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# Rethinking reusability: implications from a longitudinal study of online role play in Australian higher education

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## Abstract

In a study about designing "reusable e-learning activities", the author used online role play as a containable, but pedagogically rich, sample. 53 online role plays in Australian higher education were identified and tracked between 1990 and 2006 (Wills, 2010). As a result of interviews and surveys, it was calculated that 45 role plays were a reuse of another role play, demonstrating that the topic of reusability is an important one in higher education.

However, there were only eight instances of reuse of the same **role play itself** (18%). Predictably these eight instances were a reuse within the same discipline. Meanwhile, 82% of the instances were a reuse of another's role play **design**. This high percentage confirms the importance of research about learning designs to guide and underpin programs for sharing good teaching practice.

The eight instances of reuse of the same role play involved four role plays. These four were analyzed in more detail via case study methodology, documenting their full history of reuse. The histories raised questions about what constituted instances of reuse. These nuances of the term "reusability" are explored further in this paper.

The nuances warrant attention when designing e-learning activities to be Reusable Learning Objects and they particularly apply to those RLOs that involve active, authentic and collaborative learning such as online role plays. Wills, Leigh & Ip (2010) provides a fuller guide to designing role-based e-learning.

## Keywords
Reuse, reusability, reusable learning object, online role play, role-based e-learning

## Disciplines
Arts and Humanities | Social and Behavioral Sciences

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In a study about designing "reusable e-learning activities", the author used online role play as a containable, but pedagogically rich, sample. 53 online role plays in Australian higher education were identified and tracked between 1990 and 2006 (Wills, 2010). As a result of interviews and surveys, it was calculated that 45 role plays were a reuse of another role play, demonstrating that the topic of reusability is an important one in higher education.

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## Rationale & background

Role plays are situations in which learners take on the role profiles of specific characters or organizations in a contrived setting. Role play is designed primarily to build first person experience in a safe and supportive environment. Figure 1 illustrates the sequence of learning activities for a generic online role play from the students' perspective. In a recent Australian national project to encourage uptake of role-based online learning environments in university education, Project EnROLE (Wills et al. 2009), the following characteristics of online role play were adopted as a definition:

- 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 participant reflection.

More about designing and moderating online role plays can be found in Wills, Leigh & Ip (2010).

| MATERIALS | TASKS | SUPPORTS |
|---|---|---|

scenario, role descriptions, background readings, databases & cases

**EnRole:** be assigned or select a role

discussion within team if teams used, online or f2f

**Research:** read about the role & scenario, understand the general problem

**wRite:** publish a desciption of the role or stakeholder position ★

discussions within team and assistance from moderator

further news or events might be released by moderator

**React & Resolve:** communicate with other relevant roles, respond to proposals, negotiate resolution to scenario

moderator declares the role play finished

**Reflect:** collective online debrief and/or individual written reflection submitted ★

★ assessment task

**Intended Learning Outcomes:**
- Develop communication, research, critical thinking, negotiation and decision-making skills
- Develop skills to participate in negotiation processes that work towards consensus-based outcomes
- Work self-critically, independently or as part of a team
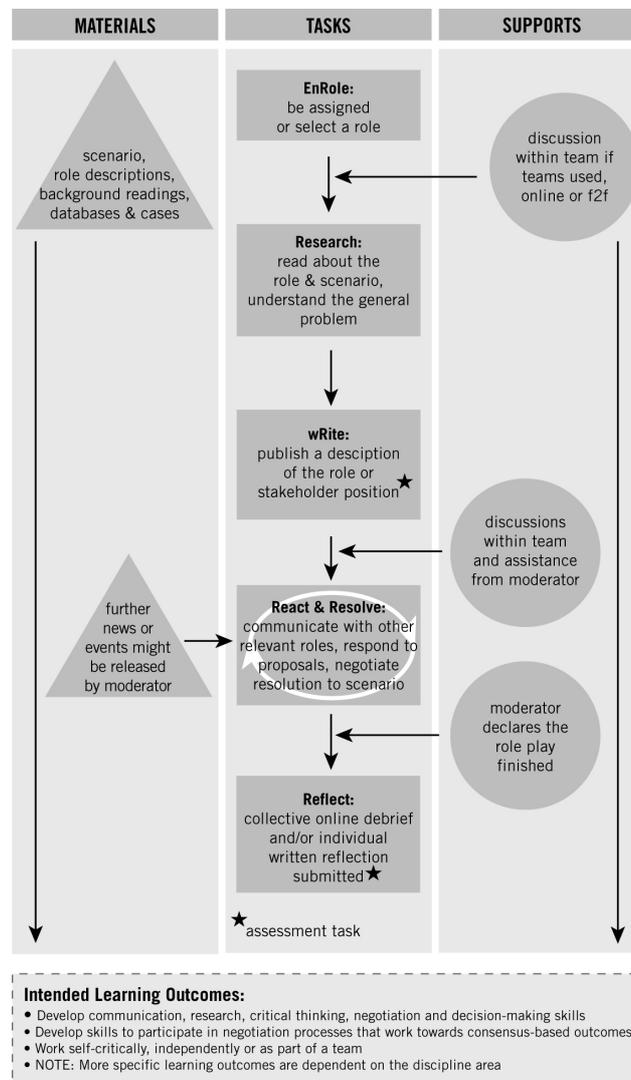- NOTE: More specific learning outcomes are dependent on the discipline area

