



# SIMulated Professional Learning Environment (SIMPLE)

## Programme Final Report

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# 1. EXECUTIVE SUMMARY

## 1.1 Aims

- 1.1.1 The SIMPLE project in general terms aimed to prove that simulations can effectively enhance learning across a range of disciplines, professions and institutions. It also set out to investigate the drivers and blockers to large-scale implementation of innovative technologies such as simulation within HE and FE.

## 1.2 Overall approach

- 1.2.1 With a total grant of £200,000 from JISC and the UK Centre for Legal Education (UKCLE) our overall approach was to design, specify, build and then use simulation software with a range of participating HE departments and schools. We then evaluated this process as well as the use of the application by staff and students, and the resultant effect upon educational processes. Our educational design was constructivist in nature, and from this general approach we developed a specific approach to professional learning we call transactional learning, which has influenced our approach to learning design.

## 1.3 Findings

- 1.3.1 Simulation environments can be agents of substantial change and powerful learning environments across a wide range of HE undergraduate and postgraduate courses. They are potentially disruptive heuristics and staff need supportive environments in which to share good practice and experiment. Students need to be aware of the expectations made of them in these new environments. Collaboration between staff, institutions and students is essential to the growth of simulation activities.

## 1.4 Achievements

- 1.4.1 Achievements are as follows:
- We designed, specified, built and implemented open-source software within a very tight schedule. The software, now the code-base for an application that will be at the core of the SIMPLE Foundation, is supported by technical and user documentation – see <http://simplecommunity.org>.
  - The core team developed a unique instance of a simulation learning design tool, namely the Narrative Event Diagram (NED).
  - Staff in participating institutions were supported in developing and running their sim projects, and all projects were evaluated in detail.
  - We ran more than twice the number of projects initially envisaged (14 in total), and we ran them over a variety of institutions and disciplines.
  - We improved the range of teaching and learning experiences across 12 out of 14 projects.
  - We contributed to the research and scholarly literature on simulation learning.
  - We have created a core of users and developers keen to take forward simulation across a range of disciplines and professions.

## 1.5 Conclusions

- 1.5.1 The project proved that simulation is a powerful heuristic, capable of enhancing student learning and supporting transformative shifts in education. To implement it, staff need to be committed to changing some of their fundamental practices. They need design support, in order to create effective simulations, and this includes integration of outcomes and methodologies of teaching and learning. They also need practice in designing innovative forms of learning, in building resources for simulation and in re-thinking feedback and assessment practices. Management at departmental, faculty and probably institutional level need to give thought to different employment practices within cadres of staff in order to support such forms of learning, resource-building and assessment. In addition simulation practice can facilitate forms of collaborative activity between institutions and disciplines, and internationally.

## 2. BACKGROUND

### 2.1 Ardcalloch: The Transactional Learning Environment (TLE)

2.1.1 This project is the second major iteration of a long-term project to produce, use and evaluate in iterative cycles a simulation application and platform that can be used by professional disciplines within FE and HE, and by the professions. The first iteration began in 2000 when, with the founding of the Glasgow Graduate School of Law, considerable resources were made available to create an ICT environment which would enhance the learning of law at the professional stages of legal education in Scotland, and in particular the Diploma in Legal Practice.<sup>1</sup> One of the initiatives formed was a virtual town, called Ardcalloch. Within this town were located the virtual law offices of postgraduate law students who interacted with resources and online fictional characters in order to complete legal transactions – for example buying and selling property over the web (Conveyancing) or winding up the estate of a deceased client of their firm (Private Client). The projects were formed iteratively and brought on stream once they had undergone initial testing. The application background altered as we gained experience, from a simple ColdFusion application to a more sophisticated application using MS Exchange Public Folders structures (mimicking the interface then used by at least one major Scottish law firm), to a true web-based application.

2.1.2 We collected feedback every year from students and staff, and re-designed accordingly. The simulation projects were supported by a range of conventional and innovative resources. Some subjects, such as Private Client, had prior to 2000 consisted of tutorials largely, without assessment, a regime that first led to open book examinations in drafting, and which later metamorphosed into simulations of transactions that were both learning and assessment zones.

2.1.3 To summarise, at this earlier stage, the Ardcalloch environment consisted of the following:

- Map and directory of a virtual town (Ardcalloch), which was used as the project context, and provided content for specific simulations. The virtual town provided the implicit simulation world of the transactions undertaken by students.
- Virtual professional workspace
- Monitoring and mentoring capabilities
- Communications routes between simulated characters, students and staff
- Teaching, learning and assessment templates, including curriculum guidelines
- Development and integration of other e-learning approaches with that of the TLE.

2.1.4 Throughout, we were keenly aware of the need to develop educational approaches to simulation – an area of learning and assessment which had not hitherto been developed in any serious way in law schools beyond the experimental stage. What was important about our own advances was that first, we were seeking to integrate simulation at a deep level within every subject in the Diploma in Legal Practice. Second, we were using an identical platform to run the simulations across the curriculum, so that what had hitherto been a series of subject ‘silos’ now had a common core running through all of the subjects. Third, to create a sense of continuity and common purpose, we developed our concept of ‘transactional learning’, the characteristics of which were crucial to our project (indeed the JISC project was initially termed TLE 2.0 – Transactional Learning Environment 2.0). We defined transactional learning in the following terms, as:

**active learning**

through **performance in authentic transactions**  
involving **reflection in & on learning**,  
deep **collaborative learning**, and  
holistic or **process learning**,  
with **relevant professional assessment**  
that includes **ethical standards**

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<sup>1</sup> Students already have undergraduate degrees in law before they enter the postgraduate Diploma, which focuses on professional skills and learning. For more information see Maharg (2004b).



- 2.1.5 While this early instantiation of the simulation environment exhibited many typical characteristics of simulation learning (high work rate for staff, improved student performance in coursework and also in examinations; problems with new forms of educational design work – see Barton & Maharg 2006 for a meta-review of the research on these characteristics) perhaps the most problematic element of the project was the idiosyncratic nature of the software. Much of the focus had been on the development of educational approaches to professional simulation learning and assessment. As a result, the platform underwent almost continuous development using a variety of interfaces and approaches. While stable and effective, there was little likelihood of anyone outside the Glasgow Graduate School of Law (GGSL) using the software to create and run simulations for themselves: it required the resources of a dedicated team of IT technical staff to set up and run the simulations. To address this serious shortcoming, in 2006 we applied for joint JISC and UKCLE funding in order to re-code the environment. We were successful in bidding for the funding within the Innovation stream and, in July 2006 (slightly later than our other two sister projects within the stream) we began the project.
- 2.1.6 The SIMPLE project builds on previous simulation work in a number of ways. The early work on Multi-User Dungeons (MUDs), well documented by Turkle and others, showed how powerful a textual simulation interface could become for participants in those worlds. Later research work by Gee, Squires, Schaffer, Steinkuhler and others demonstrated how 3D worlds were innately social spaces and could also become specific learning spaces as well. However there was no generally available, effective simulation engine that would replicate the textual universes, the docuverse, of professional working environments. We did not want SIMPLE to be a mimesis of professional practice, however. This is impossible, and given the educational mission of further and higher education is not the foremost aim of the project. SIMPLE also relies on other lines of research, which have rather more radical educational aims, which are set out in the next section.

## 2.2 The transformative agenda

- 2.2.1 The project is necessary for a number of reasons. There are almost no instances in JISC's back catalogue of projects, or indeed in that of any educational institution or organization of a simulation engine. This is so at a time when increasingly, in the world of MMORPGs and MUVES, there is significant development and educational use (eg in *World of Warcraft* and *Second Life*). There are no educational innovations in this particular field of simulation, and simulation itself is poorly represented within the range of innovation in HE and FE.
- 2.2.2 In saying this we are not arguing that the only interesting educational innovations today are in technology or that transactional learning can only be implemented through use of ICT. Far from it: the extraordinary work being done in clinical education, collaborative learning, problem-based learning, trans-systemic curriculum design, professional learning and many other loci throughout disciplines and professions are examples of inspiring educational initiatives. But we believe that well-designed and implemented technological interventions are capable of contributing to the transformation of higher education. To do that we need, as Bilimoria puts it, to generate and legitimize the creation of 'new and vital teaching and educational structures and practices conducive to improving student learning' (Bilimoria, 2000, p. 704). While there is a rich and sustained literature developing around legal clinic and medical problem-based learning, for instance, there is still insufficient theory and practice that is developed around either the use of digital simulation or games in professional education. There is plenty of compatible and useful theory, in education and information science, and in industry-based white papers and blogs. Over the last 30 years there has developed a distinguished tradition of anthropologists, ethnologists and educationalists who explore fragmented aspects of simulative activities and cybernetic concerns – Gordon Pask, Gregory Bateson, Sherry Turkle, Diana Laurillard, to name a few – and that tradition is, with the development of the internet, growing into a complex and fascinating literature.<sup>2</sup> It is a line of research that has attracted

<sup>2</sup> The internet, as Phil Agre notes (2002, pp. 171–89), is most often used as a shorthand for the notion of distributed computing – a synecdoche which is also present in terms such as 'cyberspace', 'the web', and so on. It is this sense of the word that will be used in this report.

proportionately little comment from educationalists concerned with higher education, though, given the huge uptake in ICT by Higher and Further Education in recent years. It is becoming increasingly urgent that we engage with this and other lines of research, and develop implementations based upon its insights into the relationships between technology and education specifically, and between technology and society more generally.

- 2.2.3 More recently there have been interesting strands of research that derive from research into Massively Multi-player Online Role-Playing Games (MMORPGs) and Multi-User Virtual Environments (MUEs). Definition is notoriously difficult (de Freitas, 2006). ren reynolds, in his posting at [http://terranova.blogs.com/terra\\_nova/2005/08/the\\_four\\_worlds.html](http://terranova.blogs.com/terra_nova/2005/08/the_four_worlds.html), makes the distinction between ludic worlds (or games worlds), social worlds and civic worlds. Van Eck (2007, p. 274) has set out a useful tabular matrix of game and learning taxonomies. Book (2004) has identified the following six features of social virtual worlds such as *Habbo Hotel* and *Second Life*. They consist of space shared with many other users; they have a graphical user interface either 2D or 3D; users interact in the world, for example, building objects; immediacy of action; persistence (that is, the world's existence is separate from individuals' presence); and socialization in the communities. Looking more widely at the field, there is now a burgeoning literature on the economics of simulated games (Castronova, 2001), their definition (Bartle, 2003; Reynolds, 2005; Koster, 2004; Salen and Zimmerman, 2004 & 2006), their ethnography (Delwiche, 2006; Yee, 2001), the effect they have on identity (Turkle, 1995; Stone, 1995) and social relations (Steinkuehler and Williams, 2006), cognition and literacy (Steinkuehler, 2005), education (Gee, 2004; de Freitas, 2008, forthcoming) and much else. Whilst we would never claim that SIMPLE is a wholly immersive environment, it has been clear for some time that textual simulations have the capacity to create & sustain communities, to affect learning in quite profound ways, and to help build aspects of professional identity.<sup>3</sup>
- 2.2.4 A third strand relates to the development of simulation within a professional context. Simulation-based training has been shown to be highly effective in professional disciplines. It is true of professions where work is highly governed by protocol and procedure, for instance simulator training for pilots; and also in professional situations where ill-structured problems arise, and where affect and knowledge are key components of professional practice (Bloxham and Armitage, 2003; Maharg and Paliwala, 2002; Forrest et al., 2002 & 2003; Blackburn et al., 2003). In one study, nurses were taught to treat critically ill patients on a general ward *via* mini-lectures, workshops and simulator-based patients. The subject-matter included assessment of respiratory, cardiovascular and renal systems, and pain management. Participants completed pre- and post-course tests, which showed statistically significant improvement; and in the follow-ups at two months and six months later, participants reported long-term confidence in caring for acutely ill patients (Stedeford et al., 2003; Gould et al, forthcoming, 2009). Two general points can be made about this and related studies. First, the simulator-based patients were used to assess not only patient-handling skills, but also medico-scientific knowledge. Second, simulation, as an educational approach, was used to enable students to learn the synthesis of skills and knowledge they would use in the workplace; but it was also used to assess that learning matrix.
- 2.2.5 These and other lines of research point to the potential for technologically-enhanced design to transform the educational experiences of both students and staff alike. The key to transformation lies in creating positive and powerful experiences for staff and students alike. For instance we may want to shift from transmissive approaches towards the production of knowledge and capable practice, to social and constructivist approaches that enable the formation and development of tacit knowing and formal explicit knowledge. In this shift individual learners will become novice practitioners who engage in sense-making in formal and informal situations (effectively engaging in transactional learning). No longer do they need to be told to attend a lecture at a specific place and time in order to create meaning. What they do require, however, is scaffolding in the process of becoming independent learners; and they need spaces to engage in dialogical practice, with teachers or peers (acting as facilitators or coaches) or other resources, or themselves (Cunliffe, 2002)

<sup>3</sup> Another example of this, quoted by Henry Jenkins, is the textual worlds of fan literature on the web. See Jenkins 2006, pp.196-206.

- 2.2.6 One practical implementation of this approach lies in conversational theory. As Pask sketched this approach out over thirty years ago (1975), learning conversations consist of inner reflective processes (for instance Schön's self-organised learning) and outer reflective processes, consisting in part of socially-negotiated knowledge formation. Such outer reflective processes involve students in collaborative learning (whether co-operative, with each other, or in versions of Linda Flower's rhetorical 'rivalling' activities – Flower, Long & Higgins, 2000). These forms of collaborative activity are of course not unique to Pask's version of conversational theory. In one form or another they are part of problem-based learning (Barrows, 1980; Barrows & Tamblyn, 1987; Savin-Baden & Wilkie, 2006), of project-based learning (Kilpatrick, 1918; Blumenfeld et al 1991) and many other forms of alternative curriculum design. And if they apply to student learning, they also apply to staff development. Transformational learning must involve experiential learning for them as much as for their students.
- 2.2.7 If the outer reflective processes are crucial to the process, we need to provide environments and tools with which students can engage in knowledge formation. Technology can play an important role here in supplying the task tools for learners. As early as 1993 Jonassen, Mayes & MacAleese suggested that technology can support such processes. It is the hypothesis of the SIMPLE project that simulation environments, properly engineered by technologists and educationalists, with simulation narratives designed by discipline-based staff, can improve student learning across a range of disciplines, improve staff experiences in learning and teaching, and do so with long-term efficiencies in staff time and effort.

### **3. AIMS AND OBJECTIVES**

- 3.1 The overall aim of the project was to prove that simulations can effectively enhance learning across a range of disciplines and professions. To achieve this aim the project identified the following objectives:
1. Through a series of detailed user consultations, project meetings, web and product scanning the project team would qualitatively investigate and analyse the functionality required of SIMPLE.
  2. From the work above, the core team would create a requirements specification that would describe the features of the software product, and contain required technical information and data needed for design, including purpose, input, process and output. This would also deal with security, extensibility, maintainability, reliability, accessibility, sustainability, mobility and interoperability.
  3. Following the above specification, and undertaking an ongoing consultation process with users, the programming team would iteratively build the open-source SIMPLE environment and tools, which would then be available free at point of use to the FE and HE communities.
  4. The team would also create a set of technical and educational documentation for our collaborative participants.
  5. Commission, support and monitor a series of pilot projects using the environment across a range of professional learning interventions in Strathclyde University and in UKCLE law school partners.
  6. Evaluate student performance within the environment, institutional use of the environment, drivers, blockers and other factors affecting performance of staff and students.
  7. Following on from the above work, investigation into the impact of SIMPLE on existing teaching and learning processes and any resultant organisational issues.
- 3.2 None of the high-level aims and objectives changed substantially throughout the project; all seven were achieved. Perhaps the most significantly altered objective was the evaluation plan, the details of which are discussed below.

## 4. METHODOLOGY

The project divided into three broad domains: design and creation of software, design and implementation of simulation projects, evaluation of software and projects (note that these three domains were not serial, but in many respects were synchronous). The methodology adopted in each domain is outlined below.

### 4.1 SIMPLE Evaluation Plan

- 4.1.1 The methodological approach adopted for the SIMPLE evaluation is that of integrative evaluation (Draper *et al*, 1996). This methodology used mixed methods and multiple data sources to develop an overall picture of each participant's use of SIMPLE, highlighting issues, drivers and barriers. While the evaluation sought to address specific aspects it also allowed for the emergence of unanticipated aspects. The use of multiple, rich, data sources allowed the triangulation of findings during analysis.
- 4.1.2 One of the principal elements of this approach concerned the source data used as the basis of analysis. When considering access to data or evidence, the approach adopted used any existing sources of data before introducing evaluation specific data collection mechanisms. This both minimised fatigue from excessive data collection from the subjects and also sought to reduce the Hawthorne effect commonly found in the introduction of new teaching and learning practices.
- 4.1.3 As the evaluation involved a number of partners implementing their scenarios at different points over the academic year, there was the opportunity to feed results from pilot to pilot, examining emergent aspects in more detail. The evaluation plan had common elements that are targeted within all the partner evaluations. Beyond this there is a layer of partner specific aspects, acknowledging the uniqueness of each instance of SIMPLE implementation.
- 4.1.4 Following on from the aims of the project, the specific question sets that we wished to address can be listed as follows:
1. How can SIMPLE provide a means of transforming education?
  2. How do we address systemic and institutional factors in the design and development of innovative practices and the implementation of SIMPLE in particular?
  3. What role does professional learning play within the partner institutions and how can and does SIMPLE contribute?
- The first of these summarises our interest in the teaching and learning implications of the use of SIMPLE, while the second addresses the organisational context of this teaching and learning experience.
- 4.1.5 The third set of questions focuses on professionalism and the academic ambition of developing and preparing our students for their role as professional practitioners on graduation. Professionalism is interpreted in a number of ways and will be specific to an individual project area. Common to all projects is the interpretation of professionalism in terms of developing core graduate skills, frequently referred to as transferable skills (since it is claimed that they transcend individual disciplines and are relevant to all). SIMPLE creates particular opportunities to develop team working and project/self management skills in the context of online collaborative workspaces, which are a current focus of corporate development. A more ethics-focused interpretation of professionalism compares the specific skills of a professional in the context of conducting his or her professional role, with the practice and ethical domain associated with that particular profession. Not all SIMPLE projects were in a position to evaluate such defined professional characteristics; but where they were defined, specific evaluation activities were used to investigate them.

## **4.2 Stakeholders and data sources in the evaluation**

- 4.2.1 The evaluation collected evidence from each of the main stakeholders, both in terms of their development and implementation of SIMPLE, within each partner institution. Specifically these were:
- Students
  - Tutors
  - Lecturers and module leaders
  - Developers
  - Support staff, such as Institutional IT Helpdesk staff, IT support staff and the SIMPLE Core team
- 4.2.2 Individual evaluation plans were structured around these stakeholders, and in terms of specific data collection activities, were focussed on a specific stakeholder. The plan grouped activities into four stages, chronologically ordered:
- Pre simulation
  - During simulation
  - Post simulation
  - End of SIMPLE Project
- 4.2.3 The data collection methods combined both quantitative and qualitative elements, providing different perspectives and evidence on common areas of interest. The following specific methods were employed:
- Observations
  - Tutor Interviews
  - Student Interviews
  - Focus groups (tutors)
  - Focus groups (students)
  - Diaries/logs
  - Student materials
  - Examining SIMPLE office
  - Pre-course card exercise
  - Post-course questionnaires
  - System statistics
- 4.2.4 To manage the process of reading and assimilating this data our chief evaluation officer and evaluation officer planned and executed the evaluation activities Throughout this process the data was not shown to core team members, so as to minimise the risk of bias, particularly when core team members themselves were interviewed.
- 4.2.5 These sources resulted in a considerable body of data, some of it confidential. The evaluation officers therefore collated the key points from all data sources at each project centre and for each stakeholder, and presented these as a participant-centred summary report. These reports are set out below at Appendix 1.

## **4.3 Technical design**

- 4.3.1 A significant proportion of the project was the development of the SIMPLE software. In this development we followed traditional software development procedures. Applying use-case analysis and developing user-stories to illustrate the end-user experiences developed our ideas for functionality. The development team discussed these internally, and any significant issues raised at weekly “core team” meetings, allowing the development to discuss ideas with a representative cross-section of our audience.
- 4.4.2 During the implementation of SIMPLE the development team used a combination of the traditional waterfall model of development as well as some aspects taken from the “agile programming” model (Fowler, 2005; Maharg 2002). The waterfall model was used to flesh out broad aspects of the project’s functionality principally looking at the requirements and developing a user-experience design. When we moved to the stage of designing and implementing functional code, the agile programming model took over, implementing specific features each week, rapidly testing, rebuilding features and integrating them into the whole.

- 4.4.3 When the software had been built to beta use stage, documentation (which had been synchronously collated) was finalised, and both software and documentation were made available to project participants. At this point the role of technical staff changed from predominantly designers and programmers to support staff. Michael Hughes in particular played a central role on debugging and support for staff in the development of simulation *via* SIMPLE tools and uploading of simulations *via* the SIMPLE platform.

## 4.4 Educational design

- 4.4.1 Throughout the project and in particular in our support work and presentations and publications, we have drawn upon an extensive literature, to produce what we hope is a broadly-based educational design based upon constructivist principles of learning and assessment. The challenge of constructivism, as Petraglia (1998) makes clear, is one that reaches to the heart of the debates surrounding anti-foundationalism, rhetoric and situated cognition. It is a challenge to our understanding of how academics constitute disciplinary and professional processes in their schools, and thus how they contribute to the process and practice of their profession in society at large. Constructivists, as Petraglia points out, prefer to rely on what he terms '*found cognition* (that is, thinking as it unfolds in natural contexts)' (Petraglia 1998, p.62). This is alien to much of the ecology of higher education, where second-order thinking is elaborately constructed around the development of concepts within educational processes that are highly teacher-centric.<sup>4</sup>
- 4.4.2 Simulation always has the capacity to become a constructivist environment, regardless of how it is co-opted within a programme of study, and regardless of discipline (Barton & Maharg, 2006). However it was not our role to demand of our participating projects that they adopt a full-scale constructivist approach to teaching and learning. While we encouraged the use of simulation design that supported found cognition, we required to recognize the high-risk nature of the enterprise for staff starting out in simulation; and we therefore adopted a methodology that was flexible and pragmatic as regards individual project aims and content, and that encouraged exploration and innovation in curricular and resource design within the constraints of the SIMPLE project. Thus, transactional learning was described to project participants, but we were not prescriptive about its use. Throughout, we bore in mind the key aims of the SIMPLE project: to improve student learning while mitigating the risks and work burden upon staff when they were designing and implementing their simulations.

## 5. IMPLEMENTATION

### 5.1 Initial workshop: Ross Priory

- 5.1.1 It was always our intention to begin the project with a workshop event that would bring together the disparate disciplines and personnel that would make up the project. Since it was a pre-condition of UKCLE funding that we include law schools from England and Wales as participating projects, the participation in the project was clearly going to go beyond the University of Strathclyde, and therefore the role of the initial workshop was all the more important in bringing together project staff.
- 5.1.2 Our initial workshop, held at the Strathclyde University retreat house at Ross Priory, brought together staff from all participating institutions, with the exception of Stirling, who came on board later in the project. It was key in providing a sense of project aims and methodology, and the scale of participating staff time and effort. For details of the programme, see Appendix 5.

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<sup>4</sup> Constructivism itself is a much debated term, and less a definition of a unitary concept than a constellation of ideas and approaches to learning. For further definition and commentary on what might be regarded as the core constructivist concepts and practices, see Jonassen, Mayes & McAleese, 1993; Jonassen 1994; Tenenbaum et al, 2001.

## **5.2 Project timelines**

5.2.1 From this initial event, most of the timelines on the following page were initiated:

	<b>Workpackages</b>	<b>Month:</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>
1	Project Management																									
2	Transactional Project Specification Process																									
3	Technical Requirements Specification																									
4	Implementation of Systems Arch. and Hardware Spec.																									
5	Development of Environment																									
6	Test and Deployment																									
7	Maintenance and Bug Fixing																									
8	Development of Transactional Projects																									
9	Educational Documentation																									
10	Project Implementations																									
11	Project Evaluations																									
12	Dissemination																									

Figure 1: SIMPLE project milestones & workpackages.



5.2.2 Clearly the first few months of the project were dominated by the need to focus on software design, specification and build. As we said in the Aims and Objectives section above, the project objectives changed little in the course of the project, and have been met in almost all respects. Under point two, though, it is fair to say that while most aspects of security, maintainability, reliability, accessibility, mobility, interoperability and availability were addressed, there are a number of issues still outstanding. No software is ever complete in this respect: the process of building and improving is endless. Our main concern in the project was to build software that would meet the conditions of project funding, be usable by staff and students, and be a stable basis for further project development. The following table identifies the issues that have been dealt with in the project, and those that remain to be addressed:

Area	Areas addressed	Areas still to be addressed
<b>Security</b>	Flexible, extendable authentication and authorisation scheme, integration with institutional IT systems.	
<b>Extensibility</b>	Extendable User Interface design, programmatic extension points for additional user-definable functionality	Further extensions to be implemented, Implementation of formal Application Programming Interface (API)
<b>Maintainability</b>	Use of object orientated (OO) programming for significant functional data units.	Migration to OO architecture for page generation functions.
<b>Reliability</b>	Based on proven, industry standard web technologies	
<b>Accessibility</b>	Best endeavour approach to accessibility guidelines, use of CSS for layout.	JavaScript usage for User Interface experience.
<b>Mobility</b>		Optimisation of data transfers and caching
<b>Interoperability</b>		Translation between SIMPLE XML and other formats (eg. IMS LD)

Table 1: Technical issues addressed within the project envelope.

5.2.3 In all software projects features must be included or excluded based on a number of factors, including return on investment (ROI - cost of implementation vs. value of feature), complexity and demand. On the whole most of the features set down in the original Requirements Specification for SIMPLE were implemented, and in many cases additional new features were developed during the design phase. A number of requirements were scaled back from their original specification, interoperability being a prime example of these. Where we original considered using IMS:LD (an XML schema for representing learning designs) as a format for the persistence of simulation blueprints, we subsequently decided to develop our own “simpler” XML based schema, on the basis of ROI. We have however aimed to offset this restriction by investing additional effort into the extensibility of SIMPLE, so that at a later date support for other formats could be implemented.

## 5.3 Participant departments & disciplines: recruitment & support

5.3.1 Central to the aim of this study in large-scale implementation was the recruitment of, and support for, programmes of study. This section of the report describes how recruitment and support was implemented.

