



Curtin University

# Progress Report on ALTA Grant: Comparative Evaluation of Marking and Feedback Support Systems

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Thanks!



# Grant Research Participants

Research group on Technology Supported Education (TSE)

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# Overview

- Marking and Feedback Support Systems (MFSS)  
Products, Benefits, Features
- Research Objectives
- Research Design
- Research Progress so far
- Research Findings so far
- Research Ongoing
- Research Outcomes and Plans

# Marking and Feedback Support Systems (MFSS)

A computer-based information system developed to support (but not fully automate) and improve the efficiency and effectiveness of people marking and providing feedback on essays or other open-ended written assignments

# Available MFSS Products

- Burrows and Shortis (2011) identified 15 MFSS (not their terminology)
- Commercial products
  - Blackboard 9.1 Gradebook rubric feature, Waypoint, Moodle Workshops, ReMarksPDF and ReMarksXML, Turnitin's Grademark, iAnnotate, Review
- Research Prototypes
  - ABBA, EPSS (new version named TTF), tsAAM, Semi-Automatic Essay Assessment based on a flexible Rubric, and SAFS

# MFSS Benefits (Intended)

- Improved efficiency of marking and feedback
  - Reduced marking and feedback time
- Improved effectiveness of marking and feedback
  - Improved accuracy and consistency of marks
  - Higher quality feedback
    - Legible, Meaningful and comprehensible, Specific to student work, Establishes the relationship to the material taught, Helpful & constructive, Related to the educational goals
  - Earlier/Timelier feedback
  - Improved student satisfaction with feedback
  - Improved student learning through feedback received

# MFSS Features (not in all MFSS!)

- More easily and accurately apply marking guides and rubrics
  - Select marks using check boxes or moving sliders
- More easily provide written comments
  - Pre-written comments, Adding new comments to database, Editing pre-written comments to make them specific to the student's actual work
- More easily place comments at appropriate places on assessed student work submissions
- More easily calculate total marks
- More easily record marks
- More easily produce feedback and summaries
- More easily transmit feedback to students



# Research Objectives

- Want to evaluate MFSS in terms of ...
    1. Tool installation effort
    2. Assessment/pre-marking set-up times
    3. Resources needed/used
    4. Marking effort
    5. Marking reliability
    6. Accuracy
    7. Student satisfaction with feedback
- ... in comparison with other MFSS

# Issues in Research Design

## ■ Confounding Variables in Evaluating MFSS

The student – differences in perceptions and expectations

The unit – differences in level, topic, and size

The assessment item – type, length, assessed aspects

The marking rubric – length, detail, quality, feedback text

The marker – motivation, experience, domain knowledge

Learning effects – how to use the tool, marking the assessment item

## ■ Ethical Issues

Inappropriate to assess some students solely with one marking and feedback method/MFSS and other students solely with a different marking and feedback method/MFSS

# Research Design – Paradigm

- Combine field experiment (artificial evaluation) with a field study (naturalistic evaluation)
  - Naturalistic – three realities – real users, real system, real problem/task (Sun & Kantor 2006)
  - Real markers, real students, real system (MFSS), but multiple systems and multiple markers
  - Artificial – more than one system used by each marker, more than one set of feedback received by each student

# Research Design – Controls

- Control for confounding variables – unit, assessment type, rubric, etc. – by running the experiment multiple times for multiple units, assessments, etc.
- Control for student and marker by giving students multiple feedback (different MFSS) and using multiple markers to mark each assessment
- Control for learning effects by using MFSS in different order between markers
- Include control group – comparison with *not* using an MFSS (i.e., “manual” marking)

# Research Design – Ethics

- All students are assessed using all MFSS (including manually/no MFSS)
- All students are assessed by all markers
- No students are disadvantaged by learning effects

# Research Design (for three MFSS)

	Students 1-10	Students 11-20	Students 21-30
Marker A	No MFSS (manual)	MFSS X	MFSS Y
Marker B	MFSS X	MFSS Y	No MFSS (manual)
Marker C	MFSS Y	No MFSS (manual)	MFSS X

# Research Design – Data Collection

- Collect data from all markers on opinions
- Collect data from all markers about marking time and marks
  - Using spreadsheet to record start and stop times
- Collect all the returned marks and feedback
- Collect data from students via survey about opinions

# Research Progress 2011 Semester 2

- Designed data collection instruments
- Obtained ethics approval and permission to conduct research with students
- Evaluated in three units
  - Business Information Systems 100 – ABBA vs tsAAM
  - Object-Oriented Development 501 – manual vs tsAAM
  - Supply Chain Information Systems 502 – manual vs tsAAM
- Studies were more exploratory and experience gathering – didn't fully follow the research design
  - Gathered data on set-up times, marking time, marker experiences
  - Did not mark all assessments using both methods, provide multiple feedback to students, or survey students



# Research Findings So Far

- Significant time required to install and set up tsAAM, manage users, etc.
- tsAAM needed customisation to provide some needed features
  - Ability to more fine-tune numeric marks, etc.
- Significant, but reasonable time to set-up marking rubrics, but need technical assistance
- Significant time savings in doing marking (33%)
- Several suggestions for improvements, some made to tsAAM

# Research Underway 2012 Semester 1

- Evaluating in eight units
- Most will follow the rigorous research design
  - Business Information Systems 100 – ABBA vs tsAAM vs Blackboard (partial evaluation – too many students)
  - Business Problem Analysis 300 – TTF vs Blackboard (2 assignments)
  - Business Software Tools 200 – Blackboard only
  - Operations and Material Management 301 – tba
  - Operations Management 502 – manual vs tsAAM
  - Purchasing and Procurement 311 – manual vs TTF (poster present!)
  - Strategic Supply Chain and Logistics Management 302 – manual vs TTF
  - Systems Analysis & Design 251 – TTF vs Blackboard

# Outcomes (So Far and Planned)

- Published paper on the research method and design
- Draft papers underway reporting results of 2011 evaluations
- Plan further papers on individual evaluations
- Plan journal paper integrating and summarising the individual evaluations
- Developing application for OLT grant (submit in August) for further evaluations of commercial products – Blackboard, Review, and Turnitin



Questions and Discussion?

