Abstract:

One of the inherent problems in the use of game-based activities in training and development contexts is the disconnection between the game itself, and the real world context the participants have come to learn about: the games tend to be a means to an end within the confines of the training.

Backgrounded by a long history of games and simulations in areas of education and training, recent work on the way that games can engage learners through the creation of authentic contexts led the author to explore the use of small, low cost games which could quickly create authentic contexts within training and development environments. Three case studies (a simple puzzle, a live activity, and a board game) are provided as exemplars of this approach, presenting a range of possible designs; and their value in overcoming a suggested contextual gap amongst participants is discussed.

Ways to consider and quantify this contextual gap are provided, along with advice for those wishing to create their own games-based approaches.
1. Introduction

This paper makes the case, backed up by three case studies at its core, for the use of small, focussed game-based activities to quickly set authentic contexts which mirror real-life situations or applications within training sessions, seminars or other gatherings with a learning element.

The new proposals are situated in the wider context of games-based learning and games-based approaches to training and development; and share many of the advantages inherent in these approaches, but not the long development times, costs or (most importantly) problems with context and subsequent engagement which plague the creation of games for these contexts.

2. Use of games in training and education

The use of games in training and education has a long history, stretching at least as far back as the early board and war games in use in China from 3000BC (Wolfe 1993) although the first formal ‘educative’ game with a rulebook is generally agreed to be ‘New Kriegspiel’ invented in 1798. By 1872, games were being used by the British Military, and made the trip over to America shortly after (Cohen & Rhenman, 1961) and it was to be a century later, with the advent of home computers, that these war simulation games came into widespread use for pleasure rather than training.

Aside from basic numeracy and literacy games for young children, management training was the first non-military subject to be taught with the help of a game. A simulation called ‘Monopologs’ was developed in 1955, but the first widely used one was the ‘Top Management Decision Simulation’ developed by the American Management Association in 1956, which was followed by a wide and rapid spread in the early 1960s - and today, 97.5% of management schools use games/simulations in their training (Faria & Nulsen 1996).

Although by no means ubiquitous (particularly in higher education) game use in education now covers many subjects, levels and learning objectives - and their use in education contexts is the subject of much scholarly research. Serious games in particular - those designed expressly with a learning objective in mind - have seen concerted growth in use and study (see De Freitas 2006) since the turn of the century, boosted by the creation of the Serious Games Initiative (http://www.seriousgames.org/) in 2002.

In the broad gamut of games-in-education research, the work described in this paper focuses on two emerging areas of research: those concerned with engagement/motivation - particularly on adult audiences - and those concerned with ‘authentic’ experiences and context.

Whitton (2007) applied adult learning theory (Knowles, 1998) to a study of motivation amongst adult learners using games to learn - she found that the use of games for learning with young adults (computer science postgraduate students, slightly biased towards gaming by her own admittance) was only perceived as inherently motivating by 63%; amongst older adults she found that motivations for the use of games dropped dramatically out of the set of existing game-players, was seen as “frivolous”, and was only really considered “if they felt that it was the most effective way to learn something”
One strong correlation between engagement and games is where the context is relevant to the learner: they can immediately see familiarity and value in the activity - Shaffer and Resnick (1999) call this context “thickly authentic”: one where “activities are simultaneously aligned with the interests of the learners, the structure of a domain of knowledge, valued practices in the world, and the modes of assessment used” (Shaffer, 2005). Simulation-style games are particularly adept at this if designed well; games can “attempt to make complex-living contexts understandable” and create an “interactive-learning environment that makes it possible to cope with authentic simulations that closely mimic reality” (Kriz 2003). Kriz refers to this as ‘bridging the gap’ - and I would extend that description to a ‘contextual gap’ which often needs bridging between the learner and the place the trainer wants them to be.

3. The Contextual Gap

The contextual gap is not just a distance in knowledge from the learner’s starting point to the learning objectives of the training course (although it may include that); it is everything which prevents the learner being able to engage with and achieve the learning outcomes, including (but not limited to):

- **learner desires**: what they want to achieve from the training; linked to...
- **learner expectations**: what they are expecting to receive from the training;
- **subject boundaries**: is the training relevant to their area of interest? A common problem with generic/packaged training programmes, or game genres alien to the learner;
- **perception of learning potential**: this is related to whether the learner perceives that their knowledge, abilities or experience will be increased or enhanced by the training - and includes confidence in the trainer’s abilities, worth of the co-learners in group work, etc.;
- **internal blocks**: these include learner hang-ups, snobbery, peer pressure, learned behaviour - anything which could create a block between the learner and the training materials/methods/objectives. One common example when using games-based learning is an inherent regard of games as ‘frivolous’ or ‘non-professional’.

