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The Simulation Triad

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The Simulation Triad

Abstract

This chapter contributes to the discussion on how best to theorise relationships among learning preferences, simulations, role plays and games as modes for learning. It describes the development of a framework called the Simulation Triad which is used to better define online role play by positioning it in relation to simulation and games as a teaching method. For designers of online simulations, the Simulation Triad, and the complementary Design Space Framework, will illustrate design choices around problems, rules and roles, clarifying that designs for role-based simulation emphasise interaction between roles to resolve a problem rather than focus on rules that solve a problem. The examples in this chapter will demonstrate how role-based simulation, with its emphasis on student-to-student interaction and group work to research authentic problems, is a learning design for transforming university teaching into learning.

Keywords

online role play, simulation, role-based e-learning

Disciplines

Arts and Humanities | Social and Behavioral Sciences

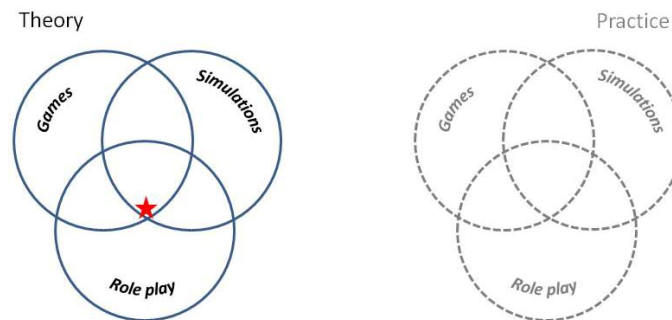
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Chapter Two

The Simulation Triad

Sandra Wills



Introduction

This chapter contributes to the discussion on how best to theorise relationships among learning preferences, simulations, role plays and games as modes for learning. It describes the development of a framework called the Simulation Triad which is used to better define online role play by positioning it in relation to simulation and games as a teaching method. For designers of online simulations, the Simulation Triad, and the complementary Design Space Framework, will illustrate design choices around problems, rules and roles, clarifying that designs for role-based simulation emphasise interaction between roles to resolve a problem rather than focus on rules that solve a problem. The examples in this chapter will demonstrate how role-based simulation, with its emphasis on student-to-student interaction and group work to research authentic problems, is a learning design for transforming university teaching into learning.

Background

This chapter is based on twenty years of tracking and fostering online role play, mainly in university-level teaching (Wills, 2010). This work reached a watershed in 2006-2009 when it was funded by the Australian Learning & Teaching Council (ALTC) as a national project under the title of Project EnROLE: Encouraging Role-based Online Learning Environments. The project goal was to encourage uptake of online role based learning environments by building a repository of learning designs for role-based e-learning which would better reward and recognise teachers already using role play and scaffold teachers getting started with role play.

The BLUE Report (Wills *et al.*, 2009) describes the project's outcomes and achievements in four sections representing four phases of the project: Building, Linking, Understanding and Extending. Over 70 learning design descriptions have been collected in the EnROLE repository.

Role play is widely acknowledged to be a powerful teaching technique in face to face contexts (Bolton & Heathcote, 1999; Levy, J. 1997; Shaw, this volume). In blended and online teaching contexts it has now been singled out as an example of good practice by ALTC and its predecessors (see ALTC's Learning Designs Project www.learningdesigns.uow.edu.au).

Role plays are situations in which learners take on the role profiles of specific characters or representatives of organisations in a contrived setting. Role play is designed primarily to build first-person experience in a safe and supportive environment. Much of the learning occurs because the learning design requires learners to explore and articulate viewpoints that may not be their own.

There are differences in the intended design of role plays, simulations and games for learning and these used to be well-understood. However, the advent of technologies to deliver role plays, simulations and games has enabled new ways of enacting the format which blur the previous boundaries. Russell (in this volume) provides an overview of the relationships between the three forms, using examples to illustrate the differences.

- *“A game is a constructed situation in which players make efforts to win within defined rules...”*
- *Simulations differ from games in that they aim to model how a complex reality functions, and to present participants with a realistic, if simplified, problem to solve (Gredler, 1992)*
- *In a role-play, learning takes place through identification with a character in a social context. This leaves room for the learners' own imaginative elaborations and interpretations. The focus is on the interaction between people with different worldviews and priorities.”*

This chapter discusses the relationships between role plays, simulations and games in order to create a case for online role play as a effective learning design or, as they are called more broadly by the end of the chapter, role-based simulations.

Technologies for role play, simulations and games

The design of role plays, simulations and games, traditionally enacted in face to face classrooms, has changed immeasurably over the past 30 years with the advent of learning technologies of growing sophistication and pervasive availability. Online role plays have, however, required technology of much less sophistication, generally using only email or a combination of email and web-based threaded discussion forum (Figure 1).