Figure 1. Learning Design Visual Sequence for online role play (Wills, Ip & Leigh, 2010) modified from Wills & Ip (2002)

In a longitudinal study about designing "reusable e-learning activities" in higher education, the author used online role play as the context. It was proposed that issues around reuse of active, authentic and collaborative learning environments such as online role play may be different from reuse of small chunks of content which has been the (stereo)-typical portrayal of reusable learning objects (RLOs).

Typically a Reusable Learning Object has been defined as a small chunk of learning material because a low level of granularity means it is easier to reuse, as it is,

without modification. The larger a learning object becomes, the less likely it might be to meet all new needs in the new context to which it is transferred and the more likely it will need adaptation. Previously the e-learning industry would have deemed an online role play too large to be categorized as a learning object. However, the results of this study's analysis demonstrate that it is possible to view whole online role plays as learning objects.

**Affordances to reuse of online role play in Australian higher education**

53 online role plays in Australian higher education were identified and tracked between 1990 and 2006 (Wills, 2010). Interviews and surveys lead to the creation of a generational mapping of the online role play designers. From this map it was calculated that 45 role plays were a reuse of another role play, demonstrating that the topic of reusability is an important one in higher education.

However, there were only eight instances of reuse of the same **role play itself** (18%). Predictably these eight instances were a reuse within the same discipline. Meanwhile, 82% of the instances were a reuse of another's role play **design**. This high percentage confirms the importance of research about learning designs to guide and underpin programs for sharing good teaching practice.

Interestingly, the transfer of role play design ideas was mainly to different teachers in different disciplines whereas it was predicted that the ideas would be more likely picked up by teachers in the same discipline. Additionally, the results show that the re-using teachers were almost as likely to be at different universities as at the same university. So proximity was not a significant affordance to reuse.

Table 1. Analysis of reused role plays comparing different teacher or same teacher & comparing different university or same university (n=45)

| Reuse by… | **different** teacher | | | |
|---|---|---|---|---|
| | in **same** discipline | | in **different** discipline | |
| | same university | different university | same university | different university |
| of **same** role play | 5 | 2 | 0 | 0 |
| of **same** role play **design** | **9** | 1 | 19 | 12 |

| Reuse by… | **same** teacher | | | |
|---|---|---|---|---|
| | in **same** discipline | | in **different** discipline | |
| | same university | different university | same university | different university |
| of **same** role play | 0 | 1 | 0 | 0 |
| of **same** role play **design** | 2 | 2 | 1 | 1 |

Other affordances[1] to uptake of online role play as a teaching method were tracked (Table 2). The main affordances for the "first generation" of online role play designers depended on a mix of typical traditional academic affordances such as conference presentations, journal papers, staff development workshops, grants and colleagues. However in the "second generation" of online role play designers the main affordance was Educational Developers (sometimes called Instructional Designers or Learning Designers). There were also signs that tutors were an

important affordance. Having been actively involved in moderating role plays, some tutors were experienced and confident enough to design their own when they became lecturers.

