Introduction

Alex Moseley and Nicola Whitton

> "Games have always had a place in education. Every time a teacher says something like 'Bob has a problem. He needs to measure the height of a telephone pole, but he can't climb it. What should he do?' they have created a game. The entire educational system, with its scores, points, and grade levels is a game system, already. The key is to figure out how to best integrate games into education."
>
> Jesse Schell

Indeed, as Jesse nicely foregrounds, there are already countless games in education – from the simplest problem solving described above, to high-end commercially-produced simulations which replace whole courses. Which is wonderful.

Until you decide "yes, I'd like to see how games can work for me", and sit down to find out more about them. That's when you'll find that the websites, journal articles, books and news sites cover an awful lot of the high-end side, and the barest whisper of the simple side. Which means that if you have a big budget and team of designers and programmers at your call, you're fine. But if you're a teacher, trainer or lecturer who has a couple of hours tomorrow night and some card and felt-tips, you're not so fine. We felt that this needed redressing, which gave birth to the idea of this book.

Another assumption you'll find in much of the existing literature and rhetoric around games use for learning, is that games are unequivocally perfect: they motivate learners, and provide all-inclusive action-packed elements which students will love you for. This is also representing just one end of the spectrum; clearly, if you tried to use *Super Mario Brothers* to teach History to undergraduates, for example, we doubt that much learning would take place, or that all students would find it motivating (many, in fact, might feel that it devalues the course they paid good money for). With this book we also wanted to question some of this perceived wisdom surrounding the use of games for learning, and provide a more measured view (whilst still retaining our enthusiasm for games in general and their use in *appropriate* contexts).

Our book therefore aims to look in detail at *whether* and *how* games can help learning in a variety of contexts, before giving practical advice, ideas, and case studies for their use in practice. We take two approaches: first, examining five of the characteristics of games that make them good for learning, and considering how to embed these within more traditional pedagogic practice; second, showing how low-cost solutions to game development (in particular traditional games, alternate reality games and virtual worlds) can be used to enable anyone to create their own games for learning.

We place game development within the context of modern education: across most formal and informal education there are reduced budgets (and in some contexts, such as higher education, rising student numbers), an increase in administrative load, a rise in the use of targets or external accreditation and other pressures. How can games help in this context, with the resources available to us as educators? We also acknowledge that successful games (in the sense of engaging their audience and being fun to play) require creative skill and experience: there is a multi-billion-pound games industry with specialists who are geared to making games fun and engaging. To capture and access some of this expertise, we interviewed a range of experts from the games industry – along with top creative thinkers or researchers in the field – and their tips and perspectives can be found throughout

these pages at relevant points. These insightful quotations can be found highlighted in boxes at appropriate places throughout the main text.

In our aim to our focus on *appropriate* use and availability of games techniques for educators, you will find we use, learn from and suggest uses for games from traditional board, card or other genres, through new forms of *transmedia* or mixed-media games, to high-end forms such as simulations, virtual worlds or massivly multiplayer online (MMO) games. Our focus throughout is on the elements of these games which are useful or interesting for learning, and how to make use of those elements within learning design and delivery.

We should note at this point that neither of us stay up late every night battling hordes in *World of Warcraft* (though some of our chapter authors and experts do, and we do play the odd board game, adventure game or a quick *Angry Birds* on the train), nor do we claim to be game designers in a commercial sense. Our experience and expertise comes from our interest in what we can learn from games, and apply to a learning context. We are both researchers in this area, and practitioners who have used our findings to design and run games-based courses and activities within higher education, museum education and charity contexts. While our work in these contexts is used as a basis for – and case studies within – these chapters, we widen out our scope to cover any form of education: including formal, informal, child and adult. We have purposefully avoided covering young child development and learning through games, as there is already much literature around the value of play to child development and it would be counter-productive to attempt to cover that here.

Our principle theoretical background is unashamedly constructivist: the work of Vygotsky, Bruner, Lave, Wenger and Piaget is included or inferred in many of the chapters. Gaming can be an individual or shared experience, but always involves construction, synthesis and application of knowledge (when you play a game you continually develop better or alternative approaches every time you play, lose and win); and so it is a natural link for us to make between this and a constructivist model for learning. If you are unfamiliar with this approach to learning, games are a good way to begin to explore it – and in its own small way this book could form a useful primer for active and constructivist learning approaches.

There are six themes that recur throughout the book, and link much of the content.

Pedagogy and effective active and collaborative approaches to learning through games is at the heart of much of this book. We believe that the use of games in education must be driven by the pedagogic goals and needs of the learners, rather than by the technology or game itself.

Integration with curriculum is a key challenge. While there is a whole chapter dedicated to dealing with the important practical issues involved in using any games-based approaches within a formal academic structure, all other suggestions and approaches within the book are made with this consideration in mind.

Motivation is a driver and challenge for the use of games and learning. While we, and our fellow chapter authors, share a love for games and believe they have a lot to offer the teacher and learner; we are also very aware that, in reality, not everybody plays games or would find a game within their course a wholesome element. All chapters therefore avoid making assumptions, and question ‘universal truths’ such as ‘games are motivating’. Ideas and recommendations are made with particular contexts in mind, and carry appropriate warnings or workarounds for real teaching and learning environments. We also do not propose that games can be used for everything: there are some situations where games might offer no useful elements at all.