Figure 1: Screen capture of Diplomatic Encounters online role play at University of Western Australia (Yasmeen & Fardon, 2002) showing threaded discussion by students in role as national delegates for UK, China, Syria, Russia, Pakistan, and Egypt.

These technologies are called ‘asynchronous’ technologies, meaning that users do not have to be online at the same time. Messages are stored and read in the receiver’s own time and replies are likewise stored and read when the user is able to be online. Asynchronous online communication need not be in ‘real-time’, unlike face-to-face communication and telephone communication which can only happen in real-time.

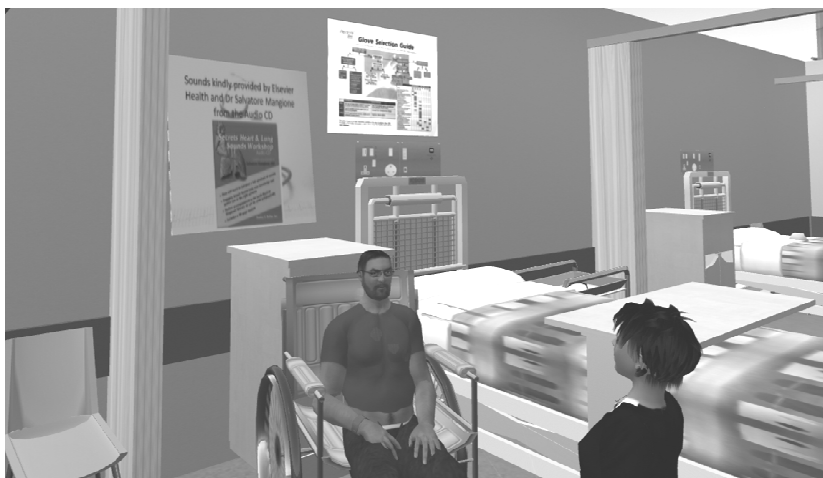


Figure 2: Virtual Patient, Glasgow Caledonian University.

Real-time modes are called ‘synchronous’ and in an online environment the technologies used are, for examples, Chat, *Skype*, *Second Life* etc. Figure 2 illustrates a two person role play in *Second Life*. (See also the chapter by Hearn in this volume). Highly graphical immersive interfaces are becoming more common for online role play and create an aura of authenticity. However, text-based discussion forums are cheaper and easier to get started and do not require all participants to be available at the same time.

The beginnings of online role play

The first known example of online role play in Australia, and possibly the world, was *Middle Eastern Politics Simulation* (MEPS) which was started at The University of Melbourne in 1990 by Vincent and Shepherd. It continued when they moved to different universities in another state in 1994, and is also run by other universities (see Vincent & Shepherd, 1998). Its 20 year history is well documented in books and videos (for example Alexander, 2005; Wills *et al.*, 2009; Wills, 2010).

MEPS was designed for undergraduate or postgraduate students studying the Middle East, terrorism, international relations, history, or journalism. Students were divided into teams playing a real person involved in Middle Eastern politics including journalists. Over four weeks they responded to a likely political scenario which was set four weeks into the future in order to further their role’s interest. Therefore, the scenario at the end often closely mirrored current events in the real world. It was played in the students’ own time via simulated mechanisms of asynchronous e-mail and synchronous chat-rooms. It concluded with a real-time conference of three to four hours, framed as a UN Peace Conference, which addressed the issues that the students had been discussing in the preceding weeks.

MEPS was normally run as a partnership between Vincent’s Australian university and one American university. On one occasion Vincent tried it with three universities, adding a Middle Eastern university. It was used in second year, third year and postgraduate politics courses. Teams playing one role were in the same university, not split across the universities. The role play at times had 40 roles in it and accommodated around 110 students, making it one of the largest online role plays in the EnROLE repository. Since Vincent’s death in 2008, MEPS has continued as an inter-university collaboration within Australia only (see Hardy & Totman, this volume).

Definition of online role play

A hurdle in the progress of Project EnROLE was pinning down the definition of online role play. Role play using technology was a newly emerging area, and there was no agreed firm definition and the definition was prone to change as new examples evolved. They were often called simulations or e-sims and later the

‘serious games’ movement invented terms like role play games and simulation games.

The EnROLE team agreed to adopt a broader term ‘role-based e-learning’ rather than the narrower term ‘online role play’ and defined online role-based learning environments as having the following characteristics:

- *“designed to increase understanding of real life human interaction and dynamics*
- *participants assume a role in someone else’s shoes or in someone else’s situation*
- *participants undertake authentic tasks in an authentic context*
- *task involves substantial in-role interaction with other roles for collaboration, negotiation, debate*
- *interaction between roles is substantially in an online environment*
- *learning outcomes are assessable and generate opportunities for student reflection.”* (Wills et al., 2007:1094).