Another affordance was the availability of tools and engines as templates and platforms to support online role plays. These tools, templates and engines were an exemplification of the particular role play Learning Design followed by the tool developer and made it easier for beginners to get started in designing role plays.

Table 2. Affordances for uptake of online role play in Australian universities - top three affordances are shaded * [+]

| Affordance (in some cases more than one) | 1990-1995 | 1996-2000 | 2001-2006 |
|---|---|---|---|
| Personal Handover of existing role play | 3 | 1 | 4 |
| Colleague | 2 | 2 | 6 |
| Conference Presentation/Journal Paper | 2 | 4 | 1 |
| University staff development workshop | 1 | 1 | 1 |
| Grant | 1 | 3 | 0 |
| Prior experience with face-to-face role play | 1 | 1 | 1 |
| Educational Developer | 1 | 11 | 23 |
| Engine | 0 | 7 | 10 |
| Postgraduate Education course | 0 | 1 | 0 |
| Learning Designs website | 0 | 0 | 17 |
| Participation in another online role play | 0 | 2 | 0 |
| Template/guide | 0 | 0 | 3 |
| Tutor | 7 | 0 | 0 |

* Early results from this study were published in 2006. This table contains updated data and additional affordances.

+ This table includes role plays that were under development in 2006 whereas Table 1 only uses data from role plays that were already up and running.

**Case study analysis of reuse of four online role plays**

The eight instances of reuse of the same role play involved four role plays (Table 3). These four were analyzed in more detail via case study methodology, documenting their history of reuse.

Table 3. Four Australian online role plays and their partners in reuse

| | Middle Eastern Politics | Idontgoto Uni | Round Table Discussion | Mekong e-Sim |
|---|---|---|---|---|
| Original | Melbourne | Wollongong | Macquarie | UTS |
| Reused/Partners | Georgetown Texas American Uni Cairo Macquarie Canterbury NZ | Wollongong Dubai Western Sydney | Sydney Edinburgh Santo Tomas California | Adelaide Sydney Malaysia Singapore Germany |

This case study analysis, conducted three years after the earlier mapping (Table 1), identified further instances of reuse for these four online role plays (Table 4).

Table 4. Instances of reuse for each of the four online role plays

| Reuse of… | Middle Eastern Politics | Idontgoto Uni | Round Table Discussion | Mekong e-Sim |
|---|---|---|---|---|
| same role play by different teacher/s in different university in same discipline | one instance repeated numerous times | almost | 2 | 1 |
| same role play by different teacher in same university in same discipline | 3 | 2 | | 3 |
| same role play by same teacher in different university in same discipline | 2 | 1 | | 1 |
| same learning design by different teacher in different university in different discipline | numerous | | 2 | 3 |
| same learning design by same teacher in different university/context in different discipline | | | 1 | 1 |
| same learning design by different teacher in same university | | | | |
| -in different discipline | 8 | | | 3 |
| -in same discipline | | 1 | | |
| same learning design by same teacher in same university | | | | |
| -in same discipline | | | 1 | 1 |
| -in different discipline | | | | 1 |

The study was seeking Design Factors influencing reusability however the case studies also brought to light important Design Context Factors. The factors identified as influences on reusability in the case studies are summarized in Table 5 according to whether the factor operated FOR or AGAINST reuse.

Table 5. Summary of factors influencing reusability in four Australian role plays

| | Middle East Politics | Idontgoto Uni | Roundtable Discussion | Mekong e-Sim |
|---|---|---|---|---|
| **Design Factors** | | | | |
| Platform | FOR/AGAINST | FOR | FOR/AGAINST | FOR |
| Size | AGAINST | FOR | FOR | AGAINST |
| Scenario | AGAINST | FOR | FOR | FOR |
| Embedded in the curriculum | | FOR | FOR | FOR |
| Designer's personal style | | AGAINST | | |
| Resolution | AGAINST | | AGAINST | AGAINST |
| Debriefing | | | FOR | FOR |
| Facilitation Guide &/or training | | | FOR | FOR |
| Cross-disciplinary and/or cross-institutional student collaboration | AGAINST | | | AGAINST |
| Branding and marketing | | | | FOR |
| **Design Context Factors** | | | | |
| Discipline expertise | AGAINST | AGAINST | AGAINST | AGAINST |
| Partnership & collaboration | FOR | FOR | FOR | FOR/ AGAINST |
| Educational Developers | | FOR | FOR | FOR |
| Scholarship | | FOR | FOR | FOR |
| Licensing & legal contracts | | FOR | FOR | FOR |
| Intellectual Property | AGAINST | AGAINST | FOR | |
| Identity & territory of HE staff | | AGAINST | | |

