Introduction
My research seeks to investigate the potential and learning effectiveness of using digital role-playing games to create situated learning experience for tertiary education students. The papers selected for this literature critique have a recurrent theme of identifying key attributes and characteristics of situated learning and how the instructional model could be successfully adopted into interactive media applications such as simulations and virtual worlds to serve as ubiquitous learning tools, improving authenticity and context in student learning.

Critique of Literature
The first selected paper is “Situated Learning in Virtual Worlds: The Learning Ecology of Second Life” by E. Hayes. The study sought to investigate how varied learning types can be supported with the design and social dynamics of a virtual world and the implications of using virtual worlds to support adult education. The author observed a lack of existing studies that provided holistic analyses on how “…features of particular worlds (they are not all alike by any means) contribute to and combine with emergent social and cultural properties to create distinctive “learning ecologies”.” While the background section provided a good overview of virtual worlds in general, some critical terms used in the text could be defined for further clarity. The author mentioned “social virtual worlds” on several occasions, though no further elaboration was made to address what constitutes as being “social” in a virtual world. This could be broadly defined from simplistic actions of sharing achievements information over the social network to complex peer-to-peer interaction experience within the virtual world. Further clarity is required in defining key terms within the text, as existing literature on virtual worlds have vastly different definitions and understandings on the “social” aspect of virtual worlds and simulations.

The study took an ethnographic approach for qualitative data collection and analysis. The author was the participant-observer and employed the process of triangulation by taking field notes, interview transcripts and other artifacts whilst spending a period of time navigating and interacting in the virtual world as an avatar in Second Life. It was unspecified whether if any preventative measures were taken to ensure objectivity and reliability of the observation. The study could ideally involve more observers to explore the social and learning landscape in Second Life to ensure validity in the findings. The findings presented an outline on how intrinsic and extrinsic learning occurs as participants engage in a range of activities in Second Life. The main focus of discussion was the user-creation functionality in Second Life, which enables participants to acquire resources and generate customized assets such as character costumes, buildings, etc within the virtual world. The discussion provided a detailed walkthrough on how learning often takes place informally in Second Life as participants develop
technical and design skills when creating customized assets. In addition, learning is reinforced within a complex set of social connections among members of user-creation affinity groups. A subsequent discussion followed, describing how user-creation and ownership functionalities in Second Life could be utilized to support in-depth learning. The author also observed a number of drawbacks in user-creation and ownership, along with its implications when adopting Second Life for educational purposes.

In this study, the author provided a descriptive overview of Second Life as a potential learning platform, along with observation and walkthrough on how the user-creation functionality could be used to support learning within an informal and social setting. However, the research findings did not appear to be fully aligned with the initial purpose of study and there is a disconnection between the final discussion and initial theoretical perspective described in the earlier section. The implications of using Second Life for education was discussed with some generality and but little elaboration was made to address how the virtual world platform could potentially be adopted to be used specifically for the learning purposes of adult learners. As discussions in the paper primarily focused on user-creation in Second Life, it will be useful to extend the study with further breadth by observing other aspects of Second Life, such as peer-to-peer mentorship and collaboration, non-linear learning paths, interactive activity tasks – all of which could potentially support adult learning in relation to Lave and Wenger’s (1991) situated learning theory.

In the paper “Critical Characteristics of Situated Learning: Implications for the Instructional Design of Multimedia” (Herrington, Oliver, 1991), the authors provided a detailed overview on Lave and Wenger’s (1991) situated learning theory, along with the implementation of cognitive apprenticeship model (Brown, Collins, Duguid, 1989) as means of adding authenticity of classroom learning through situated learning activities and peer-to-peer interaction. The authors further described Lave and Wenger’s (1991) situated learning theory, elaborating how “legitimate peripheral participation” occurs as learners embed and actively participate within a community and culture of practice. A balanced view was provided as the authors acknowledged existing debates and criticisms on how the situated learning model could be adopted into classrooms and computer-based applications. One mention of criticism was how situated learning could not be adopted into classroom environments due to the necessity of having an expert or practitioner of the trade to transfer knowledge and skills to students directly (Tripp, 1993; Wineburg, 1989). Another mention was the criticism by Hummel (1993), who believed that implementing situated learning theory into digital learning environments will result in subsequent loss of situational authenticity from learning materials. The authors contended that despite criticisms, it has been observed that a growing number of researches have indicated that interactive multimedia environments are able to serve as effective platforms for simulated apprenticeships to support situated learning activities. In summary, the authors identified six critical characteristics of situated learning which could be adopted into instructional design:

- Provide authentic context that reflect the way the knowledge will be used in real-life;
- Provide authentic activities;
- Provide access to expert performances and the modelling of processes;
- Provide multiple roles and perspectives;
- Support collaborative construction of knowledge;
- Provide coaching and scaffolding at critical times;
- Promote reflection to enable abstractions to be formed;
- Promote articulation to enable tacit knowledge to be made explicit;
- Provide for integrated assessment of learning within the tasks.

