

Project Acronym: ARGOSI
Version: 2
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Date: 21 March 2009



JISC Final Report

Alternate Reality Games for Orientation, Socialisation and Induction (ARGOSI)

Final Report
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March 2009

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Acknowledgements

The ARGOSI project was funded by JISC under the Users and Innovation Programme.

We would like to gratefully acknowledge the following individuals for their contributions to the project and its dissemination: Barbara Ashcroft, Paul Bailey, Geoff Butters, Emma Corrigan, Jenny Craven, Dr Juliette Culver, Sam Easterby-Smith, Bob Glass, Jill Griffiths, Alex Moseley, Dr Katie Piatt, Lawrie Phipps, David Sherlock, David White, Sharron Williamson and the many volunteers who helped evaluate, promote and play the ViolaQuest game.

Executive Summary

The Alternate Reality Games for Orientation, Socialisation and Induction (ARGOSI) project aimed to provide a novel and engaging alternative to traditional student induction. Through the use of an Alternate Reality Game (ARG), which combines a series of collaborative challenges within an unfolding storyline, it aimed to provide a mechanism for new students to make friends, orientate themselves to the City of Manchester and learn basic information literacy skills.

ARGOSI used a user-centred development methodology to produce the ARG software coupled with a mixed-methods research methodology to evaluate the project. The project workflow consisted of an initial concept design leading to a development strategy including iterative testing, during which phase the project software, game design and artefacts were refined. Deployment of the game followed, between September and December 2008, supported by ongoing formative and summative evaluation. The game was deployed in September 2008 and ran until December 2008 with a total of 173 players, 23 (13%) of whom were active. Although this proportion of active players is fairly typical for games of this nature, the overall sign-up rate was disappointing. The final roll-out phase involved the development of training materials and delivery of a series of courses.

The project web site at argosi.playthinglearn.net will act as a repository of the resources created by the project, such as the software produced, reports, graphical artefacts, guides to designing and running ARG elements, and materials from the training courses developed. This site will act as a growing resource for the ARGs in education community and will grow as new resources become available. The research findings (documented in detail in the project Evaluation Report) include insights into players' motivations for playing ARGs and the ways in which educational ARGs are necessarily different from those designed purely for recreation.

There is evidence that the project has achieved its aim of developing and piloting an ARG for induction, as well as achieving the majority of its objectives. It also offers a number of insights:

- There may be some design issues (e.g. difficulty of challenges, order of challenges) that require modification but the ARGOSI team believe that the overall design is sound.
- Timing is a critical factor and running any activity during freshers' week is problematic.
- The true ARG aesthetic may not work for education; it cannot be assumed that students will be motivated by games or autonomous enough to engage without prompting.
- In order to generate larger player numbers, ARGs need either a) ensure a larger initial sign-up from the target population or b) ensure a greater percentage of active players from those who do sign up. Ways in which to achieve both of these outcomes deserves further consideration and research.

There were a number of big questions surrounding alternate reality games in education, which emerged from the evaluation of the ARGOSI project:

- How can students be encouraged to engage without making it compulsory?
- How large does the game have to be to be workable as a voluntary activity?
- At what point does the game become value for money?
- What is an effective marketing strategy?
- ARGs support the autonomous student, but can they also be used to develop autonomy?
- How can the tension between the niche nature of the ARG be resolved with the inclusively that is desirable in Higher Education?

Background

Student retention is a key issue in Higher Education at the present time, and the quality of the induction process has been identified as a factor that can affect retention (e.g. Tomkinson et al, 2002; Yamnikar, 2006). Current models of induction do not always meet student needs, in particular, the increasing diversity of the student population, in terms of age, culture and religion, is not necessarily reflected in induction period activities. Induction activities are usually carried out at the start of term, when students are already overwhelmed with a new environment and new people. This is a time when they may find it difficult to engage in contextless induction activities or to subsequently retain and apply the information and skills, and induction may be more appropriate and useful to students when it lasts for a number of weeks (Billing, 1997). It is important that induction activities provide students with the opportunity to meet other students and build social networks rather than simply providing information (Trotter & Roberts, 2006).

Student retention is an important issue for both institutions involved in this project, and is highlighted in the strategic plans of both Manchester Metropolitan University and the University of Bolton. The first strategic goal of MMU is 'to enhance the quality of the experience, increase the satisfaction and improve the retention of students' (MMU Strategic Plan 2003–2010, p 7) while retention is also one of the key priorities at the University of Bolton (University of Bolton Strategy Plan 2006–2012, p 13).