In general, in these case studies, the **design** factors which contributed to reuse are: access to a secure and reusable platform; small class size and small number of roles; an interesting and rich scenario which at the same time is not overly-complex; embedding the role play activity and assessment in the departmental curriculum; clear place for debriefing as an important step in the sequence of learning activities; guidelines and training for teachers and facilitators involved in the online role play; and branding of the online role play so that it has an identifiable, memorable name and image.

Design factors which at times worked **against** reuse include large class size and large number of roles; difficulty of reaching consensus or resolution, a factor related to size; personal style of the original facilitator which other facilitators might not be comfortable with such as humour or sarcasm; cross-disciplinary or cross-institutional implementation involving collaboration with others students and teachers leading to extra organizational workload.

The **contextual** factors which impact the design process positively are: collaborative design by partners including a significant role for educational developers; recognition of the value of a scholarly approach to evaluation and publication about the innovation; establishment of legal contracts and licensing agreements for governing reuse by others.

A significant contextual factor which worked **against** reuse in two of the cases was conflicting and unclear perceptions of intellectual property rights. Partly related to this factor in one case was differing perceptions of the identity of academic staff and professional staff and the territory in which they may operate in terms of scholarship and intellectual property. This factor has implications for the role of what are variously called educational developers, learning designers or instructional designers as well as for the role of tutors in the higher education workplace.

These contextual factors are in fact "people" issues and it is not surprising they impact on design since the previous section showed that two of the affordances to uptake of online role play were people, namely educational developers and tutors.

Another contextual factor was that the four online role plays required significant discipline expertise for the role play itself to be reused. The high level of discipline expertise may be a reason why learning objects and repositories are not as common in the higher education context as they have become in the school and technical education contexts.


**Nuances of reuse**

The above analysis of the four case studies has focused on factors that influence reuse of online role play. However the case studies also give rise to reflection more generally on what it means to "reuse".

The initial analysis of reuse of 53 role plays used the framework of Generational Mapping, distinguishing between reuse of a role play design and reuse of the role play itself, according the following additional dimensions:

- same teacher versus different teacher
- same discipline versus different discipline
- same university versus different university

From the four in-depth cases, further dimensions were revealed. Table 6 lists a number of scenarios that occurred in the history of reuse of the four online role plays. This list of types of reuse goes further than the types discussed in the previous statistical analysis.

Each of these reuse scenarios will have implications for how online role plays are designed, if they are being designed with reuse in mind. Only one in this small sample was designed specifically for reuse by (unknown) others (first shaded row in Table 6). Most of the other descriptions of reuse involved reuse by people already involved. In other words the re-users had a degree of familiarity with the online role play in that either they helped to design it, helped to implement it, or had been trained to use it. No-one picked it up "cold".

However, the purpose of this study was to look at factors for fostering this type of reuse hence a better understanding of what is meant by reuse is important.

Table 6. Four case study online role plays: nuances of reuse by others

| Types of reuse | Middle Eastern Politics Simulation | Idontgoto Uni Role Play | Round Table Discussion | Mekong eSim |
|---|---|---|---|---|
| Designed by a team for each to use | y | | y | y |
| Designed by cross institutional partners to be used in each institution | y | | | y |
| Designed for cross institutional student collaboration | y | | | y |
| Designed for transfer/reuse to unknown teacher | | | y | |
| Continued to be used by one partner without the others | | | | y |
| Used by new cross institutional partners | y | | | y |
| Run by tutors /dept members without original designer being present | y | y | | y |
| Run by tutors/dept members after original designer leaves | y | | | |
| Modified by tutors or members of same department | y | y | | |
| Transferred to new institution with an original designer | y | | | |
| Transferred to entirely new teacher in a new institution | | | y | |
| Potential to be transferred but not happened yet | | y | | y |

The final nuance in Table 6 (second shaded row), potential to be transferred but not happened yet, is particularly important as it probably describes the majority of work currently happening under the heading of Reusable Learning Objects and RLO repositories. If RLOs are not being reused then gaining a broader understanding of types of reuse might provide ideas for improving the design or improving access.