5.3.2 There were more participants than places for the UKCLE side of the project, and therefore a choice had to be made regarding them. In the event, three were chosen, one Welsh and two

English, representing a range of law schools (though with no ancient law schools among them). The choice remained stable throughout the project, and the three law schools were the responsibility of Patricia McKellar, E-learning Advisor for UKCLE. In February 2006 an open call was made to UK Law Schools who wished to participate in the SIMPLE project inviting them to become one of the project partners. The invitation made it clear to institutions that the project would develop and support the implementation of one simulation within the curriculum of the participating department. While the project itself could make no direct funding available to participating institutions beyond a minimal amount, support would be given in the educational design, development, technical specification, technical and programming expertise and implementation through the project team based at Strathclyde. The UKCLE E-Learning Advisor would also support Law School projects. Each participating institution, with this support, was made aware of the responsibility of taking forward the project within their institution and to develop the simulation. We expected the department to commit to developing the simulation within the law curriculum and to identify how this would be taken forward. Institutions were advised in the submission process that the simulation itself would be discrete and would not be bolted onto an existing VLE. They were also made aware of the training requirements for both academic and IT staff and of the necessity to ensure staff were given the support and training time required.

- 5.3.3 Law Schools who wished to be considered for participation in the project submitted a written proposal to UKCLE to indicate how they would meet certain *criteria i.e.* access to a web server, sufficient IT capability and infrastructure to support such a project, departmental/faculty IT support or dedicated time from central IT support, a dedicated member of Law staff with allocated time to support project, possible support of Research assistant/s to assist with collation of documentation for project or to manage the simulation. Participating institutions were also expected to submit ideas as to how they saw the simulation operating within their course or module together with an indication as to their commitment to e-learning.
- 5.3.4 After discussion of the submissions, the Law Schools considered for the project were visited in April and May 2006 by members of the project team to assess their suitability as partners. The project team invited University of Glamorgan, University of Warwick and University of the West of England to become project partners and in June 2006 they attended the inaugural meeting of the SIMPLE project at Ross Priory in Scotland.
- 5.3.5 The identification of project partners in Scotland initially proved more problematic. Within Strathclyde University we wanted a representative department from at least four of the five university faculties. There were early withdrawals for a variety of reasons before the project really got underway. In the event, three departments or schools joined us in the first few months: Social Work from Education, Architecture from Engineering and the Built Environment, and the Law School from Law, Arts and Social Sciences. Later, one of our core team (Helyn Gould) proposed and ran another project in Management Science in the Business School, which brought the total represented faculties to four out of five. We considered this a fair representation of one institution's faculty divisions, given the size of and funding for the project. It was important for us to have interdisciplinary representation, for one of the key objectives of the project was to prove or disprove the hypothesis that the same simulation engine could be created and used effectively across a range of disciplines and professions.
- 5.3.6 We also wanted to consider the effect of the simulation on Scots legal education in more depth, and therefore planned to run a comparison simulation in the Law School at Glasgow University. However after several months the key member of staff involved in that project obtained a promoted post at another institution and, while she was keen to run the simulation at that institution as a second-wave participant, it was not possible for her to run the project at Glasgow University.
- 5.3.7 Support for the participants was always going to be a crucial element of the project, and the literature on HE staff perception of ICT says fairly explicitly why this is so (Maharg 2006). Coupal (2004) for instance, identified three stages of development in ICT use by teachers: 'literacy uses (a technology-centred pedagogy); adaptive uses (a teacher-centred, direct instruction pedagogy); and transforming uses (a student-centred, constructivist pedagogy)', and pointed out how problematic it was to achieve the third stage (591). This has been observed by

other researchers (Bottino, 2004). Other researchers have pointed out how affect and the use of such sophisticated ICT tools are closely related to how teachers perceive the effects of ICT on their practice. Over a decade ago Klem and Moran (1994) analyzed why teachers had negative reactions to ICT. In their study, teachers viewed ICT as bringing about a loss of power, control and authority within the traditional teaching environment. Their view of technology was that, to misquote Clayton Christensen, *most* technology was disruptive; very little of it was seen as being sustaining of traditional educational practices.

Penteado (2001) came to the same conclusion as Klem and Moran, but she postulated that such confrontation between old and new was inevitable, a result of teachers using technology and being forced to move from what she called relative comfort zones into risk zones. As a consequence, and at a deep level, teachers required to re-negotiate their educational practice in order to use technology. Such re-negotiation is dependent on many factors, including feelings of certainty about course content, experience of teaching the course, experience with some of the technology being used or none of it, the perceived riskiness of the technology in use with students, support offered by management in the use of ICT.

- 5.3.8 SIMPLE was always going to be seen as a high-risk venture by participants. It was plain from the experience of the GGSL team over the last six years that the implementation of curricular approaches based upon a constructivist paradigm was in many respects quite unsettling to most academic pedagogic practices. The core team therefore planned both pedagogic design support and technical support for participants. We started this process with the initial project event at Ross Priory (see Appendix 5 for details), followed by several visits to participants and workshops, and a rolling programme of support for each centre, based upon the time they could give to design and their implementation deadlines. Patricia McKellar was the main support contact for English and Welsh law schools throughout the processes of designing, building and running simulation projects, while Helyn Gould, Paul Maharg and Scott Walker were involved in pedagogic support for Strathclyde departments and Stirling Law School. Michael Hughes provided technical support for all project centres. The programme needed to be flexible, guiding the participant designers, but aware of their own timetables for preparatory work and implementation, and needed to be tailored to the demands of different programmes of study and disciplines. The extent to which the core team succeeded in this is set out in the evaluation data below, and the Summary Evaluation Sheets in Appendix 1.

## 5.4 Cyberdam

- 5.4.1 At the start of our own project there arose the opportunity to support a Dutch project called Cyberdam. This was a project continuation from an earlier initiative, funded by the Dutch Ministry for Economic Affairs, and led by the RechtenOnline Foundation, and later SURF.<sup>5</sup> For us in SIMPLE, the support amounted to a sharing of documentation, and the commitment to design an international simulation once SIMPLE was finished (this is currently in process). Documentation has been shared between the two projects, and it is clear that there are many points of fascinating contrast and comparison between the two approaches to professional simulation design. These will be explored in later projects and publications.
- 5.4.2 For the purposes of this report, and in retrospect, the link has been a fruitful one, and has not resulted in extra workload for the project team. Indeed there are many directions that international collaboration could be taken, and which the SIMPLE Foundation intends to develop. Maharg is at present forming an international simulation project with at least one institution in Utrecht, and developing links in Social Work and other disciplines, eg International Business.

## 5.5 Project evaluation

- 5.5.1 At the start of the project, Futurelab was involved as a partner with responsibilities for evaluation and possibly also coding and design support. Due to issues that arose during the project it was agreed that the core team would be responsible for evaluation and coding

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<sup>5</sup> See <http://www.saganet.nl/mod/resource/view.php?inpopup=true&id=115>, and <http://www.ukcle.ac.uk/directions/previous/issue5/netherlands.html>.

support. Following this decision, we employed Helyn Gould as a chief evaluation officer, and Emma Nicol as evaluation officer and data collector, with Dr Sara de Freitas as external evaluator for the evaluation plan. A plan for evaluation of the remainder of the project was drawn up, submitted to Dr de Freitas and approved by her (the Evaluation Plan is in Appendix 3).

- 5.5.2 As each project approached implementation, our evaluation officer made contact with local staff, aided by some of the core team. During and after implementation she gathered data from all stakeholders in accordance with the evaluation plan. This process is described in greater detail in the Evaluation section below.

## **5.6 Project support for technical design and pedagogical design**

- 5.6.1 The project tools were intended to be used in association with the project documentation, and to be available to project academics. We were under no illusions that further support would be required. It was, though, a key aim of the project to produce simulation tools and an environment within which academics could design and implement simulation projects. It was therefore important that academics at least be involved in the process of building their simulations using the tools available to them. Both Michael Hughes and Gavin Maxwell were on hand to support in this process, as was Helyn Gould. The process of support is discussed in the evaluation section in more detail. Once the projects started, little in the way of support for technical design or pedagogical design was required. Instead, Michael Hughes was contacted if there were problems running the software. These problems manifested themselves as general bugs, and were promptly fixed.

## **5.7 Dissemination strategy**

- 5.7.1 Throughout the project dissemination has been a critical activity, third only to the design & build of software and support of participants in the project. Unlike most other JISC projects, the SIMPLE project continued innovations that had been in place in GGSL since the early years of the millennium, and therefore there was rich seam of theory and educational evidence and practice that could be drawn upon, in addition to the project's own developments. Since this is a fast-moving field it was essential that we bring the project results to the FE, HE and simulation communities as speedily as possible. It was also important to bring on board what we describe as 'second-wave' participants, *i.e.* those academics who would be interested in using the software as part of a community of practice after the conclusion of the SIMPLE project. Dissemination activities therefore took place throughout the term of the project. A list of our publications and activities can be found in Appendix 7.
- 5.7.2 We intend to continue and indeed increase the profile of the simulation application through the SIMPLE community site and its forums, user groups, resource-bases, etc. We also intend to feed into the e-learning community, at HEA level and subject centre levels, and in disciplines and at professional levels (e.g. Law Societies, etc). Many of the dissemination items in Appendix 7 are in fact pieces that contribute to the scholarly literature on simulation, education and professional education. Much of this feeds into pre-existing debates, and in some respects leads the debate into new areas of theory and practice.
- 5.7.3 It should be noted that, while the majority of publications and presentations are given by academic staff involved as core team (with others such as Karen Barton from GGSL) we encouraged everyone involved in the project to present and write (for example Emma Nicol has contributed to publications, while Michael Hughes took up the invitation to present the project at a conference in Krakow). Collaboration at a deep level has always been the signature of GGSL project work, and we wanted this to continue into SIMPLE, with the project forming a truly interdisciplinary 'trading zone' (Galison 1997; Maharg 2007) between different disciplines, sets of expertise and professions. The extent of the dissemination that has been carried out, in addition to the core work of the project, is an indication of the transformative power of the trading zone when it is a core working method in a project.

## **5.8 Post-project implementation: SIMPLE project wind-up & SIMPLE community launch event**

- 5.8.1 It was clear to us that some kind of event would be necessary at the end of the project. A neat book-end to the first event at Ross Priory, it would wind up the project by bringing together participants and core team, and enable local dissemination of the initial summaries of evaluations. We also envisaged that the event could be a bridge event between the SIMPLE project itself, and our plans for sustaining a community of practice thereafter. To that end we invited all those people who, through project dissemination or other means, had encountered the SIMPLE project and wished to be second-wave participants. The result was a 1.5 day workshop held in Scarman House, University of Warwick, which attracted almost 50 participants, and which was very successful in achieving its aims. Feedback from this event is listed at Appendix 5.

## **6. OUTPUTS**

The project has four main outputs: software, documentation, evaluation and dissemination. Dissemination has been above. Evaluation will be dealt with separately below. In this section we shall describe the software platform, the tools and documentation.

### **6.1 Software outputs: the SIMPLE platform**

- 6.1.1 The project has two primary software outputs, in the form of the SIMPLE platform and SIMPLE tools, collectively known as the SIMulated Professional Learning Environment, or SIMPLE. Both products are finished to beta user stage. Each of these products is aimed at different areas of the teaching eco-system: the platform is targeted towards students & staff, and is there to provide the day-to-day systems for engaging with and managing simulations. The tools, on the other hand, are targeted towards an academic or professional educator, and allow them to design professional simulations and manage all of the resources that are required to provide an engaging learning experience. Both open-source products are available to the FE and HE communities free at point of use at <http://simplecommunity.org>, with appropriate licence structures in place.
- 6.1.2 The two products are delivered differently as well. In order to allow an academic or professional educator to be effective, without placing constraints such as requiring an internet connection and to avoid conflicts in functionality between different web browsers, the tools have been developed as desktop-based application (currently only for Windows computers at present). This allows the educator to use the software wherever they have the tools, without any external requirements.
- 6.1.3 The SIMPLE platform is web-based, allowing access from anywhere in the world where staff and students have an internet connection. This allows for flexibility in the student learning environment (they can work from home or work as well as on-campus) as well as flexible options for staff management of student simulations (enabling more efficient multi-tasking in administration and learner support). We have made plans for extensive further development of both tools and platform (see 'Future Directions', below).

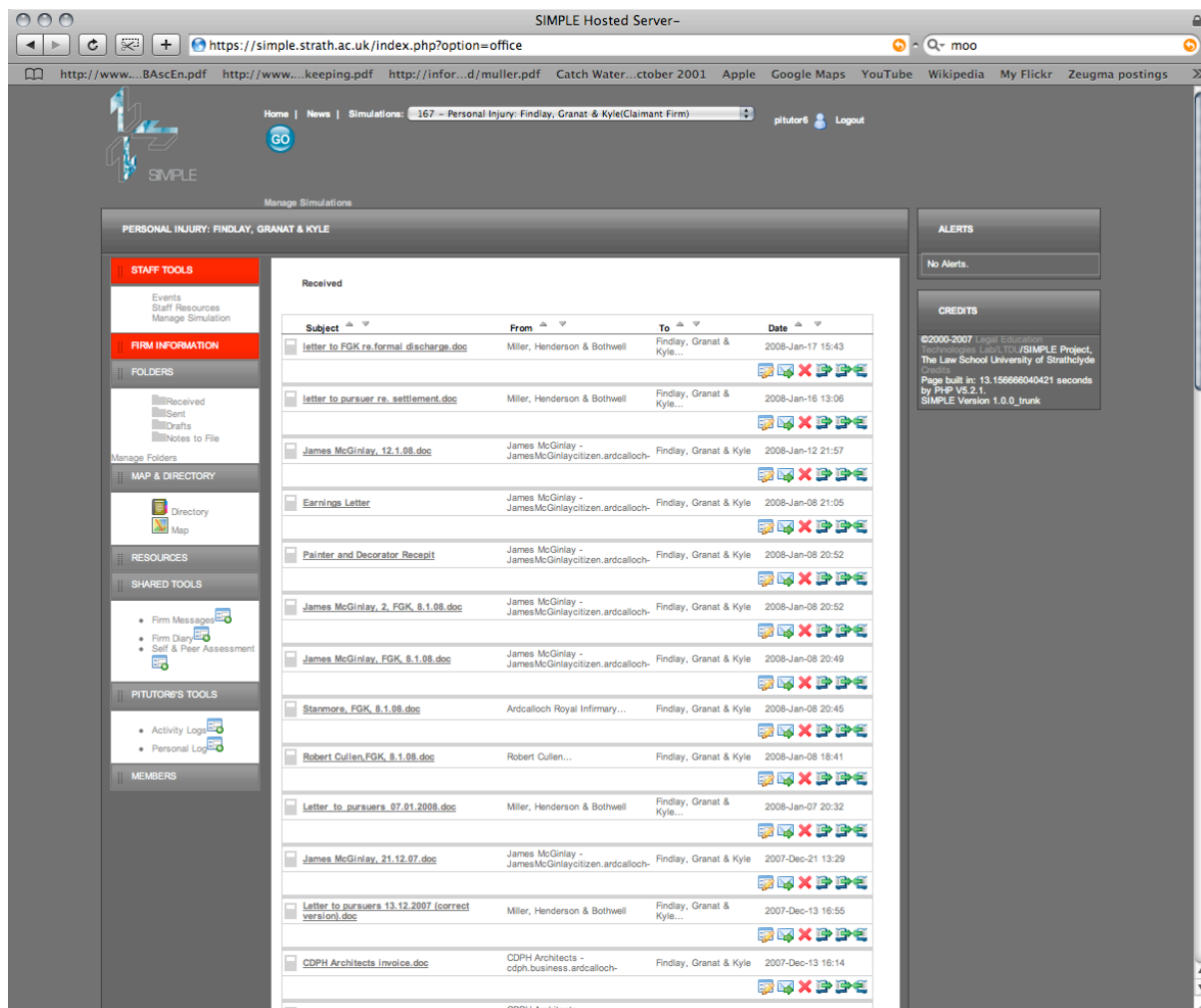


Figure 2: SIMPLE student environment

6.1.4 What do users do with the environment? Figure 2 is an example of the environment, seen from a tutor point of view. Staff see what students see, but with added functionality (staff would click on Staff Tools, in left-hand column to use staff-specific communications tools). Students use the environment as a professional working environment. They can receive, send and store documents, graphics, video and other file formats by uploading them to the environment. They can communicate with real or fictitious persons and institutions, and receive feedback on their work in-role. They have access to any resources that staff may wish to make available to them; they can share tools and resources. They have access to a map of a fictional town (in this case, Ardcalloch – see figure 3 below) and a directory (see figure 4 below). Using the environment, students can build up the correspondence and drafts of an entire transaction, and either use the environment as a single student, or as part of a collaborative grouping.

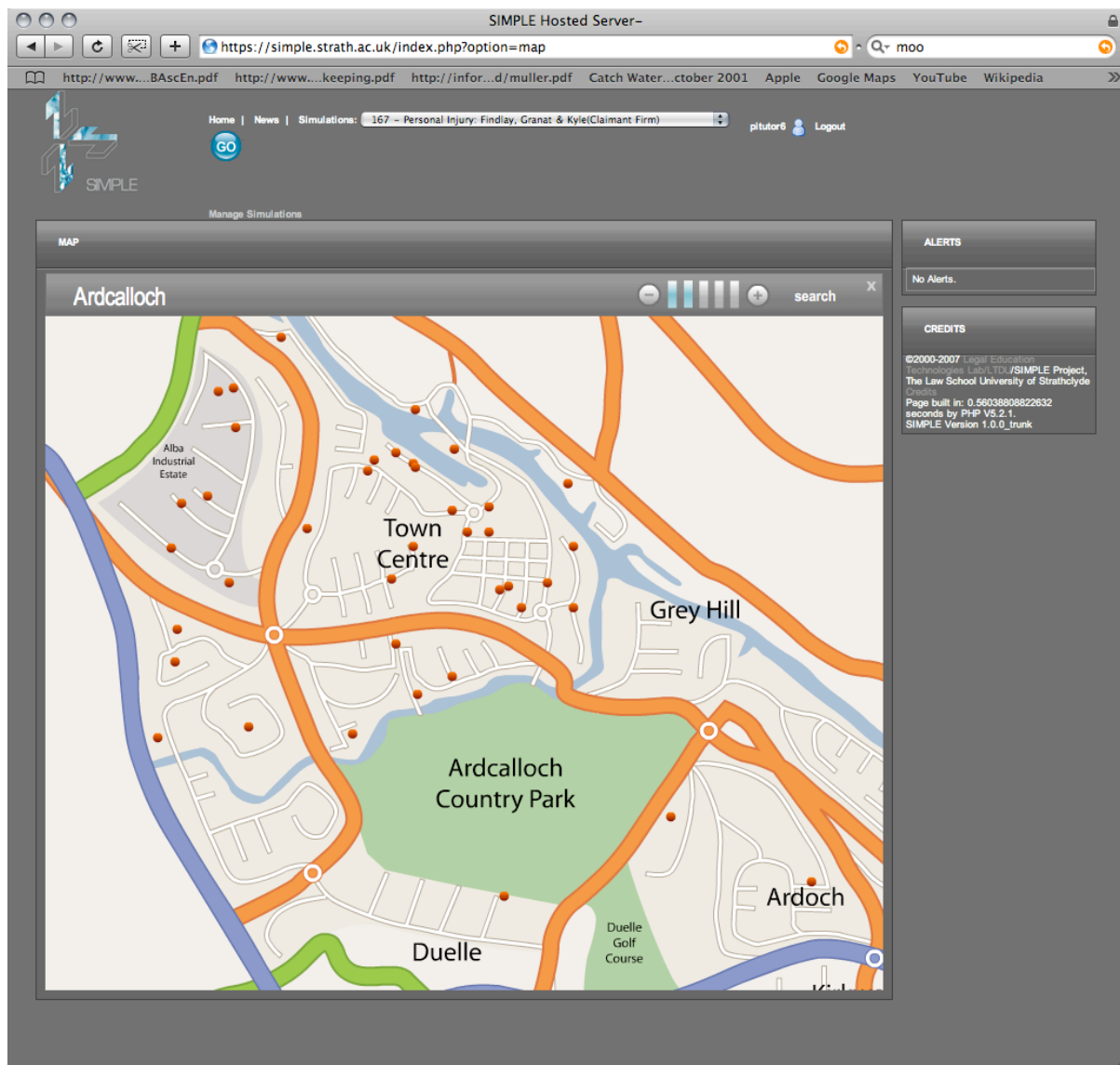


Figure 3: Map of Ardcalloch

6.1.5 As with Google Maps, students can increase the level of detail by zooming into the town. Websites, represented at this resolution by red dots, have hover labels which, when clicked, open up a website associated with the organisation or institution.

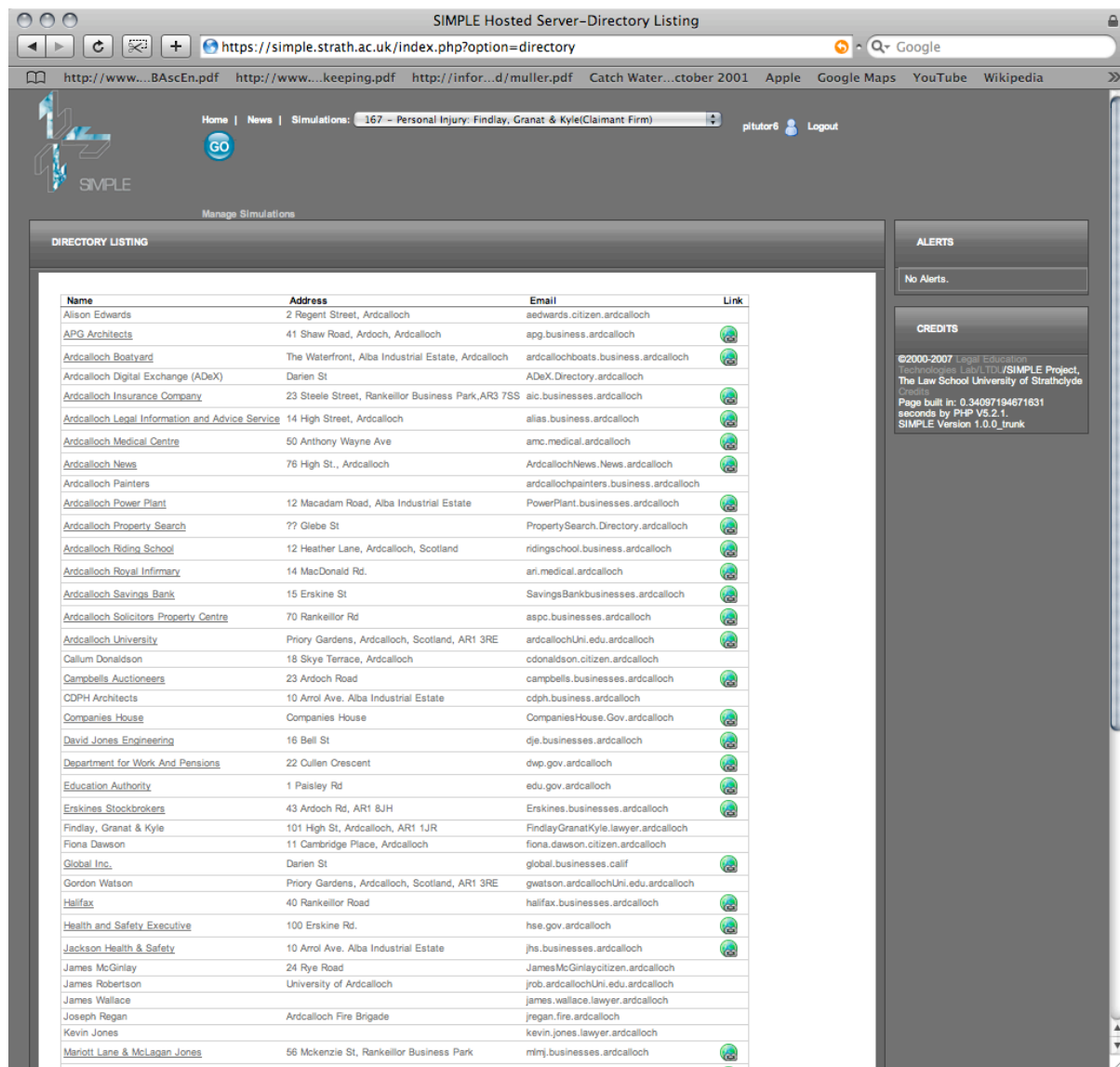


Figure 4: Directory for the PI project

6.1.6 This figure represents the Ardcalloch directory for the Personal Injury project, containing all the institutions, organisations and citizens associated with the project. If students were unsure of addresses, they would use the directory. By contrast, the map was rarely used in this project, for students had photographs and sketch maps of the locus of the accident (though it is not difficult to imagine a location-based project where the map would be more central to student activities).

## 6.2 Software outputs: the SIMPLE tools, and Narrative Event Diagram (NED)

6.2.1 One of the unexpected developments that arose during the course of the project was the development and implementation of the Narrative Event Diagram. Whilst we consulted with various stakeholders about specification of the software (and in particular their conceptualisation and implementation of simulations), it became clear that for most constituents there was a considerable gap between their ability to conceptualise their scenarios and their ability to reproduce those scenarios as a formal design.

6.2.3 The NED is the result of a combination of workshops & consultation about how our partners thought about their scenarios and the input of the software development staff from SIMPLE's



predecessors. Its aim is to provide a structured system for taking a scenario concept, formalising it and then enabling the formal description to be converted to be machine-understandable, all in a format that is still (relatively) quick and easy to interpret. The NED uses some activities (such as activity diagrams) and ideas from structured systems analysis and attempts to wrap them in a much more accessible format.

- 6.2.4 As a process it is useful at two levels. First it provides a diagrammatical system that can be applied using cheap, easy-to-modify materials (i.e. pencil and paper) and the concepts and structure can be transferred between human beings in a relatively efficient manner. Second, as a software implementation (such as the SIMPLE tools) it is possible to then take these benefits and operationalise them to allow the production of actual code or resources.
- 6.2.5 One of the main concerns we had to consider whilst developing what would become the NED, was to try to ensure that we were not re-inventing the wheel. However we felt that none of the options available, such as IMS LD, managed to address both our technical/functional requirements and the conceptualisation requirements. For example IMS LD uses a play metaphor as the basis for recording the structure of a learning design, but does not offer any intrinsic process for using that metaphor for conceptualisation. It is left to the user to find a process to map their scenario ideas to IMS LD. We felt it was important that this gap was addressed in whatever tool we developed.
- 6.2.6 A Narrative Event Diagram appears as four horizontal lines, arranged in a manner similar to a musical staff, each representing one of 4 different scopes for activity:
1. Critical Events. Major scenario exposition points, such as background events preceding the start of a Player's involvement in the scenario.
  2. Player Activities. Any task that the Player (a single individual or a multiple individuals)
  3. Non-Player Character Activities. Any task or event that is performed by any entity in the scenario who is not the Player
  4. Staff Activities. Any task that is performed in administrative or managerial capacity by an overseer.
- 6.2.7 The core concept of the NED is based on the notion of activities taking place, involving different entities (both Player Characters and Non-Player Characters), generating a message (some information), which is then passed on to another entity (again either Player Characters or Non-Player Characters). Activities are placed on the line that most accurately represents the scope of the performer thus tasks that students will perform are placed on the Player Character line.