These aspects describe the gap which must be closed between the context the learner occupies at the start (with desires, expectations, familiar surroundings and subjects, prejudices, beliefs and hang-ups), and that the learning outcomes are situated in. Good training usually considers the first three areas well; but the latter two (perception of learning potential and internal blocks) can easily derail the best laid plans, and result in learners becoming disengaged with a well designed course.

4. Games to provide focus and context

The author’s own area of work is within an educational, or instructional, design role: and the common contextual gap for those occupying this kind of role within higher education is in the unwillingness of lecturing/tutoring or administrative staff to recognise the value
of overarching course design when creating or modifying an academic programme. Staff are usually so concerned with their own experience in current day-to-day practice that they are unable to step back and rethink pedagogic or administrative strategies. The role of a course designer is therefore to widen their scope to fill this conceptual gap, which can take many meetings, one-to-one discussions and patient explanations.

This situation is not unique, of course: there are countless situations where particular staff need to have their field of vision widened; to draw them back from the trees and view the wider wood. If not in course design, in developing strategy or policy; in solving problems; or - in business - in rethinking markets, product lines, support systems, etc. In all these (any countless more) cases, bridging this contextual gap is a key feature of much public sector and corporate training, meetings with consultants, and other costly and time consuming methods.

The value of games in setting contexts, and capturing sometimes difficult concepts in small, engaging, steps (think of how Monopoly explained the general elements of real estate, economics and the property ladder to you at a young age, without the need for textbooks, documentaries or a patient tutor); provides attuned affordances to bridge these contextual gaps. In many existing uses within training, of course, games are used to set scenes, and quickly bring groups to the task in hand - but almost universally, the games are used as a means to achieve the session aims (which then in turn hope to affect wider-ranging and context-specific challenges for the participants): they are not directly used to reflect or miniaturise a real context.

The author had been using simple games within their own work to help explain concepts and widen participants’ perceptions at the start of training sessions and conference seminars (see case study 5i below); when they came across Charlier & Clarebout (2009) ’s description of a board game used successfully to formally assess the understanding of key first aid and basic life support concepts. Although focused on assessment (and hence applying, rather than widening existing, knowledge) their game was found to increase mean scores when compared to traditional paper-based tests; and the authors speculate that this may be a result of both a reduction of fear/stress (games are “fun, motivating, challenging” when compared to the “fear of examination”) but also of peer feedback during the game. An additional aspect the authors missed, however, was the context: whereas a written test begins straight away by focusing in on specific problems; the board game eased the participants into the context of a third world country and real world problems - testing their reaction to contextual events.

5. Three case studies
Over the last two years, the author has been testing games-based approaches to filling this contextual gap with a number of small games or activities. Three of these are described below. It should be noted that in all three cases, ‘game’ tended to be replaced with ‘activity’ when describing it to participants - as there is a pervading view (particularly in higher education and adult training) that games are frivolous and unprofessional (see Hildmann, 2008). Interestingly, as can be seen in case study (i), the activities themselves can be a way to change these misconceptions / internal blocks so that - if desired - the acceptance of a game based approach can become one of the outcomes.
i. The Microcosm Game: setting scene, key concepts and acceptance

A successful games-based course teaching research skills for History first year undergraduates (The Great History Conundrum, see Moseley et al. 2009) generated much interest both locally and internationally at conferences. The concept of a games-based approach, however, was difficult to explain, rationalise and gain acceptance for within short fifteen or twenty minute slots. A ‘microcosm’ of the course was therefore developed using a simple card-based puzzle, which was easy to reproduce in small packs for multiple groups within a seminar or workshop.

