University of Huddersfield Repository

McDowell, James

Design-based research as a methodological approach to support participatory engagement of learners in the development of learning technologies

Original Citation


This version is available at http://eprints.hud.ac.uk/25762/

The University Repository is a digital collection of the research output of the University, available on Open Access. Copyright and Moral Rights for the items on this site are retained by the individual author and/or other copyright owners. Users may access full items free of charge; copies of full text items generally can be reproduced, displayed or performed and given to third parties in any format or medium for personal research or study, educational or not-for-profit purposes without prior permission or charge, provided:

- The authors, title and full bibliographic details is credited in any copy;
- A hyperlink and/or URL is included for the original metadata page; and
- The content is not changed in any way.

For more information, including our policy and submission procedure, please contact the Repository Team at: E.mailbox@hud.ac.uk.

http://eprints.hud.ac.uk/
Design-based research as a methodological approach to support participatory engagement of learners in the development of learning technologies

Dr James McDowell
University of Huddersfield
What is Design-Based Research?

History and Nature of Design-Based Research (DBR)

Originated by Ann Brown (1992) and Alan Collins (1992) to enable research to be conducted in the ‘messy conditions’ of authentic educational settings

Interdependence of theory and practice is key to design-based research (e.g. Brown, 1992; Collins, 1992; DBRC, 2003)

Offers opportunities to conduct mixed methods research which is flexible and responsive to the data, allowing for an emergent research design

Can incorporate other methodologies (e.g. case study) within an overarching methodological approach
Motivations for the Research

*Teaching in a highly visual area within the Computing discipline (games) ...*

Previous study had highlighted opportunities to introduce video tutorials

High incidence of SpLDs including dyslexia, autistic spectrum conditions

Aiming to promote greater inclusivity/level the playing the field

Desire to engage students with assessment *for* learning

Need to provide timely, usable, and effective feedback
DBR and Software Engineering

DBR Cycles and Software Engineering Models

(c) Knowlton’s (2007) observations on congruence of DBR and rapid prototyping
Theoretical Backdrop

Cognitive Theory of Multimedia Learning
Cognitive Load/Dual Coding Theory

Social Presence (Col)
Learning Styles
Teaching Presence (Col)
Conversation Theory
Conversational Framework

Key:
A: Artefact
L: Learner
T: Tutor

Inspiring tomorrow’s professionals
Three Research Cycles: First Cycle

Introduction of Instructional Tutorial Videos (ITVs)

Findings: Feed-forward, Dialogue, Visual Demos

Refinements: Video-Enhanced Assessment/Feedback
Three Research Cycles: Second Cycle

Design, Implementation and Evaluation of VEA/VEF Techniques

Findings: Enhanced Inclusivity and Engagement
Refinements: Increase Frequency of VEF, Formalise VEA
Three Research Cycles: Third Cycle

Refinement of Techniques to Form Integrated Model

Findings: Increased Reflexivity, Autonomy, Inclusivity

Recommendations for Future Research/Development
Data Collection and Analysis
Observations on Methodology

Phase Differences in DBR

Design and implementation phases clearly differentiated during Cycle 1, where focus was on development of artefacts (i.e. ITVs)

Differentiation began to blur in Cycle 2 when developing techniques (e.g. video-feedback loop), where design and implementation phases became less distinct

In Cycle 3, differentiation between analysis and design phases became blurred, where techniques were refined to form an integrated system
Conclusions

Flexibility a Key Advantage of DBR

DBR can bridge the paradigmatic divide, knitting together elements of both cognitive and social theories of learning.

Student participation in the development of learning technologies can lead to the enhancement of inclusivity, reflexivity, autonomy and academic performance.

"Where participants play an active role in defining and shaping an intervention, the application of the personalisation effect (Mayer, Fennell, Farmer & Campbell, 2004), within a dialogic interviewing framework underpinned by a collapsed tutor-student hierarchy, offers a strong vehicle through which to engage with participants as students in the role of practitioner, and to engage students as participants in the role of researcher."
Any Questions?


Inspiring tomorrow’s professionals