Game-based learning has the potential to be used effectively in education to improve engagement when used appropriately and purposefully. However, issues of cost-effectiveness and accessibility must be taken into account and can limit this potential (Whitton, 2007). Alternate Reality Games combine an overarching narrative with a series of collaborative challenges and use a simple technological approach. They offer a low-fidelity solution, using established web technologies to create cost-effective and accessible content, with an ongoing narrative and visual theme to link the challenges into a coherent game. The success of ARGs for entertainment (see, for example, www.perplexcity.com) provides evidence of their potential to engage.

Alternate Reality Games offer a real solution to the issues of game development for learning in Higher Education and there is already some evidence of the potential effectiveness of this model. A similar pilot scheme, run by Dr Katie Piatt at the University of Brighton, concluded that the ARG 'provides an interesting alternative to existing mechanisms for introducing students to certain types of information or services' (Piatt, 2007).

Aims and Objectives

The aim of the ARGOSI project was to develop and pilot an alternate reality game to enhance student induction.

The ARGOSI project had four research objectives. These consider the issue of whether an Alternate Reality Game is an effective and appropriate medium for enabling students to:

1. meet the intended learning outcomes of the library and information skills induction;
2. create social networks during the induction period;
3. improve their confidence in navigating the city and university campus;
4. engage in, and enjoy, the induction experience.

The additional funding received through the benefits realisation and stakeholder engagement funding added the following objectives. The project also aimed to:

1. develop a training course for others wishing to adapt and use the ARG framework;
2. create a manual for others wishing to adapt and use the ARG framework and software;
3. run the training course (on a training-the-trainers basis with 5 CETLs);
4. develop an openly-available bank of challenges.

Methodology

This section describes the methodology applied to two different aspects of the project: development, and research.

The **development** methodology was one of user-centred design with iterative prototyping, which allowed the project to take an agile approach to creation of the software. A three-phase prototyping model was adopted, which was hoped would enable issues to be highlighted and addressed early on the development process. The first prototype examined the effectiveness of the game design, narrative and core challenges in a face-to-face context; the second tested the playability of the core game online over a week period; and the third pilot investigated the appropriateness of the set of information literacy challenges that were created. This methodology was chosen because it supports innovation, flexible software development, the creation of ideas, teamwork and user engagement.

Also important in the development methodology was adherence to web standards, in particular the project ensured conformance to RSS, W3C accessibility and XHTML. However, issues of accessibility and transparency within a gaming environment arose, for example, the question of how a game can be made fully accessible (where clues and puzzles are hidden in graphical or auditory elements) without making it too easy for other players. Two approaches to this issues were adopted within the project: a) where possible alternative versions of challenges were provided using another medium (e.g. textual version of a graphical puzzle), or b) there was an assumption that collaboration would be required to solve the puzzle (i.e. it was so difficult that one person would be unlikely to solve it alone).

The **research** methodology adopted was one of mixed methods, using a combination of qualitative and quantitative methods throughout the project lifecycle. The rationale for adopting this methodology was to enable the creation of generalisable data as well as individual insights. There were three phases of evaluation: diagnostic, formative and summative (see Table 1).

Method	Phase	Purpose
Pilots	Diagnostic	To inform the design of the story, challenges, game and software.
Expert evaluations		
Usage statistics	Formative	To enable modifications and improvements to the game as it ran.
Market research		
Interviews/questionnaires	Summative	To highlight lessons learned from the game.
Team reflections		

Table 1: Research methods used to evaluate the ARGOSI project

Three pilots were undertaken during development ($n=6$, $n=10$, $n=5$) and expert evaluations were carried out by the wider team to provide feedback on the narrative design, software interface, graphical artefacts and challenges developed. Ongoing usage statistics and market research with students ($n=96$) were used to monitor the game as it progressed and make amendments when required. Originally it was planned to gain feedback from those students who had played the game by interviewing the active players and asking the non-active players to complete a questionnaire. Unfortunately the response rates were so low ($n=2$) that this phase of the research had to be abandoned. As an alternative, a team reflective exercise was carried out in order to gain experiential insights from the perspectives of the core team members. While it is recognised that this is not as valid a research method as actually interviewing the students, it was realistically the only feasible alternative. This also highlighted a common issue with research, being how to get students to engage in research (particularly if they did not fully engage in the activity under scrutiny).

Originally it was also planned to use talking head video vignettes and network analysis as part of the evaluation, however, this had to be dropped because of the overall low activity in the game and the market research was added in order to investigate the impact of the marketing strategy and why initial take-up was so low.

