools describe the playful objects, artefacts and technologies that signify the existence of a playful learning environment and can be used to encourage or develop playfulness. Technologies in this sense are not limited to digital artefacts but describe objects that are engineered to achieve a purpose, in this case the creation of play. While there are clearly many developments in digital gaming and simulations that could be considered to be playful learning, to limit the scope of playful technologies

Table 1. Playful learning tools, techniques, and tactics.

Playful learning...	Description	Examples
Tools	Objects, artefacts and technologies that signify a playful environment.	Games Toys Simulations Puzzles Virtual environments
Techniques	Pedagogies and learning approaches that facilitate play.	Role play Making Performance Problems Quests
Tactics	Mechanics and attributes that engender playfulness.	Surprise Humour Chance Competition Storytelling Mystery Badges

to digital would be unnecessarily restrictive. As there is currently a resurgence in the use of traditional games and toys such as Lego in higher education, it is important to include them in a wider consideration of playful tools and technologies.

Playful techniques are teaching and learning approaches that naturally encapsulate elements of play or bring out playfulness in learners. These include techniques that involve make-believe or empathizing with another character, such as role play or storytelling, elements of public performance or aspects such as making, building or tinkering that involve playful experimentation and learning through mistake-making. They also include playful ways of framing challenges to support motivation, such as the use of problems or quests. These types of challenge create motivation for people to engage and stimulate curiosity and feelings of satisfaction on completion. This is exemplified by flow theory (Csikszentmihalyi 1992), which highlights the importance of the balance between skills and levels of challenge in any activity for creating the optimal experience— if skills are significantly higher than challenge then the task will be boring, if challenge is higher than skills then it causes anxiety. Schell (2008) expands on this theory to describe how games have honed techniques of keeping players in a state of flow by repeating a cycle of starting easy (as an initial hook), gradually increasing difficulty before introducing an extremely hard ‘boss level’ that leads to great satisfaction when it is completed. These approaches can be used to rethink pedagogy and assessment in higher education.

Playful tactics are strategies, devices or characteristics that add playfulness into different contexts. They encapsulate playful ways of doing things, elements of playful design or ways of playfully reframing activities or contexts, for example, by adding elements of humour or silliness (such as throwing a beach ball around a lecture theatre to pick the next student to answer a question), adding chance (using a wheel of fortune to allocate points) or adding elements of novelty or surprise. Using game mechanics in learning contexts, for example, adding competitive aspects, collection of sets or badges, rewards and explicit visible progression, is another set of tactics for potentially adding playfulness to learning. It is important however to be cautious of confusing gamification (the use of game mechanics) with playful learning (a philosophy as well as practice) as the use of the mechanics will not automatically generate a magic circle of play. In some cases, such as the use of competition or leaderboards, these practices may actually have the opposite effect.

This framework aims to categorise the scope and range of playful learning approaches in higher education. It makes no judgement on the appropriateness or acceptability of any of these tools or approaches in any given context. Nor does it purport to be a comprehensive toolkit of approaches for practitioners. It is important to recognise that while playful learning encapsulates a range of elements, students have many motivations for engaging, and particular forms of playful learning may be more apt in certain contexts; many of these aspects have intrinsic cultural or gender biases, and it is important to recognise this.

Playful learning in practice

This section describes two short case studies that exemplify some of the ideas discussed earlier in this paper, particularly around the importance of failure in learning and the development of playful pedagogies that support this. Each case provides a short description of ways in which playful learning approaches have been employed, looking

in particular at the playful tools, techniques and tactics used. The first case describes *EduScapes*, an EU-funded project that aims to develop learning through escape room design; the second case looks at the emergence of the *Playful Learning Conference*, which aims to rethink how conferences are designed and structured using playful techniques as well as focusing on play as the key subject matter.

EduScapes: learning through escape room design

Escape rooms are a relatively new entertainment form in which small groups of players work together over a set time (usually an hour) to find clues, solve puzzles and escape a real life locked room. They are usually based around a specific theme and have a narrative element. There is increasing interest in their pedagogic use (e.g. Clarke *et al.* 2017) as they provide a motivating and authentic collaborative context and puzzles can be designed to meet specific curriculum goals.