Although this definition was reasonably broad there were a number of examples of practice that were not included in the repository because it was decided that they fell outside the definition.

Is it an online role play or not?

One example was *DRALE Online*, developed for Dispute Resolution and Legal Ethics at The University of Melbourne by a Law academic and educational developer. Students worked on four different cases for almost a full year. The developers describe the learning design:

“Real case files have been modified to remove identifying information such as company names, and then placed on the system. Each student is assigned to a law firm with 4 other students. These firms are then made either plaintiffs or defendants, and matched with an opposing firm. When each student logs in, they have access to the appropriate case file – a set of documents as background to their case. They must read and understand their file, add their own documents during the course of the role play. Students have access to communications tools which allow them to send messages to the opposing firm and to their ‘senior partner’ (played by the tutor), to file documents with the court, or to serve documents as writs. New documents from others appear in an inbox which reads like a ‘To Do’ list. The students can also see when another member of their firm is online when they log on. Documents which require authorisation have flags (using check boxes) to allow other members of the firm to approve or disapprove of the documents which are to be sent. At least 4 out of 5 of the firm

must agree, with no disapprovals before a document can be sent.” (Riddle & Davies, 1998:603).

DRALE Online was not included in the list of online role plays as its focus was on the process of doing a job and passing documents between roles as part of that process rather than on the human interaction between roles. Instead of being put in someone else’s shoes, the roles performed the job that the Law students would be doing once they graduated. The process was predictable and fixed rather than emerging from the interplay between roles.

Late in Project EnROLE, a grouping of role plays very similar to *DRALE Online* was encountered in the UK. These were developed using a tool called *SIMPLE*.

The original role play, *Ardcalloch*, was not called ‘role play’ by the designers. Instead they chose the term “*transactional learning*” because their emphasis, like *DRALE*, was on the transaction of legal documents (Barton *et al.*, 2007). *Ardcalloch* was a virtual town environment for the learning of law at the professional stages of legal education in Scotland, and in particular the Diploma in Legal Practice.

“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 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.*” (Hughes *et al.*, 2008:8).

These types of learning design, in which the roles were secondary to the purpose of the simulation and where the emphasis was on process or transaction, were decided to be out of the scope of the project. However they were significant examples and during the course of the project a proposal was formulated to view them as being at one end of a continuum of role-based learning designs in general rather than being a completely separate species.

Throughout the EnROLE project the word ‘simulation’ had been rejected for describing online role play, as used in the title of *Middle Eastern Politics Simulation*. MEPS does simulate a diplomatic environment but it achieves this via interaction between real roles in the diplomatic world. On the other hand, a

simulation usually involves one role playing against a computer model. In *DRALE Online* and *Ardcalloch*, although roles are involved, they are not interacting with each other. Where there are roles, they are ‘generic solicitor’ or ‘generic defendant’.

However the word simulation kept appearing, especially in the UK context, so the online role play definition demanded re-examination to see if it could be made more encompassing of transactional learning and simulations in general.

One scenario: two differing learning designs

An illustration of the differences between types of simulations is provided in a paper by Demetrious (2007). *Save Wallaby Forest* was first developed as an online role play in the university’s Learning Management System for a Public Relations post-graduate course at Deakin University (Demetrious, 2004) and later re-developed as an e-simulation *PRessure Point! Getting Framed* for the same course at an undergraduate level for larger numbers of students. The role play anonymously and randomly casts half the class as a property developer and the other half as an environmental activist organisation.

“In the first step, participants watched a four-minute video that set the scene with generic information about an environmental planning dispute. Next they were asked to research their particular theoretical position through hyperlinks to web information. Then, in their separate groups, participants were provided with further ‘private information’, a detailed ‘role profile’ description, and a group task to complete. The group task was to produce a 500-word speech to post at a public meeting. Finally, after they had posted their speeches representing different perspectives, the two groups were encouraged to critique each other’s position.” (Demetrious, 2004:8).

The online participation, which took between four to ten hours over several weeks, plus the essay, contributed to 40% of students’ overall mark. However, despite its success at engaging students actively in achieving the course learning objectives, the teacher assessed that there were difficulties in administering the online role play. The course included distance students as well as on-campus students. So some students were located in different time zones and found it difficult to commit to the demands of group work.

“...like most group-work, Save Wallaby Forest is subject to the sometimes unpredictable social processes of membership formation that may affect the extent of a participant’s inclusion or exclusion.” (Demetrious, 2007:190).