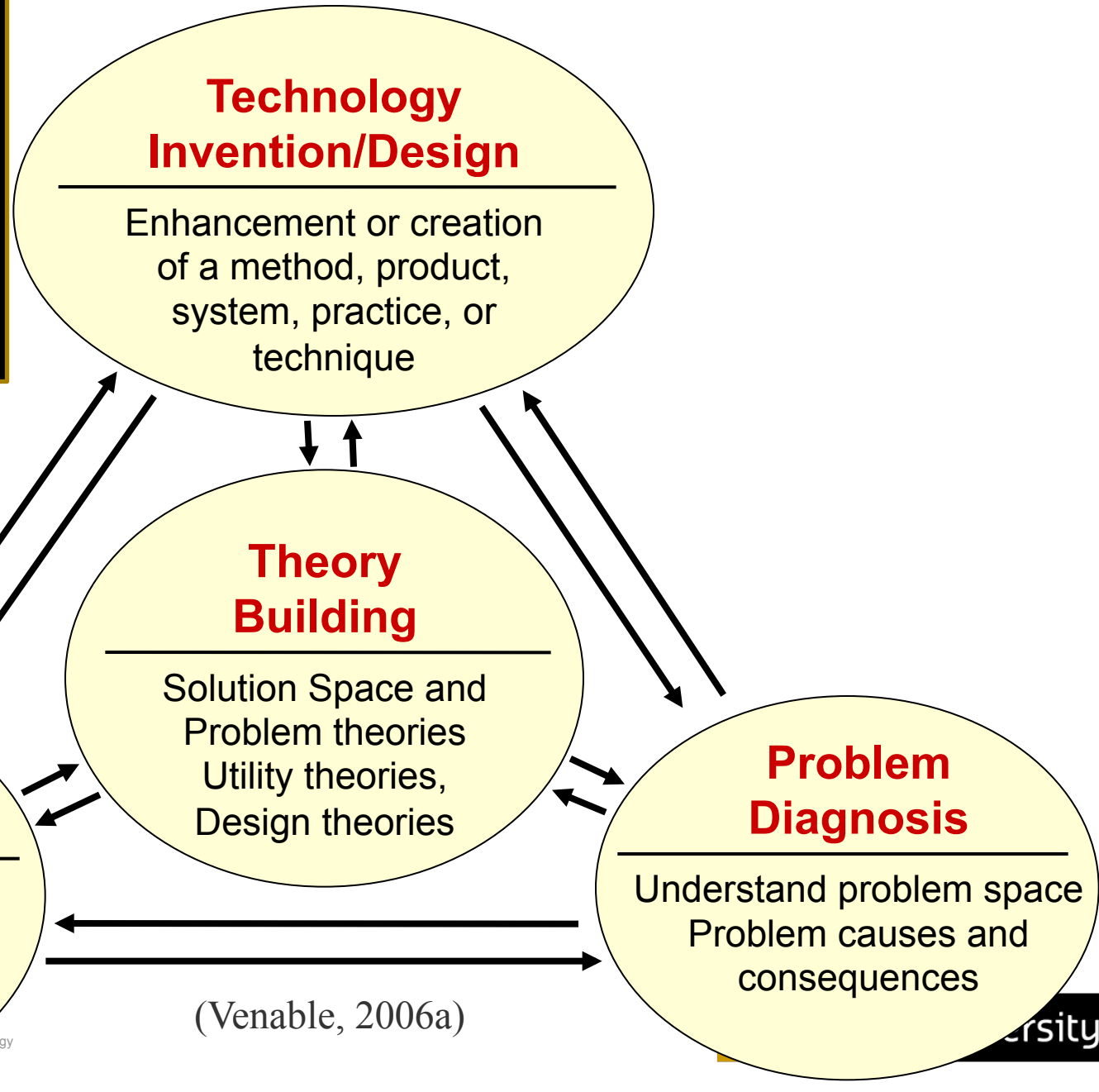
# References

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- Venable, John R., Ashley Aitken, Vanessa Chang, Heinz Dreher, Tomayess Issa, Brian von Konsky, and Lincoln Wood (2012). Developing a Research Design for Comparative Evaluation of Marking and Feedback Support Systems, *Proceedings of the 2012 Teaching and Learning Forum*, Perth, Western Australia, 2-3 February 2012, Murdoch University.

# Research Methods

- Design Experiments – Education  
Brown, 1992; Collins, 1992
- Design-Based Research – Education  
Dede, 2004; Dede, et al., 2004; Design-Based Research Collective, 2003; Reeves, et al., 2005
- Design Science Research – Information Systems  
Hevner, et al., 2004; March & Smith, 1995; Venable 2006a, 2006b, Peffers et al 2008

# Design Science Research Activities



# Evaluation in Design Science Research

- **Artificial Evaluation – Rigour sense 1 - efficacy**
  - Computer simulations
  - Role playing simulations
  - Field experiments
  - Lab experiments
- **Naturalistic Evaluation – Rigour sense 2 - effectiveness**
  - Case studies
  - Survey studies
  - Field studies
  - Action research