The *EduScapes* project goes a step further to provide a method of teaching teamwork skills, creative thinking and problem-solving in a playful environment that emphasises iterative design and learning through failure. Using this approach, small teams of three to five students work together to develop a ‘professional-quality’ escape room; during which they follow a process of design, creation and testing over a number of days or weeks. Students follow an iterative development process, with a focus on prototyping and feedback throughout. First, they play a commercial escape room and take part in a short course on escape room design. They then enter a phase of iterative testing and design of the puzzles, the narrative and the complete room. Finally, the room is showcased with a real audience at a live event.

EduScapes provides a playful pedagogic technique for creating meaningful playful learning experiences because the creation of escape rooms involves a rich challenge, bringing together creative, problem-solving and technical design skills in a safe space, where the outcome does not really matter (although the process may be assessed). Designing escape rooms is necessarily iterative, and it is impossible to create a perfect room at the first attempt; therefore, learning from failure is an inevitable part of the process. Only repeated testing of puzzles and their integration in practice will lead to a workable room. This creates a cycle of productive failure and continuous improvement. In addition, puzzles are used as playful tools, and elements of competition, storytelling, and mystery are employed as playful tactics. The project makes the assumptions that collaborative problem-solving and design supports teamwork, communication skills and creativity, while the playful and open-ended nature of the task, in a safe space where there are no correct answers, supports measured risk-taking, creativity and innovation. Work is ongoing to evaluate these hypotheses.

EduScapes has run successfully for 2 years in conjunction with Cheadle Hulme High School in Greater Manchester. Twelve Year 12 students (aged 17 or 18) took part as a two-week enrichment activity in 2016, and thirteen in 2017, this time over the course of a single week. Each time the students finished by running their final escape rooms for delegates at the Playful Learning Conference in Manchester. In both cases, the feedback from staff who played the game was phenomenally positive, and the students who took part were very deeply engaged in the experience throughout. In particular, feedback showed that testing the game on teachers and other school staff helped the learners build confidence by taking on the mantle of an expert, and facilitated the development of a collaborative co-learning environment.

In 2018, the intention is to test the scalability of the design with 40 students over a 6-month period, which will also provide an opportunity to gather rich data on the experiences and attitudes of the students and what they have learnt from taking part. Details about the project and open resources produced can be found at <http://eduscapes.playthinklearn.net/>.

Playful Learning: rethinking the conference

The first *Playful Learning Conference* took place in July 2016 and was conceived as a response to the traditional conference format where didactic presentations are still the norm. Whereas traditional conferences still largely run on a research paper presentation format of presentation and discussion, playful learning aims to be open about presentation formats, timings and approaches in order to encourage delegates to try new things in a supportive and collaborative environment. Playful Learning aspired to rethink all aspects of the conference from format to catering, with an underpinning ethos of taking risks and not being afraid to fail.

The *Playful Learning Conference* is based on the principle of questioning every part of the conference process to consider why things happen the way they do; in some cases, there are good practical reasons, but in others it is simply unquestioned custom. At the heart of its activities, the conference aims to do things differently and enable both organisers and delegates try new things and take novel approaches. To move away from the traditional presentation formats, delegates are encouraged to 'step out of their comfort zones' and any type of engagement is possible. Treasure hunts, neon badminton, secret storytelling, live karaoke and a lecture 'for cuddly toys only' have all featured. Sometimes, elements are unsettling, sometimes activities fail; because the conference takes risks, it is expected that not every approach will succeed every time, and failure is seen as an inevitable and positive part of the conference design.

This conference encourages the showcasing of playful tools, both digital and traditional, with sandpits and Play Doh alongside virtual reality and immersive video games, and delegates are encouraged to use a wide range of playful techniques and tactics throughout. Despite the driver of novel and innovative engagement, quality is still crucial for any conference to be seen as a legitimate and credible academic endeavour, more so in the case of playful learning, which fights the inherent stigma in its association with 'play'. Review processes are rigorous, robust and transparent but supportive at the same time; a mentoring scheme is in place to help novice researchers and presenters develop their good ideas. Each year, the conference team works with delegates to produce a journal special issue and support the development of ideas from conference presentation to journal paper.