(Herrington, Oliver, 1991)

In addition, the authors discussed the instructional design considerations, strategies and implications of adopting situated learning characteristics into interactive multimedia programs. An example was provided to illustrate how an interactive multimedia program was designed to accommodate the aforementioned critical characteristics of situated learning environment for mathematics education students at Edith Cowan University. Using the interactive multimedia program and supplemented materials such as videos, audio recordings and expert comments, pre-service primary and secondary mathematics teacher examined classroom-based scenarios and pursued investigations of the resource. This is followed with reflective thinking, collaborations and articulations with peers in class, thus successfully reinforcing students’ overall situated learning experience.

Another interesting paper discussing the subject of embedding situated learning into educational simulations was titled “Simulations: Bringing the benefits of situated learning to the traditional classroom” (Lunce, M., 2006), which explored key components of situated learning and provided relevant examples of how the use of educational simulations facilitated situated learning in classrooms. The author’s review of literature on simulations was detailed with many relevant citing used within the text, providing a balanced view of benefits and disadvantages of using educational simulations to facilitate learning. Lunce identified four categories of simulations – physical simulations, iterative simulations, procedural simulations, situational simulations. It was further emphasized by the author that effective utilization and design of situational simulations was more challenging compared with other categories of simulations, primarily due to its open-ended design and the complexity of modelling human behavior. This is a useful observation as careful design considerations could be made when embedding situated learning theories into simulations.

In addressing the situated learning effectiveness of simulations, three research projects were presented. For instance, one example cited was Dwyer and Lopez’s (2001) study on the use of an educational simulation with integrated video to engage and educate elementary and middle school about the river ecosystem. An overview was provided for each example, followed by detailed descriptions of each project’s research design, data collection and analysis process. The author concluded that all three cited examples reaffirm the potential of using instructional simulations to facilitate real-world situated learning in traditional classroom settings. While many advantages and successes of the educational
simulation were presented in each example, there were no mentions of possible limitations or problems encountered in any of the research projects examples discussed. This may lead to a question on the author’s objectivity when examining and discussing each educational simulation project. Thus, some mentions or acknowledgement in any possible limitations in the research project examples should ideally be made for a balanced view in discussions.

The paper “Situated learning in virtual simulations: Researching the authentic dimension in virtual worlds” by Falconer, L. (2012) presented a case study of how an online virtual world was implemented as part of the curriculum for postgraduate students undertaking accident investigation and risk assessment exercises. Aside from describing general attributes of online virtual worlds, the author also presented statistics illustrating the growth of virtual world accounts over recent years, along with example uses of online virtual worlds in the field of education, technology, business, etc. The author also described of Lave and Wenger’s (1991) situated learning theory and cited literatures stressing the importance of authenticity and context in learning.

In the case study, students undertaking an Environmental Health Principles and Practice module experienced a simulated accident investigation and risk assessment process in Second Life as part of the curriculum’s assessment task. Both exercises took place in two simulated accident scenes in Second Life and students played separate roles as accident investigators and witnesses. Navigating through the virtual space and communicating using virtual avatars, students conducted interviews, examined and interacted with scene objects, taken photographs etc., while conducting an investigation for the simulated accident. Upon completion of the accident investigation and risk assessment exercises, students were required to reflect upon their actions and complete a written report. Data and feedback was collected by means of questionnaires and focus groups. The author’s use of open-ended questions and Likert scale items was a good measure in collecting both quantitative data (definitive answers collected from the Likert scale items) while also encouraging students to provide richly narrated positive/negative feedback of their learning experience from the open-ended questions. Ideally, the research design could be further improved with an addition of a control group to determine if any significant difference is observed in students’ learning experience with or without the use of virtual worlds to facilitate learning.

The author concluded that evidence from the case study demonstrated general good acceptance of virtual worlds as simulated environments for accident investigation and risk assessment exercises. Nine positive factors that contributed authenticity into learning in Second Life were identified and the author provided quotations from collected student feedback illustrating their experiences throughout the process. Ideally, the presented student feedback could be examined further as some discussions or elaborations – for example, why did the author considered that “presence and authority” was a contributing factor in a student feedback that stated: “It is visual and a more realistic way of learning as I felt like the actual person doing the investigation.”. The study was nonetheless conclusive overall and presented a good example on how virtual worlds could be utilized for scenarios-based learning and
effective situated learning.

**Conclusion**

This critique presented four separate studies that sought to investigate the embedment of situated learning theory into interactive multimedia applications such as simulations and virtual worlds. All authors presented case studies to illustrate the implementation of such applications into classrooms. Observations, questionnaires and focus groups were observed as common approaches for data collection to determine the learning effectiveness of embedding situated learning theory into interactive multimedia applications.

**References**

(Papers selected for critique)


(Additional citations)


Herrington, A. J., Sparrow, L., Herrington, J. and Oliver, R., Situated Learning in Mathematics Education: Connecting Theory and Practice