The course itself encourages students to discover effective and critically suitable methods of research through ‘real life’ narrative-based puzzles, placing them in the role of ‘historical detectives’ (giving the course both authenticity and context): the puzzles range from simple and logical to highly cryptic and requiring communal solving; and assessment is linked to a competitive element. To get these ideas across to seminar participants, I created a set of six ‘matching pairs’ - with an historical source on one card, and a description of its usefulness to research on the other (a series of simple puzzles). The cards also carried a letter in the lower right corner, and were set against a background image of a stately home: when all the pairs were correctly matched, and set in a particular order, they revealed a question; clues to assist with this order were given through one of the letters being a capital and another being a question mark - which revealed both the ordering for each pair of letters and the starting and ending pair - and another clue was in the background image: Hampton Court. When ordered correctly, the letters spelled out “Henry 8 wives?”.

Figure 1: a sample matching pair of cards

Figure 2: the completed question
The activity starts off by splitting participants into small groups, and telling them that the first group to shout out the correct answer wins a prize (a box of chocolates or similar), then hand out the card packs and set them off. Usually, one team has the answer within 4-8 minutes.

In this way, the simple card game was able to demonstrate all of the key features of the full course:

a. setting the context and approach (historical, research skills, problem-solving);

b. the range of puzzle types (from simple - matching pairs; to cryptic - the overarching Henry VIII question);

c. collaborative elements (working in groups);

d. the competitive element (first to win, prize)

...all within the space of around six minutes. An additional benefit is that participants, through their enjoyment and engagement with the activity, also gain a very quick appreciation for games-based approaches. The presenter is then able to begin a detailed discussion of my course and results, without the need to spend any further time describing the context, approach or benefits.

The cards themselves continue in usefulness in one of two ways: they are backed with contact details for the presenter and the course, so that participants can take them away for further investigation and discussion; or, if left behind, they can be collected in and formed into sets again for a future session.

Results and reflection

This simple card-based puzzle has been used in a number of situations to quickly give participants an idea of what the Great History Conundrum is all about; and to introduce them to the concept of game-based learning. It has been a great success on each occasion - taking only 4-8 minutes in total, and every member of every team in every situation has been fully engaged in the process.

When compared to sessions (usually conference short papers) where the presenter has not been able to run the activity due to space or size of audience, sessions with the game tend to be devoid of any questions regarding the value of game-based learning or the acceptance of such an approach within an academic department; whereas those without usually focus around these issues during the questions.

The only problem with the puzzle has been its difficulty for those who don’t have a background in Humanities in higher education - so a more generic puzzle which still covers the same aspects would be a useful, more inclusive development.

ii. The Focussed Game: putting a lens on particular aspects

There was a need to produce a two-hour workshop introducing an institution-wide desire to rethink its support of distance-learning students, to departmental administrators - in
preparation for one aspect of course redesign individual departments would be required to undertake in the future. There was limited time available for preparation of materials, and unknown numbers of participants from 15-60.

A game-based activity was created to focus in on (apply a lens to - a useful analogy from Schell 2008) this aspect, and to mirror the task departments would ultimately be required to do in reality. This focussed around:

a. drawing back from their usual role and current support strategies, and looking at the bigger picture;

b. finding out about, and thinking about, key areas of student support they may not already know about / cover in their current strategies;

c. designing a new coherent support strategy to cope with a wide range of requests and issues;

d. testing the new strategy against a rage of student requests and issues;

e. seeing how unplanned technical, financial, political or other events can dramatically affect student support.

With help from colleagues versed in student support issues, a game-based activity was designed to model and cover the above aspects, and retain engagement and interest across the two hour slot. The resulting game (and the contextual tasks it covered, shown in brackets with reference to the lettered list above) took the following form:

1. A spoken introduction to the activity described the broad course model the groups would be concerned with: setting the context for the session, this model was generic enough to resonate with all participants; and was provided in printed form.

2. Groups of 5-6 participants were then formed around desks, and provided with a large sheet containing a blank table, suggesting areas which a student support strategy might need to cover. A couple of examples were worked through by the workshop leader.

<table>
<thead>
<tr>
<th>Support elements:</th>
<th>Academic support</th>
<th>Pastoral support</th>
<th>Administrative support</th>
</tr>
</thead>
<tbody>
<tr>
<td>How provided/mode</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Point of contact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turnaround times</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 3: a section of the student support strategy table
3. Groups were then given 25 minutes to come up with their support strategy, and to document it on the table. Assistance was given by instructional designers assigned to each group.

4. When 25 minutes had passed, groups were told that their strategy was now fixed for the year ahead - just as in a real course context, support systems are set up at the start and are generally not reconfigured through the rest of the academic year. They were told that they will now be testing their system against some real student queries and issues which arise in distance learning courses.