It is wasteful of resources if RLOs are not being reused because this study has shown that reuse (of online role play designs) more often occurs in different disciplines and different universities, the furthest transfer distance, rather than the more sensible cost-effective reuse of existing role plays (Reusable Learning Objects) within the same discipline (the least transfer distance).

So although reuse of learning designs might be the common practice, attracting teachers towards reuse of learning objects is something that needs to be promoted.

Possibly, reusability in the form of Resuable Learning Objects is less likely in a university context because university role play designers are highly expert in the discipline area of the role play, such as politics or geography. They bring a wealth of knowledge into the moderation of the role play which is difficult to duplicate in another university. Course outlines are often closely aligned to the research strengths of the academics employed in the department. Reuse of comprehensive teaching materials is therefore less common in universities than in schools and post-secondary education. Academics are more likely to adopt a learning design than a Reusable Learning Object, unless the learning object is small and can be incorporated into their own learning design.

However, all the dimensions and factors explored in this study about reuse of same role play could usefully be applied to thinking about the nature of learning objects more broadly. This focus may improve their uptake and acceptance in university contexts and also inform the development of appropriate programs and services for sharing teaching practice in general.

## Fifteen factors influencing the design of reusable e-learning activities in higher education

The Design Factors and Design Context Factors which contributed to the reusability of the four online role plays in this study can be framed more generically as factors influencing the design of reusable e-learning activities. The fifteen factors listed in Table 7 warrant attention when developing e-learning activities as Reusable Learning Objects. These factors particularly apply to those RLOs that involve active, authentic and collaborative learning such as online role plays.

It is noticeable that cost has not emerged as a factor in the design of online role play because most studies of this type end up with cost on the list. However, this type of learning object is a low-cost learning activity, one of the reasons for its usefulness. Therefore cost need not be a consideration, unless designers decide a

graphically immersive 3D learning environment is required to meet the learning objectives or if video is used as the trigger scenario.

Table 7. Fifteen factors influencing the design of reusable e-learning activities in higher education

|   | Factors influencing design of Reusable Learning Objects |
|---|---|
| 1 | Access to common e-learning platform |
| 2 | Activity matched to manageable class size |
| 3 | Scenario that is engaging but not overly complex |
| 4 | Scaffold students through all phases of the e-learning activity, especially resolution or conclusion |
| 5 | Embed use of the RLO in departmental curriculum, especially the assessment tasks |
| 6 | Clear place for debriefing and reflection in the sequence of learning activities |
| 7 | Guidelines & training for teachers and facilitators using the RLO |
| 8 | Cater for different facilitation styles |
| 9 | Brand the RLO so that it has an identifiable, memorable name & image |
| 10 | Collaborative design by partners including a significant role for educational developers |
| 11 | Reward the role of professional staff and tutors in designing & implementing RLOs |
| 12 | Scholarly approach to evaluation & publication about the innovation |
| 13 | Establish legal contracts & licensing agreements governing reuse by others |
| 14 | Confirm intellectual property rights of all team members |
| 15 | Support teacher workload if the RLO involves inter-disciplinary and/or inter-institutional student collaboration/competition |

**Conclusion**

To analyse a sample of 53 online role plays in Australian higher education developed over nearly 20 years, the study used the constructs of **learning object** and **learning design.** For understanding reusability of e-learning activities both were found to be useful constructs; however, in the university context, uptake of learning designs is more common to date.

A framework for analysis of types of reuse adopted three additional dimensions: reuse in same or different **university** by same or different **teacher** in same or different **discipline,** totalling 16 different types of reuse in total. Case study analysis of four online role plays that had been reused revealed a further 12 nuanced descriptions of reuse.

The study identified 15 **design** factors contributing to reusability of e-learning activities, however, many important **contextual** factors were also found to be an influence on reuse: design team factors such as *Roles* and *Partnerships* and recognition factors such as *Intellectual Property* and *Reward*.

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