An e-simulation was developed to replace the online role play in the large undergraduate classes, reserving the online role play for smaller more manageable

postgraduate classes (40 to 50 students). It uses the same story and characters that were developed in *Save Wallaby Forest*, but puts students in virtual workplaces, with a deadline and task to complete. It is a 'stand alone' activity: students interact with the technology rather than via the technology; they interact as individuals rather than interacting with each other in teams. The different technology used to create the e-simulation is much more complex than the standard LMS discussion forums used for online role plays and is more ambitious in its pedagogical outcomes.

“In summary, both ICTs address different aspects of democratic and constructivist learning principles, however, I found that Save Wallaby Forest has more creative potential for students than PPressure Point! GF. This is because the role-play uses technology that facilitates communicative interaction and also because the dynamics of teamwork leads to greater opportunity for dynamic creativity and input by students. In comparison, PPressure Point! GF is more rigid. Students are pointed at the resources and aside from varying levels in their ability to write a media release, most will produce similar looking and sounding documents. However, PPressure Point! GF exposes students to more alternative viewpoints than the online role play which may lead to a richer learning experience. Moreover, in Save Wallaby Forest, the intensive moderation and input required by students and teachers offsets the value of collaborative, dialectic learning. Therefore, PPressure Point! GF, while less participatory, exposes students to a wide range of ideological views in a highly engaging way and can be used successfully with large groups.” (Demetrious, 2007:191).

Henriksen and Lainema (in this volume) discuss similar issues around paying attention to the learning context and learning outcomes when implementing a simulation. It is not always necessary to change the design of the product, when changing the design of the learning sequence may work better. The design of the product may be quite simple but the process of the learning sequence with the class may be much more complex, for example by building in more periods of reflection and debrief before re-engagement with the product.

A Simulation Triad

In order to better position online role play as an emerging type of simulation, accounting for the myriad ways of designing role-based learning environments that the project had catalogued, a framework called the Simulation Triad was developed (Figure 3).

In earlier literature on (face to face) role play, Gredler (1992) divided simulations into two main categories:

- Tactical decision simulations: these focus on analysing data and on achieving particular outcomes from the decisions based on that analysis. The learning outcomes are capabilities in data selection, organization, interpretation and management.
- Social process simulations: these focus on interactions among people and how their beliefs, assumptions, goals and actions influence decisions. The learning outcomes are the ability to work in social systems, to build insight or empathy, or to develop communication skills.

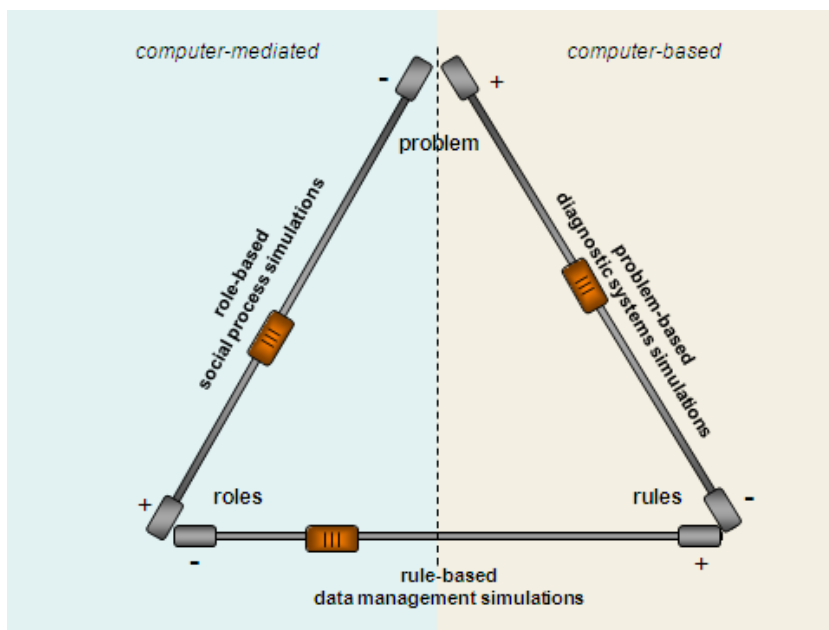


Figure 3: Simulation Triad (from Wills et al., 2009) - Triad sides are labelled using categories from Gredler (1992).

Online role play simulations, as originally defined in Project EnROLE, included social process simulations but not tactical decision simulations. They involved realistically complex interaction between the roles, perhaps better described as personas, rather than building sophisticated models that generated experiences (data) for the student to analyse.