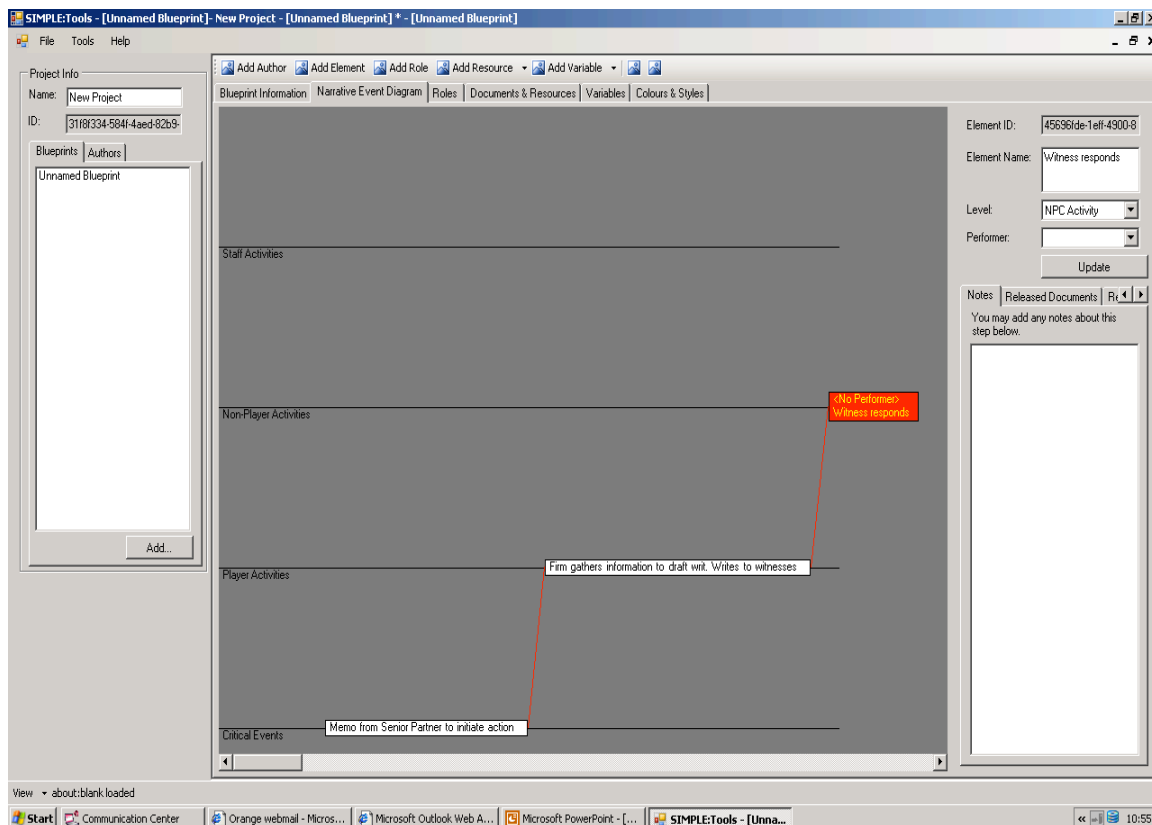


Figure 5: Narrative Event Diagram, showing the initial moves being plotted in a legal transaction.

6.2.8 The music analogy is an important element of the NED, and once this visual trait appeared we tried to maintain consistency with it where possible, as it is an efficient mechanism for visually representing complicated sequences. Thus, each node or activity forms a musical note on the staff with the information passing between entities represented by a directed line (arrows) from the right hand side of the generating activity, to the left hand side of the receiving activity. Stages in the simulation activities can be represented by bar lines, in effect defining the pace and rhythm of the simulation (Gould et al, 2009; Maharg 2007). The sign for repeat can represent repetitions or activity loops. We envisage that in later developments the idea of reading multiple activities (for example complex adversarial or third-party simulations) could be accommodated by representing different staves, much as a conductor will read an entire piece of music, with bass, alto, tenor and treble clef staves.

6.2.9 The creation of tools to help non-technical staff create a simulation is always problematic. We are aware from project feedback and from the two projects that did not complete that the tool set requires revision in a number of aspects, and this will be done within the SIMPLE Foundation. Nevertheless, the concept of the NED and much of its implementation has been generally successful in introducing the complexities of simulation creation and development to staff with little or no experience of simulation design and practice.

## 6.3 Documentation outputs: technical and user documentation

6.3.1 Documentation is an essential product in any software development process. In SIMPLE we have produced two sets. The first deals with the sets of administrative operational technical detail necessary for understanding the processes of building, deploying and maintaining simulation projects. These are effectively user manuals for both SIMPLE tools and SIMPLE platform. These are not included in this report, but can be viewed and downloaded from the project website at <http://simplecommunity.org> (click on 'Library'). These documents are currently being converted into wiki documents for ease of further development. The second set of documentation is aimed at the developer community, and consists of descriptive comment within the source code itself. Further evidence of project developmental decision-making processes will be made available to JISC and UKCLE.

6.3.2 The core team learned much about the process of supporting staff who had relatively little experience of simulation design and implementation. In spite of the support structures in place for participants, it was clear that the planning process for simulation building was problematic for staff. In response to one aspect of this, namely time planning, the following sample chart was designed during the as a resource for planning time and task in generic simulation building. It was compiled as an Excel chart, and will be developed on the SIMPLE community site as a more interactive device to help plan the process of simulation building. It is one example of the way that our research findings from the SIMPLE project are feeding into the community and its ongoing products.

Start dates	Deadlines	No. of weeks before launch	Activity	Order of activity	Type of activity
14/9/07	12/10/07	16	design high level scenario	1	simulation design
22/6/07	12/10/07	16	plan how simple will work within overall syllabus	1	syllabus design
			gain agreement for academic changes from relevant internal university committees	2	syllabus design
3/2/06	2/2/07	52	define characters and role (creation of fictional characters)	3	simulation design
22/6/07	12/10/07	16	create tasks and write documents	3	simulation design
20/7/07	26/10/07	14	organise hosting and IT infrastructure	4	implementation
25/5/07	28/9/07	18	begin development of appropriate assessment for whole syllabus and SIMPLE	5	syllabus design
22/6/07	12/10/07	16	plan sessions within course structure	5	syllabus design
20/7/07	26/10/07	14	create variables in SIMPLE	6	simulation design
17/8/07	9/11/07	12	design resources development (e.g. websites)	6	simulation design
17/8/07	9/11/07	12	develop student support resources (e.g. FAQs, templates, library)	7	syllabus design
			write tutor and administrative instructions and related assessment support and systems	8	syllabus design
12/10/07	7/12/07	8	modify accompanying lecture material	9	syllabus design
7/12/07	4/1/08	4	book suitable accomodation	10	course admin
17/8/07	9/11/07	12	liaise with staff over curriculum changes	11	syllabus design
12/10/07	7/12/07	8	test system	12	implementation
12/10/07	7/12/07	8	run pilot	13	implementation
12/10/07	7/12/07	8	learn how to run a simulation with a class	14	implementation
21/12/07	11/1/08	3	provide support documentation for staff	15	implementation
21/12/07	11/1/08	3	provide support documentation for students	16	implementation
21/12/07	11/1/08	3	assign admin rights to relevant staff and tutors	17	implementation
4/1/08	18/1/08	2	train tutors	18	implementation
18/1/08	25/1/08	1	enter students into simple system	19	implementation
18/1/08	25/1/08	1	assign student to groups and tutor	20	implementation
18/1/08	25/1/08	1	inform students of new approach	21	implementation
18/1/08	25/1/08	1	train students to use SIMPLE	22	implementation
1/2/08	1/2/08	0	Launch SIMPLE simulation	23	implementation

Table 2: Timetable to simulation implementation

## 7. OUTCOMES

### 7.1 Project deliverables

7.1.1 Almost all deliverables set out in the original project documentation have been met or exceeded: software was specified, designed, built, implemented and documented. A total of fourteen projects were planned and implemented, of which twelve completed successfully (see table 3 below). The variation in project design was remarkably wide. The projects ranged in size from a single-week project (Stirling, Sim I) to a three-month project (PI, GGSL); from first year undergraduate (Glamorgan) to postgraduate professional (GGSL); from almost purely online (PI) to varieties of blended and face-to-face projects (Management Science, Architecture, Civil Court Action, GGSL); from projects where context was minimal (Stirling, Sim I); to projects where teaching context was quite highly conceptual and theoretical (Warwick) or procedural (Civil Court Action, GGSL); from projects where students played single roles (Private Client, GGSL) to projects where they played multiple roles (Warwick); from highly 'open-field' projects (eg PI, GGSL) to highly bounded or structured projects (Architecture).

Discipline	Institution	Degree programme	Number of sim projects
Architecture	Strathclyde	BSc (Hons), level 3	1
Management Science	Strathclyde	BA (Hons), level 1	1
Social Work	Strathclyde	MA (Hons), levels 2 / 3	1
Law	Strathclyde	Diploma in Legal Practice, postgraduate	6
Law	Stirling	LLB, levels 2 / 3	2
Law	Glamorgan	LLB, level 1	1
Law	University of the West of England	LLB, level 3	1
Law	Warwick	LLB, level 3	1

Table 3: Participating projects in SIMPLE

7.1.2 There were two exceptions to this record. The first concerns the two projects that did not complete using SIMPLE, namely Strathclyde Social Work and UWE, Law. Reasons for this are discussed below under Evaluation, and local staff give their views in detail in the relevant Summary Evaluation Sheets in Appendix 1.

7.1.3 The second exception was the proposal to run a mobile project, comparing student experiences with mobile hardware compared to those who ran the software only on desktop hardware. When we came to implement this part of the participant projects it became clear that any data we would extract would be highly compromised and difficult to analyse. We therefore decided to focus on student experience regardless of hardware platform. In the event, the evaluation data proved our expectations, namely that students tended to use a sophisticated variety of hardware platforms. In GGSL for instance students would work at home on personal computers, or they would meet in the computer labs using several computers, or they would book a tutorial room and group around a single computer. This variety of hardware use was replicated in other projects: students would work on and off campus, using the flexibility of the simulation environment. This is not to say that the sophistication of student use of technology in simulation environments is unworthy of further investigation. Far from it: we believe it is an essential research direction. However to do the subject justice required more resource and focus than we were able to give it in the present SIMPLE project.

## 7.2 SIMPLE Foundation

- 7.2.1 The SIMPLE community and Foundation, based at <http://simplecommunity.org>, is an outcome that is *post-project*; but if the project were to be successful in its aims, it was a key aim for our future strategy. It is central to the growth, development and increased uptake of the SIMPLE products. Further information on this can be found in this report below at the section entitled 'Way Forward'.

## 8. EVALUATION

### 8.1 Evaluation data collection & analysis

- 8.1.1 A detailed summary account of the evaluation data, set out by participant centre and project, can be found at Appendix 1. The following synoptic analysis is based upon those documents, and upon the analysis carried out using decision analysis software (*Decision Explorer*), which helped considerably to draw out the main themes in the data. The raw results of this analysis are set out in Appendix 4, while detailed information about evaluation methodology is set out in the SIMPLE Evaluation Plan in Appendix 3. In summary, our evaluation included the following data collection methods:

- Observations
- Interviews (tutors/students/lecturers)
- Focus groups (tutors/students/lecturers)
- Diaries/logs
- Student materials
- Examining SIMPLE office
- Pre-course card exercise
- Post-course questionnaires
- System statistics

- 8.1.2 The following analysis is carried out on three levels. The first level, focusing on the evaluation of participant projects, analyses stakeholder experiences based upon the broad range of data collected during the project. The second level, building on the first, focuses more on the higher-level analysis and implications of these experiences for innovative technology-enhanced learning in the HE curriculum. The third level deals with more general issues of learning, institutions and practices that arise from the prior two levels.

### 8.2 Level one: evaluation of participant projects & stakeholder analysis

Below, the report details findings per user groups, defined as either students or staff (lecturers, tutors and research assistants).

#### 8.2.1 Students

- 8.2.1.1 From the student point of view, the SIMPLE software appears to have gone some way to meeting the needs of six very different groups of learners. At two of the partner institutions, Stirling and Glamorgan, lecturers noted an increase in assessment scores among their students as well as increase in engagement and learning. At Glamorgan, somewhat exceptionally, all students had completed the year successfully, and at Stirling the SIMPLE activities achieved participation rates higher than was usually the case for the tutorials on that particular module. The Stirling lecturer noted that those students who took part in the SIMPLE activities put in more effort than they did for the tutorials the activities replaced, something borne out by the students' comments on the activities. One first year Stirling student said 'Relative to other tutorials this one has required far more work and has made me aware that I should probably be working harder than I have done so far'. The Stirling lecturer also noted that these same students had also tended to do better in the problem-based questions in the exams at the end of term. She and another lecturer had noticed an enthusiasm for a particular subject, public law, which was usually missing when that subject had been taught in previous

years. Whether this is wholly attributable to the use of simulation is debatable, but it is nonetheless an interesting observation.

8.2.1.2 In terms of what students thought they gained from taking part in the simulation activities, many pointed to improvements in the quality of their letter writing and an increase in the effort they put into this, notably at Warwick and Stirling. There was an increased awareness of the importance of time recording and client care (in the case of law students) and of the importance of good time management. The need to plan, organise and 'stay on top of things' was a recurrent theme among student comments at every partner institution, which suggests the development if not of project management skills themselves (though in the Management Science project this was an explicit outcome for students), at the very least an awareness of the importance of these skills.

8.2.1.3 There were several reported instances of improvement in groupworking skills. Indeed for some it was their first experience of working as part of a group for any length of time – they were much more familiar with individual work. Some students felt that SIMPLE supported group working rather well, such as the Architecture student who noted that using it was 'a refreshing way to work. It's more flexible and you can shift load around different members of group depending on who is available'. There had been a number of issues arising from groups where certain members had not participated well and there were concerns about whether SIMPLE would capture just who had done what work and when (the Practice Management module addressed this concern in the GGSL's programme). Several students believed that they were working within an environment that captured the group's every move and that this would assist with ensuring everyone got credit for the work they had done, for example at Warwick where one student remarked 'I liked the security of knowing that teaching staff knew what was going on via use of SIMPLE.' Others were less sure. A few students mentioned an improvement in IT skills, particularly at Glamorgan, where there was scheduled lab time and assistance each week for students (though timings of labs caused problems for students). There were a number of instances of students who mentioned that their understanding of the subject at hand had increased because of their interactions within SIMPLE. Several Glamorgan students mentioned that they felt they understood the Torts module better, for example, and many reported a new appreciation of the professional processes associated with this area of law. 'It gave me a greater understanding of the process that negotiations go through', was a typical comment.. Architecture students commented that they had generally never been allowed to handle contracts during their time in practice and as such knew little about them or the importance of clauses within them. The SIMPLE activities had brought this home to them. Interestingly a few of them noted that they had realised during the simulation that they had either picked up or been taught bad habits from other professionals while in placement practice. SIMPLE had another unexpected effect at Stirling, where a good number of students stated that in carrying out their first simulation activity they either finally realised or were sharply reminded of why they were at university. One went as far as to say 'SIMPLE type simulations should be used for every university subject as they act as a 'reality check' for students i.e. they remind students what they are aiming towards and why they are at university at all'.

8.2.1.4 The sense of student engagement in all the simulations was good at all project centres. Interacting in this manner is arguably more engaging than other ways of learning, partly due to uncertainty about who is responding within the simulation. It was clear from focus groups at all partner institutions that none of the students knew with whom they had interacted nor even whether departmental staff were involved at all. Students who took part in the Architecture simulation suggested that future simulations might make good use of architectural practitioners taking on roles within the simulation. All of them agreed that they enjoyed lectures given by practitioners at university and encountering practical knowledge amongst architects in practice. They felt that the presence of these practitioners in the simulation would only enhance the learning experience and increase the sense of realism. One student summed up the benefits and limitations of SIMPLE in the context of Architecture with the following comment: '[You] can't really simulate it, but SIMPLE is good at showing relationships between different parties in [the] building [industry]'. A number of students said that knowing that all documentation within SIMPLE was being recorded and often observed

'live' made them take the activity more seriously and meant they were more inclined to make a greater effort to be accurate and efficient in their work.

8.2.1.5 A persistent theme from students at all of the participating institutions was the need for effective feedback. Where it occurred e.g. at Warwick where students had a weekly meeting with their tutor, it was greatly appreciated and where it was not provided e.g. Architecture, there was a good deal of dissatisfaction among students who, while they were happy with their marks, wanted to be able to understand which elements (of a 16-part activity) they had performed well on, and which not. There were similar concerns about lack of feedback at both Glamorgan and at GGSL, where certain groups felt they had not had the detailed feedback they would have liked and therefore could not understand how well they had performed in each part of the transaction. A student at Glamorgan who did value the feedback she had received said 'Having regular feedback made me think of new issues and points, ensuring my final argument was more detailed and accurate'. One of the commonest requests for change to the PI transaction was that students should receive interim feedback, perhaps once a month as students felt it was difficult to know how well they were doing (though they could request voluntary 'surgery' time with staff throughout the project). One GGSL student observed that 'Maybe fending for yourself is part of the learning process.'

8.2.1.6 While on the whole the SIMPLE platform appears to have required nothing beyond basic IT skills and confidence for it to be used successfully by a majority of students, there were a number of features that were seen as drawbacks by students at all institutions. Many cited the lack of an instant messaging type system and complained about the need always to draft and upload a Word document even when as little as a one-sentence reply was required. A typical comment came from a student at Glamorgan 'The working of SIMPLE system [is] sometimes cumbersome. Should be [more] like an email system.' There was clearly a mismatch between student expectations of system function and system design, which is probably born of an unfamiliarity with the document management system that SIMPLE aims to replicate and the email systems with which students are undoubtedly more familiar. Other common complaints about SIMPLE were its dull, colourless interface, which some felt meant it looked unfinished or was depressing to interact with. As one Warwick student put it, 'SIMPLE appearance: could be brighter [with a] larger text size. Dark colour is off-putting – currently looks still under construction'. There had been some glitches in using SIMPLE, particularly at GGSL when traffic was heavy around submission deadlines and students at Glamorgan in particular had encountered repeated error messages when logging in, which had been irritating. There had also been a few problems associated with documents that could not be opened at Warwick, which had led to considerable frustration. The application set does need further development, and the core team is already planning the infrastructure, funding and direction of that development (see 'Future directions' below). Nevertheless, two points should be recognised. First, the application set was specified and built in a remarkably short span of time within the project envelope. Second, the application set was sufficiently robust to support the project work of many hundreds of students across a range of sites and across the UK. The scale of the data speaks for itself. According to the server collating the University of Strathclyde data alone (i.e. data relating to GGSL, Management Science and Architecture projects), by the end of the academic year 10,723 individual documents were sent by approximately 500 students.

## **8.2.2 Staff: Lecturers**

8.2.2.1 One theme that has emerged strongly from the evaluation is the mismatch between expectations of SIMPLE and the reality of what SIMPLE was like when delivered, both in terms of aesthetics and functionality. Initial presentations of the SIMPLE project appear to have influenced very strongly the partner institutions' perceptions of how their projects would run and what their roles would be. Often this had resulted in the partner institutions having an incomplete understanding of where their project would go, what it would look like and what efforts would be required to realize it. It is perhaps easy to understand how such misunderstandings occur. Presenting an innovative piece of software such as SIMPLE to a new audience can be fraught with problems. In this case, at the outset of the project, the core team and the partner institutions were operating at different levels of knowledge and understanding of SIMPLE. Also, presenting transactional design cases is problematic – there were at the time no established means of documenting the processes involved.



- 8.2.2.2 Some staff had imagined an interface more like Second Life than the rather functional, largely text-based interface that was delivered. Still others expected that there would be little technical expertise required to get simulations built. In a sense this is true: beyond using the handbook for guidance, the tools should require little training to use effectively. The tools themselves were generally described as 'a bit clunky' and attitudes to the difficulty in using them varied. Stirling and Warwick respondents felt the handbook could have been clearer on a number of issues. For those who did not manage to build and run a simulation a number of reasons were cited for this difficulty. Among the English/Welsh projects the UWE project did not go ahead. There appear to be several issues that contributed to this, but there one common factor with the other project which did not proceed, at Strathclyde's School of Social Work: both institutions cited lack of IT expertise as one of the key factors. In the case of UWE, the lecturer in charge had, when she realised she herself would have difficulty using SIMPLE to build a simulation, co-opted her university's e-learning manager to assist. However, her lack of confidence in the software meant the simulations were never run. Similarly, at the Glasgow School of Social Work, despite their attempts to co-opt a person with IT experience to assist following their realisation that they may have difficulty using the SIMPLE tools given the level of support offered by the core team, the lecturers were unable to run their simulations in SIMPLE, falling back instead on a VLE they had used before. UWE returned to using paper simulations. Social Work plans to use computer-based simulations in the future and have indicated their preference to use SIMPLE for this purpose. Both of these project results indicate strongly the importance of IT confidence to the successful running of a SIMPLE simulation. They bear out the research, outlined above, on the critical importance of staff confidence in what are perceived as risky areas of ICT use.
- 8.2.2.3 From the point of view of teaching staff, SIMPLE has largely proven to be an effective and efficient way of managing simulations. All of the successful projects managed to build at least one simulation using the tools, which they then went on to run using the platform. While there were some difficulties experienced with the tools, it was widely agreed that once this understanding had been gained the tools were relatively straightforward if clunky to use.
- 8.2.2.4 When a simulation was running on the SIMPLE platform, academics could see in detail what students were doing at any given time, could monitor student progress both individually and on a group basis, and were able to see what students were having difficulty in comprehending. This access to student process, they observed, alerted them to the need to intervene on the students' learning journey. This intervention could take place in what has been described as a 'detached' way – referring to the gap between character portrayal and actual persons. Interviews with students and with staff have shown that frequent uncertainty over who is actually sending documents makes the simulation more realistic and means that the response received is generally taken more seriously than might otherwise be the case. In fact it was notable that during all the focus groups with students it was clear that none of them knew with whom they were interacting and even some months later were still none the wiser. This distance enables the suspension of disbelief that draws students into the simulation. It also enables characters to be developed in depth throughout the course of a transaction – this is true of the Personal Injury transaction at GGSL, where the client becomes much more foregrounded in the transaction as a result.
- 8.2.2.5 Efficiency of case designing process is another key evaluation point. Simulations had taken far longer to build than had been expected but it was widely recognised that once the work had been done, in future years the simulation could be re-used with little further effort required in the way of building. It is notable that the projects that took the longest time to build were also those that were the most complex, namely Warwick and GGSL Civil. Adding levels of complexity such as students acting in multiple roles (Warwick) or running more than one version of the same simulation (GGSL, Civil) adds many hours to the development of resources and to the testing of the simulations before launch. Adding complexity also increases the potential for error that in itself increases the time taken for testing.
- 8.2.2.6 For all staff beyond the GGSL this was the first time they were designing simulations for a digital environment. The first experiences are always going to be more problematic than future simulation designs, and simulation design is inherently more sophisticated than using

Web 2.0 software such as Flickr or YouTube. It is clear that a community of practice is necessary to take this forward, and to act as a repository of experience and general practice, and to give confidence to new members of the community. In-depth IT experience was not the distinguishing factor between staff who used SIMPLE tools successfully and those who did not. It was noticeable that most staff who were confident with IT tools had fewer problems using the SIMPLE tools.

8.2.2.7 In addition it was clear that staff needed practice in designing resources for simulations. It is easy to be drawn into designing highly complex resources for simulations. It was significant that the two projects which did not proceed in SIMPLE had ambitious plans for resource-building which they tried to implement – in the case of UWE, a highly detailed map and set of resources, and in the case of Social Work, extensive liaison with a Local Authority professional grouping. Apart from the special case of the GGSL, and the case of Warwick where internal funding for assistance had been sourced, the other departments and schools created a minimalist set of resources, concentrating on building the simulation and making sure that that ran without serious failings. The GGSL provides an interesting example in this regard. The core team, acting on their own experience in the GGSL over the last six years, made it clear that the resource base could only be built year on year, and indeed sophisticated simulation structures could only be built on this basis as well. Civil Court Practice, for example, was originally constructed in parts over several years. With forward planning it is possible to use a curriculum as a construction yard; and this is the process that was adopted by most projects.

8.2.2.8 The evaluation has highlighted the significant institutional issues that a module leader is likely to face when adopting new software in a teaching environment. While Stirling and Strathclyde seemed to have few problems (because Stirling's IT services were brought in at an early stage, and GGSL staff handled issues to do with deployment and hosting at Strathclyde), academic staff elsewhere, while generally very enthusiastic about simulation learning, had some difficulty in liaising with their central IT service departments to agree to provide hosting for the software. Where it was agreed that hosting on campus was possible, it was likely to cost a considerable amount of money to the teaching department. After no small amount of negotiation, GGSL agreed that the hosting would be done at Strathclyde, and implemented service level agreements to that effect. But it was felt by several of the partner institutions that this issue had taken up rather more time than they would have liked and that they should perhaps have been forewarned about this potentially being an issue. There had been some confusion as to whether Strathclyde would be providing the hosting service. In fact no such arrangement had been in place.

8.2.2.9 This issue highlights another related issue, namely communications between the SIMPLE core team, the implementing department and the local IT services teams (wherever they were based). Put simply, it was unclear from the start who would liaise with local IT services: departmental staff did not have knowledge of the application, and the SIMPLE core team did not have sufficient knowledge of local implementation conditions (which were different for each project). When the SIMPLE core team identified this problem from the earliest instantiations of projects, they began to liaise more with IT services to mitigate the problem. However IT services structures often required much more in the way of notice for forward planning (one centre cited 12-18 months' notice...). In addition, there were cost implications for departments in using IT services. This was the case at Warwick and Glamorgan.

### **8.2.3 Staff: Tutors and research assistants**

8.2.3.1 In a number of instances, simulations were either built (GGSL PI & Civil, Warwick, Management Science) or co-run (PI, Stirling) by postgraduate tutors and research assistants who for the purposes of this section will be referred to as 'tutors'. The Management Science simulation showed that SIMPLE simulations can even be designed and built by an Honours student with the right supervision and a small amount of training in using the tools.

8.2.3.2 GGSL's PI project has for some years, made effective use of postgraduate tutors who are currently working in practice, to act in roles in the transaction. This practice has continued into the SIMPLE phase, and appears still to work well. The tutors who had used the simulation software pre-SIMPLE thought that on the whole SIMPLE was easier to use. It did not require

much training for them to use it, and some of the new features had made it easier to manage multiple groups than before. A less successful aspect from the point of view of the tutors was the graphical appearance of the interface.