5. The groups were then each issued with a card containing one ‘student issue’, an on-screen countdown timer (http://www.online-stopwatch.com/) was set to 7 minutes, and they were asked to write a brief description on the card of how their support system would handle the issue (or why it would fail).

   A student contacts the administrator and says: My tutor hasn't responded to any of my emails or queries. What should I do?

   “Hello it's me again! I can't get this essay in on time either. Can I have the usual extension? About 3 weeks, ok?”

   Figure 4: sample student issues

6. On 7 minutes, the countdown timer issued an alarm sound, the ‘issues’ cards were collected in from all groups, a new ‘issue’ card was delivered to each, and the countdown timer was restarted from 5 minutes this time. This process continued, with the time given for each round being cut down from 5, 4, 3 to remain on 2 minutes over each subsequent round.
7. Once the activity was running well, and the groups concentrating on answering each ‘issue’ as quickly as possible, a further element of surprise was added to the activity: at random points, a klaxon was sounded; groups were asked to stop; and a ‘global event’ was issued to each group on special cards. The first group to write and return a satisfactory response to the event based on their support system won a prize (a bag of sweets to share around the group); and then the normal activity process resumed.

The Virtual Learning Environment goes offline for a week for emergency maintenance. Your students have an essay deadline three days in.

8. After around an hour (in reality, the groups were monitored to see when engagement with the activity started to lapse), the activity was stopped, and each group was asked to reflect on the way their support system coped with the range of student issues and events put through it; what its strengths had proved to be, and which areas it ‘failed’ on. The groups then fed these reflections back to the room, and key issues were recorded.

9. After the participants had left, it was possible to match up the support system tables from (3) with the ‘issues’ card responses from (6), and the reflection notes
taken in (8) - this provided five ‘model, test and reflect’ sequences to document and analyse for wider distribution.

**Results and reflection**

The game was well received in a workshop of 25 participants (split into five groups), who struggled initially with the creation of their support system - on reflection, the lack of a ‘widening focus’ element to the activity at the start meant that some of the groups struggled to move away from the systems they knew themselves - but with assistance all groups managed to produce one. The main game loop (timed delivery and completion of ‘issues’) worked perfectly, however, and kept the groups engaged with a high level of discussion. The three random ‘events’ introduced were liked and contested greatly, with groups clamouring for the small bags of sweets on offer. At the end of the activity, in the reflection phase, it was clear that the groups had engaged with the key issues: principally, that the initial design of their system, and reviewing/improving it over time based on day-to-day activity, was of vital importance; and that it was important to balance both structured approach for efficient day-to-day practice, and flexibility to cope with emergency or ‘out of the blue’ events. The instructional designers have also been provided with five quite detailed models for student support.

This style of game would work well where there is a need to focus on a particular aspect of practice, to model systems, and to test responses to events or inputs. It also results in more tangible resources than the other two case studies described here, and provides a reflective stage for participants to “apply the knowledge acquired during the gaming simulation to the real world” (Kriz 2003, p497).

**iii. The Opening Minds Game: drawing back to show the big picture**

The first time an instructional designer meets with an academic department to revise or create a new course, the initial meeting is a difficult one. Somehow the departmental staff have to be drawn back from their own concerns, opinions and their current mode of working; and asked to take a wider view of the course and how it might best serve the students and the academic subject. Because this meeting is one which takes place with every new project, there was a need to create a useful re-usable tool or activity to help aid this process and bridge the contextual gap.

It was decided that a board/card game might be useful in achieving this: something which could be taken along to the meeting, set up and explained quickly, and within 20-30 minutes bridge the contextual gap to allow the meeting to then run a more normal course aided by more open and engaged participants. Its aims:

- to encourage participants to step back and rethink their course provision with open minds;
- to give participants an idea of the range of pedagogic, administrative and technical elements available when designing and building a course;
- to remind participants that they have to think about their markets and their students’ needs;
to give participants a chance to test course designs against some realistic situations, without educational, financial or reputational damage.

Principles for the game came from Schell (2008) - who despite focussing on digital games, provides a very useful set of principles and ‘lenses’ for approaching all types of games - and the excellent discussion on numerous game design sites (The Board Game Designers Forum [2010] and The Journal of Board Game Design [2010] being two of the most useful) aided in its design. Over a number of months and small playtests, a prototype version was developed.