Instead of continuing with strict definitional boundaries, the Triad implies that there is a continuum, in which online role play may involve a simulated problem context and analysis of related data, but where the focus of learning is on how the roles interact in dealing with the problem.

The Simulation Triad takes as its starting point that all simulations involve roles and rules and a problem. (A problem is sometimes called case, situation or scenario). Developing a framework that recognises design decisions according to the amount of emphasis put on Roles versus Problem versus Rules means that other examples can now be accommodated without compromising the integrity of

the online role play design that emerged in Australia following the Vincent and Shepherd archetype. Some of Gredler's terminology for simulation categories has been adapted to label the three sides of the Triad.

Sliders are used on each side of the triad to indicate amount of emphasis on roles, rules or problems. Figure 4 maps Middle Eastern Politics as an example.

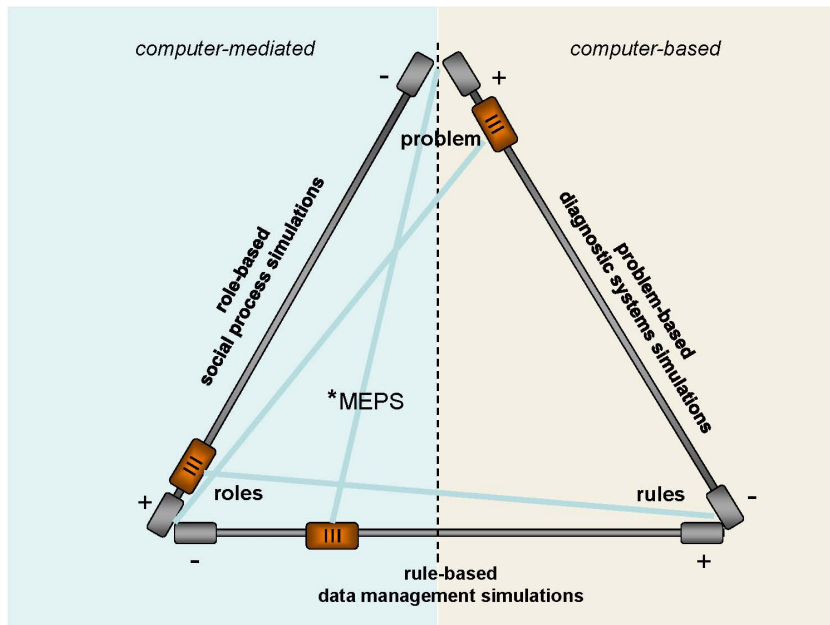


Figure 4: Mapping Middle Eastern Politics Simulation on the Simulation Triad.

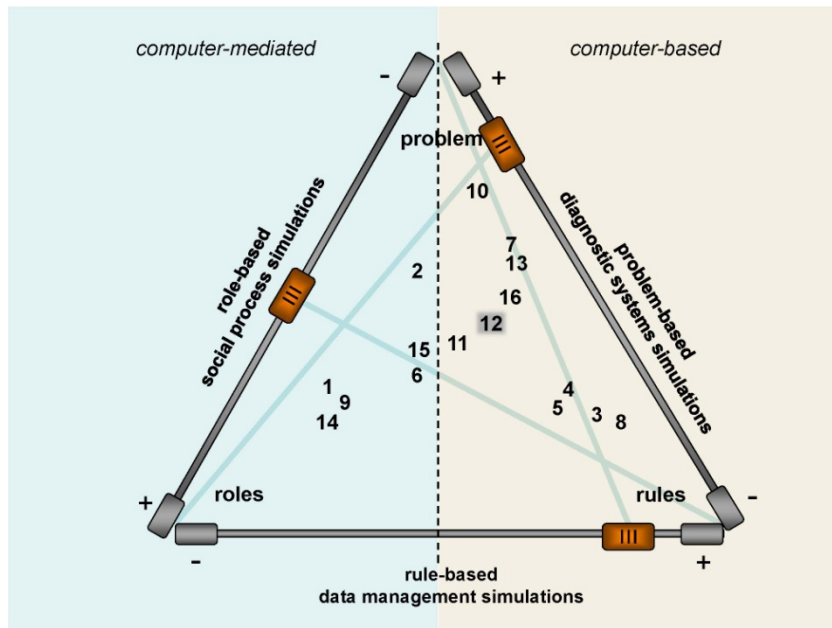
The Triad graphic also serves to indicate the differing role of the computer in online simulations. Traditional simulations such as those that model Nuclear Power Plants are computer-based, the learner interacts with the computer, whereas role plays are computer-mediated, that is, the learner interacts with others via the computer.

Because of the way the project originally defined role-based e-learning, the majority of the 70 online role play learning designs collected in Project EnROLE's repository are along the role-problem continuum and the examples that were previously excluded belong along the role-rules continuum.