8.2.3.3 Projects at GGSL are built by research assistants working in tandem with academics. During this process they flagged up few problems with SIMPLE but they did observe how time-consuming it could be to develop a project. Both lecturers and research assistants suggested beginning development as early as possible to allow time for multiple testing and mentioned the difficulties inherent in trying to carry out such tasks during term time. This was of course exacerbated by the tight timescale of the project itself; but this is a point that was also made by Stirling and by Glamorgan staff, whose project building took rather longer they had foreseen.

8.2.3.4 Warwick's simulation was built by a series of research assistants rather than by the academics themselves. This arrangement worked well, and the simulations created were largely very successful. However there remain questions over how the knowledge will be passed on to future generations of research assistants: legacy and sustainability are key issues with this model of development. Staying with Warwick, they appeared to be unclear that GGSL's projects had been run with the assistance of tutors, thus academics had taken on all roles themselves that were not played by students. It is likely that Warwick will use postgraduate students to perform some of these tasks next year.

## **8.3 Level two: implications for the HE curriculum**

8.3 One of the striking features of the feedback was the difference that was noted by staff between the experience of designing, planning and running a simulation, and the experience of conventional teaching and learning activities. Staff comments on the issue of curriculum planning and implementation have been collated and commented upon below.

### **8.3.1 Staff control: disruptive sims vs. convergent sims**

8.3.1.1 Some simulations fitted better with pre-existing elements of the curriculum than others – they were, in other words, more convergent with conventional teaching, learning and assessment methods. Glamorgan staff, for instance, rewrote some aspects of the Torts module to accommodate the simulation in the latter half of the module; and at Warwick there was some initial concern that the introduction of simulation would tip the delicate balance between analytical theory and practice in the module (a concern that was largely unfounded, as it turned out).

8.3.1.2 Within some simulations (Architecture being a good example) students found stages more problematic than others. In itself this is no bad thing, but probably needs to be signalled to students in advance. The client report in the GGSL PI transaction is another example. There, in spite of a template report being given to students and detailed advice on how to structure the report, the difficulty of writing to an audience, in some cases breaking bad news, and pulling together multi-professional information was a test of professional writing skills. It is fair to say that the writing skills resources require to be improved to support this complex task.

### **8.3.2 Open-field sims vs. bounded sims**

8.3.2.1 Some simulations were open-field in nature, where students had a wide choice of paths, including recursive paths and considerable anticipatory activities, including planning and notes to file (GGSL PI and, to a lesser extent, Civil). Such transactions require considerable student effort, and staff effort in planning. Contrast this with the Stirling transactions which were simpler, bounded and more linear in nature. The contrast may appear to be polar but actually there is more of a spectrum of transactional traits (Barton & Maharg 2006). Inevitably, the place of the simulation in this spectrum has an effect on curriculum resources and on other modules adjacent to the simulation.

### **8.3.3 Identity exploration (personal & disciplinary) vs. conventional learning**

8.3.2.2 In conventional curricula students are focused on the furniture of disciplinary learning, and heavily driven by forms of assessment. In transactional learning, students have the opportunity in role-play to explore the role of the professional, and discover through performing that role aspects of their own identity (which of course for many students in their late teens and early twenties is in a transitional stage). In this way, SIMPLE can be used as a device that enables exploration of the personal and disciplinary domains within a curriculum. This is true of the reflective activities in the GGSL Practice Management module; and while it took place to some degree in some projects (eg Warwick's Legal Practice module), it can be better used by all projects. Most staff recognised that learning to design such experiential simulation tasks was in itself a learning experience for them; and that this area was one where design skills and experience were particularly required.

### **8.3.4 Transactive knowledge object-forming vs. knowledge object-forming by conventional assessment**

8.3.4.1 As Entwistle and Marton described it in their classic phenomenographical study, a knowledge object for students is a form of understanding legitimated within a particular disciplinary community, 'a tightly integrated "bundle" of ideas and related information and experience', in which the nature of the knowledge object formed will depend crucially on the range of material incorporated, the effort put into thinking about that material, and the frameworks within which the knowledge object is developed. (Entwistle and Marton, 1994, pp. 174–5). There are four characteristics of knowledge objects:

1. the student's awareness of a closely-integrated body of knowledge
2. the quasi-sensory representation (often visual) of this corpus
3. a movement from unfocused and episodic remembering to much more detailed and coherent knowing
4. structure of the knowledge object itself

8.3.4.2 A key question that should be asked of the SIMPLE environment is whether it allows students to form a transaction as a knowledge object. This does happen to some degree in the Conveyancing Sale & Purchase transactions within the GGSL, where it has been noted by staff that students who have difficulty with these domestic Conveyancing transactions also encounter difficulty in transferring their learning to the commercial leases open book assessment. Whether it happened in all transactions within the SIMPLE project is very much a function not just of the complexity of the transactions but their alignment to learning resources. The average 10% uplift in assessment results achieved by Glamorgan in both coursework and examination assessment, and similar results achieved in Stirling, for instance, demonstrates clearly the usefulness of SIMPLE as a knowledge object-forming environment within the curriculum; but much relies, of course, on how simulation activities are deployed within a module.

### **8.3.5 Transactional teaching vs. conventional teaching**

8.3.5.1 Transactional teaching is quite different from conventional educational strategies evolved for lectures, tutorials, seminars, and workshops. It can take place in FAQs, in emails, on discussion forums (Maharg 2006), and above all, in-role within a transaction. Role-playing formed an essential part of the simulations for staff. In the Management Science sim, for instance, students were intrigued by who was answering them, and felt that the distance achieved by the mask was essential to the role-play's authenticity.

8.3.5.2 Teaching in-role has quite different dynamics associated with it, as was recognised by a number of project staff. Often it requires staff to adopt forms of collaborative emergence (collaborative, because the whole group of roles contribute to it, and emergent because it cannot be predicted in advance) as well as creative leadership. This requires forms of register and speech quite different from those adopted in conventional teaching interventions such as tutorials (Maharg 2005). Staff realised this – the PI mentors on the GGSL PI project observed how different it was to other forms of teaching they had done in the law school. This difference contributes to the unique quality of simulation as a heuristic in HE.

8.3.5.3 There are wider issues here, though, to do with staff organisation and routine. Course teams constantly routinize curricula in order to save time and effort. It is an essential element of any well-organised curriculum; but habits and routines in curriculum formation are difficult to change. This is as true of paper-based simulations as it is of conventional teaching, when faced with the change that digital simulations bring. This may go some way to explain the apparently paradoxical difficulties with digital simulation at UWE when the Law School already had substantial (and very successful) experience of running paper-based simulations. Another project centre, Architecture, also had experience of simulation, but in other areas of the curriculum, and the SIMPLE simulation was an entirely new scenario. By contrast at Glamorgan, where no simulation existed before, the GGSL PI transaction, which was highly open-field, was stripped back and used successfully in an entirely different context and to different ends. In the transfer of sim-building from paper to digital environments it may be the case that teaching routines, scripts and schemas can hinder rather than aid the development of online simulations.

8.3.5.4 The priorities of simulation-building were also new to staff. The NED was built in order to minimise staff effort in the creation of the scenario and the transfer of it to the digital arena. It was also there to focus staff attention on the new design task of creating a narrative the robust design of which would be critical to the success of the project. Outwith the GGSL, which already had a substantial store of resources to support the simulations, it was significant that projects succeeded where they focused effort on the design and creation of a narrative within the NED, and did not attempt to front-load the process with elaborate resource-building; and this is evident in a number of Evaluation Summary Sheets (Stirling, Glamorgan, Warwick, Management Science, Architecture).

### **8.3.6 Front-loaded sim-building vs. conventional teaching preparation**

8.3.6.1 Most staff commented upon the substantial time that was given to the building of simulation activities with the NED and the need to test the simulation before it was used with students. Since the SIMPLE project focused only on the first year of simulation implementation it was of course not possible to capture staff comment on the timesaving aspects of simulation development in subsequent years. Staff at GGSL did comment on this (as the only project centre with prior experience of e-simulations – eg see GGSL Civil Evaluation Summary Sheet in Appendix 1), and it was clear that while complex sim-building was a considerable undertaking, there were gains to be had in future years as regards the use of simulation activities that had already been designed and implemented.

8.3.6.2 The NED is a critical tool in this regard. As the evaluation of staff comment shows, staff found the tool difficult to use. In part this is because of the design of the tool; and its design features will be improved in future iterations. However there are other reasons why the tool may be difficult to use. It asks staff to plan teaching and assessment and relations with students in ways that they have never had to plan before. In this sense, the tool is counter-intuitive to the dominant categories and procedures of conventional teaching preparation. For example, in sim-building so much more activity is planned in advance to be done within a simulation, when staff are perhaps more used to preparing or controlling teaching events either just prior to or even within those events (eg tutorials). Staff also have to think anew about forms of feedback and comment that are normally routinized within a conventional curriculum.

8.3.6.3 A number of staff commented on the differences in timetabling that this implied for staff. Conventional teaching preparation was the default in all centres, with the exception of the GGSL; and teaching and admin allocations reflected this. Sim-building, it was felt by several, ought to be a distinct and recognised activity within a department or school, and staff should be given specific teaching hours to construct the simulations.

### **8.3.7 Interactive mentor roles vs. conventional lecturer / tutor roles**

8.3.7.1 A number of projects ran with what might be regarded as unconventional arrays of staff. GGSL projects often use tutors as senior partners in transactions. They also use a variety of staff in online roles, and these staff often double up as mentors as well. Glamorgan, Management Science and Architecture used part-time staff in this way. GGSL also use tutors

as coaches, eg in Practice Management. Warwick made it clear that they will be adopting this use of staff more. Mentors need the flexibility and skills of online tutors (Maharg 2004; 2005); and this role is significantly different from the roles of face-to-face tutors whose activities are determined much more by timetabled classes and discourses of tutorials and seminars and similar teaching interventions. This requires careful planning and training. Students on the GGSL PI project, for instance, wanted more feedback from online tutors acting in role, while students in the Management Science and Architecture simulations were intrigued by the anonymous role-play and stimulated to respond as a result. Warwick students played a number of roles within the simulation; and while this made the simulation much more complex to design and run, it had the advantage of giving students the experience of the simulation from a number of viewpoints.

### **8.3.8 Simulation spaces vs. teaching interventions**

- 8.3.8.1 One difference between in-depth simulation and conventional teaching is the emphasis on space. Teaching is normally defined as some kind of activity. Simulation by contrast can be defined as a space designed for learning. The metaphor of the stage is apt: staff activity takes place behind the scenes, at the planning stages (as playwright) and in role-play with students (as actor). The result of this is, curiously, that staff can be perceived by students to be more remote from their learning activity, precisely because they are not present in conventional roles. Staff in a number of projects commented on the effects of this.
- 8.3.8.2 The problem is not just one of new staff roles, but also the management of student expectation. In the sim space, communication and feedback require new forms of intervention. In-role feedback is possible. New varieties of forms of feedback were designed. In the GGSL PI transaction, students received feedback on issues from negotiation tutors within 'surgeries' – effectively brief sessions, lasting no more than 20 minutes, where students came to discuss with tutors specific issues relating to their transaction, and receive advice and feedback. Students needed to know precisely how this would operate before they could feel comfortable with it, precisely because the discourse of such an event is quite different from a tutorial, seminar or workshop.
- 8.3.8.3 Most projects also planned the integration of sim spaces with teaching interventions. In the Warwick project, discussions of theory and research findings in conventional tutorials were spliced with the simulation, while in Glamorgan tutorials were held before the project began, with the simulation building upon the principles, cases and themes discussed in tutorials. The interface needed careful planning, but as both projects demonstrated in different ways, it is possible to design simulations that can actually enhance student understanding of conceptual and theoretical knowledge.
- 8.3.8.4 Communications channels become more critical in this environment. Glamorgan commented on the lack of email within the SIMPLE environment, which is more akin to a file management system than an email client, observing that this seemed to differ from the previous system at the GGSL. In fact the only key difference in this respect was the lack of a discussion forum for the firm (also noted by the GGSL Civil lecturer in the Evaluation Summary Sheet in Appendix 1) – a useful channel of communication for the firm and online tutors, and one that supplements texting, IM and mobile phone calls. This can be added to later versions of the SIMPLE application; but it is interesting that its absence, which would be scarcely noticed in a more conventional teaching environment, was felt to be significant here precisely because the simulation space relies more on such communicative channels for learning and feedback to take place.

### **8.3.9 Replay/remix/feedforward assessment culture vs. snapshot assessment culture**

- 8.3.9.1 The simulations varied widely in their timespans – one week at Stirling for the first simulation there, and 12 weeks for the GGSL PI transaction. Such flexibility is innate to simulations, and was appreciated by staff.

- 8.3.9.2 Another, related, feature is the ability to play elements of a transaction and replay them. While students build the transactional file they begin to use and remix elements of letters and documents: they learn to streamline the production of communications. They begin to act, in other words, as professionals do in similar circumstances (and this applies to academics as well as professionals beyond the university). In this environment, *feedforward*, i.e. mentoring advice and guidance that is directed at shaping student performance in the next loop, is crucial to student improvement. It is by means such as these that student performance can be moved from a level that may be barely acceptable at the start of a simulation to capable and polished novice performance by the end of the simulation.
- 8.3.9.3 Students appreciated the assessment of the whole transaction precisely because it took account of improvement within the simulation. In this respect, assessment by simulation is quite different from the snapshot assessment that takes place within examinations or other conventional forms of assessment. Moreover, when a learning environment is also used as an assessment environment (where students can draft and redraft documents online, for instance, before they send them – the transmission of the document effectively being an entry in the submission process) then the close adjacency of assessment to learning can serve to change the culture of assessment. Students take responsibility for their client, their file and their process of learning. That this happened in most projects to some extent is evidenced by student comment upon their own performance.

## **8.4 Level three: implications for institutions & disciplinary educational practices**

- 8.4 Where level one deals with the specifics of feedback upon the SIMPLE system, and level two focuses upon curricular innovation and its effects, level three briefly discusses more general educational and infrastructure issues raised by the project.

### **8.4.1 There is no such thing as experiential learning**

- 8.4.1.1 This provocative statement expresses the essence of the SIMPLE project. We do not learn from experience: as Dewey reminded us in text after text, we learn by working to interpret experience, given that, when learning:
- we have different prior knowledge
  - our aims are always different in subtle ways
  - we learn different things from the same resources
  - 'resources' means symbolic objects such as books & web pages, but also people, including ourselves
  - we can learn intimately and deeply from any resource, given a suitable context
- 8.4.1.2 Versions of these statements are traceable to constructivist approaches to learning. We were quite open about this approach in the project, and indeed many of the innovations discussed at level two evaluation analysis stem directly from this approach. Where it becomes a level three issue, however, is in the programme- and indeed institution-wide implications of the approach. For if teachers and students are to take this approach seriously, they need to encode those interpretations of experience as complex memories, habits, skills, attitudes or knowledge objects if they are to re-use them. Habit, as Dewey reminds us, is an essential yet generally unregarded aspect of the educational experience. Yet many of the experiences we give students in the curriculum are not aimed at developing good habits, but compel them to develop anew, time after time, pieces of knowledge or skills or attitudes, without giving them the curricular space in which to develop such knowledge or attributes as habitual action. It is a point that goes to the heart of the university's mission, particularly in the area of ethics (Maharg 2007); and simulation, problem-based learning and other such heuristics can help to encourage more directly reflective interpretations of experience.

### **8.4.2 Learning changes in distributed environments**

- 8.4.2.1 Technology-enhanced learning takes place in distributed environments, where social relations between students and staff, and between students and students, can be altered by the

environment. This statement is something of a truism, and is common to all programmes of study in FE and HE. But it is especially relevant to simulation environments. The topography of the learning space is crucial to the learning process, as we saw in level 1 evaluative comment. Not only the look and feel of the environment was important to students: so too was the arrangement of resources around the transactional environment, and the creation of online relationships and communicative channels to facilitate learning. The array of tools, roles and tasks significantly affected learning.

- 8.4.2.2 If it is important to students, it is so for staff as well who are, after all, learning to design and implement simulations. Within a collaborative community of practice it is essential not just to have access to a blueprint of the simulation narrative, but the array of resources that comprise the learning topography. Successful simulation is the result of giving careful thought to this array and its complex interactions.

### 8.4.3 'There is no spoon': curriculum *is* technology

- 8.4.3.1 Building on Benkler's (2006) ironic reading of *The Matrix*, it is helpful to regard curriculum not as a collection of classes or teaching or learning practices but as technology itself. On a reading of its history (not necessarily reductionist, either) it is constructed of multiple distributed technologies and practices. Examples are timetables, course teams, notepads, learning spaces, forms of knowledge transmission, discussion, seminar discourse, lab tools, computers, forms of speech, writing – technologies that crowd our curricula and are the basis of much of what we do in Higher and Further Education.

- 8.4.3.2 Some technologies are ancient (*lectura, glossa*, for instance), some new (SIMPLE, standardised clients, mobile phones). In this respect we can regard the curriculum as consisting of strata of technologies, where layers of implements and tools, laid down in previous eras, exist for us to use. Such technologies contribute, quite powerfully, to the default curriculum that we inhabit – Lee Shulman's signature pedagogies – and in a version of Gramscian hegemonies such technologies serve to mask the power of the default, and the conservative impulses of the curricular forms we enact.

- 8.4.3.3 As a result, we need to be much more self-aware of the process of conservation (ever a key term for Dewey) within the curriculum. Once we are, then it is easier to realise that success in learning requires:

- for staff, the need to *compose and orchestrate the curriculum*.
- for students, the tools, support & spaces to *manage their own curriculum*

- 8.4.3.4 SIMPLE is the classic example of a new technology within the curriculum where, as we have seen, composition and orchestration is essential to its success. And SIMPLE itself, as noted above, is an example less of a new form of teaching intervention as a new space for learning where students can manage their own learning. While it is too much to claim that they can begin to manage their curriculum (or even a single module) entirely, students can certainly take control of their learning within it to a considerable degree, depending on the complexity of the simulation. We encountered a range of comments from students on most of the projects on this subject. Some disliked the freedom it gave them. Some relished the power to shape a transaction. With more experience, it may be that they will come to view the transactional arena as a performance zone – which is what it is intended to be. It is the ambition of the GGSL to have at least one transaction in each module within the Diploma in Legal Practice, and in this way to begin to shape the rhythm of the entire curriculum around simulation as an embedded, habitual and purposeful learning and assessment activity. Not the only arena for learning, to be sure; but one of the key zones for assessment of professional learning.

### 8.4.4 Staff role-change vs. conventional teaching/admin roles

- 8.4.4.1 Simulation can have profound effects on staffing within a departmental unit. The implications of this can be seen more clearly within the GGSL PI transaction. There, two members of staff, one full-time the other part-time (Maharg & Charles Hennessy) ran a transaction with 7 part-time online mentors involving 272 students divided into 68 firms, (34 transactions) over



12 weeks. Students were producing work constantly, which was answered in real time, and creating an entire transaction consisting of over 30 pieces of correspondence per firm with associated research, notes to file, minutes of meetings, video records of face-to-face negotiations and much more. The students stated that they worked much harder than they would if a conventional tutorial series had been organised to teach them Personal Injury.

8.4.4.2 The organisation and training of staff bore little relation to traditional gearings within a department; and the activities of staff were quite different, taking place at different times, in different spaces and with different tools. The basic building blocks of learning processes are present in the simulation, but organised quite differently.

8.4.4.3 Is this a cost-effective way of teaching? The PI project was costed crudely against the model of tutorial-based course that would have been organised in its stead on the GGSL Diploma in Legal Practice, and proved to be only two-thirds the cost of the GGSL tutorial model, once development costs of the software were stripped out. What is more important, however, than any crude ROI model is the development of new and imaginative teaching strategies and learning opportunities. Staff training and collaborative practice is essential to the development of SIMPLE and similar approaches to learning if teaching is to become coaching, facilitation and role-play; and if preparation for teaching is to include simulation design and specification.

## **8.4.5 Trans-systemic approaches to learning**

8.4.5.1 One of the aims of the JISC project was to examine the implementation of innovative technologies and we have commented on that at level 2. In a single institution, namely Strathclyde University, SIMPLE was introduced into four faculties. At least three of those faculties will be extending the use of the software in the coming academic year. This is very modest change in the larger scale of institutional technology use, but it is symptomatic of larger shifts in how we organise our teaching and our students' learning resources. At present in FE and HE, most institutions organise their knowledge in LMSs, silos of knowledge behind intranet walls. Products of the teaching process include handbooks, CDs, closely-guarded downloads, and are passworded. Content is organised into programmes and modules, within which there is snapshot assessment of taught substantive content in examinations and other forms of assessment.

8.4.5.2 But simulation, as we have seen, frequently inverts what might seem to be the natural order of things. What if we look not at how institutions affect the implementation of innovative technologies (which has been answered at levels one and two in this report), but instead ask how such innovations can effect change in institutions? If SIMPLE were to be in widespread use, what might its effects be? With its propensity to be a multi-user platform across a range of institutions, it would contribute to the weakening of boundaries, but paradoxically could strengthen the presence of institutions, precisely because it is capable of supporting and organising resource-based, integrated learning networks, with open access. MIT & OU, with their open courseware initiatives, show us the way forward in this regard. But these institutions are still acting as single institutions. What is uniquely different about a platform such as SIMPLE is its potential for global take-up, and interdisciplinary collaboration across institutions, across disciplines, and across systems of Higher Education. In such an environment it may be more possible to focus not on static content but on web-based, aggregated content, where e-learning is integrated with other forms of teaching & learning as understanding & conversation, just-in-time learning; and where assessment takes place as assessment of situated learning. Such an environment can be termed trans-systemic in its potential effects.

8.4.5.3 This process has already begun. Post-SIMPLE project, the software, its products, the people gathered around it and the experiences it has generated, will exist as a community of practice and as a Foundation similar to the Mozilla Foundation. The community has already been set up. Within it the application will be supported and developed. Simulation blueprints and resources will be capable of being shared amongst participants, and guidelines to technical and educational good practices are being developed as web resources. It is also, as we have proved in this project, an application capable of multi-disciplinary use, and as such can

contribute to interdisciplinary practice within a wide range of professional disciplines. Staff from Architecture and Law will be in the future collaborating on interdisciplinary projects, and we expect that this will continue as SIMPLE grows in its user base.

### **8.4.6 Simulation: an academic and professional interface**

- 8.4.6.1 Simulation is a remarkable heuristic in that it can, as we have seen, embed the professional within the academic, and enhance academic learning through the enactment of professional practices – the Architecture and Glamorgan projects proved this. It can also help embed academic learning within professional practice – the GGSL PI transaction proves this, where students draw upon a wide range of academic subjects: Delict, Tax and Welfare Law amongst others
- 8.4.6.2 The divide that exists in a number of disciplines, most notably law, between a highly academic undergraduate curriculum and a postgraduate professional curriculum, can therefore be mitigated by the use of simulation at both under- and postgraduate stages. It can go further. Simulation can be used at more and more sophisticated levels within professions – in law, for instance, it can be used in traineeships, by newly-qualified lawyers, and by senior practitioners. Simulation can, in effect, (and much as e-portfolios may claim to do the same) enact the aims of lifelong learning by providing customised and relevant learning and assessment environments at all stages of professional education and training.

### **8.4.7 Institutional change and innovation**

- 8.4.7.1 What have we learned from the evaluation data about the nature of institutional change and innovation? There are a number of key points that can be made. As we said above, staff development was key to transformation. A number of other JISC projects have pointed this out, notably the Transforming and Enhancing the Student Experience through Pedagogy (TESEP) project, and Collaborative e-Learning in Life Sciences (CeLLS) project. In the SIMPLE project staff development was focused on a specific aim, namely understanding how simulation could be used in a discipline, and implemented within a local curriculum. It was clear that for some staff, more was needed than workshops, occasional visits and email support, and that what was required was the steady communication pattern between individuals within a community of practice, where trust and willingness to share can be built up over a period of time. This happened for most but not all participants within the SIMPLE project (and remarkably so, given the relatively short span of the project), but it could happen for more staff more quickly and more effectively within a more efficient support structure. We aim to produce this within the simple community (more of how we intend to implement this is set out below).
- 8.4.7.2 Individual transformation of practice is, of course, more easily accomplished with the support of management and IT personnel, and if cultures of innovation and embedding are encouraged by senior officers within an institution. But IT personnel and senior officers will only offer support when they are persuaded that the risk is outweighed by the potential gains, to staff and learners. Persuasion is therefore an essential element of early adoption. Dissemination of the project results has been a key outcome for us, therefore, and our record of dissemination on this project is set out below, and at Appendix 7.
- 8.4.7.3 The above findings are important for all stakeholders involved in SIMPLE. But the project's findings can be interpreted in a different way, if we adopt a different frame of reference. A narrative such as this report often deals with the project subject as if it were a unique instance of technological change embedded in an otherwise change-free curriculum. According to this narrative technology brings change to a curriculum that is described as an object; or at least arrives, as in cargo cults, bearing exotic and mysterious gifts to the curriculum. It generates predictable questions about change – learning gains are demonstrated, efficiency proven, usability debated. Often, there are predictable answers: learning is shown to improve, institutions are shown to be conservative in one way or another, implementers and innovators are implicit heroes of the narrative.

8.4.7.4 Curricula are not change-free: their identities shift and move like a glacier. But what if we were to change point of view, and ask as we did at level two, whether there is such an object called 'curriculum' at all. What if curriculum itself is technology – nothing more than the stratigraphic evidence of prior technologies and their associated practices and social relations, evidence of technologies assimilated and absorbed by institutional practice? Viewed in this way, technological innovation becomes the historical narrative of disruption and change that has always occurred, a process that has both a material and social dimension. And as with anthropological accounts of cargo cults, the material and the social are both essential to an understanding of the phenomenon, and give rise to searching questions about the cultural bases of and intentions behind IT introduction and adoption on the one hand, and institutional practice and conservation on the other. The findings of a project such as this are deeply unsettling because they call up questions about what we think teaching and learning actually is, and how it happens in our institutions.

8.4.7.5 Institutional change, then, is significant to the progress of embedding innovative IT within disciplinary curricula. But if we leave the issue there, little will be achieved. The reverse is also true: embedding of innovative IT deep within disciplinary curricula is essential to institutional change. And it may be that the second movement is the easier to bring about, particularly through projects such as SIMPLE, which can be at once a means by which a discipline realises itself in the present, and a bridge to future transformative practice.

## 8.4.8 Interdisciplinary and international collaboration

8.4.8.1 The question is no longer why we use conventional teaching *versus* simulations, problem-based learning, clinic or one of the many other forms of experiential learning; but in an era where Wikipedia & SourceForge flourish against all odds, why are we not collaborating at all levels in teaching & learning? Moreover, at a time when international academic research and scholarship standards are being profoundly altered by use of digital environments and technology, it is fair to say that we lack flexible, imaginative and robust environments for international teaching and learning.