Implementation

The project adopted a collegial team-based approach for all the activities, although certain members had overall responsibility for certain areas of work (e.g. graphics and software development). Figure 1 below shows the project workflow.

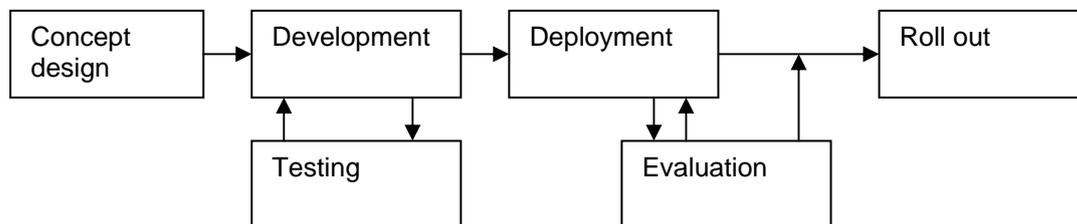


Figure 1: ARGOSI project workflow

The concept design involved the creation of the overarching narrative, the development of the core challenges, and the creation of the overall game concept. This was then developed into a series of working prototypes that underwent three phases of testing, both face-to-face and online. During this phase the software, plot, challenges, graphical artefacts and associated resources (e.g. web sites, rich media) were developed and refined. Originally it was planned to include two students on the project team and pay them an honorarium, but no student volunteers were forthcoming so it was decided to use students from MMU's Student Ambassador Scheme for each trial, who were paid at the standard hourly rate.

The game was deployed in September 2008 and ran until December 2008 with a total of 173 players, 23 (13%) of whom were active. Although this proportion of active players is fairly typical for games of this nature, the overall sign-up rate was disappointing. During and after the deployment phase a series of evaluation activities were carried out, which fed into the roll out phase.

The roll out was supported by additional funding from the benefits realisation and stakeholder engagement strands of the programme and involved the creation of a training course and manual to support the use of ARGs in education (available at argosi.plyathinklearn.net from early April 2009). This course is being rolled out with five LearnHigher CETLs (Bradford and Leeds Universities, Bournemouth University, Liverpool Hope University, London Metropolitan University, and Manchester University) using a train-the-trainers model and facilitating the creation of additional challenges sets in a range of student support areas.

Lessons learned from the implementation process:

- Creative development of this nature requires good team rapport, and initial face-to-face engagement through the project kick-off meeting was important for continued online engagement.
- The online social network used for team communications through the Ning community was essential for sharing ideas, undergoing internal evaluations, and for documenting processes.
- Continued prototyping and testing all game elements was of prime importance to create a usable and playable game.
- The development of a flexible and adaptable ARG framework, that can be easily re-used, will be important if it is to be used in different situations and with different student groups.
- It cannot be assumed that students will volunteer to take part in any project or research, even if they are paid, and consideration should be given to how to ensure engagement.

Outputs and Results

The key result of the ARGOSI project was that it successfully created and piloted a workable game, with usable software, and showed how challenges can be linked to specific learning outcomes. While the take up of the game was disappointing overall (173 players, 23 active), a great deal has been learned from this project about how to implement games of this nature in the future.

The project web site (argosi.playthinklearn.net) will contain a range of outputs from the project:

- Project reports, in particular the evaluation report, which details the stages of the project evaluation and discusses their findings and implications in more detail.
- Links to the software engine developed, which is freely available for re-deployment and modification, with deployment instructions. This software supports ARGs by allowing identity management, challenge management, communication and leader boards.
- A manual for developing an educational ARG based on lessons learned from and artefacts developed for the project. This will be comprised of a series of short information sheets on areas such as narrative design, challenge design, re-use of graphical artefacts and developing a marketing strategy. This manual will be ongoing in its development.
- Materials for, and a guide to, running the ARG training course.
- It is also envisaged that the site has the potential to act as a community hub for practitioners interested in the use of ARGs in education and that it will grow as a resource over time (for example, through the addition of more challenge sets).
- Links to presentations and publications that emerge from the project.

In addition to these tangible outputs, the project found some interesting (although tentative) research results on student motivation to engage with ARGs, from the series of interviews carried out during the pilot phase. Six motivational elements were identified (see Table 1), which can be used to support game design and help create a more balanced game.

Element	Possible implementation
Community	Collaborative activities, communication tools.
Competition	Prizes, leader board.
Completion	Overview of complete structure, pieces needing filled in.
Creativity	Creative challenges that involve making artefacts.
Narrative	Ongoing storyline that contains a mystery.
Puzzle-solving	Challenges based on puzzle-solving.

