

PLAYING YOUR WAY TO COMPETENCY

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The study

This paper compares the learning outcomes from two types of computer-based learning tools with differing levels of narrative and gameplay.

We ask if interactive gameplay provides a more appropriate context in which to deliver information than the more commonly employed multiple-choice quiz interactive?

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Data collection

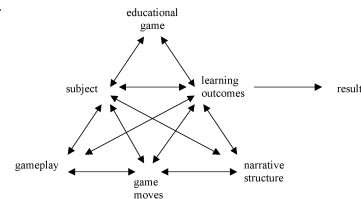
Quantitative and qualitative data was collected during trials of two computer based products - an interactive game and a multiple-choice quiz.

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Activity Theory

Research phases involved the application of the principles of Activity Theory which illustrates how the effectiveness of any learning system is dependant upon the interplay of subjects and objects.



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Findings

Quantitative data shows a significantly greater proportion of correct answers in the test from subjects who played the game version over those who played the quiz.

Qualitative data revealed that the level of specific detail given in response to open-ended non-multiple choice questions by the players of the interactive game was far more comprehensive than those supplied by the quiz respondents.

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Participant responses

Interestingly, and in contradiction to the analysis, part of the qualitative data collected included negative comments recorded in focus group discussions, which indicated that participants thought the engaging gameplay in the game product distracted from learning information.

Observation

The participants playing the game version were more focused, intent on successfully playing the game and appeared to be having fun as well.

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Game vs Quiz – the differences

Subjects playing the quiz version reported negative aspects including “insufficient feedback” and “no enticement to continue”. However, the amount of informative fact-based feedback was no greater in the game version than what these subjects experienced in the quiz. What did differ was that the information in the game was delivered throughout the game environment and reinforced by players having to revisit specific information in the gameplay.

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Perception vs reality

In spite of the perception within groups that the quiz seemed to be more focused on delivery of information, and that the game version was fun and not so focused on learning; it is observed from this study that learning outcomes, as well as user engagement, are improved with the introduction of narrative elements and increased interactivity.

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Conclusion of the study

- Process-driven pedagogical systems based on experiential learning provide a more durable model of skills acquisition than content-driven systems, which tend to promote surface learning with learners recalling facts in isolation.
- Integration of game environments and gameplay into learning products has the capacity to heighten engagement for users and foster deep learning.

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Games for Training

Computer games have the capacity to become important learning systems because:

- they engage participants by making them active agents in their own learning rather than passive consumers of received knowledge.
- game players adopt and invest in new identities through gameplay, thus allowing learners to take risks and imagine themselves in the roles they are training to achieve.

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... and what's more

- New tools that are action and goal oriented
- Play the game first and then are introduced to real world elements
- Players are active agents, they must understand the design/world to participate
- Customise their own learning-make choices about where to go and what to do
- Deep learning requires extended commitment, taking on a new identity and investing in it - ie taking on a new role at work
- Smart tools (tools and technologies) allow learners to extend themselves into the world being investigated
- Well ordered problems – tackling hard problems first leads to bad practices
- Pleasantly frustrating- learning works best when new challenges are pleasantly frustrating. Motivation lies in challenges that feel challenging, but doable
- Expertise develops through cycles of learning and practicing
- Information “On Demand” and “Just in Time”
- Fish tanks (ZPD)- simplified system that displays critical variables and their interactions that are obscured in highly complex real world situations
- Sandboxes-safe havens to explore and learn-relate back to OHS
- People do not like practicing skills out of context over and over
- System Thinking -people learn skills, strategies, and ideas when they see how they fit into an overall larger system to which they give meaning

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Playing for the future - The Vocational Game Project

The project is a collaboration between:

- Faculty of Technical Trades Innovation
- School of Creative Industries
- Work-based Education Research Centre
- Telematics Trust

Game scenario will take place in an Engineering workshop

1. user – role of a new employee.
2. make a series of planning and safety-based choices relating to uniform, protective clothing, handling chemicals, operating machinery and performing tasks.
3. interact with supervisors and fellow workers.
4. game goal - plan and perform a day's work without injuring themselves, their fellow workers or destroying equipment.

Addresses 3 Units of competency from MEM05 *Metal and Engineering Training Package*

<game build to date>



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