8.4.8.2 The SIMPLE project is a very modest first step to the creation of one such environment. We have proved that staff and students in a variety of disciplines can use the platform and tools. The next step is to build interdisciplinary simulation projects, and to do this not just in the UK but internationally. Such collaboration will not be limited to the co-production of simulation blueprints. Building on the experience of working with the Cyberdam project in the Netherlands, one of our aims for the future SIMPLE Foundation will be the creation of standards, tools and communities of practice on a global scale.

## 9. CONCLUSIONS

9.1 Our conclusions can be summarised as follows:

1. Simulation environments can be agents of substantial change and powerful learning environments across a range of disciplines and professions within FE and HE.
2. They can enable more engaged and deeper learning in students, both at undergraduate and postgraduate levels
3. They can be used to learn and assess conceptual and second-order symbolic knowledge, practice-based skills and personal achievement of integrated skills.
4. Students adapt best to new learning environments when they are aware of the expectations of them in the new arena. Staff need to prepare students whose conservatism in learning may be the product of socialization within less imaginative and traditional teaching structures, or within ICT environments that merely serve to mimic conventional structures. Student induction into constructivist environments can often best take place around dialogues on tasks, or discussion of assessment, or within learning zones that also function as assessment zones, and where assessment itself is a continuum of learning and coaching. SIMPLE can accommodate all these alternatives.
5. Simulation is potentially a disruptive heuristic, and requires support not just for the process of design and building, but for the deep change that the approach can engender within a curriculum. Staff need support in order to re-conceptualise and re-negotiate their

- practice, consider new learning theory, new teaching practices, and weigh up the effects of these on their students.
6. While the initial workload with simulation tools and platform is heavy, there is payback for staff in later years in terms of less effort and time that needs to be allocated to simulation activities.
  7. Just as problem-based learning changed medical educational staff practices, so simulation changes significant aspects of traditional staff teaching activities within a department or school; and senior management at faculty and institutional level may need to consider new forms of staff support for student learning in simulation environments.
  8. Within an institution, flexible support at faculty or central service is essential if innovation technologies are to survive and thrive in departments and schools. Financial and application-based structures put in place by support staff with the best of motives to control and protect staff and student use of IT systems can inhibit innovation and take-up of more experimental and cutting-edge technologies such as SIMPLE. Early communications between IT services and the innovating technology in this respect is essential.
  9. Improvement of interface and convergence of platforms is required, particularly between different hardware formats. Since the project's conclusion, SIMPLE is already running on iPhones, and there is no reason why it should not eventually be extended to the mobile platforms generally.
  10. Collaboration within a community of practice is essential if innovators are to be supported beyond initial experiments, so that simulation becomes a regular and accepted part of a teacher's repertoire.
  11. Collaboration across institutions, disciplines and internationally is an essential element of such a community of practice, if the full advantages of simulation are to be leveraged.
  12. Further research is required on a number of simulation areas, for example:
    - a. The variation of student learning within simulations, causes and best-practice approaches to this
    - b. Nature of 'long conversations' (Mercer 1998) between students and between students and facilitators within a simulation, and how best to support this
    - c. Effect of disciplinary content and approach to practice on simulation design and implementation
    - d. On an international scale, the variation of local professional and educational custom and practice, and the effect of this on simulation design and implementation.

## 10. IMPLICATIONS

10.1 The implications of the SIMPLE project are significant for the field of FE and HE.

1. Working in collaborative and interdisciplinary groups, it is possible for academics, technologists and educationalists to create innovative, ambitious open-source software that can enhance student learning
2. Innovative forms of teaching and learning require good-practice examples, plenty of safety nets and monitoring and support if they are to be accepted within disciplinary communities.
3. Innovation can be disruptive of settled work and employment patterns. Departmental and faculty managers should be aware of the changes that simulation learning and facilitation can bring to academic and technologists' working practices.
4. IT support services at faculty and institutional levels require to be more open to change and innovation that arises ground-up from within departments and schools. Early communications with these services is essential.
5. The SIMPLE project raises many research questions. There have been many surprising successes, and some surprising failures. Best practice guidelines can be drawn from both success and failure, but we also need to consider the implicit issues of curriculum design and working practice that simulation by its nature disrupts, and help staff to understand these contextual factors. Communities of practice will help staff to turn such

factors into learning gains and mitigate the time and effort staff need to put into simulation and learning resource design.

## **11. FUTURE DIRECTIONS: SIMPLE COMMUNITY & FOUNDATION**

### **11.1 SIMPLE Community**

- 11.1.1 Following on from this two-year JISC/UKCLE-funded project, it is clear that we need to establish a viable community for SIMPLE, one that will enable further uptake by second- and third-wave participants, and continued investment both in pedagogic approaches and the software environment.
- 11.1.2 There are two main software products in the SIMPLE Project – the SIMPLE environment and the SIMPLE community. The SIMPLE Community is, in the most straightforward of terms, all of the partners, funders, developers who have been involved in the SIMPLE project up to now. It should also include all of the interested second-wave participants and those interested in using the software beyond this.
- 11.1.3 There are number of phases typically associated with developing both the environment and the community. In phase one the community of practice has to encourage and support the personal investment of individuals interested in using the SIMPLE environment, exploring its potentials for them, deploying SIMPLE platforms and feeding back to the rest of the community their experiences and requirements. These requirements do not apply only to software tools but also to the whole educational and administrative context of simulation and transactional learning. In establishing a sustainability plan, the SIMPLE project must consider how to allow these interactions to happen. This does not require funding beyond the goodwill and personal investment of the core-team and the current partners. In addition, during phase one ideas and support are generally freely requested and given between members of the community. A few developers would take responsibility for the maintenance of the software suite, typically in their own time or in time “donated” by their employer.
- 11.1.4 The second phase generally takes place once the community reaches a “critical mass”. At this point there is sufficient personal investment from all stakeholders to allow a more formal organization to coalesce. The biggest challenge in migrating from phase one to phase two is on the maintenance side. The organization established would take responsibility for the maintenance of the software suite. (It should be noted that any actual work performed in maintenance may be done by volunteer or paid developers, or a combination of both.)
- 11.1.5 One reading of this process is to proceed straight to phase two, bypassing phase one. This may be a perilous approach for at least three reasons. First, there needs to be a fairly well established culture of sharing amongst parties. Second, there needs to be stable and reliable mechanisms for sharing amongst parties. Both issues require to be addressed to make any community of practice (CoP) successful. Third, phase two typically requires there to be some form of funding available to support the activities associated with the community. In phase one this is less of a requirement as the CoP is oriented around a gift culture; but phase two can take the shape of a much more commercial system. Commentators on collaborative communities have warned against commercial operations that can debilitate phase one and two.
- 11.1.6 So far we have been referring largely to the SIMPLE community. The SIMPLE software environment as an entity is more difficult to handle. Without a community of practice or user-base it has no life of its own. In addition if the SIMPLE environment is only free and open to UK HE & FE institutions the suite would have to be gifted to the Community under an appropriate license.

The way forward can be summarised as follows.

## 11.2 Phase 1: the community

### 11.2.1 Goals:

1. Establishment of a community around individuals (community members) committed to:
  - taking an active role in sharing, developing and deploying the ideas embodied in simulated/transactional Learning
  - using the SIMPLE: environment in their teaching and sharing feedback about the use of the software suite with the other members of the community
2. Establishment of infrastructure to allow the sharing of information amongst community Members
3. Discover individuals within the community to take on specific roles (e.g. maintenance of the software suite).

### 11.2.2 Activities:

1. Sharing of experiences & resources (source code, documentation etc).
2. Software maintenance (bug fixing)
3. Further development of software suite (providing there are parties willing to take this on).
4. Development of host website. Since the SIMPLE project is required to maintain a project website for at least 2 years following the end of the project, the core team have created a separate web site to act at the focus of all future community activities, sited at <http://simplecommunity.org>. On this site the SIMPLE project will gift the final SIMPLE environment release, source code and documentation to the Community (under certain restrictions), together with simulation blueprints and many other project and other resources. This has already taken place.

## 11.3 Phase 2: further development

### 11.3.1 Goals

Seek sources of funding to allow:

1. Concentrated development of the SIMPLE: environment (above and beyond the personal investment of community members)
2. Establish an “official” entity to oversee both development of the software suite and promote the use of Simulation/Transactional learning & use of the Software suite (See “The SIMPLE Foundation” below).

### 11.3.2 Activities

As in phase one, and:

1. Invest in/reimburse individuals/institutions for contributions to the community as a whole.
2. Represent SIMPLE environment to investors, potential clients.
3. (Potentially) provide solutions for simulation/transactional learning, based on the SIMPLE environment.

## 11.4 The SIMPLE Foundation

### 11.4.1 Aim

- 11.4.1.1 This organization would be responsible for continuing development of the software, supporting existing participants and promoting the use of SIMPLE.

## **11.4.2 Structure**

11.4.2.1 The Foundation would be made up of a Board who would have overall responsibility for SIMPLE. The Board would be made up of representatives taken from existing partners and interested parties.

11.4.2.1 The Foundation would be responsible for:

1. Establishing a plan for providing technical support for partners.
2. Maintaining all of the documentation pertinent to the support and development of the SIMPLE environment and the pedagogic ideas that under-pin the system.
3. Seeking investment in the SIMPLE Environment, both in terms of financial investment and investment of partners (existing and new) in using SIMPLE (i.e. rolling out SIMPLE within an institution).
4. Establishing and implementing a roadmap for the continued development of the SIMPLE Environment.
5. Providing a forum for all partners and interested parties to collaborate and share their projects, feedback and ideas with each other.
6. Providing hosting solutions and/or helping partners in establishing a hosting solution.
7. Providing advice/consultancy to partners and new-partners on best practices.

## **11.4.3 International Board**

11.4.3.1 In the first instance the Board would be made up of first wave participants and funders. This would include:

1. A representative from JISC and UKCLE, as principal funders of the SIMPLE project and who have a vested interest in the ongoing development and uptake of the suite.
2. A representative from each current project partner (Glamorgan, UWE, Warwick, Strathclyde Law School, Strathclyde Architecture & Social Work, & Stirling), should they wish to be represented
3. A member from Strathclyde's LTU as the representative of the current Development Team/Partner.
4. At least two non-law representatives/interested parties.
5. At least three persons well experienced in either the simulation & gaming industries or in simulation & gaming research.

11.4.3.2 There would be an intention that the Board be made up of a balance range of subject representatives and would move away from the weighting towards the discipline of law that is current in the SIMPLE Project.

## **11.4.4 Development Team**

11.4.4.1 For the immediate future the current development team will remain responsible for maintenance of the SIMPLE environment (the platform & the tools). However in spite of the (probable) continuing involvement of the GGSL with SIMPLE, it is highly unlikely that the Learning Technologies Development Unit would be in a position to continue undertaking that role.

11.4.4.2 A plan should be put in place for:

1. Opening the current version of the SIMPLE Environment up to further development under the current open-source license; and
2. Determining a roadmap for future development of the suite. It may be the case that further development work is placed on hold until funding is available and/or a suitable development team can be found/put together.

## **11.4.5 Promoting SIMPLE**

11.4.5.1 Any facility for continuing SIMPLE will require both promotion of the pedagogic and technological approach, with a strong emphasis on collaboration (Maharg 2007). To this end at minimum a community site must be established, around which a viable,

vibrant community of practice can form. This community site would (ideally) be separate from the SIMPLE Project. The site must:

1. Be a vehicle to allow engagement between adopters of SIMPLE and the promoters/developers of SIMPLE.
2. Provide a repository of current and previous versions of the SIMPLE environment.
3. Documentation on current and previous versions of the SIMPLE environment.
4. Provide facilities to allow the interaction between the different parties (existing partners, new adopters, developers) who have an interest in SIMPLE.
5. Provide a background to the evolution of the software and the teaching ideas.

11.4.5.2 In addition, it may be desirable that the site:

1. Provide a marketplace or trading zone for the trading of projects, their blueprints or associated resources.
2. Provide hosting for projects.
3. Act as an international trading zone for simulation partners, projects, blueprints, research projects, etc.

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## APPENDIX 1: EVALUATION SUMMARY SHEETS

Below are the Evaluation Summary Sheets that summarise the data collected at each of the eight project centres. The Sheets summarise the data that was collected by Emma Nicol *via* a variety of evaluation instruments, largely interviews. In a number of cases the evaluation data was given on a confidential basis, and the Summary Sheets reflect the nature of such data, as well as giving an overview of the key points made by stakeholders within the project centre.

The data was collected and then written up in a templated semi-structured form. It was edited and then passed back to the project participants for final amendment, and stands as a record of each project as perceived by local staff, and supplemented where appropriate by student feedback. Student feedback itself is detailed in the body of the report.

The Summary Sheets are listed below in the following order:

1. University of Strathclyde, Dept of Architecture
2. University of Strathclyde, Glasgow School of Social Work
3. University of Strathclyde, GGSL
4. University of Strathclyde, Dept of Management Science
5. University of Stirling, School of Law
6. University of the West of England, Bristol Law School
7. University of Warwick, School of Law
8. University of Glamorgan, Law School
9. SIMPLE core team review

# University of Strathclyde, Dept of Architecture

## Introduction

The Architecture simulation ran in the second semester of the 5<sup>th</sup> and final year of the University of Strathclyde's undergraduate Architecture programme in a module called Design Management Practice whose main focus is contractual issues encountered in construction projects. SIMPLE was used for the second assignment of this module. 40 students split into groups of 4 took part and one tutor was responsible for building and running the simulation. The scenarios involved the students acting as project architects on an 18-month construction project. The lecturer took on the roles of client, contractor etc. The simulation ran for 8 weeks and required the completion of 16 discrete scenarios that were to be completed in a specific order. The students did not have to submit a written piece of work but had to provide fairly comprehensive written answers in order to successfully complete each stage. The lecturer had a background in designing simulation, having used it for a number of years.

## Building the simulation

The lecturer began by identifying suitable scenarios and contexts and thinking about how the scenarios would be delivered. He then faced the challenge of trying to programme this in with the assessment schedule for the module. There were regular meetings with SIMPLE project staff to get assistance and advice – this worked really well. There were some difficulties in setting up the tools – a small learning curve was involved. Once this was overcome things were relatively simple. The tools were straightforward to use after seeing a couple of examples, and after seeing it being demonstrated a few times, so too was the NED. It took around 40 hours of initial preparation and use of the tools to build the simulation. There were no technical issues encountered in doing so. The handbook material had been very helpful.

## Running the simulation

When it came to running the simulation the scheduling did not work well. Managing 16 scenarios was not easy and the lecturer felt he could have been better prepared for it. There were often a lot of students waiting to go on to the next stage who had not yet received the responses or instructions they needed in order to do so. Quite a bit of offline feedback was received about this. When he realized this was causing problems the lecturer changed his online office hours rule so that students knew they could expect to get a response at least once a day and that responses would be occurring at certain times. This did not quite work however, mainly as it was difficult to know at what times students would be working and which times would be of use to them.

A few of the assessment points had to be rescheduled to fit in with other work the students had to complete. This had a negative impact on a number of groups who, it was felt, lost momentum. The lecturer felt that groups who had managed to keep within the original schedule had understood the nature of assessment better and had taken in a lot more knowledge of contractual issues. The very first scenario had taken too long to complete (student unfamiliarity with the system may have had something to do with this). They had been told this would be the hardest task, but the lecturer felt maybe he could spend more time in the initial training session explaining what they should expect. The lecturer wanted students to work as a group and respond as a group but this didn't always happen – many students were working individually on certain of the scenarios. Despite this all groups completed on time and in a satisfactory way.

## General comments:

The lecturer felt that the impact on learning had been valuable. He felt that students would now be more prepared for tackling issues raised within the simulation in their professional practice; and feedback from students confirmed this.

He had not realized how much work would be required in running the simulation until it was well under way. He felt he should have anticipated more of the responses that he received and that there were many organizational issues to address. In the future he plans to run the simulation over longer period with fewer scenarios, asking students to complete at a certain time of week so that they get quick

responses. He will make use of another member of staff eg a research student to manage the responses. There is the potential to incorporate more graphical elements into the simulation to make it a bit richer eg still images and video that would add more realism. He is currently considering the use of SIMPLE simulations elsewhere in the university. Given the nature of these scenarios on contractual issues, there may be an opportunity to run it with multiprofessional groups of students, eg law students and architecture students.

The lecturer's advice for future users of SIMPLE would be to schedule and organize what will happen as far as possible in advance, prepare responses in advance, programme sufficient time for responding, and to inform students fully at the outset as to how the project is to be tackled.

# University of Strathclyde, Glasgow School of Social Work

## Introduction

The Social Work simulation was to take place on a 12-week module on the Glasgow School of Social Work's undergraduate programme on the University of Strathclyde's Jordanhill campus. The simulation was to be designed and run by two members of staff and there were to be three parts to the simulation that would run consecutively during the second semester of the first year of the degree. The lecturers had previously developed some reusable learning objects for a previous cohort of students and it was on these that the simulation was to be based. The lecturers had previous experience of using scenarios in their teaching and were well-versed in using problem-based learning (PBL) approaches.

## Building the simulation

The lecturers had been working in close partnership with practitioners from West Dunbartonshire Local Authority Department of Social Work with a view to making the simulation as close to the experience of a real social worker, and accordingly much time was spent building up relationships with the staff there. West Dunbartonshire uses a case management system to manage client data and the lecturers wondered whether there could be something similar replicated within the SIMPLE application. Members of the SIMPLE core team from Strathclyde met with the necessary IT staff and social work professionals at the authority to discuss this possibility and there was a lengthy period of negotiation between the two parties. In the end, the idea was not realised and the lecturers agree that on reflection perhaps it was an unrealistic wish and perhaps time had been wasted trying to achieve this, though arguably having such a thing in place may have made for a more realistic simulation of social work practice. The lecturers now feel that perhaps the core team might have discussed more fully the difficulties that attempting something so ambitious might cause.

Before the summer break the lecturers felt things were going well. The lecturers began working in March to produce the additional resources for the simulation. This work continued right up till the beginning of the semester in September. The first simulation was due to take place in October and lectures were deliberately scheduled for early in the term to ensure that there was time to deal with any glitches that might arise when it came time to run the simulation, while a decision was made to start the simulation element of the teaching as late as possible. The lecturers had thought that they would be given extensive training in the process of using the tools to upload the simulation and training on the platform to deliver and manage the simulation and that they would be offered help, in particular, in designing a 'map'. According to the lecturers this never happened. According to the relevant members of the core team, it seemed that the lecturers were happy to proceed with the level of support that was on offer. An administrative assistant from the School of Social Work who had a background in software engineering was brought on board to assist. The assistant worked closely with one of the lecturers, the lecturer providing pedagogical support while the assistant tried to work with the tools, with the core team inviting the assistant to join them in the GGSL. In spite of this the simulations were never fully uploaded to the platform.

## Running the simulations

Before running each of the three short simulations the lecturers were never quite sure whether the simulation would be in a state that would allow them to run it, and one of the lecturers was unsure how to use it as a simulation. The second simulation suffered a similar fate. Fortunately the lecturers had a contingency plan that involved using the materials developed for the SIMPLE simulation, in *WebCT*. By the time it came to run the third and final simulation, SIMPLE was ready to use but they felt that by then they were more than half way through the module and using it at such a late stage might confuse the students. On the positive side, the lecturers had successfully uploaded all the materials, designed the NED, had done a full run-through with partners based at another campus, but then encountered a server-side problem close to the period of implementation.

## General comments

Both lecturers thought at the outset that their role would be that of providing academic materials to be loaded on to SIMPLE. They thought they would not have to be actively involved in the technical

aspects of getting the simulation up and running. What transpired differed hugely from this expectation and they admit that perhaps they'd had the wrong expectation of their role and of the technical support they would receive from the core team. They reflected that perhaps they had not asked the right questions or made the right demands in the early stages, possibly because they didn't yet understand quite what to expect from the software or what it would be like to work with. They felt that they had been abandoned to get on with things without the necessary expertise to do so and felt that they should not have been expected to have this expertise, being educators rather than technicians. Though responses to queries put to the core team were forthcoming, sometimes it felt like they were receiving only partial answers and they never felt that they had a clear idea of what their simulation would look like in SIMPLE. The level of support was not at a level that the lecturers felt they needed nor at the level they had expected on joining the project.

Since the failure of the simulations, SIMPLE has been demonstrated *via* video link at Crichton Campus, where some of the social work undergraduate students, are based and has met with a favourable response. The school has been very impressed by what the tutors are doing with the module. However the lecturers are unsure as to whether what they are doing is actually a simulation as such and have noted that given that their students actually get the chance to work with live clients maybe their need to participate in a simulation exercise is not great. Having said this, the work done by the students with the resources has been impressive and they have engaged very well with the materials to the extent the department will be teaching several further modules in this manner in the coming academic year.

# **University of Strathclyde, GGSL: Civil Court Action and Personal Injury Negotiation Projects**

A total of six simulations were run at the GGSL – Conveyancing Sale, Conveyancing Purchase, Private Client, Personal Injury, Civil Court Action and Practice Management. Two projects only were selected for analysis, given that further focus on GGSL projects would have skewed the evaluative feedback for the SIMPLE project as a whole.

## **Civil Court Action**

### **Introduction**

The Civil Court Action simulation ran on the Diploma of Legal Practice course at the Glasgow Graduate School of Law in December-February 2008. A total of 272 students were split into 68 firms of four members each, with students taking the role of lawyer within the firm. This particular transaction was a paired or adversarial transaction with pairs of firms negotiating. The project was built and run by one senior lecturer (Barton) and an e-learning consultant (McKellar) who took on all other roles within the simulation during its lifecycle. A research assistant helped with administrative tasks related to the building of the simulation. The simulation scenarios had a degree of variation but all involved claims over the payment of an item or service. Similar simulations had been run at GGSL by the same tutors during previous years using a transactional learning environment (TLE). For the tutors, SIMPLE was a new way of working. The students engaged in this transaction were also using SIMPLE for four other projects that either preceded or ran concurrently with this one, so on starting it, they were quite familiar with the software.

### **Building the simulation**

Initially, lecturers felt there were some things that were not intuitive about using the tools but after a few attempts, they soon learned what to do. There were still a few bugs to be sorted out and these were reported and fixed. For these lecturers, who had created and used simulations in the past, using SIMPLE required them to move away from the idea of a flow chart to that of the NED, which was not problematic for them, possibly because of their awareness of simulation terminology. There was however quite a bit of 'unlearning' to do. Constructing the first NED took three or four passes to get it exactly right. It required them to work out how to specify their existing simulation from the previous incarnation of the transactional learning environment (TLE), using the new software. Constructing the NED took two people two days, with much of this time taken up by getting to know how to use the tools. Help from the SIMPLE team with tasks such as uploading documents was required on occasion and assistance was also required for more complicated tasks such as dealing with documents that contained graphics or calculated variables for other calculations. They felt that one thing that might have made the tools easier to use would be a facility for dragging and dropping items within the NED. The version of the tools used by these lecturers worked in a fairly sequential manner where it might be helpful to have had a slightly more free form way of doing things. It should, however, be borne in mind that the GGSL Civil transaction is one of the most complex devised within the SIMPLE project.

The simulation was due to run in January and even though the project had been in the planning since June it was still a rush to get it finished in time. Deployment was done in November and thereafter there was a great deal of error-testing to complete. This was a lot of work for one of the lecturers and a research assistant who spent much time checking formats, checking correct documents would be released, ensuring nothing was missing and that document variables and dates were correct and made sense. They systematically went through the process of releasing every document to ensure that everything was in place. Support staff reported on any problems that required attention and the simulation went through several iterations before lecturers were satisfied that it would run well. What made matters somewhat difficult and rather time consuming was that in this project there were in effect 10 different simulations. This meant that 10 NEDs and 10 variable sets were required. The reason for incorporating this degree of variability was to ensure that there would be little collusion between firms by getting them to work on different scenarios. The large number of permutations of the simulation meant that testing took rather longer than it might otherwise have done and accordingly



error-fixing was also was rather a time-consuming operation. This is a key issue in the design of simulations: incorporating variability leads to an increased workload for the person creating and administering the simulation, though it undoubtedly lends added authenticity to the total group of simulations being performed by the class.

One of the challenges of designing the simulation was dovetailing it with tutorials, lectures and assessment. This requires a lot of careful consideration. This particular project was designed so that stages were performed a week behind the taught classes on the same stage, and the simulation was structured to give students practice in aspects of legal practice that did not receive much profile in tutorials. To address this, online forums were provided that allowed the students to ask specific questions to guide them through the simulation.

### **Running the simulation**

The simulation ran January – March 2008 and it went fairly smoothly initially. All required documents were released on time. Further on in the project there were times when the response time for students and staff was really slow and this lasted a couple of days. There were occasional breakdowns of communication between firms related to variables in blueprints that had been input incorrectly, usually caused by simple typo errors.

The basic communication of documents between characters and firms worked well as did the release of documents, which made it easy to manage 68 firms and thirty-four simultaneous transactions. Managing critical events and block release of docs was easier than it had been in the earlier TLE, and it was now possible to release to every firm either synchronously or individually. What was slightly problematic was the frequent need to edit a document before sending, which required seven steps. Another slightly awkward aspect was that when writing replies, lecturers would often have to print out the letter they had received from the firm and keep it on desk as a guide. It would be good to be able to have these things open at same time on the screen.

Communication within firms was good up to a point. It was found that students tended to use other forms of communication beyond SIMPLE, eg texts, email and face-to-face discussion (in itself no bad thing). At the training activity students were shown how to upload documents, but maybe there needed also to be some emphasis placed on SIMPLE's utility for drafting documents as a group as at the moment groups are only using it to send rather than to do drafting. One real success was the set of templates that were provided to allow students to produce forms and letters.

### **General comments**

From the point of view of the lecturers who were to build and run this simulation the development of the SIMPLE platform was borne of a need to dispose of the requirement for technical assistance every time a new simulation was required. Prior to SIMPLE, the lecturer's role was quite different. He or she would largely develop the basic resources for the simulation, i.e. letters and templates. They would then supply a general specification of actions and types of correspondence, as well as the necessary links between firms and clients to the technical development team who had to develop the system that allowed this all of these elements to interact. Now, with the tools and platform in place, the lecturers could actually design the simulation themselves without relying on major technical implementation by programmers. After having successfully run the simulation this year the lecturers now have a stock of replies and other resources that will make running the simulation again next year much easier, with little of the effort that was required in this iteration.

One thing that was disappointing about SIMPLE was that there was now no common calendar across all simulations, which meant students are much less likely to use it. The lecturers also felt that the concept of Ardcalloch had been lost somewhat. Students do not use the websites as much as they used to in previous years. This is down to a number of factors: firstly, the map and directory are not as good as they were. The labelling of the map is not as clear as it once was and the content of the directory is less rich. Secondly, it is now more difficult to see where the map and directory are located. This limits the scope of the simulation. It might be preferable to have students enter the system through Ardcalloch to give them a sense of having a presence there in the virtual town.