Figure 5 maps selected examples from this volume onto the Triad in order to illustrate the diversity of simulations whether they be role-based, rule-based or problem-based. In general, authors who describe their designs as games will be clustered in the rule corner and authors who describe their designs as simulation will be closer to the problem corner. Predictably, authors describing their application as role play are around the role corner of the triad.

The Simulation Triad positions role-based e-learning visually in relation to simulations in order to explain better what this new form of online role play is, with its emphasis on student interaction between roles, in role. However, it also serves to position role-based learning in relation to problem based learning (and, as

mentioned earlier, case-based learning as inferred by Riddle & Davies regarding DRALE Online). This broader definition provides scope for other learning designs to be added to the EnROLE repository by broadening the keyword index. The repository could therefore include learning designs variously described as: Role Based Learning, Problem Based Learning, Case Based Learning, Scenario Based Learning, Situational Learning, Collaborative Learning, Computer simulation, and Scientific modelling.



Key to Simulation Triad					
#	Name	Chapter	#	Name	Chapter
1	Middle Eastern Politics	Hardy & Totman	9	We are the People	Ludewig & Ludewig-Rohwer
2	Save Wallaby Forest	Wills	10	EIS	Henriksen & Lainema
3	Pressure Point!	Wills	11	Mindsetter	Henriksen & Lainema
4	Ardcalloch	Wills	12	RealGame	Henriksen & Lainema
5	DRALE Online	Wills	13	ViMine	Russell
6	XB	Leigh et al	14	Buyat Bay	Russell
7	Police eSim	Davies	15	Interviewing Sim	Hearns
8	Medicina	Muller & Habel	16	Simport	Warmelink et al

Figure 5: This situates game, simulation and role play examples in this volume on the Simulation Triad. (Slider position shows #12 RealGame).

Strengths and weaknesses of the Simulation Triad as a framework

Due to this clearer definition and positioning of role play within the field of simulation, the EnROLE repository, although starting with Australian online role play descriptions following the same learning design as the original Vincent &

Shepherd role play, is now able to include many more descriptions of role plays from elsewhere in the world. Future research involves re-tagging the existing role play descriptions according to their relationship to the problem/roles/rules corners of the Simulation Triad and developing the Triad sliders as an animated search engine for the repository.

It is worthwhile reflecting that the Triad is a model that attempts to simplify a complex, messy context. It should not be taken too literally. Any model is by necessity a simplification in order to make a point. It serves as a thinking tool to facilitate a change in perspective (see Russell's explanation of systems thinking, in this volume).

In addition to slider continuums around role-based, rule-based and problem-based, other slider continuums could be considered in representing different types of simulations. For example, a continuum to represent the amount of student participation in the design. The emergence of co-created content and co-created learning environments is described by Russell and by Cermak-Sassenrath and Walker, in this volume. This approach was first articulated by Papert (1980) who created the term 'microworlds' rather than 'simulation'. This fourth continuum could be visualised in the Simulation Triad as a third dimension, turning the triad into a pyramid.

The Simulation Triad is not the only visualisation method for describing simulation. In a very recent project funding the author as an OLnet Fellow at the Open University, a *Cloudworks* site has been established to facilitate community discussion of learning design representations using several online role plays such as the Middle Eastern Politics and Save Wallaby Forest examples. Each is represented by a variety of methods including Simulation Triad, LAMS sequence, Visual Learning Design Sequence, Two Page/Two Picture Template, Pedagogical Pattern, IMS Learning Design, and Design Decisions Framework (Wills, 2011).

Further use of the Simulation Triad: a Design Space Framework

The Simulation Triad assists teachers and designers to understand that the focus of online role play is on the interaction between roles. Once the significant decision has been made to design a role play simulation, there are then many other decisions to be made to enact the design. Using the Simulation Triad as a basis, the Design Space Framework (Wills *et al.*, 2011) can assist with these decisions (Figure 6). Viewed from the designer's perspective, there are three core elements of an online role play and these are the same as the corners of the Simulation Triad: Problem; Roles; Rules.

When the three Design Elements are combined with factors such as Learning Objectives and Learning Context they work together to create the Design Space within which educational designers work as they generate ideas and goals for an

online role play or simulation as in the earlier case study of *Save Wallaby Forest* versus *PRessure Point*.

Under each of the three core Design Elements – problem, roles, rules – there are four Design Considerations (see Figure 6). These are briefly described next.