Table 1: Motivational elements of ARGs

The project evaluation also highlighted a number of ways in which ARGs for education are necessarily different from ARGs for entertainment.

- The ARG aesthetic of 'this is not a game' may not be appropriate in the context of education as students needed more support in knowing how to get started and more motivation for completing the activity.
- Most students require a clear purpose for taking part in a game like this, whether it is linked to assessment, there is a prize or simply a clear link to being able to help them with their studies. The fact that something is a game does not appear to be a sufficient motivator for many busy students.
- There is a tension between the niche nature of ARGs and the inclusivity strived for in formal education. There are also issues of how to make a game accessible without spoiling it for other players.
- In games where students are asked to meet and work with others (who can not necessarily be verified as bona fide students) there are issues of online safety and duty of care by the institution.

Outcomes

Overall, the ARGOSI project achieved its aim of developing and piloting an alternate reality game for student induction. However, the take-up rate was lower than expected despite a considered marketing campaign. In terms of the impact on students who played who played the game, from the evaluation research this is impossible to gauge as the levels of feedback were so low.

Nevertheless, as a proof of concept, it could be argued that the project had met its research objectives in showing that, *for some students*, it is an effective and appropriate medium for meeting library learning outcomes, and was an enjoyable induction experience. There is little evidence that this medium will be effective for all students (and indeed this was never intended to be the case) or that the game supported social networks (as the levels of communication were low) or confidence in navigation (as the offline tasks that involved navigation in physical spaces were least popular). What the research has shown, however, is that there is further potential in ARGs in education but that this is a new field and effective practice is still emerging. It is hoped that the lessons learned from the ARGOSI project will help to shape future projects of this nature.

The additional funding received through the benefits realisation and stakeholder engagement funding added four additional objectives. The first three were met to a large degree by the project in that a training course was developed and piloted for others wishing to adapt and use the ARG framework, a manual is being created as an ongoing series of information sheets (and will be available on the project web site) for others wishing to adapt and use the ARG framework and software, and the training course has currently been run with three CETLs (and received extremely positive feedback) and a further two courses are planned for May 2009. In addition a short workshop version of the training session was run with 33 students on the MMU Library and Information Management Masters degree course. The general consensus was that this seemed an excellent way to handle induction. The openly-available bank of challenges is still in progress for two reasons: a) because of the unforeseen difficulties that participants found creating fully-usable challenges in the time allowed, and b) because of the issue that making the challenge sets freely available on the web means that they are findable by players. It is hoped that when challenges are created in the course of ARG development at other institutions they will be made available and can be disseminated in a secure manner.

There are plans to use versions of the ARGOSI model at MMU in the forthcoming year, both as part of the library induction and as a component of the Information and Communications curriculum in 2009. There has also been positive feedback from the CETLs that have attended training sessions with Manchester, Liverpool Hope and London Metropolitan all considering their use in the forthcoming year. Brighton University will also be piloting a version of Viola Quest for induction in 2009.

In terms of outputs that are useful to the wider community, there are some specific insights that the project can offer:

- Timing is very important and running any activity during freshers' week is problematic. Timing has been identified as a critical factor, and the project identified a time that doesn't work, but there are still questions as to what might be most appropriate – earlier, later, shorter, longer?
- The true ARG aesthetic may not work for education; it cannot be assumed that students will be motivated by games or autonomous enough to engage without prompting. The question is then how can what is good about ARGs be maintained without 'sucking out the fun'?
- Approximately 1.5% of the total MMU first year population signed up to play the game (while it is impossible to ensure that players are first year students, all of the marketing was targeted at this group), and of these approximately 13% were active players (this second proportion is common for ARGs). In order to generate larger player numbers, games like this would need to need either a) ensure a larger initial sign-up from the target population (e.g. through greater marketing, more explicit purpose) or b) ensure a greater percentage of active players from those who do sign up (e.g. through easier initial challenges leading to instant gratification) c) introduce some element of compulsion. Ways in which to achieve all of these outcomes deserves further consideration and research.

- There may be some design issues (e.g. difficulty of challenges, order of challenges) that require modification but the ARGOSI team believe that the overall design is sound (as evidenced by user testing).