With regard to advice for future SIMPLE users, the lecturers on the Civil Court Action advise that it is important to start early, to plan and to refine early concepts of how the simulation is going to work before uploading anything; and to accept that a couple of attempts may be required to get things going. They stress the importance of thinking about whether all students will do the same simulation, an entirely different one or one that is very slightly different, as this will very much define how long it takes to get a simulation up and running. Student training requires some careful thought – what do they really need to know before starting, in the way of training, resources, conceptual knowledge, skills?

As far as the impact on learning is concerned, the lecturers thought that working in this way was one of the best ways for students to learn about the practicalities of being a solicitor. If they engage at all there's nothing that compares with it. It would have been impossible to administer a similar project on paper. SIMPLE allowed 68 firms running 8 simulations across 34 transactions to be run by only 2 people, which could not be implemented in any other way.

The Civil Court Action will run again next year and for the first time it will be easy for the lecturers to make updates and edits to the simulation and its resources without asking support staff to do this. Future plans for the transaction may involve incorporating more video and introducing the client as a richer entity than at present.

## **Personal Injury**

### **Introduction**

The PI transaction had been in development as a web-based learning environment since at least 2001. Currently, 272 students, divided into 68 firms of four students, take part in a pre-litigation negotiation over a injury sustained by the claimant at work at the University of Ardcalloch, with one side representing the injured claimant, and the other representing the interests of the university's insurer, Ardcalloch Insurance Group. There is a sophisticated range of resources, including graphics, maps, video, photographs, witness statements, template documents, etc. The scenario is 'variablised', that is to say key elements such as client name, injury, witness statement details etc are altered across transactions so that each transaction is unique across the 34 transactions of the class cohort. The scenario is also changed every three or four years. Students create the file of the transaction by contacting characters (around 17 in total are available to them) in-world. In their negotiation, students represent their client's interest, and follow guidelines on negotiation already given to them in a Foundation Course in Professional Legal Skills. Their learning is supported by two forums, where Paul Maharg and Charles Hennessy (solicitor and Visiting Professor to GGSL who drafted the resources) answer student queries. Charles and another tutor is available to consult with firms who wish to discuss their transactions. Each surgery lasts around 15 minutes, and is focused on specific issues brought to the surgery by students. Eight tutors or 'PI mentors' oversee around 6-8 firms of students each, answering mail, responding in character, and as senior partners in PI, dealing with problems the firms may have. The transaction gives students practice in letter-writing, document-drafting, practical legal research, face-to-face negotiation performance and professional groupwork.

### **Building the simulation**

Paul Maharg drew up the NED for the transaction in an afternoon. One research assistant compiled the already-existing file sets and ported them into the simulation platform, updating documents as she did so, and working with Maharg in this process. She also ensured that the document variables (which are used fairly extensively in this simulation) matched the scenario narrative details. This process took five days. The final deployment was checked by Michael Hughes. No serious issues were met with in creating the NED, though Maharg would agree with most of Karen Barton's comments above regarding the design of the simulation toolset. Most of these issues, he felt, can be addressed in the next iterations of the environment, including calendar and interface alterations.

### **Running the simulation**

The simulation had two errors in documentation which initially caused problems for students, and which first came to light on, and were resolved on, the PI discussion forums. Apart from this, the

documentation was nearly error-free. PI mentors generally agreed that this version of interface, while rather dull to look at, was more functional and easier to manage than previous simulation management interfaces. After some initial problems with uploading specific versions of Word documents, students found the interface relatively easy to manage. The advantages of transactional learning using this method have been extensively documented elsewhere (Maharg 2007, for instance) and need no rehearsal here. Tutors were trained in the new environment and performed well as approximately 17 different characters in 34 transactions, all of which were different (given the complexities of document variables). Maharg agrees with Barton's comparison of the old Ardcalloch environment with the new learning environment: again, this is something that can be addressed in later iterations of the software.

## **General comments**

Students had to accommodate to receiving responses in real-time, which caused problems in terms of project-management, because they had not worked in this environment before, and the PI project was the first of around six transactional projects. Work-load tended to be uneven, depending on response. This reflected legal practice. SIMPLE occasionally crashed at week-ends. Some students found difficulty coping with uncertainty in open-field transactions such as PI, preferring more staged simulations such as Private Client, where the transactional process is more linear.

### *What students disliked about the PI project:*

There were occasional glitches in the system, which sometimes was not available from outside the campus. They sensed that whoever was responding was remote (though this was also seen as necessary by students). Multiple logins were irritating. They had some difficulty in changing drafts, and could forget how to upload documents. Some students had problems logging on from home. Some students found the interface dull. There were occasional inconsistency in character addresses. They found that their workload was unpredictable. They felt the lack of guidance from staff and although there was information in the forums they wanted more specific guidance on their work (in addition to the voluntary surgeries offered by staff). The report to client halfway through the project was useful, but difficult to draft.

### *What students liked about the project:*

They found that in this project research on practical legal aspects was enjoyable, and negotiation was the most difficult aspect. It was enjoyable and stimulating, following on from the Foundation Course. Dealing with a whole transaction and seeing it unfold was very helpful. Ardcalloch itself, they felt, needs to be expanded. There should be a reduced time for responses (four days). Students recognized that good groupwork relations was key to successful completion of the transaction. Many were aware of the varieties of groupwork that could contribute to successful transactions – an issue explored in depth by Barton & Westwood (2006). They found it hard to imagine how else they might get practical experience of a transaction, outside of legal practice itself. Students were asked to express whether their experience of using SIMPLE for the PI transaction had been a positive or negative one. Of 15 students who participated, 14 replied that it had been a positive experience with one student taking a neutral position.

# University of Strathclyde, Dept of Management Science

## Introduction

The Management Science simulation was overseen by Helyn Gould who, as well as being Director of Teaching and Learning for the Management Science department, is a member of the SIMPLE Core Team. Helyn had used both e-learning and simulation in her teaching for several years. Management Science is a subject area that requires high use of computers on its courses and generally management scientists will be very familiar with the idea of simulation since it is a fundamental heuristic in the discipline. The simulation ran on a first year module. It is an important class for the department as management science is generally run as a conversion course and this is the students' first contact with management science and their route into the subject. Around 140 students took part in the simulation.

## Building the simulation

An Honours year student was given the task of developing a suitable concept for the simulation for her final year project and was also tasked with building the scenario for her honours year dissertation. The scenario devised was very straightforward. It had been thoroughly researched through consultation with tutors, lecturers, former students and current students. These consultations gave the Honours student the key criteria that would decide the nature of the scenario. The eventual scenario involved students assuming the role of business consultants for a company called PVA Consulting and working for a client, Real Records record company, who were interested in running a music festival in the city. The client required a critical path project plan to be produced for the planning, organisation and running of the festival.

The Honours student developed the scenario under supervision, uploaded the scenario and input all of the administrative data. This took the equivalent of about 5 days to do and required about half a day of support from the lecturer. There was an introductory session for tutors and then another for students.

The Tools were thought to be reasonably straightforward to use, although they had taken a bit of getting used to. There were no technical issues to get over, possibly because the Honours student had a high level of IT skill. The administrative system that controls putting users into the simulation was thought to be somewhat clunky but it worked. Two faults were reported and these were quickly resolved by the SIMPLE support team.

## Running the simulation

A short pilot was run with eight final year students. They didn't actively play the game but viewed the scenario and gave feedback in order to ensure that everything was in place to meet student expectations when it came time to run the simulation with the class. This was a good dry run for the technology and for the scenario itself.

Three tutors and the lecturer ran the scenario taking a few groups each. Student engagement with the issue was fairly high and the scenario seemed popular. Students liked the idea of their correspondence being answered by clients and others, and also seemed to enjoy not knowing with whom they were engaging. The anonymity of the persons playing the other roles served to break down the barriers that normally exist between tutor and students and allowed for more effective role-play. Groups worked steadily throughout the period of simulation. This differed from previous years where there had been a problem with students cramming all of the project work into the final week of a four-week period. Working in this way meant their work was more evenly spread over the period.

Some students did not use the simulation system as much as they might have, using the internet to search for information instead. This had been a useful learning experience as it could then be pointed out to them that they should be asking for information from the client rather than getting generic information from the web. Many students worked remotely and liked this aspect of the project. There were also many who met up in the labs on campus and worked together.

Any negative feedback received was down to traditional group issues rather than the system itself. The simulation had been excellent in terms of introducing realistic information retrieval and the standard of work/reports had been noticeably better than last year. No technical problems were encountered though the interface was thought to be clunky.

## **General comments**

The lecturer's expectation of SIMPLE was that it would allow her to manage a sophisticated case study that is usually not possible with such a large class and she hoped that it would also allow her to address an area of the curriculum that normally isn't addressed until later in the course. The lecturer had already seen what SIMPLE could do and what it could deliver in her role as Core Team member and indeed it delivered her simulation in a way that exceeded her expectations. The ease of running was high and there were none of the technical hiccups that one might have expected when using software for the first time.

There was an impact on student learning in that the learning average was higher than the previous year. The Management Science department had been very supportive of the project both financially and otherwise and were delighted by the outcome. Plans for next year involve using additional websites and information, using variables and more tutor resources including using tutor resources in a different format. It's possible that the activity might run in semester 1 rather than 2. There might be a new scenario for 1st year, a Business Technology Project.

The main lesson learned from building and running the simulation was that the scenario idea is the most important part. It does not need to be complex or ambitious to be effective and kept simple for the first year, it can be layered and made more sophisticated in the second and subsequent years. The key to the success of a project like this is having good materials for tutors.

# University of Stirling, School of Law

## Introduction

The Stirling simulations ran in a module taken by both first and second year students on the Stirling undergraduate LLB programme within the Law School. They were managed by a senior lecturer, who devised and built the simulation and who then ran the simulation along with a postgraduate student. Two simulations were run. The first ran in November 2007, for one week, the other in April 2008 for four weeks. Sixty-three students attended this particular class. The tutor had little experience of simulation but was used to using IT in her teaching in the form of a VLE, for the delivery of handouts, for example.

## Simulation I

This was a very short simulation that lasted one week and replaced the students' weekly tutorial. The scenario was built around an incident that occurred on a film set. The lecturer took the role of partner in the firm and the students played the role of lawyers within it. At the end of the simulation the students had to submit a report on what they had done.

## Building the simulation

The lecturer found that the simulation was easy to set up and although she did not make much use of the NED, setting it up was easy. The time taken to set up the simulation took no more than the contact time usual for a tutorial with the added benefit that the work could be done at any time and not during a set class time. It required less work than a normal tutorial and she felt that having gone through it once there would be slightly less work required for lecturers or tutors using it in the future.

## Running the simulation

The students grasped the idea quicker than she had expected them to and indeed she felt that using SIMPLE was a good way of seeing what they were not understanding about legal concepts.

Fewer students participated than she had expected – around half as many, even though it was compulsory. She thought this was due to the workload that the students had for other modules. It was generally the less able students who did not take part. She commented on the difficulties of administering a course such as this where first year students are working together with second year students, who perhaps have different motivations. Some students worked closely as a group, others worked separately within groups, and others worked entirely alone. The simulation is designed to allow any of these possibilities, but a report written by the whole group was handed in for each group.

No odd or unexpected behaviour was observed, however one adventurous student, while knowing the case was fabricated, pretended it was a real case and got much out of pointing out the flaws in case to the lecturer, in a constructive way. It was noted that students put in more effort and participated more than for a normal tutorial, possibly because they had to produce something written at the end. The students seemed comfortable using SIMPLE once bugs were fixed though they did not like having to log in multiple times. All seemed to be computer literate.

## Simulation II

The second simulation at Stirling ran for 4 weeks and was in the area of public law. The lecturer took the role of partner in the firm and the students of lawyers within it.

At the end of the simulation the students had to submit a briefing report for assessment, which was done by a postgraduate student. Due to lack of time, the simulation built was markedly less complex than the lecturer had hoped it might be.

### Building the simulation

This took around 10 hours, including two hours to create the blueprint. The lecturer found she had forgotten aspects tool use, between running the first simulation in November and this second in April. Uploading it was straightforward and took about an hour but adding students one by one had been rather tedious.

### Running the simulation

Students seemed to grasp the topics and took them seriously because they knew that the topic of the SIMPLE project was in last year's examination. They seem to enjoy being given realistic problem questions such as this. Other staff agreed that while this was not usually a popular topic, the students for once seemed to understand it well. The effect of SIMPLE on this was of course just one among a number of factors.

The tutor realised that she could perhaps have quite a bit more ambitious with the simulation than she had been but even so, felt it had a profound effect on teaching as it encouraged her to teach public law as if it were a private law subject *i.e.* as a practical domain. Students seemed to prefer this method.

### General comments

When the lecturer first became involved in the SIMPLE project she had seen a few demos but was rather unsure as to how elaborate it would be. Would it be like *Second Life* or just text? In reality the appearance was a little less exciting than she had expected but using it was actually more straightforward than she had anticipated. Using the application tools had caused a few problems. They weren't entirely intuitive and crashed on occasion. She felt that more documentation was required to assist with building simulations. She felt that support from the SIMPLE team had been very good and that having them in the background had been key to her successfully building and running the two simulations.

Regarding the platform, this lecturer wanted to use more colour and have the ability to customize the appearance of the platform to make it more welcoming. She also felt it would be useful to have prompts by email to remind her to do whatever step is required next in the simulation, as attempts to use the SIMPLE calendar had not worked. One of her main ambitions for future simulations would be to try having students in different roles in the simulation.

This lecturer's main advice to future users of SIMPLE was that they should try to understand student roles and their use of SIMPLE before students try it themselves, by setting up a student account and trying the tasks, as a student would experience them. This serves as an alert to any potential problems/confusions that might arise when students go through the simulation and to anything that needs to be changed before this happens. She also stressed the importance of keeping the simulation as simple as possible first time around and of doing a short run or pilot before trying anything else. She also stressed the importance of starting to develop and plan the simulation as early as possible, before the semester begins, and the importance of choosing a subject one knows well and is fully comfortable with before trying to simulate it.

# University of the West of England, Bristol Law School

## Introduction

The simulation at the University of the West of England was planned for a module on the undergraduate law programme of the university's School of Law. The simulation was scheduled for February 2008 with a pilot planned for the previous November and it was to be run by a team of two tutors, one of whom was new to this particular course. The team had the assistance of the Deputy Manager of the E-learning Development Unit at UWE who was there in an advisory capacity. The school had run paper based simulations for some years but beyond using *Blackboard* for uploading materials for use by students they had not used computer technology to deliver their teaching before.

## Building the simulation

In the beginning, the course leader thought that using SIMPLE would provide a simplified way of running the paper based simulations she'd been using for some years. Though she was not confident about the IT side of things she pictured herself gaining from using SIMPLE and moving away from being overwhelmed with paperwork as was often the case when using the current method, which was rather open ended. The paper-based simulations often took unexpected turns and the outcomes were not pre-determined. The open-endedness is deliberately built in to the simulation so is not something we sought to reduce. The team hoped that using SIMPLE would help to manage the simulations more easily and effectively.

UWE's e-learning deputy became involved in the project in early 2007. He thought the project was very ambitious because it aimed at developing an online learning simulation environment from scratch. By March 2007 it had become apparent to the tutors that they needed someone with technical skills and online learning expertise on board, so the role of UWE's e-learning deputy in the project became greater. Originally, his involvement related to providing general advice and support; this then evolved into more detailed advice about online learning support and development.

UWE's e-learning deputy met with the SIMPLE developers in March 2007. At that time the tools weren't yet ready and at that stage he was rather concerned with the timescales involved. It was his opinion that a paced development lifecycle could not take place before the scheduled November pilot. At that time the platform wasn't also operational, and the relationship between tools and platform was unclear. At that point there was not yet any documentation for staff or students nor illustrative screenshots of the software for the end users. Despite this UWE's e-learning deputy stayed positive though he was rather concerned about the split between the tools, which allow the simulation to be built, and the platform, which allows it to be run. This split he felt could generate problems such as limiting greatly how much simulations could be modified once created, which in education can be very important as it is a dynamic process. It was felt that using the tools to create the simulation would be conceptually difficult as one is working in the dark with no clear idea how the simulation will look and operate once uploaded to the platform. He felt that the tools had been developed very much from a technical person's point of view and the majority of academic staff would not be able to use them without dedicated technical assistance, which made the project unsustainable in the UWE context.

The final version of the tools became available to the UWE team in August 2007. Unfortunately, it being summer vacation time, it was difficult to get the team at UWE together to work on the simulation and by September they were too busy getting ready for the start of term to spend the time that the project required.

A pilot simulation was planned for November and preparations began for that but an issue arose regarding hosting. UWE had assumed that Strathclyde would provide hosting for the simulation. However this had never been part of the agreed plan for the project. It led to a number of weeks being wasted while a solution was negotiated. Eventually Strathclyde agreed that the easiest solution for everyone would be for Strathclyde to host it after all.

Narrative Event Diagrams (NEDs) had been created on paper by the course tutors with help from members of the SIMPLE Core Team – a lot of work had gone into this in the first year of the project but they then encountered difficulties using the tools to recreate the NEDs. The categories present in the paper version were often different in the tools and it was unclear how to correct or change any mistakes that had been made. It was felt that an absence of workflows in the software was an



important aspect of the difficulties they faced. The structure of tools seemed to assume that when developing the simulation the tutor would have perfectly worked out plan for it. This seemed counterintuitive as the simulations were open-ended by pedagogic design. This was very different to storyboarding which had been the usual way of managing the creative process of designing the paper based simulations that UWE had run in the past.

Much time was spent in January 2008 trying to develop the simulation and there had been meetings with the SIMPLE Core team in December and January but the UWE team didn't feel confident that the tools, platform and support documentation were ready to be used in a high-stakes learning scenario with students. Instead they carried out a paper-based simulation. Ultimately, the software was not used by the students either for a pilot or for the main simulation in February. The course tutors felt they would never be confident enough in using the software and they were very concerned about doing anything that would damage the close relationship that exists between tutors and students on this particular course, so they took the decision not to go ahead with the SIMPLE-based simulation.

## **General comments**

In terms of the support received from the SIMPLE Core Team this was thought to have been good – all noted bugs were looked into and questions were answered, but the course leader felt that she would have needed someone based on campus permanently to assist with getting the simulations up and running. It was her opinion that the technical demands of the project were much greater than anticipated.

Learning simulations will continue to run at UWE, possibly assisted by online technologies but not with the SIMPLE tools and platform which they feel are not fit for the purpose of running open-ended learning simulations within a sustainable support model. There is support for simulation in the School of Law and there is definitely the opportunity to expand the scope of the simulations that are run at present. It was still felt that the original concept of SIMPLE was a strong idea that had a lot of pedagogical mileage.

# University of Warwick, School of Law

## Introduction

The Warwick simulation was used in the teaching of a module called Law in Practice. A cohort of 48 students takes this module in either their second or third year of undergraduate study. The simulation was based on a paper-based simulation that had run for several years at Warwick. The simulation was adversarial in nature, that is to say, pairs of firms negotiated a legal transaction. Students were divided into firms of four with each student taking the role of a lawyer within their firm. However, there was a key difference between the Warwick simulations from those that ran elsewhere. The students, as well as operating within their firm, were also called upon to play the roles of clients and witnesses in the simulations of other firms. There were no roles played by tutors as at GGSL for example. Following the online transactions in SIMPLE the students were required to prepare for and take part in a mock trial. Research assistants built the simulation and it was run by two professors, one of whom is head of school. While the senior staff involved did not have a great amount of experience of e-learning, both had used simulations to teach professional learning for many years.

## Building the simulation

Warwick received some additional funding from their institution to assist with building the simulation; thus the simulation was built by two postgraduate students. The first student began developing the NEDs and resources in April 2007 taking her lead from the personalised student handbooks and other materials that already existed for the paper-based version of the simulation. Initial NEDs were developed in May 2007 with some guidance from a SIMPLE Core team member based at Warwick. In mid-June 2007 she ran a short pilot study with a small group of students from Warwick. Student feedback from this pilot study was used to throw some light onto issues that needed to be considered both in relation to developing the software and how Warwick wish the tools to be used within the context of the module.

Shortly thereafter the work of building the simulation was passed on to another postgraduate student who spent another few weeks working on a second iteration of the NEDs. Uploading the simulation had been problematic. There were links in the blueprints that determined who can communicate with whom. The links had to be intact in both directions of communication. The fact that in Warwick's simulation students were playing roles not just within their own simulation but within others meant that the web of communication was extremely complex resulting in a hefty administrative task for the persons uploading the blueprint and making the potential for error high. Any such errors cannot be rectified once the simulation is running.

The postgraduate assistants noted handbook did cover many of the problems that were encountered while trying to get the simulation up and running but not always in terms that a layperson would understand.

## Running the simulation

What was significant was that prior to running the simulation the lecturers did not know that it should run with postgraduate students or adjunct staff acting as tutors, as it did elsewhere, eg at GGSL. This had led to academic staff spending rather more time than they might have using SIMPLE. They felt this should have been better explained at initial project meetings with Strathclyde and would revise their approach in future years, getting research assistants to perhaps take on the role of online tutors or mentors. The map of the virtual town was not much used but it was thought that in future it might easily be better integrated with the factual situation.

The process of building and running the simulation had highlighted what was not there in the original scenarios, which resources are missing, etc.; and revealed to staff that they could have added more realia to the sense of location.

There were some glitches in the simulation and with the software at Warwick. There were broken links between a couple of the characters which meant that certain messages that were sent never arrived but there was no feedback to the sender to say this was so. The 'sending' aspect of the SIMPLE

platform was felt to be rather clunky and did not work as smoothly as email would have done. One member of staff reported that some students were asking to use Outlook, which would not have been helpful, since the simulation would not have been centralized as it is in SIMPLE. It also would have taken students out of the simulation, which would then have lost the sense of authenticity.

## General comments

Warwick's original motivation for being part of the project came from having seen Ardcalloch demonstrated on a number of occasions at conferences. It was hoped that they might use it to manage the simulations they had been running for a number of years. In designing the simulation, some adaptations had been made to preserve the existing values of the course. The two professors wanted their students to be involved in conceptual work as well as vocational work, and therefore they designed a hybrid model of simulation. The fact that the course had only been partially adapted meant that the course wasn't transformed to the degree that perhaps occurred at other institutions involved in the project

By and large Warwick's expectations were met, but their view of SIMPLE had changed during the course of the year. The view had gone from thinking of SIMPLE as being driven by or being all about the virtual town to realising that actually it could be dispensed with. The importance of SIMPLE lay in its potential for managing communications and transactions. It was felt that perhaps the virtual town aspect had perhaps been hyped at the expense of this significant fact. Warwick have described SIMPLE as 'mundane' technology, but this is not meant in a derogatory way. In fact it is descriptive of the straightforward common sense nature of the approach.

Both members of staff felt they had to ensure students had clear instructions and that the weekly case meetings were essential. They use these meetings to move the students on to the next stage of the project, if necessary. They also identified problems, gave gentle guidance but neither were sure which method of communication is better - case meetings or using SIMPLE. The aspect of the simulation activity that had worked best was the sense of professionalism the students got from working in this way. As such the introduction of SIMPLE to the course was regarded overall as a success by both staff and students. However the key elements of skills development remained central and in particular it was felt that the students would remember the trial rather than SIMPLE. as the climax of the course and their enduring memory of it. SIMPLE was only used in a limited way – as was intended. The external examiner was given login details for SIMPLE so that he could inspect student work within the system.

Due to perceived lack of specialist IT knowledge, Warwick obtained assistance to build the simulation. It was straightforward enough to get money to do this – there is often a lot of money available in universities for e-learning. However when it came to actually hosting the software it transpired that this would not be easily done at Warwick without much wrangling and potentially a significant injection of cash. This illustrated a common issue in universities namely that while education encourages innovation, central service departments such as IT services can hold things up significantly.

The lecturers felt they had been protected last year from the real development work as they had the research assistants to do this work for them. They thought that it would be rather difficult to get a project up and running alone without the help of research assistants. They also considered that they had misjudged the level of support and technology required. It was felt that support from the core SIMPLE team had been very quick and helpful but that there had been less clarity on broader issues such as the server/hosting issue where they were in the dark. They felt they had been lucky to have both a key member of the SIMPLE team and UKCLE nearby to assist.

Warwick's plans for next year will involve case studies that are more related to environmental law. They plan to make more use of the virtual town to give the simulation a better sense of place.

# University of Glamorgan, Law School

## Introduction

The Glamorgan simulation ran in the Torts module of the first year of the University of Glamorgan's LLB degree programme with a class of 120 students who were split into firms of four. The simulation was an adversarial transaction based on GGSL's PI transaction with adjustments made to accommodate the differences between Scots and English law and the academic nature of this module as opposed to professional education (see Appendix 2 for more detail on this). The transaction was built by one of the senior lecturers who has a background in both Law and Multimedia but who has little experience of either e-learning or simulation. Two other lecturers took on roles within the simulation and were responsible for a number of pairs of firms each. Students had an allocated lab time where they could get assistance from a further member of staff who was qualified in both Law and information Technology.

## Building the simulation

The NEDs were built by the senior lecturer. There was some frustration in using the tools - there were quite a few crashes when trying to upload blueprints. Creating the resources and associating with the NED had also taken a great deal of time and effort and this along with the frequent crashes meant the senior lecturer wished she had started the process of building the simulation earlier. Despite the workload being heavier than had been anticipated, the job of building the simulation did not take time away from any other work activity.

## Running the simulation

A few aspects of the software had come as a surprise – the black colour of the interface for one thing, and the lack of email. This slowed communications and seemed to be different to what had been seen at Strathclyde. It had been the lecturer's intention to have some websites running alongside the SIMPLE environment. Unfortunately the software that would have enabled her to create them was not made available by the university and buying it was too costly for her departmental budget. Some of the richness of simulation had therefore been lost. The issue of hosting had been a significant one. It was not possible to have the project hosted at Glamorgan, so eventually it was hosted at Strathclyde.

## General comments

The lecturer's main expectation of SIMPLE was that it would improve legal knowledge, IT skills and other skills that students currently lack. This for some students at least appeared to be the case. There had also been a noticeable improvement on last year's results for this particular class with more students completing successfully – overall, an increase of 10% in both coursework and examination results. Students responded well to pressure and liked the constant feedback. They also responded well to role-play and expected fast turnaround of documents.

The lecturer thought that one of the main benefits of SIMPLE was having the ability to provide 'detached' feedback, that is to say feedback that is not emotionally charged in the way that feedback between teacher and student might be. There was also increased frequency in feedback, which was highly valued by students. The simulation allows the lecturer to role-play effectively in whichever character she happens to be playing at the time. SIMPLE was also useful from the point of view of assessment – the external examiner was allowed to access the system in order to view student work.

One downside to using SIMPLE in the way in which it was used at Glamorgan has been that when something went wrong it was not always easy to alert students to this or to fix the mistake. Posting a correction to an electronic notice board didn't always reach the desired number of students. There had been an issue when lecturer went abroad for a week. Those who took over were not always able to deal with problems, as they were inexperienced in using SIMPLE. At various points during the simulation there had been problems releasing documents to release documents because of mistakes and erratic progress of students. Students were not consistent in their approach to interim deadlines.