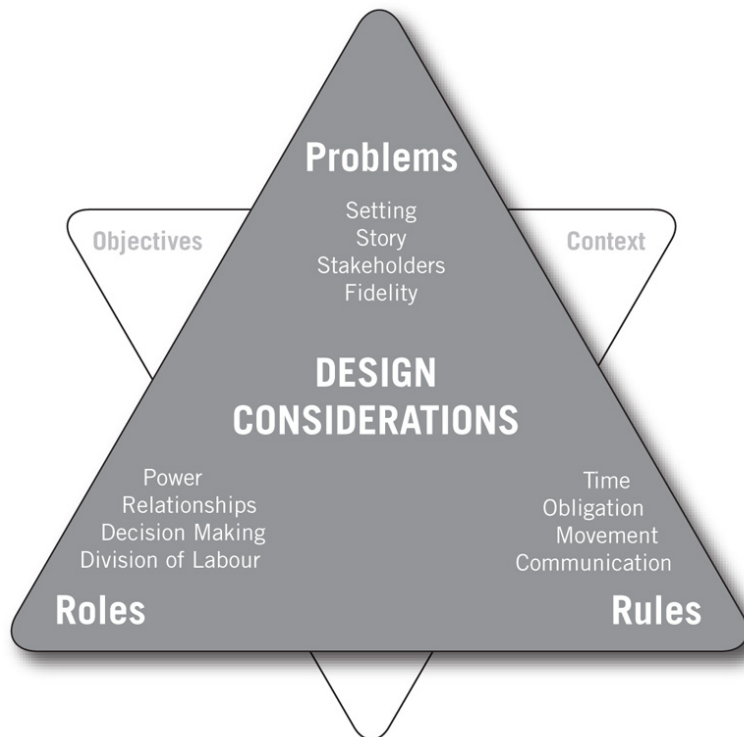


Figure 6: Design Space Framework illustrating the twelve Design Considerations for online role plays (Wills, et al., 2011).

Problem

In a role play simulation, the problem that students are to solve (or resolve) is framed as a scenario which includes three sub-elements: story to be enacted by participants, setting in which the story takes place, and stakeholders whose interests are interacting to create the story.

These sub-elements require research and attention to ensure that the eventual shape of the online role play has sufficient realism and fidelity to be relevant and engaging for the participants. The story sets the stakeholders in context and contains sufficient conflict to spark debate among the stakeholders. However, unless the moderator is very experienced in the topic (as in the Middle Eastern Politics example) the problem should aim to be reasonably manageable and the conflicting issues should be resolvable to some extent. Extended online role plays might also involve decisions about events and sequencing within the story.

Once the decisions are made about the fidelity and nature of the Problem (the story, setting and stakeholders) the focus shifts to design of the details that add

shape and dimension to learners' enactment of a role play. These other two Design Elements are the Roles and Rules in the Design Space Framework.

Roles

In a game there may be one or more players. In a computer-based simulation, there might often only be one role. In a university context that role is likely to be a generic representation of the profession that the student is training for. In a role play there must be more than one role as the emphasis is on the interaction between roles. These roles are a highly selective sub-set drawn from all the possible stakeholders known (or imagined) to be involved in the story underlying the role play. Providing a role with both a public agenda and a private agenda can give the role compelling reasons to act and allows the role to experience the kind of situation referred to in the learning objectives. Design Considerations for roles include the following considerations: allocation and use of power, division of labour amongst roles, relationships among roles, and how roles make decisions.

Rules

In computer-based simulations there are many rules and these are usually programmed into the computer model (a flight simulator, for example) and therefore not always explicit to the student. On the other hand, in a role play there are minimal rules and what rules there are revolve around rules of engagement between roles and with the moderator. For example, social rules about interaction between men and women, or political rules about which factional groups can communicate directly with a president, or fidelity rules such as limits on unnecessary acts of violence as in the *Middle Eastern Politics Simulation*. Other rules might include how much time the participants have to complete the role play, how much historical time does it cover, which roles are allowed to engage with each other, what meeting places will be provided, which roles are allowed into which place, and which rules might be broken?

These are the structural parameters through which the story and the roles are brought to life. They do not exist independently of either the roles or the problem but provide a bridge to move between them. Design Considerations for rules therefore include the following: time in all its dimensions, rules of participation, rules for communication among participants, and rules as to where and how participants move around the virtual world.

Conclusion

Framing online role play in relation to problems, roles and rules allows us to find a corner for this particular learning design within the field of computer-based simulation and computer games. The Simulation Triad illustrates clearly that

online role play is about interaction between roles rather than interaction with a computer. The Triad also lays the basis for a Design Space Framework that supports designers in the numerous design decisions they make in designing online role play as an effective learning environment for students. Understanding the design differences between computer-mediated online role play and computer-based simulation assists teachers to choose the learning design which best matches their learning objectives, as illustrated clearly by the examples in other chapters in this volume. It assists those seeking to transform university teaching into learning to use co-created learning designs that emphasise student-to-student interaction and student team work for researching authentic problems.