Affordability of pedagogic approaches is a crucial question in the modern age of austerity. Games need to be seen to be value for money rather than simply expensive motivational gimmicks, and this issue is one that is highlighted throughout, particularly through an emphasis on traditional games, media-media environments and virtual worlds.

Creativity is needed to address the fact that learners (and teachers) are unique. Unlike the Henry Ford model, not all people learn in the same way; and as a result not all respond to learning activities in the same way. Games or game approaches in learning are not immune to this fact, and flexibility and variety is therefore an important part of any design process.

Technology (and the lack of it) is also an important consideration. Depending on your own environment, you may have access to high levels of technology, or none; you may have technical, design or programming teams available to you, may take on some of these roles yourself, or may have no recourse to these. Throughout the book we therefore aim to provide a broad spread of approaches – suggesting technology where appropriate, but providing as many approaches which require little or no technology or technical knowledge. Occupying a useful position in this gamut are new mixed-media approaches such as alternate reality games, where technology can be used where available or appropriate, but paper and pen could be just as effective.

Book Structure

The book is split into three major parts (which together reflect a logical design sequence) topped and tailed by introductory and concluding parts.

Part I: Introduction
Following this introduction, Chapter 2 draws from both education theory, and game design principles, to make a case for the role of games in learning. Our aim is to challenge existing stereotypes and provide a more compelling base from which to work.

Part II: Applying game principles to education
In this first of the major parts, five chapters each take an aspect of games that we feel has particular usefulness in learning environments: challenge, communities, narrative, competition and use of multiple media. For each, a theoretical background and summary of use within games is followed by practical suggestions about how the elements could be used within learning and teaching, whether as part of a game or in 'standard' teaching.

Part III: Creating games for learning
Building on Part II, the four chapters here focus on the development of games within educational environments. Three principle types of game (all low-cost and low in technical needs) are suggested throughout: traditional games, alternate reality games and virtual worlds; with a number of worked examples demonstrating how to build, and integrate into the curriculum, effective games for learning.

Part IV: Games in Practice
The final major part culminates in three games based approaches to learning designs, where practitioners and researchers in the field describe how they have integrated the principles from part II in real-world applications. We hope that these will provide inspiration, and a comforting proof that low-cost, highly-effective games *can* be built for education.

Part V: Conclusion
Bringing together the other parts of the book, the concluding chapter summarises key themes that became apparent to us as the book began to take shape, and looks ahead both to your own journey we hope you will now be equipped to make, and to the environment surrounding games and learning and how it might change in the future.

Fuller details of the three major parts, and how they fit together, are provided in small introductions preceding each.

How to approach this book

If you have limited awareness either of constructivist approaches to learning, or of the main areas of benefit games provide to education, we strongly suggest you begin by reading on through Chapter 2. This will equip you with the background you need to engage with the main parts of the book.

If, however, you are coming from a strong game design or educational design background, you may prefer to start with Parts II and III – picking particular features of games you would like to use in your learning designs. If you want to use elements from games within traditional teaching and learning, Part II is the one to focus on; whereas if you are interested in creating whole games, turn to Part III.

Our strong recommendation, however, is to treat the book as a narrative in itself: if you can take the time to work through each part in order, you will be rewarded with a slowly-building knowledge base which gradually feeds more developed ideas until you finish with the real world examples and application of theory in Part IV.

We have, however, designed the chapters in such a way that you can dip into each with very little knowledge of previous chapters – you should therefore, at any point in the future, be able to return to the chapter on, say, assessment to explore a particular problem within your learning environment and look for inspiration.

Expert tips

In order to bring together our perspectives as researchers and educational practitioners with views from industry and experts in game design, we interviewed a number of experts in the games industry, creative industry and academia (see Guest Expert Contributors for details). We have taken key quotes and tips from these interviews and placed them in appropriate contexts within the book, giving rich insights and creative sparks. In this way, we hope that this book will bring insights beyond the academic perspective about what games bring to education and how they can be designed effectively.

> “In the best games, the designer is trying to say something that they can only say through the medium of the game. Game design is an art form. If you can say what you want to say using some other art form – a novel, a drawing, a movie – then you should do that instead. If you can only say it through a game, that's what makes the game powerful. It's passion and vision that makes a game. Sure, you need mechanics and genre and balance and so on, but it's the heart of the game that makes the difference between a curiosity and a revelation.”
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> Richard Bartle

Web resources

A number of extended resources (including links to the various case studies mentioned in the book, and the full ‘expert’ interviews) to support your exploration of the concepts and examples covered, are available at the following URL:

http://gamesbook.playthinklearn.net/

We hope that this book will provide an easy path for anyone – regardless of existing knowledge, experience or time – to see the value of game-based approaches for particular learning and teaching needs; and more importantly, to see a way forward which will allow you to develop them within local budgets and means. Building on a solid theoretical and games design base, the numerous suggestions and examples in chapters, and the expert tips, should provide all the argument and motivation you need.

From then, it's over to you: we hope that future articles and books will be able to report on many more examples of how games – in all shapes and sizes, from scribbles on paper to complex cross-media courses – have been used in many contexts, but always to improve the experience for learners.

With this book, we hope to have helped douse the old bonfire of rhetoric and uninformed truths around games and learning, re-laid the firewood and applied a match to the kindling: it's now up to you to build and feed your own fires. Good luck!