The conference also encapsulates an explicit social justice agenda and aspires to be as fair, open and accessible to everyone as possible. It has explicit policies such as keeping delegate rates as low as possible, providing low-cost accommodation, making keynote benefits equitable and transparent and ensuring that women are fairly represented across the committee and in keynotes. Sustainability is also important, and in 2017 the conference catering was completely vegetarian, which spread the ethos of challenging yourself to the wider catering team, who stepped up to the challenge by producing some of the best conference food many of the delegates had ever tasted.

The Playful Learning Conference provides an excellent example of how thinking differently and thinking playfully can help to make little changes that can make a big

difference. The conference provides an example of how quickly a meaningful community of shared purpose and understanding can be developed through attention to a holistic and inclusive delegate experience. For example, collecting delegate feedback at the end of any conference is notoriously difficult and response rates are typically low. By taking a playful approach to feedback by making the forms into paper aeroplanes and letting delegates fly them into a ‘feedbasket’ at the end of the conference, the conference team were able to achieve almost complete engagement in the feedback activity, enabling a typically disengaging activity to become a source of play in its own right.

Conclusions

While playful learning in higher education has a range of theoretical benefits and sound pedagogic rationale, which have been presented in this paper, it is not unproblematic as an approach (although being a playful problem that pushes against current educational trends may not be a bad thing). Play in adult education may provide spaces for safe, exploratory and ideational learning, but only for some learners, under some circumstances. The nuances of context and individual experiences of play have not been fully explored. This final section will consider three of the key issues in the developing field of playful learning and highlight how they might shape a future research agenda in the area.

While there is a history of research study in the role and nature of play in childhood, play in adulthood is still underacknowledged as a separate field of study. The forms and mechanisms of play in childhood and adulthood may be broadly similar, but adult play is fundamentally different from children’s play because of the assumptions and values that adults bring to its practice, the perceived acceptability of various forms of play and the ways in which players are judged by others. Play in adulthood is stigmatised, little understood and lacks a coherent body of research evidence (Guitard, Ferland, and Dutil 2005). While there are some pockets of excellent research in the field (e.g. Barnett 2007; Proyer 2013), researchers do not yet fully understand how, and why, adults choose to play in different ways, the full benefits of play, whether or not play is important for different aspects of adult life and whether it matters if individuals elect not to play. Without this necessary background in play in adulthood, study of playful learning in higher education becomes even more complex and difficult. Compounding this is the possibility that research into games and play tends to be carried out by researchers who are intrinsically playful, which may lead to biased assumptions and lack of appreciation of any negative unintended consequences of the approach.

Related to this is a need for a deeper understanding of the competing discourses of playful learning in higher education, and the assumptions that underpin them. While there is a gradual shift towards acceptance of playful learning approaches, the language of play is highly nuanced and often pejorative (see, for example, the exploration of the negative associations of the term ‘gamer’ in the UK media, Whitton and MacLure 2015). Associations with play as an activity that is childish, frivolous or inauthentic may limit the motivation for learners – particularly adult learners – to engage with playful learning. It is problematic that ‘there is an ideological stance found in much of the literature on serious games and gamification that posits that games and play are somehow inferior unless they are useful’ (Stenros 2015). Terms

such as ‘serious play’, ‘hard fun’, ‘simulation game’ and ‘role play’ are commonly used to mask or ameliorate the frivolous childishness of play rather than lauding it. Each term comes with its own baggage and sets of assumptions; it is important to make these assumptions visible, and confront them. There is a need to better understand the way in which language and terminology shapes the use, acceptability, inclusivity and accessibility of play in higher education, the ways in which playful learning is discussed and the structures of power that are implicit within these discourses. How people talk about play in tertiary education is one of the key factors that influence engagement and acceptability for students, academics, parents and the public.