Glamorgan will be using SIMPLE again next year. Their advice to future users of SIMPLE would be to keep detailed records and to be very specific about what students have to submit as assessed work, something student feedback has indicated is a desire on their part also.

## **SIMPLE core team review**

At the beginning of the SIMPLE project in 2006 the project team consisted of Paul Maharg, and Patricia McKellar, two members of GGSL's Learning Technologies Development staff (Lead Applications Developer Michael Hughes, and Learning Technologies Manager Scott Walker, later joined by Applications Developer Gavin Maxwell), and part-time project manager Brian Henderson, supported by Helyn Gould with evaluation design and coding support provided by Futurelab.

All core team members participated in weekly meetings for the first two-thirds of the project, then bi-weekly meetings. These meetings were a key element in project management and helped drive progress and strategy within the project. When supporting participant departments, core team members focused on project implementation, pedagogical issues, strategic issues, curriculum design.

There were to be some hurdles along the way however. The departure from the project of Futurelab has been cited as having had an adverse impact on the management and running of the project in year one. A great deal of time was allocated to dealing with this particular issue, and it came to dominate project meetings. This may have taken attention away from other important ongoing areas of concern. Not surprisingly the impact on the evaluation itself during the period between Futurelab's departure from the project and the appointment of a new evaluation team, was marked. Very little formal data was collected during this period and indeed very little has survived from that first year. Since the drafting of the original evaluation plan at the end of 2006, the project had undergone significant changes, which meant the plan was no longer appropriate and so a new, more cohesive plan had to be drafted. This was delivered in October 2007, approved, and was implemented immediately.

Towards the end of the first year, two significant personnel changes took place. The project manager, Brian Henderson, left to take up a position at another institution and while he was still to be involved with the project, his role as project manager effectively came to an end. Around the same time the other project manager, Helyn Gould, who was also overseeing the evaluation, was promoted within the university, so that the time she had previously allocated to SIMPLE was now somewhat diminished. The impact of these personnel changes manifested itself in two key ways. First, the once-regular Core Team meetings became less frequent and secondly, having another member of the team in a remote location and two members of staff whose non-SIMPLE workload had increase, created difficulties when it came to organising times to meet that were suitable for all. Arguably the need for weekly meetings had diminished, since the software development phase of the project was over but it was felt by a number of Core Team members that some momentum and team cohesion might have been lost in the final few months.

Broadly speaking, the team worked very well together and the success of the SIMPLE project can be strongly linked to the wide range of expertise and experience in software development, project management, e-learning, pedagogy, and evaluation the team possessed as well as the high degree of commitment shown by every team member. Additionally, within the team there were a number of people who had a history of working together on earlier successful projects and initiatives, which went some way to ensuring good working relationships on the SIMPLE project.

## APPENDIX 2: A COMPARISON OF THE GGSL AND GLAMORGAN PERSONAL INJURY TRANSACTIONS

The following diagrams illustrate some of the differences between two of the projects, namely the Personal Injury transaction at the GGSL, and the PI transaction at Glamorgan. While the two appear similar at first glance, the significant differences lie in the complexity of the correspondence with other firms and other non-playing characters (NPCs). The number and nature of NPCs frequently determine the relative sophistication of a simulation. Because GGSL students were postgraduate level, and following a professional programme of study, the transaction was designed to be much more sophisticated than the Glamorgan transaction, where the students were first year undergraduates attending their first module in Torts. The GGSL transaction also employed variables in documents to randomize the simulations, much more detailed witness statements and realia, with contradictory or obscure issues arising, and a much greater degree of open-field simulation design.

There are many fascinating points that can be drawn from this comparison, and we shall be conducting work on this, to be posted on the simplecommunity website. For our purposes in this report, however, what is striking about the comparison is that the transactions were broadly similar in scope and aims. The similarity is proof that a simulation engine such as SIMPLE is flexible enough to be used in the same disciplinary area, at quite different levels of study, and for quite different educational ends.

Figure 6: Summary of GGSL Personal Injury transaction (blueprint to be posted on the simplecommunity website)

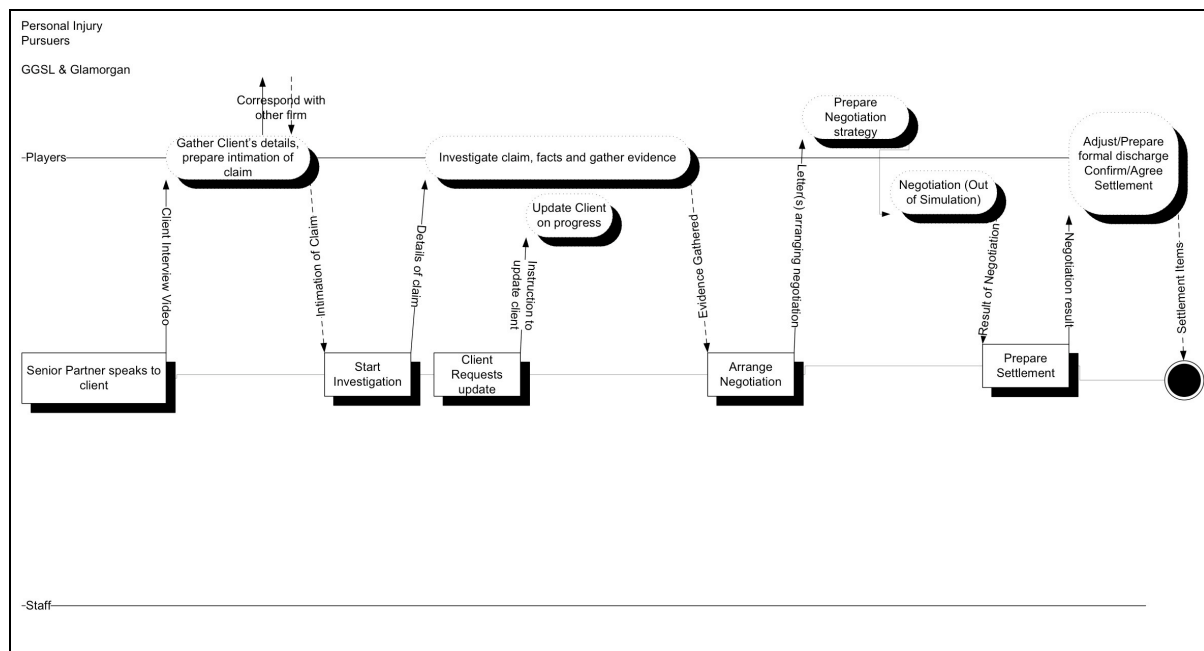
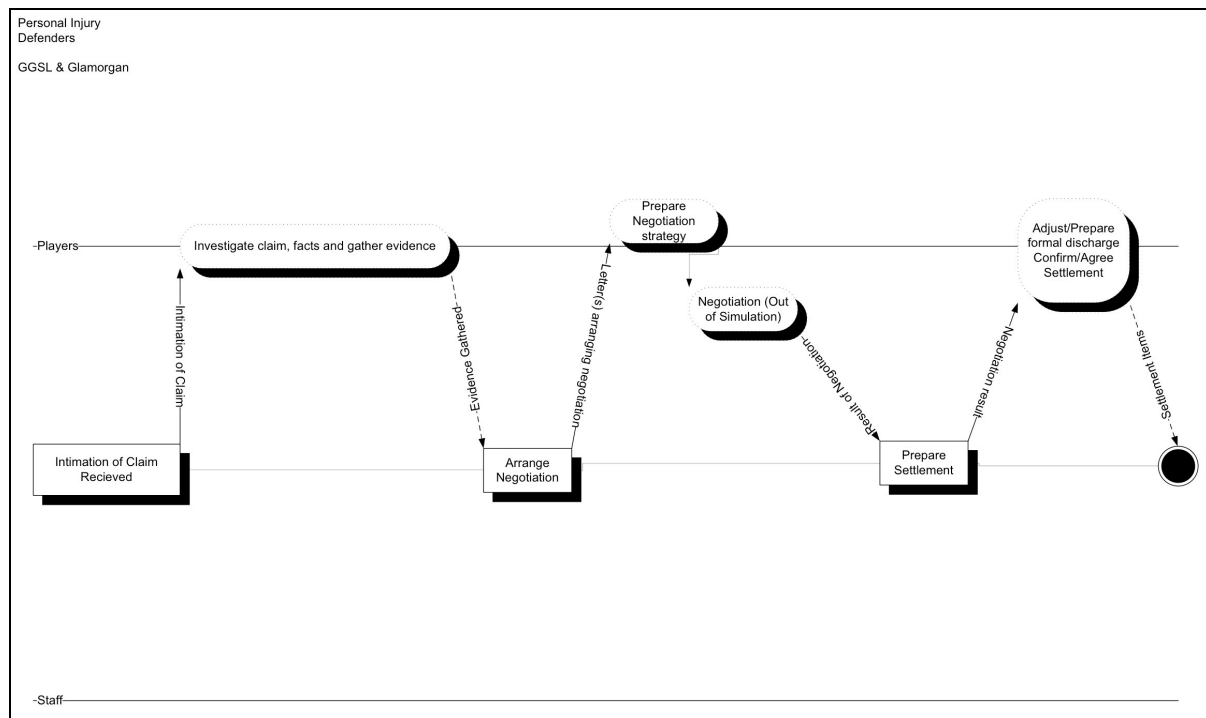


Figure 7: Summary of Glamorgan Personal Injury transaction.





## APPENDIX 3: SIMPLE EVALUATION PLAN

### Introduction

This document provides an outline of the overarching methodology of SIMPLE's evaluation plan, describing in detail the specific data collection activities in terms of the evaluation focus. Due to a change in structure of the evaluation personnel in the project this evaluation plan has been constructed more than halfway through the project and its evaluation. The document has been written to summarise the approach which SIMPLE is taking and give a basis for individual evaluation plans to be developed specific to each partner institution. Some activities already completed during the project will be built upon and thus are listed in the appropriate place.

The methodological approach adopted for the SIMPLE evaluation is that of an integrative evaluation (Draper *et al*, 1994). This methodology utilises mixed methods and multiple data sources to develop an overall picture of the partner's use of SIMPLE, highlighting issues, drivers and barriers. While the evaluation seeks to address specific aspects it also allows for the emergence of unanticipated aspects. The use of multiple, rich, data sources allows the triangulation of findings during analysis.

One of the principal elements of this approach concerns the source data used as the basis of analysis. When considering access to data or evidence, the approach adopted utilises any existing sources of data before introducing evaluation specific data collection mechanisms. This both minimises fatigue from excessive data collection from the subjects and also seeks to reduce the Hawthorne effect commonly found in the introduction of new teaching and learning practices.

As the evaluation involves a number of partners implementing their scenarios at different points over the academic year, there is the opportunity to feed results from pilot to pilot, examining emergent aspects in more detail. The evaluation plan has common elements that are targeted within all the partner evaluations. Beyond this there is a layer of partner specific aspects, acknowledging the uniqueness of each instance of SIMPLE implementation.

The specific areas that we wish to address can be categorised into the following main areas:

- How can SIMPLE provide a means of transforming education?
- How do we address systemic and institutional factors in the design and development of innovative practices and the implementation of SIMPLE in particular?
- What role does professional learning play within the partner institutions and how can and does SIMPLE contribute?

The first of these summarises our interest in the teaching and learning implications of the use of SIMPLE, while the second addresses the organisational context of this teaching and learning experience. The second section of this document will outline in detail specific parts of the evaluation in terms of these areas.

The third set of questions focus on professionalism and the academic ambition of developing and preparing our students for their role as professional practitioners on graduation. Professionalism is interpreted in a number of ways and will be specific to an individual pilot area. Common to all pilots is the interpretation of professionalism in terms of developing core graduate skills, frequently referred to as transferable skills as they transcend individual disciplines and are relevant to all. SIMPLE poses particular opportunities to develop team working and project/self management skills in the context of online collaborative workspaces, which are a current focus of corporate development. A more specific interpretation of professionalism relates to specific skills, values and attitudes of a professional in the context of conducting their professional role. In the Law and SW case, particular evaluative focus must be paid to the role of SIMPLE in developing the students' expectation of and competency in future practice; and this includes issues such as ethical practice. These areas will be addressed by pilot specific evaluation activities on top of the common core, although continuity in approach between relevant pilots will be maintained. Issues relating to professionalism will be outlined in the individual plans for each institution, developed in conjunction with partners and are not outlined in detail within this document.

## Stakeholders in the evaluation

The evaluation will collect evidence from each of the main stakeholders, both in terms of their development and implementation of SIMPLE, within each partner institution. Specifically these are:

- Students
- Tutors
- Lecturers and module leaders
- Developers
- Support staff such as Institutional IT Helpdesk staff and the SIMPLE Core team
- Heads of Department

The following evaluation plan has been structured around these stakeholders and is built upon specific data collection activities focussed on a specific stakeholder. The plan groups activities into 4 stages, chronologically ordered:

- Pre-simulation
- During simulation
- Post-simulation
- End of SIMPLE Project

The data collection methods combine both quantitative and qualitative elements, providing different perspectives and evidence on common areas of interest. For example, actual system statistics will be cross-referenced with learners' and tutors' perceptions in terms of patterns of use.

## Evaluation methods

The following specific methods will be employed:

- Observations
- Interviews (tutors/students/lecturers)
- Focus groups (tutors/students/lecturers)
- Diaries/logs
- Student materials
- Examining SIMPLE office
- Pre-course card exercise
- Post-course questionnaires
- System statistics

A discussion of each of these data collection methods follows.

### Observations

Observations are a useful way of collecting both quantitative and qualitative data on user interaction with both a system and with the other actors also using that system. This methodology is useful for investigating the user's point of view and can draw out 'tacit' knowledge, i.e. those aspects of the activity or process that might be taken for granted and therefore easily overlooked

Given the nature of SIMPLE, a software program that can be used in any location, observations of user activity will be carried out in several different contexts. Where appropriate, learner activity and learner–tutor interaction will be observed in scheduled class time in a classroom or computing laboratory environment. In order to elicit the most useful and unbiased data every effort will be made to ensure that the events being observed are as authentic as possible and the observation will involve as little disruption to the activities underway as is achievable. This approach is useful for long-term and longitudinal studies of user interaction and it is intended to be used in this way in one or more of the SIMPLE pilots.

In many cases however, learners will be using SIMPLE outside the classroom environment and effort should be made where possible to observe both individual and group learner activity in these other contexts. It is expected that at least one of the pilots, a group of students will be 'followed' during the course of their SIMPLE activities and will be observed for a short time at some point during each week of the simulation. Observations require only moderate preparation time and should impact little on participants' time. They require little in the way of additional resources to carry out. Analysis of the resulting data should take a moderate amount of time.

### **Interviews (tutors/students/lecturers)**

Interviews will be conducted at the end of the SIMPLE project to elicit both quantitative and qualitative data on participants' experience of using SIMPLE. Interviews can be useful for formative/developmental or summative/retrospective evaluation. There are a number of approaches to interviewing, which have in common the need to get perspectives on the evaluation targets from a sample of users representing different stakeholder groups and careful consideration will be given as to which approach will elicit the most useful data. A standardised, open-ended interview will make sure that questions are asked in the same way across a sample population by different interviewer. This approach has the risk of losing important, unanticipated, information. By contrast the guided or structured interview keeps interaction focused, covering same ground with respondent sets, while allowing individual experience to emerge. This approach has the weakness that it cannot divert far, or long, from agenda without losing part of 'the story'.

Interviews require only low amounts of preparation time, require a relatively low amount of participant time, require little in the way of resources to conduct and are straightforward to administrate. Analysis of the data collected from interviews will require a moderate amount of time and effort.

### **Focus groups (tutors/students/lecturers)**

Focus groups are moderated meetings of 'involved' people discussing their experiences. They are a useful tool for formative or summative evaluation and can serve as a single, self-contained method or can easily link to other evaluation activities. Focus groups are useful for generating hypotheses, identifying key issues, developing emergent themes and furthermore the data collected can feed into other data collection methods eg to determine the schedule for an interview with a stakeholder and indeed it is envisaged that they might be used in this way as part of the SIMPLE evaluation. Focus groups require a relatively low amount of preparation time, should take up only a modest amount of participant time, require little administration and nothing in the way of additional resources. A moderate amount of time is required for the analysis of the data collected by this method.

The main advantage of using focus groups to collect data is that they allow large amounts of interactive information on a topic to be obtained easily and within a short time. That the setting in which they take place is not 'natural' but deliberate could be seen as a disadvantage of the approach however focus groups are nonetheless a rich source of both quantitative and qualitative data. It is envisaged that for SIMPLE, groups of learners, groups of tutors and groups of lecturers will be brought together to discuss the issues that arose during their use of SIMPLE and their thoughts and feelings about these.

### **Diaries/logs**

Diaries and logs kept by participants can be a good means of collecting both quantitative data on participants' day to day activities as well as qualitative data regarding their thoughts and feelings in so doing. They can provide a good means of collecting longitudinal data and tracing the evolution of a course or learning journey. In some cases learners may already be completing learning logs as part of their normal class activities and where this is the case, these will be examined. It is often difficult to encourage participants to complete diaries, especially over long periods of time so careful consideration must be given to how this is administered and how diaries are to be structured in order to elicit the most useful feedback. Care must also be taken to ensure that all diaries are collected at the end of a study. Data collected via this method can easily be fed into the design of data collection activities scheduled for the end of the project such as interviews, questionnaires and focus groups.

### **Student materials**

Student materials will provide a rich source of qualitative data regarding the participant's use of SIMPLE in terms of the documents created in the system. As this work is often in the form of a reflective report on the learning experience, this should also provide data on participants' interaction with the system and other participants as well as providing data on the quality and nature of their learning journey. Data gathered in this way may easily be triangulated with that collected via other data collection methods such as questionnaire responses, interviews, focus group discussions, and observation reports. This data takes little time to collect and has little impact on the SIMPLE

participant but may take a large amount of time to analyse, so it is suggested that only a small sample of work is examined.

### **Examining SIMPLE office**

The SIMPLE office environment of each participant will provide a rich source of quantitative data regarding the participant's use of the system in terms of the documents created in the system and will also, via the inbuilt system logs of activity, provide data on participants' interaction with the system and other participants. Data gathered in this way may easily be triangulated with that collected via other data collection methods such as questionnaire responses, interviews, focus group discussions, course grades (student work) and observation reports. This data takes little time to collect and has little impact on the SIMPLE participant but may take a large amount of time to analyse, so it is suggested that only a small sample is examined.

### **Pre-course card exercise**

A short exercise completed by learners at the beginning of their SIMPLE experience that requires learners to complete a short form containing a few open questions about their prior experience, motivations and expectations before their first exposure to the software. Carrying out a short exercise such as this is helpful because it can generate a large amount of qualitative data with minimal preparation and administration. The impact on participants should be low due to the very short time required to complete the exercise: indeed it is envisaged that it should take up no more than five minutes and will be completed during scheduled lecture or tutorial time in order to ensure the collection of as many responses as possible.

### **Post-course questionnaires**

Questionnaires are a collection of open or closed questions. Questionnaires can be an excellent way of obtaining feedback about an activity and can be a very effective means of gathering both quantitative and qualitative data. Questionnaires have some advantages over other data collection methods such as interviews because responses are gathered in a standardised way and are therefore more objective. Generally it is relatively quick to collect information using a questionnaire and they are useful when working with large groups, however in some situations they can take a long time not only to design but also to apply and analyse. Questionnaires must be designed with a high degree of care: a poorly worded or structured questionnaire will generate data that is scant, poor in quality or both. When working with large groups such as the learners involved in SIMPLE, it will be extremely important to ensure that questionnaires are delivered and responded to in class time in order to ensure high rates of response.

Each stakeholder in SIMPLE will be required to complete a questionnaire tailored to their role in SIMPLE at the end of each simulation cycle questions either in a paper-based format or online, dependent on suitability at each pilot. Questionnaires will be completed anonymously in order to elicit the fullest and frankest responses from participants.

### **System statistics**

System statistics record user interaction with a software program. The level of detail recorded is determined by the metrics defined by the system developers. In the case of SIMPLE this includes details of login frequency, time spent on system, mouse clicks, system crashes etc. Such data can provide a useful means of tracking user preferences and navigational choices and is an excellent source of quantitative information.

Data collected in this way may easily be triangulated with other data sources, e.g. questionnaire responses, interviews, focus group discussions, student work and observations for a learner centred evaluation. Additionally, it may be put to use to conduct a usability evaluation with the system's data recording providing as an objective means to track use patterns, errors, navigation paths and time on task.

Using system statistics as a data collection method is relatively inexpensive in terms of preparation and administration time. It should require very little effort and time on the behalf of participants in SIMPLE, however analysis might prove time consuming depending on the nature and volume of the data collected.

Method	Preparation time	Time/ participant	Time/ administration	Analysis	Additional resource
Observations	Low-moderate	moderate	moderate	moderate	moderate
Interviews	moderate-high	moderate	high	moderate-high	moderate
Focus groups	low	moderate	moderate	low-moderate	moderate
Diaries/logs	low-moderate	low	low	low	none
Student materials	low	low	moderate	moderate	none
Examining SIMPLE office	low	low	moderate	moderate	none
Pre-course card activity	low-moderate	low	moderate	moderate	low
Post-course questionnaires	moderate	low	low	moderate	none
System statistics	moderate-high	low	low	moderate	moderate

Table 4: Summary of data collection method and resources/effort required to implement each

## Pre-simulation data collection activities structured by stakeholders

### Learners

*Questionnaires from previous year.*

Learners in last year's cohort completed questionnaires regarding their experience of the course before SIMPLE was brought online. This exercise was completed in order to provide baseline information that might later be compared with data collected from students who had used SIMPLE for the same course of study with the aim of gaining insights into the evolution of the course in terms of the student experience.

*Card activity (pre-course):*

A short pre-course exercise designed to elicit student thoughts, feelings and attitudes and existing knowledge before their first interactions with the SIMPLE platform. Carried out during class time. Duration: approximately 5 minutes. The exercise is designed to capture the students' engagement and understanding of the nature of the activity being undertaken as well as their expectations, relevant prior knowledge/experience and motivation.

### Tutors

*Questionnaires from previous year.*

Tutors working with last year's cohort of learners completed questionnaires regarding their experience of teaching the course before SIMPLE was brought online. This exercise was completed in order to provide baseline information that might later be compared with data collected from tutors (in many cases the same people) who had used SIMPLE to teach the same course of study with the aim of gaining insights into the evolution of the course in terms of the tutor experience.

### Lecturers

*Questionnaires from previous year.*

Lecturers working with last year's cohort of learners and tutors completed questionnaires regarding their experience of leading the course before SIMPLE was brought online. This exercise was completed in order to provide baseline information that might later be compared with data collected from lecturers (in most cases the same people) who had used SIMPLE to teach the same course of study with the aim of gaining insights into the evolution of the course in terms of the lecturer experience.

## **Data collection activities during simulation: by targeted stakeholder**

### **Learners**

#### *The SIMPLE office environment*

The SIMPLE office environment of selected students will be examined for evidence of success of collaboration and the journey taken to achieve this, the workload involved in terms of time and synchrony and also the depth and breadth of student engagement in the activity.

#### *Diaries and Logs.*

Dependent on appropriateness and acceptability at each pilot, learners will keep a log of their SIMPLE activities for the duration of the simulation to assess the depth and breadth of their engagement in the activity, their understanding of the nature of the activity being undertaken, their success in collaboration with other students and the journey taken to achieve this as well as the workload involved in terms of time and synchrony. Other areas explored will include access and use of system issues, and any other problems or issues that arise during the activity. In many cases, learners are already keeping journals of their activities and where this is the case, good use will be made of this data. Where appropriate, at pilots where this is not already the case, learners will be provided with means and instruction to complete a diary of their SIMPLE activities.

#### *Observations (Scottish pilots: EN, English pilots: PMcK).*

Live observation of student activity in SIMPLE. The learners' engagement and the nature of the activity undertaken will be investigated.

#### *System statistics*

These will be examined for evidence of trends in activity type, timing, frequency etc.

#### *Student materials.*

Any materials produced by learners for submission during or at end of simulation e.g. reflective essay or report will be investigated for indications of the effectiveness of the scenario design to the learner's journey, the depth and breadth of engagement of the learner and the learner's engagement and understanding of the nature of the activity being undertaken. The materials will be further investigated for evidence of the students' success of collaboration, the effectiveness of feedback on the learning journey and an assessment will be made of the quality/value of student work

### **Tutors**

An investigation will be made of the Simple tutor office environment.

Observations of tutor activity in class contact and non-contact hours will be carried out

Diaries and Logs: Tutors will keep a structured log with details of the time taken and the nature of the activity undertaken. Diaries will be completed or submitted on a weekly basis

System statistics will be examined for evidence of trends in activity type, timing, frequency etc.

### **Lecturers**

Diaries and Logs: lecturers will keep a structured log of their tutor supporting activities detailing the both the time spent and the nature of the activity undertaken. Diaries will be completed/submitted on a weekly basis.

### **SIMPLE core team**

Diaries and Logs: Each member of the team with support or quasi-support role will keep a structured log of learner/tutor/lecturer support activity- detailing the time spent and the nature of the activity undertaken. To be completed on a weekly basis.

## **Post –simulation data collection**

### **Learners**

Post-Course Questionnaires particular to learners will be devised. These will be structured with a variety of open and closed question and circulated for completion immediately following the end of a simulation. The areas investigated will include learners' engagement and their understanding of the activity, their success in collaborating with others and the engagement of other members of their team. The workload in terms of time and synchrony will be investigated as well as the effectiveness of tutor interventions. Learners will also be asked about changes they would make to the system, any access issues that arose and any further solicited problems and issues with their use of SIMPLE

Interviews with learners will be conducted to elicit comments about learner engagement with and the nature of the activity undertaken as well as their success in collaborating while working with SIMPLE. Also investigated will be learner effectiveness in using SIMPLE and the feedback that they received while on the learning journey as well as the effectiveness of tutor intervention on that journey. Learners will also be asked about their workload in terms of time and synchrony and about any problems or issues encountered.

Focus Groups will take place with small groups of learners, in the teams in which they worked in SIMPLE, to elicit comments regarding learner engagement with and the nature of the activity undertaken. Also investigated will be the effectiveness of feedback on the learning journey and the effectiveness of tutor intervention on this journey. Collaborative aspects of interaction will be investigated to discern whether and to what extent the team engaged. The focus group will also provide a forum to discuss any other arising problems and issues.

Tutor interviews will be conducted to elicit comments about learners' engagement and understanding of the nature of activity undertaken and the depth and breadth of this engagement. Tutors will also be asked for their perspective on the learners' success of collaboration, their reaction to feedback and the quality and value of the student work produced. A discussion of workload, access and use of system issues will also take place.