The game, “Of Course!” is played as follows:

1. Players roll dice to set up the demographic and resources for a new course, which are indicated by counters on the demographic and resources boards. These provide a permanent reminder to players of the context they are playing in. They also indicate how many staff and how much money (in units) is available.

![Figure 7: demographic and resources boards](image)

2. Players then draw two cards from each of five piles (Learning modes, Pedagogic Elements, Materials and Administration), and by referring to the resources and demographic boards, choose any four cards which could go together to form an appropriate course design. They also pick up and save two Event cards, which they save for step 4.

![Image 2](image)
3. Players then score their initial designs: each card has a staff and money value (which when added up from all four cards should match the available staff/money units set in 1). In addition, certain cards have bonus points if their symbols match those on the resources or demographic boards.

4. Players now choose one of their two Event cards to play on the whole group. These will adjust the context of the course or otherwise render some players’ cards useless. All players can then swap any one of their course design cards for one in their hand to try to reduce the effects of the Event. Players then score their designs again, as in (3).

5. This process is repeated for all players, each one playing an Event card, and then going through the process of changing and scoring designs as described in (4).

6. After all players have played an Event card, the players’ scores are added up, and the player with the highest score wins.

This game sequence takes around 20-30 minutes the first time it is played with a group. Further rounds (resetting the resources and demographic boards and running through 1-6 above) can be played, at around 10-15 minutes per round thereafter.

Results and reflection

The board/card game has been used successfully with test teams, and has now (June 2010) been used with a department starting a course design project for the first time. The simple and visual set up of the resources and demographics was liked (ticking Schell’s [2008, p42] aesthetics box), and quickly helped to explain the game instructions. The initial scoring round took a little more time than expected, as did the first ‘event’ play (step 4 above); but that aside, all players became more engaged as the game progressed, and for the second round they even suggested modelling their own course and playing the round with that as a model, which proved extremely useful as a source of discussion. The meeting both during and following the game was notable for the open-ness of the participants to more extensive redesign of their course (in stark contrast with a similar
meeting with the same department six months earlier), and the reference to some pedagogic and administrative elements represented in the game.

Clearly the creation of a board game is a fairly lengthy and time-consuming undertaking. Given initial tests and results of this particular one, there is some confidence that -with further tweaks to improve clarity/ease of gameplay - it will be reusable time and again with each new course team (as anticipated in the initial design specification); and further, that it may have wider applicability in other institutions. However, for a narrower remit or short-term shelf-life, this kind of approach would be overkill; something closer to a simple card-based approach in case study (i) would be more appropriate.

**Wider application**

The three case studies serve to demonstrate the wide range of games-based approaches which could be used to bridge a contextual gap. The time and materials needed to produce case study (i) are small; whereas those for (iii), and - going further than this paper or my own approaches at present - digital game approaches have potentially huge time and production overheads: the important point this paper makes, though, is that the games should be small, focussed and (where possible) repeatable, so large scale projects should only be undertaken where their per-use breakdown of cost/effort reduces over time through regular re-use.

The advice for trainers, designers or teachers looking to use game-based approaches to set authentic contexts within their work is threefold:

1. **It works.** The way that games can pack a wide range of contextual elements into a short, simple space, is unparalleled; as is their value for allowing experimentation and mistakes to be made with “no permanent consequences” (Kriz 2003, p506).

2. **Visualise the contextual gap.** Focus first and foremost on where your audience are starting from, where you want them to be, and what is stopping them getting there. Use the five areas described in (3) above as a guide.

3. **Think about good game design.** The best way to do this, bar none, is to dust off your old boardgames, get out your old console, or think back to the favourite games of your youth. What kept you going back, what motivated you to have “just one more go”, and which parts did you always find irritating? If you want to take things further, Caillois’s *Man, Play and Games* (2001) is a fascinating study of games and how humans interact with them; whilst Salen & Zimmerman’s *Rules of Play* (2004) and Schell’s *Art of Game Design* (2008) are both inspiring guides on how to design games - written by academics who are also active game designers.

Beyond that, experiment and don’t be afraid to fail and try again - the very nature of a game is that sometimes you win, sometimes you lose; but the best games keep you coming back for “just another go”.

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