Finally, and perhaps of most concern, is the lack of recognition that play, and play in higher education, is an exclusive and privileged practice. Play is a powerful force to inform, engage and influence attitudes and behaviours, and it is increasingly embedded within the fabric of society, as playful approaches are used to engage adults in the media, workplaces, social networks and interactive technologies. However, it is crucial to appreciate that play is not equally accessible to all. Play is a privilege for those with the time, inclination, appreciation, confidence, social capital and ability to engage. There is a lack of critical research, taking into account the power structures and nuanced natures of privilege inherent in adult play. This includes an awareness of the exclusive nature of play; the social, cultural (Bourdieu 1985) and gaming (Walsh and Apperley 2012) capitals required for adults to engage; and the acceptability of play and games within learning and life contexts for those from different backgrounds, with different abilities and from societies with different social and cultural norms. Play has the potential to be a powerful tool for supporting learning and making the world a better place, but it is crucial to recognise the implicit power structures and exclusivity of play, and work hard to make playful learning something that is an option for all.

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References

- Aguilar, S. J., Holman, C. & Fishman, B. J. (2018) ‘Game-inspired design: empirical evidence in support of gameful learning environments’, *Games and Culture*, vol. 13, no. 1, pp. 44–70.
- Atkinson, J. W. (1957) ‘Motivational determinants of risk-taking behavior’, *Psychological Review*, vol. 64, Part 1, no. 6, pp. 359–372.
- Ball, S. J. (2012) ‘Performativity, commodification and commitment: an I-spy guide to the neo-liberal university’, *British Journal of Educational Studies*, vol. 60, pp. 17–28.
- Barnett, L.A. (2007) ‘The nature of playfulness in young adults’, *Personality and Individual Differences*, vol. 43, pp. 949–958.
- Bateson, P. (2014) ‘Play, playfulness, creativity and innovation’, *Animal Behavior and Cognition*, vol. 2, no. 2, p. 99.
- Bolliger, D. U., Mills, D. & White, J. (2015) ‘Japanese students’ perceptions of digital game use for English-language learning in higher education’, *Journal of Educational Computing Research*, vol. 53, no. 3, pp. 384–408.
- Bourdieu, P., (1985) ‘The forms of capital’, In Richardson (Ed) *Handbook of Theory and Research for the Sociology of Education*, pp. 241–258.