### **Tutors**

Post-Course Questionnaires particular to tutors will be devised. These will be structured with a variety of open and closed questions. These will be circulated for completion immediately following the end of a simulation.

Tutors will be asked to participate in Focus Groups, Tutor Interviews (about their own experience), and additionally, any Teaching Review notes and Quality Assurance Documentation that are relevant will be examined. The Interviews and Focus Groups will be targeted at emergent phenomena and issues, with specific targeting of individual partners as appropriate. These data collection methods will aim to provide insight into the following areas:

The tutors' engagement and understanding of the nature of the activity being undertaken as well as the tutors' place in and engagement with the teaching and learning system and their satisfaction with outcome will be investigated.

The impact on student performance will be investigated. In particular, the quality and value of student work produced following interaction with SIMPLE, and SIMPLE's capacity for enabling students to practice and reflect upon professional activities and values will be investigated.

The impact on tutor performance will be investigated in terms of workload, time and synchrony. There will also be consideration of the tutors' contact with students, their ability to intervene and shape student progress and any other issues in group management that arise.

Technical issues and technical barriers to success such as access issues and use of system issues will be investigated as well as non-technical issues and non-technical barriers to success and data on solicited problems and issues, unforeseen issues and specific issues with given scenarios /simulations will be collected.

Tutors will also be asked to propose modifications for future iterations of SIMPLE including those changes they would make to SIMPLE and those they would make to local organisation in order to achieve more satisfactory results. They will also be asked to reflect on what they would have done differently, what needs to be modified and what the next steps with SIMPLE should be.

## **Lecturers**

Post-Course Questionnaires particular to lecturers will be structured with a variety of open and closed questions. These will be circulated for completion immediately following the end of a simulation.

Lecturers will be invited to take part in Focus Groups and Tutor Interviews (about their own experience) and any relevant Teaching Review notes or Quality Assurance Documentation will be examined. These methods will be used in parallel with those that are taking place for Tutors. These Focus Groups and Interviews will be more generally focused and will have more room to accommodate unforeseen phenomena than those conducted with tutors. They will deal with the lecturers' perspectives on their own use of the system, and their awareness of the issues that tutors, as well as their observations regarding learners.

## **End of SIMPLE project**

### **Developers**

Reflective interviews will be conducted with SIMPLE software developers to establish their satisfaction with outcome in terms of the software produced and to elicit comments about any unforeseen issues that arose, what was learned during the implementation stage and what they would have done differently. The interviews should also provide insights into their perceptions of need for changes in structure/system, any aspects of SIMPLE that need to be modified and their thoughts on the next steps for the software.

### **Support staff**

Reflective interviews will be conducted with SIMPLE software developers to establish their satisfaction with outcome and to elicit comments about any unforeseen support or other issues that arose, what was learned during the implementation stage and what they would have done differently. The interviews should also provide insights into their perceptions of need for changes in structure/system, any aspects of SIMPLE that need to be modified and interviewees' thoughts on the next steps for the software.

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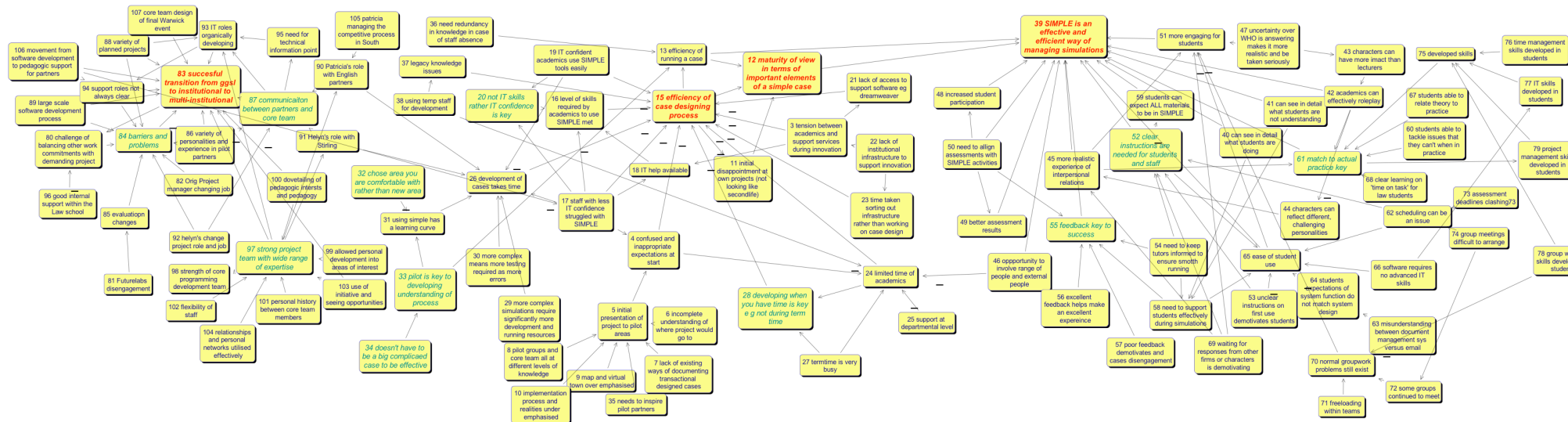
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## APPENDIX 4: EVALUATION DATA: STAKEHOLDER ANALYSIS DIAGRAM

The following diagram is the result of analysis, based upon stakeholder data, and using decision analysis software (*Decision Explorer*). The process of drawing up this diagram (completed largely by Helyn Gould, with assistance from Emma Nicol and Paul Maharg) contributed substantially to the creation of the summary reports in Appendix 1. A copy of this diagram at a larger resolution can be found at <http://simplecommunity.org>



## APPENDIX 5: INITIAL & FINAL PROJECT EVENTS

### SIMPLE Initial workshop, Ross Priory, University of Strathclyde

Below is the workshop programme for the initial event that began the SIMPLE project (at first termed TLE 2.0). This and all related workshop resources can be found at the SIMPLE community page, at <http://simplecommunity.org>.

Day	Time	Session		Comment
<b>SUNDAY</b>				
	2.30 for 3.00	Arrival		Tea, coffee
	3.00 – 3.45	<i>Plenary</i> <ul style="list-style-type: none"> <li>• Introductions &amp; overview of event</li> <li>• Overview of Ardcalloch &amp; TLE 1.0</li> </ul> <i>Discussion</i>	PM	
	Break, 5 mins			
	3.50 – 5.00	<i>Plenary</i> <ul style="list-style-type: none"> <li>• TLE 2.0</li> <li>• Interdisciplinary and town planning issues</li> <li>• Transactional learning &amp; professionalism</li> </ul> <i>Discussion</i>	SW & MH PM	
	Break, 15 mins			Tea, coffee
	5.15 – 6.45	<i>Plenary</i> <ul style="list-style-type: none"> <li>• Transactions in depth</li> <li>• Granularity of scenarios &amp; resources</li> <li>• Use of templates</li> <li>• Evaluation methodology</li> </ul> <i>Discussion</i>	PM  MO	
	7.00 for 7.30	<b>Dinner</b>		
		Walk in gardens (weather permitting); bar		

<b>MONDAY</b>				
	7.00 – 8.00	Walk / Jog / golf (w/p)		
	8.20 – 9.00	<b>Breakfast</b>		
Monday	9.00 – 9.10	<i>Plenary</i> <ul style="list-style-type: none"> <li>• Recap + preview of day's outcomes</li> </ul>	PM	
	9.10 – 11.30	<i>Small Group-work</i>  Development of interdisciplinary case studies: <ul style="list-style-type: none"> <li>• Narratives</li> <li>• Tool analysis</li> <li>• Support for staff</li> <li>• Resources required</li> </ul>		Tea & coffee available from 1000; seminar to be divided into three interdisciplinary groups; rapporteur to be appointed to feed back to plenary after lunch.

		<ul style="list-style-type: none"> <li>• Hazards of approach</li> <li>• Benefits of approach</li> <li>• Lists of features for TLE 2.0</li> </ul>		
	Break, 15 mins			Tea, coffee
	11.45 – 12.45	<i>Small group-work</i>  Assessment plans: <ul style="list-style-type: none"> <li>• Learning outcomes</li> <li>• Competencies to be developed</li> <li>• Bodies of evidence required for assessment</li> <li>• What's missing?</li> </ul>		
	12.45 – 1.15	<b>Lunch</b>		
	1.15 – 2.30	<i>Plenary</i> <ul style="list-style-type: none"> <li>• Feedback by the three interdisciplinary groups on case studies, functionality &amp; assessment</li> <li>• Feedback on three sets of presented plans by TLE group</li> <li>•</li> <li>• <i>Discussion</i></li> </ul>	Small groups	
	Break, 5 mins			
	2.35 – 3.00	<i>Plenary</i>  Roadmap: Next steps in TLE 2.0 project	BH, MO, PM	
	3.00	<b>High Tea &amp; depart</b>		

Key:

BH – Brian Henderson    MH – Michael Hughes    MO – Martin Owen  
 PM – Paul Maharg                      SW – Scott Walker

## SIMPLE Launch event, University of Warwick

Below is the workshop programme for the final event at Scarman House, University of Warwick, that ended the SIMPLE project and launched the SIMPLE Foundation. This and all related workshop resources can be found at the SIMPLE community page, at <http://simplecommunity.org>.

The SIMPLE project, jointly funded by JISC and UKCLE, aimed to develop an open source simulation environment for learning in law and other professions and to evaluate its use in large-scale implementations. The SIMPLE - Simulated Professional Learning Environment - application will be available to download by summer 2008.

At this launch event we shall demonstrate the suite of tools used to create simulation blueprints, and the custom-built platform. Five partner universities (Glamorgan, Stirling, Strathclyde, Warwick and the West of England) have been involved in implementing the application in undergraduate and postgraduate modules in law, social work, management science and architecture - some of their projects will be presented during the first day of the event, along with interim evaluation results. The second day is given over to a hands-on session for academics and technical staff interested in joining the second-wave of SIMPLE.

### Monday 9 June 2008: The SIMPLE project – what it achieved...

The first day will focus on the two-year span of the SIMPLE project – what were the aims, what has the core team produced, how did participating institutions use the software, and how has a simulation approach to teaching, learning and assessment changed local practices?

10:30 *Registration and refreshments*

11:00 **Introduction to the day** - Paul Maharg (Glasgow Graduate School of Law - GGSL)

11:15 **Learning through simulations: SIMPLE** - Paul Maharg and Patricia McKellar (UK Centre for Legal Education)

11:45 **Partner projects: case studies**

- Glamorgan Law School (Karen Counsell)
- Warwick Law School (Nick Johnson)

12:30 *Lunch*

13:30 **Partner projects: case studies**

- GGSL (Strathclyde University, Karen Barton)
- Social Work (Strathclyde University, Mel Cadman & Kate Cameron)
- Management Science/Architecture (Strathclyde University, Helyn Gould & Emma Nicol)

14:40 *Coffee/tea*

15:00 **Future directions 1:**

- **Cyberdam** – Diny Peters & Pieter van der Hijden
- **Development of the SIMPLE platform** - Michael Hughes, Legal Education Technology Lab

16:10 **Future directions 2:** 'second wave' participants: open discussion

16:45 Close of sessions day 1

1800 Drinks in Scarman House bar

19:00 Dinner

## **Tuesday 10 June 2008: Building simulations with SIMPLE**

The second day will focus on simulation building. Working with facilitators, participants will draft scenarios on paper, and will then have the opportunity to use the SIMPLE tools. (Facilitators: Karen Barton, Helyn Gould, Michael Hughes, Patricia McKellar & Paul Maharg)

09:15 **Introduction to simulation designing:** tips, tools and examples

09:30 **Designing scenarios on paper:** workshop & plenary

10:30 *Coffee/tea*

10:45 **Introduction to the simulation tools**

11:00 **Designing scenarios using SIMPLE tools:** workshop & plenary

12:00 Questions, comments; introduction to the SIMPLE Platform

12:30 *Lunch & departure*

## APPENDIX 6: SIMPLE LAUNCH EVENT EVALUATION FEEDBACK

1. *How relevant and useful to your work did you find today's event?*

Not at all 0      A little 0      Fairly 6      Considerably 24

2. *Please could you rate each of the following on a scale of 1 to 5 (5 being the most useful and 1 being the least useful)*

	1	2	3	4	5
Quality of materials at the event			1	11	18
Preparation for the event		1	3	6	17
Presentations at the event			2	11	17
Overall organisation of the event			1	5	23

3. *Please indicate what you will change about your teaching and course development as a result of this event?*

1. Will look at implementing SIMPLE
2. I'm not sure at the moment. I will take it back and discuss in the law school and with our e-learning people.
3. Clinical education in p/g law
4. Don't teach but provided a v good opportunity for us as SC to understand project and pass on info- also understand lecturer concerns
5. Hope to integrate small SIMPLE simulations
6. Probably nothing because of intractable problems at my university
7. I will use SIMPLE in delivery of one of my modules and try to encourage my dept to adopt it more generally
8. N/A but I will try and help disseminate
9. Consider using SIMPLE in my Criminal Law module
10. Look at alternatives to entirely paper based assessment
11. It won't change things but will encourage developments already planned
12. I will be presenting this to the learning & teaching team at Aston when I get back. Even I can see areas for application and will be keen to get buy in from some cross discipline approaches.
13. More intentional. Break up simulations into smaller pieces

4. *Tell us how you rate this event as a method of dissemination for UKCLE projects:*

Excellent 21      Good 8      Average 0      Poor 0

And give any other comments below:

1. Possibly it could have been less repetitive and completed in a day. Pace was rather slow.
2. V good for SIMPLE project- interactive and sociable
3. Residential setting allowed complete engagement away from other distractions
4. Excellent- especially the chance to play with the application
5. Outstanding, very interesting.
6. Paul/Helen very helpful
7. Hands on session was extremely good
8. Join the C of P and develop 4 blueprints over the next year
9. The hands on phase needs work. Too quick. Should have told us to load software on day one so we were ready to go. It would have been good for us to be making the same keystrokes as

Michael, so we actually followed along with him and did what he did. He was very nice but a bit too IT for the non IT person.

5. *Tell us how you rate this event as an opportunity to discuss the SIMPLE application:*

Excellent 20      Good 9      Average 0      Poor 0

And give any other comments below:

1. I think it would have been more effective to start by putting delegates into the student role for half an hour and letting them experience the forward facing element of the software.
2. Would have been interesting to have more discussion re pedagogic maturation
3. V good event and presentations all useful and interesting BUT the work through of the software was too fast and not useful as I quickly fell too far behind to understand what was happening.
4. It would have been better at the beginning to demonstrate what the student sees and does
5. Good to know what one's project member partners are doing
6. More time for hands on would be useful
7. Very helpful
8. Good opportunity to meet other discipline reps
9. Very useful exposure. A tutorial on the computer would be helpful- like with other new software. It's a great concept. Also tell people in advance that the software won't work on Macs

6. *Tell us how you rate the 'case study' approach used at this event:*

Excellent 17      Good 9      Average 3      Poor 0

And give any other comments about this below:

1. Would be useful to cover student issues not covered e.g. diverse student body
2. Really useful to hear how it operated in practice
3. Useful to see how SIMPLE has been adopted and evaluations from staff and students
4. We could have started a bit earlier and given the case study presentations more time to go into detail

7. *Tell us how you rate the workshop activities on Tuesday morning:*

Excellent 18      Good 6      Average 2      Poor 0

And give any other comments about these sessions below:

1. V helpful facilitators
2. Really helpful to practice
3. Bit fast paced- would loved it to have lasted all day
4. Really enjoyed the opportunity to practice with SIMPLE and get advice re questions
5. Very helpful, very interesting
6. Possibly too little time

8. *Session 5 'Future directions 2' discussion session considered how we might take forward the SIMPLE Second Wave projects. What support would be most valuable to you should you decide to continue with this project?*

1. I shall continue to liaise with Paul and team about how we can progress this.



2. How to guide, possibly on website. SIMPLE wiki
3. Help in using software
4. Online IT support and forming development groups to work with
5. How to support for techie side
6. One which was just an email away
7. Technical helpdesk- phone/email
8. Technical support and training on NED
9. Being able to keep in touch with technical developments and creative approaches to delivery
10. Closer links- more discussion time
11. Discussion and general encouragement
12. More training re server- it will at best take a lot of time to convince 'my' IT dept to run it on own
13. Integration with Student management systems & VLEs
14. Regular meetings f2f
15. Continued financial support, provide community development, follow up workshops
16. Email/phone 1 to 1 coaching, consultation

9. *Do you have any other comments on any aspect of this event that you wish to make.*

1. Excellent one woman admin
2. Brilliant venue
3. Opportunities to communicate with interested people from variety of settings- very stimulating
4. Platform- technical help

10. *Are there any other topics you would like to see covered in the UKCLE events programme?*

1. Pedagogic issues. Sources for further qualifications for tutors
2. Research methods for tutors
3. Could you stress the need for UKCLE presentations to load onto the website or do more with UKCLE re loading onto website.

11. *We would find it useful to be able to evaluate the impact of today's session on your daily teaching activities in six months time. If you would be happy to take part in a short telephone survey please give your name and contact details below:*

Name:

Telephone:

E-mail:

Please complete the evaluation form and hand it in to Patricia McKellar at the end of the launch event or send it to Events Coordinator, UK Centre for Legal Education, University of Warwick, Coventry, CV4 7AL.

Fax: 024 7652 3290

# APPENDIX 7: SIMPLE DISSEMINATION ACTIVITIES: PUBLICATIONS & PRESENTATIONS

## Publications

(Presented in chronological order. All publications are peer-reviewed)

- Barton, K., Maharg, P. (2006) E-simulations in the wild: interdisciplinary research, design and implementation, in *Games and Simulations in Online Learning*, edited by Aldrich, C., Gibson, D., Prensky, M., Part 2, chapter 6, 170-218, Idea Group Ltd, 115-148 (16,000 words)
- Maharg, P. (2006) Authenticity and professionalism: transactional learning in virtual communities, in *Innovating E-Learning Practice, The Proceedings of Theme 3 of the JISC Online Conference, Innovating E-Learning 2006*, ed by Minshull, G., Mole, J., chapter 6, 33-42, [http://www.jisc.ac.uk/media/documents/programmes/elearning\\_pedagogy/ebook\\_theme3\\_a4.pdf](http://www.jisc.ac.uk/media/documents/programmes/elearning_pedagogy/ebook_theme3_a4.pdf)
- Maharg, P. (2006) SIMPLE – Simulations for Professional Legal Learning, *D-Lib* (2,000 words)
- Barton K, McKellar P. (2007) Transactional Learning: Ardcalloch Sheriff Court is open for business, *Journal of Information, Law and Technology*, (1), [http://www2.warwick.ac.uk/fac/soc/law/elj/jilt/2007\\_1/barton\\_mckellar](http://www2.warwick.ac.uk/fac/soc/law/elj/jilt/2007_1/barton_mckellar)
- Barton, K., McKellar, P., Maharg, P (2007) Authentic fictions: simulations, professionalism and legal learning, *Clinical Law Review*, 14, 1, 143-193, (20,336 words).
- Maharg, P., Owen, M. (2007) Simulations, learning and the metaverse: changing cultures in legal education, *Journal of Information, Law, Technology*, 1, [http://www2.warwick.ac.uk/fac/soc/law/elj/jilt/2007\\_1](http://www2.warwick.ac.uk/fac/soc/law/elj/jilt/2007_1), (10,382 words)
- Maharg, P. (2007) *Transforming Legal Education: Learning and Teaching the Law in the Early Twenty-First Century*, London, Ashgate Publishing, 354pp. (Chapters 6-8, Part III Conclusion and Afterword deal specifically with transactional learning and SIMPLE).
- Maharg, P. (2008) SIMPLE learning and professional practice, in: Mayer, I., Mastik, H. (eds) *Organising and Learning Through Gaming and Simulation*, Eburon Academic Publishers, Amsterdam (4,000 words).
- Gould, H., Hughes, M., Maharg, P., Nicol, E. (forthcoming, spring 2009) The narrative event diagram (NED): a tool for designing professional simulations, in Gibson, D. (ed) *Digital Simulations for Improving Education: Learning Through Artificial Teaching Environments*, IGI Global Books, Hershey, PA (7,815 words).
- de Freitas, S., Maharg, P. (forthcoming, 2009) Transforming professional learning, in de Freitas, S., Maharg, P. (eds) *Learning Through Play*, MIT Press (6,475 words)
- de Freitas, S & Neumann, T. (2008). The use of 'exploratory learning' for supporting immersive learning in virtual environments. *Computers and Education* (forthcoming) (7,362 words).

## Presentations & Keynotes

(Set out in chronological order. Many of these presentations can be found at

<http://www.slideshare.net/paulmaharg>)

- Barton, K., Bloxham, S. McKellar, P., Maharg, P. (2006) UK legal education and ICT: state of the discipline, state of the art. The 9th International Conference on Substantive Technology in Legal Education and Practice, University of Oslo, 28-29.6.06
- Barton, K., Bloxham, S., McKellar, P., Maharg, P. (2006) Rip mix & learn: social software and professional legal education, Society of Legal Scholars Annual Conference, University of Keele, 4-7.9.06
- Barton K, McKellar P, Transactional learning and simulations in professional legal education, Subject Centre Internal Conference, Manchester, March 2007
- Barton K, McKellar P, Learning through Simulations: SIMPLE, Blended Learning Conference, University of Hertfordshire, June 2007
- Bloxham S, McKellar P, Collaborative Learning with Simuations, UCL E-Learning Event, May 2007
- Gould, H., Henderson, B., McKellar, P., Maharg, P. (2007) Really SIMPLE stuff: simulated professional learning, LILAC, January 2007
- Gould, H., Henderson, B., Maharg, P. (2007) Really SIMPLE stuff: simulated professional learning, JISC E-Pedagogy Expert Group Meeting, Said Business School, University of Oxford.
- Henderson, B., Gould, H. Maharg, P. (2007) Demonstration of simulation learning and SIMPLE: Visit of Japanese law professors, 19 February 2007.

- Hughes, M., Maharg, P. (2007) Transactional learning and simulations in professional legal learning, JISC Regional Support Centre Scotland Conference, Menzies Hotel, Glasgow, 3.07.07
- Johnson N, McKellar P, SIMPLE, Simulation Learning, Commonwealth Legal Education Conference, University of Kenya, Nairobi, August 2007
- King, R., Maharg, P. (2008) Rip mix & (I)earn: the futures of legal KM..., Fifth Annual Knowledge Management Conference, Hilton Hotel, London, 24.4.08, invited plenary presentation
- Li, L., Maharg, P. (2008) Simulation, technology, professionalism: transforming the student experience, *The Future of Legal Education Conference*, Georgia State University College of Law, invited keynote presentation
- McKellar, P., Maharg, P. (2007) Demonstration of SIMPLE, Faculty of Engineering, University of Liverpool, 4.6.07
- McKellar, P., Learning with Simulations, Learning and Teaching Staff Development Day, University of Plymouth, June 2007
- McKellar P., Maharg P, SIMPLE, Learning through simulations, International Conference in e-learning in law and interactive teaching, National Chung-Cheng University, Taiwan November 2007, Invited paper.
- McKellar, P., Maharg, P. (2007) Really simple stuff: simulated professional learning, BILETA Conference, University of Hertfordshire, 17.4.07
- McKellar, P., Maharg, P. (2008) SIMPLE – Simulated Professional Learning Environment – an update, *Learning in Law Annual Conference*, Warwick, 5.1.08
- McKellar, P., Maharg, P. (2008) SIMPLE – Simulated Professional Learning Environment – an update, BILETA Conference, Glasgow Caledonian University, 28.3.08.
- McKellar, P., Maharg, P. (2008) 'There is no spoon': SIMPLE and legal learning, Society of Legal Scholars Conference, Legal Education section, London School of Economics, September 2008
- Maharg, P. (2006) Professional Learning in Cyberspace: Possibilities, Realities, invited seminars, University of Portsmouth Law School, 30.1.06
- Maharg, P. (2006) Virtual learning and resource-based learning, City University Law School, London, invited seminars, 2.2.06
- Maharg, P. (2006) Online learning communities and authentic learning, University of Middlesex, invited staff development seminar, 15.2.06
- Maharg, P. (2006) Legal CPD and simulation learning, invited staff development seminar, College of Law, 16.2.06
- Maharg, P. (2006) Professional learning & simulation, invited presentation, Social Work dept, Jordanhill Campus, University of Strathclyde, 14 September
- Maharg, P. (2006) Simulations and legal learning, UKCLE E-learning Day, University of Warwick, 20 September
- Maharg, P. (2006) Transactional learning and simulations: how far can we go in professional legal education? *Spelend leren in virtuele werelden / Playful Learning in Virtual Worlds Conference*, TU University, Delft, 27.9.06, invited keynote lecture
- Maharg, P. (2006) Law e-learning post-2010: glimpsing the future, *UK Legal Education and Training Group (LETG) Annual Conference*, Aston University, Birmingham, 15-16.11.06, invited keynote lecture
- Maharg, P. (2006) Beyond simulation and social software, *UK Centre for Legal Education E-learning all-day seminar*, Aston University, 20.9.06
- Maharg, P. (2007) Technology, training, know-how: achieving the shift, Herbert Smith, Training Awayday, 20-21.03.07. Invited keynote.
- Maharg, P. (2007) Blogging, podcasting & beyond: from real to second life, Denton Wilde Sapte client seminar, DWS, 7.02.07. Invited presentation.
- Maharg, P. (2007) SIMPLE, Transactional Learning, simulation, University of Hong Kong staff development series, 14-18 May. Invited staff seminars
- Maharg, P. (2007) SIMPLE, Transactional Learning, simulation, Griffith University, Brisbane, Australia. Staff development series, 14-18 May. Invited staff seminars, 21-25 May
- Maharg, P. (2007) Web 2.0 and global e-legal learning, College of Law Professional Development Awayday, 2.7.07. Invited plenary.
- Maharg, P. (2007) SIMPLE learning and professional practice, ISAGA Conference, Nijmegen, Netherlands, 10-13.07.07
- Maharg, P. (2007) SIMPLE stuff: simulated professional learning, ALT-C Conference, University of Nottingham, East Midlands Conference Centre, 3-6.09.07

- Maharg, P. (2008) Simulation, technology, professionalism: transforming the student experience, Kwansei Gakuin University Law School Simulation Conference, 7 March, Osaka, Japan. Invited presentation.
- Maharg, P. (2008) Transforming legal education, University of Strathclyde Ross Priory Legal IT Retreat, 14.5.08, invited presentation.
- Maharg, P. (2008) simulation::plagiarism, *Grasping the nettle: designing assessment to reduce plagiarism*, [http://www.heacademy.ac.uk/events/detail/21\\_May\\_2008\\_Assessment\\_Event](http://www.heacademy.ac.uk/events/detail/21_May_2008_Assessment_Event) , invited presentation.
- Hughes, M. (2008), SIMPLE learning and professional practice, PILI Conference, Krakow. Invited paper.