About the author

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Bibliography

- Alexander, S. (2005). Role Play Simulations for Teaching Political Science. In J. McKenzie; S. Alexander; C. Harper & S. Anderson, *Dissemination, Adoption & Adaptation of Project Innovations in Higher Education*. Australia: Report to Australian Universities Teaching Committee.
- Barton K.; P. McKellar & P. Maharg (2007). Authentic fictions: simulation, professionalism & legal learning. *Clinical Law Review*, Vol. 14, No. 1, pp. 143-193.
- Bolton, G. & D. Heathcote (1999). *So You Want to Use Role Play? A new approach in how to plan*. London, Trentham Books.
- Demetrius, K. (2007). Playing a critical role: Experiential learning resources and analytical media studies and in higher education. In *ICT: Providing choices for learners and learning*. Paper presented at *ascilite conference*, December 2007, Singapore.
<http://www.ascilite.org.au/conferences/singapore07/procs/demetrius.pdf>
[Accessed October 10 2011].
- Demetrius, K. (2004). Finding voices: authentic learning online in the field of public communication and citizenship. *Prism*, Vol. 2 No. 1.
<http://praxis.massey.ac.nz> [Accessed October 10 2011].
- Gredler, M. (1992). *Designing and evaluating games and simulations: a process approach*. Houston: Gulf Publishing Company.
- Hughes, M.; H. Gould; P. McKellar; P. Maharg, & E. Nicol (2008). *SIMulated Professional Learning Environment (SIMPLE): Programme Final Report*. [Accessed October 10 2011 from
http://www.jisc.ac.uk/media/documents/programmes/elearninginnovation/simple_final_report.pdf].

- Levy, J. (1997). Getting into the skins of historical roles. in Ballantyne, R.; J. Bain & J. Packer. *Reflecting on University Teaching: Academics' Stories*. Canberra, Committee for University Teaching & Staff Development, Australian Government Publishing Service.
- Linsler, R.; S. Naidu & A. Ip (1999). Pedagogical Foundations of Web-based Simulations in Political Science. Paper presented at *Responding to Diversity ascilite conference*, December 1999, Brisbane, Australia.
<http://www.ascilite.org.au/conferences/brisbane99/papers/linsernaidum.pdf> [Accessed October 10 2011].
- Papert, S. (1980). *Mindstorms: Children, Computers and Powerful Ideas*. Brighton, UK: Harvester.
- Riddle, M. & M. Davies (1998). DRALE Online: A Computer Mediated Communication Environment For Teaching Law. Paper presented at *ascilite 98 conference*, December 1998, Wollongong, Australia.
<http://www.ascilite.org.au/conferences/wollongong98/asc98-pdf/riddle.pdf> [Accessed October 10 2011].
- Vincent, A. & J. Shepherd (1998). Experiences in teaching Middle East Politics via internet based role play simulations. *Journal of Interactive Multimedia in Education*, Issue 3, <http://jime.open.ac.uk/jime/article/view/1998-11> [Accessed October 10 2011].
- Wills, S. (2010). *Factors influencing the design of reusable e-learning activities in higher education*, unpublished doctoral thesis, The University of Melbourne.
- Wills, S. (2011) EnROLE Cloudscape
<http://cloudworks.ac.uk/cloudscape/view/2344> [Accessed December 6 1011].
- Wills, S.; E. Leigh. & A. Ip (2011). *The power of role-based e-learning: designing and moderating online role play*, London: Routledge.
- Wills, S.; E. Rosser; E. Devonshire; E. Leigh; C. Russell & J. Shepherd (2009). *Encouraging role based online learning environments by Building, Linking, Understanding, Extending: The BLUE Report*. Report to Australian Learning and Teaching Council. ISBN: 978-1-74128-173-6.
http://enrole.uow.edu.au/repository/BLUE_Report.pdf [Accessed October 10 2011].
- Wills, S.; E. Devonshire; E. Leigh; E. Rosser; J. Shepherd & A. Vincent (2007). Encouraging role based online learning environments. Paper presented at *ICT: Providing choices for learners and learning ascilite 2007 conference*, December 2007, Singapore.
<http://www.ascilite.org.au/conferences/singapore07/procs/wills-roleplay-symposium.pdf> [Accessed October 10 2011].
- Yasmeen, S. & M. Fardon (2002). Description of Political Science Simulation Exercise.
<http://www.learningdesigns.uow.edu.au/exemplars/info/LD25/index.html> [Accessed October 10 2011].