- Boyle, E.A., *et al.*, (2016) 'An update to the systematic literature review of empirical evidence of the impacts and outcomes of computer games and serious games', *Computers and Education*, vol. 94, pp. 178–192.
- Cheng, G. (2009) 'Using game making pedagogy to facilitate student learning of interactive multimedia', *Australasian Journal of Educational Technology*, vol. 25, no. 2, pp. 204–220.
- Clarke, S., *et al.*, (2017) 'escapED: a framework for creating educational escape rooms and Interactive Games For Higher/Further Education', *International Journal of Serious Games*, vol. 4, no. 3, pp. 73–86.
- Consalvo, M. (2009) 'There is no magic circle', *Games and Culture*, vol. 4, no. 4, pp. 408–417.
- Crocco, F., Offenholley, K. & Hernandez, C. (2016) 'A proof-of-concept study of game-based learning in higher education', *Simulation and Gaming*, vol. 47, no. 4, pp. 403–422.
- Csikszentmihalyi, M. (1992) *Flow: The Classic Work on How to Achieve Happiness*, Random House, London.
- Dijkers, S. M. (2016) 'Questing as learning: iterative course design using game inspired elements', *On the Horizon*, vol. 24, no. 1, pp. 55–70.
- Dweck, C.S. (2010) 'Even geniuses work hard', *Educational Leadership*, vol. 68, no. 1, pp. 16–20.
- Guitard, P., Ferland, F. & Dutil, É. (2005) 'Toward a better understanding of playfulness in adults', *The Occupational Therapy Journal of Research (OTJR): Occupation, Participation and Health*, vol. 25, no. 1, pp. 9–22.
- Holdsworth, S., Turner, M. & Scott-Young, C. M. (2017) '... Not drowning, waving. Resilience and university: a student perspective', *Studies in Higher Education*, pp. 1–17.
- Huizinga, J. (1955) *Homo Ludens: A Study of the Play Element in Culture*, Beacon Press, Boston, MA.
- James, A. (2013) 'Lego serious play: a three-dimensional approach to learning development', *Journal of Learning Development in Higher Education*, vol. 6, no. 6, p. 18.
- James, A. & Brookfield, S. (2014) *Engaging Imagination: Helping Students Become Creative and Reflective Thinkers*, Jossey Bass, San Francisco, CA.
- Jennings, A.S. (2002) 'Creating an interactive science murder mystery game: the optimal experience of flow', *IEEE Transactions on Professional Communication*, vol. 45, no. 4, pp. 297–301.
- Jones, K. (1998) 'Hidden damage to facilitators and participants', *Simulation & Gaming*, vol. 29, no. 2, pp. 165–172.
- Juul, J. (2013) *The Art of Failure: An Essay on the Pain of Playing Video Games*, MIT Press, Cambridge, MA.
- Khan, A. & Pearce, G. (2015) 'A study into the effects of a board game on flow in undergraduate business students', *International Journal of Management Education*, vol. 13, no. 3, pp. 193–201.
- King, J., Hill, K. & Gleason, A. (2015) 'All the world's a stage: evaluating psychiatry role-play based learning for medical students', *Australasian Psychiatry: Bulletin of Royal Australian and New Zealand College of Psychiatrists*, vol. 23, no. 1, pp. 76–79.
- Markopoulos, A.P., *et al.*, (2015) 'Gamification in engineering education and professional training', *International Journal of Mechanical Engineering Education*, vol. 43, no. 2, pp. 118–131.
- Nerantzi, C. & James, A. (eds) (2015) *Exploring Play in Higher Education*, Creative Academic Magazine Special Issue, www.creativeacademic.uk.
- Nørgård, R., Toft-Nielsen, C. & Whitton, N. (2016) Playful teaching between freedom and control: exploring the magic circle in higher education. SRHE Annual Research Conference, Newport, 7–9 December.
- Nørgård, R., Toft-Nielsen, C. & Whitton, N. (2017) Playful learning in adulthood: exploring the Magic Circle in Higher Education. *International Journal of Play*, vol. 3, 272–282.
- Pelletier, C. & Kneebone, R. (2014) 'Playful simulations rather than serious games: medical simulation as a cultural practice', *Games and Culture*, vol. 11, no. 1, pp. 265–389.
- Proyer, R.T. (2013) 'The well-being of playful adults: adult playfulness, subjective well-being, physical well-being, and the pursuit of enjoyable activities', *The European Journal of Humour Research*, vol. 1, no. 1, pp. 84–98.

- Remmele, B. & Whitton, N. (2014) Disrupting the magic circle: the impact of negative social gaming behaviours. *Psychology, pedagogy and assessment in serious games*. Hershey, PA: IGI Global.
- Salen, K. & Zimmerman, E. (2004) *Rules of Play: Game Design Fundamentals*, The MIT Press, Cambridge, MA.
- Schell, J. (2008) *The Art of Game Design: A Book of Lenses*, CRC Press, Boca Raton, FL.
- Shulman, L. S. (2005) 'Signature pedagogies in the professions', *Daedalus*, vol. 134, no. 3, pp. 52–59.
- Stenros, J. (2014) 'In defence of a magic circle: the social, mental and cultural boundaries of play', *Transactions of the Digital Games Research Association*, vol. 1, no. 2, pp. 147–185.
- Stenros, J. (2015) *Playfulness, Play, and Games. A Constructionist Ludology Approach*. Tampere: Tampere University Press.
- Suits, B. (1978) *The Grasshopper: Games, Life and Utopia*, Broadview Press, Peterborough, Canada.
- Walsh, C. & Apperley, T. (2012) 'Using gaming paratexts in the literacy classroom', in *GLS 8.0 Games + Learning + Society Conference*, eds C. Martin, A. Ochsner & K. Squire, Madison, WI. ETC Press, 322–329.
- Whitton, N. (2014). *Digital games and learning: research and theory*. New York: Routledge.
- Whitton, N. & MacLure, M. (2015) Video game discourses and implications for game-based education. *Discourse: Studies in Cultural Politics of Education*, vol. 38, issue 4, 561–572.