Conclusions

The ARGOSI team felt that, overall, the project did many things well:

- The team successfully completed the design, development, testing and running of a pilot alternate reality game to support student induction.
- Development of robust and reusable software for supporting alternate reality games (e.g. challenge management, user management, communication, leader boards).
- There was a good choice of initial team design at the project design stage, and selection of experts with appropriate skills and experience who all worked well together as a team. The initial face-to-face 'kick-off' meeting was particularly valuable for establishing an open and collegial working atmosphere.
- Communication was also good, both between team members, with the Programme Manager and with other project. This was achieved through a variety of communication channels but, in particular, the social network that was set up to support internal project communication was very useful.
- The initial user testing was very successful, with participants engaging and providing a great deal of valuable feedback on the game design and software implementation.
- The narrative, graphical artefacts and challenges created are appropriate, fit-for purpose and relatively easy to re-use.
- The dissemination throughout the project has been thorough and effective and members of the project team have been asked to speak at a wide variety of events.

There were a number of big questions on alternate reality games in education, which emerged from the evaluation of the ARGOSI project:

- How can students be encouraged to engage without making it compulsory? If the game becomes compulsory does it then cease to be an ARG but become something else? Is it possible to make a compromise between the notion of 'this is not a game' and something that is appropriate and acceptable for learning?
- How large does the game have to be to be workable as a voluntary activity? If it can be assumed that only around 10% of players will become active, how many need to be reached in the first place? Will a single institution ARG be viable?
- At what point does the game become value for money? How high does participation need to be for it to be a worthwhile activity? How can the success of such an activity be measured in terms of costs/benefits?
- What is an effective marketing strategy? Marketing as a mystery or game will not necessarily appeal to all (or even many) students, but if it is marketed as an educational activity but the game then start to move away from being an ARG? Does this matter?
- ARGs support the autonomous student, but can they be also be used to develop autonomy? How do they fit into a culture of learning that says "don't do anything unless you're told to do it"?
- How can the tension between the niche nature of the ARG be resolved with the inclusively that is desirable in Higher Education? How can challenges be made accessible for all without spoiling the game for some?

As well as the big questions for the use of ARGs in education, the project also identified a number of areas in which different implementations could be explored:

- Changes in timing and length of the game, for example use pre-entry or second semester.
- Engagement with tutors and embedding into specific curricula.
- More explicit marketing around the game, highlighting the link to learning outcomes.
- Considering providing extrinsic motivation (e.g. prizes or prestige).
- Make a larger number of challenges available from the beginning with more easy challenges available earlier.
- Focus on individual, online and creative challenges earlier in the game and use collaborative and physical challenges later.
- Increased involvement with and support from the students' union (however timing of elections and changeovers makes this difficult).
- Exploring the potential of commercial sponsors in order to spread the risk, however this may have ethical implications.

To conclude, while there is considerable potential in the use of alternate reality games in education, it is certainly not a quick win. The game genre is relatively new and very new in the field of Higher Education and there is, as yet, very little established practice or evidence as to how they can work effectively. A major issue in any form of game-based learning is how to use a game in a context where outcomes matter (e.g. are linked to learning outcomes, assessment or formal education) and keeping the 'fun' of the game itself. This will be an issue for ARGs, particularly if the model of educational ARGs moves away from the typical aesthetic to a more structured and learning-focussed model.

While the complete ARG model may not be appropriate to be used wholesale for learning, there is certainly potential for using elements. For example, a focus on activity-based learning through challenges, the use of narrative structures to support learning, or the development of a collaborative learning community are all elements that ARGs support that could equally-well be implemented outside of the ARG context. In all, perhaps the education community expects too much from learning games. In the commercial world, 90% of entertainment games fail and this is seen as an acceptable, and predictable, failure rate. Are Universities willing and able to take that level of risk?

Implications

While the ARGOSI project made an early attempt at running an ARG in education, and achieved its overall aim, the project still got a lot of things wrong. However, one of the key purposes of the pilot was to learn from this early investigation and inform future practice. Further research is needed to build evidence of effectiveness and good practice in the use of ARGs in education as project emerge in different discipline areas with different implementation models. In addition, Issues of access, motivation, relationship to curriculum, marketing, timing, safety, use of external sites (especially the use of fictional characters in contravention to terms and conditions) all need to be considered.

In terms of embedding the ARG model with an institution, research evidence is also need on the relative costs and benefits of games like this for induction and the relationship to retention. In future years it is hoped that other institutions – particularly those CETLs involved in the stakeholder engagement bid – will help to provide that body of evidence.

Recommendations

The ARG software developed, with its challenge management capabilities, has the potential to be explored as an activity-based learning environment.

There is also potential for the ARGOSI model to inform other areas of work such as engagement with communities and a model for widening participation.

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Appendix 1: ARGOSI Presentations and Publications

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