

How Do We Measure Effectiveness In Mobile Learning Environments?

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EDUCAUSE



A. I'm attending solo today

B. I'm attending with at least one other colleague



Agenda

- Mobile learning initiative frameworks (the what?)
- Strategies and methodologies to help measure the impact of mobile tools on teaching and learning (the how?)
- Mobile learning measurement tours (the for instance)

Resources

<http://tinyurl.com/mecar>

Got mobility?

- A. Yes
- B. No
- C. Sort of, we're working on getting to this point



- A. Yes
- B. No
- C. Sort of, we're working on getting to this point



- A. Yes
- B. No
- C. Sort of, we're working on getting to this point





Discipline-specific
customized mLearning



Generic mobile
instructional functions
(clickers, twitter, LMS)



Pushing mobile content
(registrar, library, tram)

BEHAVIOURIST
activities that
promote
learning as a
change in
observable
actions

CONSTRUCTIVIST
learning as an active
process in which
learners construct new
ideas or concepts
based on both their
current and past
knowledge

SITUATED
activities that
promote
learning within an
authentic context
and culture

COLLABORATIVE
activities that promote
learning through social
interaction

LEARNING AND
TEACHING SUPPORT
activities that assist in
the coordination of
learners and resources
for learning activities

Which of these best describes your current efforts in mobility

- A. Behaviorist
- B. Constructivist
- C. Situated
- D. Collaborative
- E. Learning support

The mobile tools (tablet, smart phone, etc.)

The mobile applications (apps, cloud, etc.)

The goals (engagement, content delivery, etc.)

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ACTIVITY, PART 1::

YOUR MINI MOBILE INITIATIVE

Mobile technology
is best suited for...

Tapping into the PLE

Content delivery is the
low-hanging fruit

Innovation doesn't always start
in the classroom

Rapid growth in mobile
applications and their
interoperability with other tools

The new tool in the toolkit

Challenge of ownership patterns

What will you do in your initiative?

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**ACTIVITY, PART 2::
YOUR MINI MOBILE INITIATIVE**

Review your plan and ask...

- What would be the **ramifications and opportunities** for learning if this technology were adopted?
- What kinds of teaching and learning **engagements** might this technology: **make better or enable**?
- If we decide to do a pilot, what kind of **evaluation methodology can we overlay on the project to assess outcomes**?
- What kind of additional research needs to be done concerning this technology (student)?

The Thing(s) To Measure

vs

How To Measure

Measuring the Impact: 5 Studies

MOBILE RESEARCH: CHALLENGES AND GOALS

Source:

<https://ira.le.ac.uk/bitstream/2381/8162/3/%5B14%5DVavoulaSharples-mlearn2008%5B1%5D.pdf>

Capturing learning context and learning across contexts

Challenge 1

Has anyone learned
anything yet?

Challenge 2

An ethical question

Challenge 3

The technology itself

Challenge 4

The big picture

Challenge 5

Formal vs informal

Challenge 6

5 recommendations

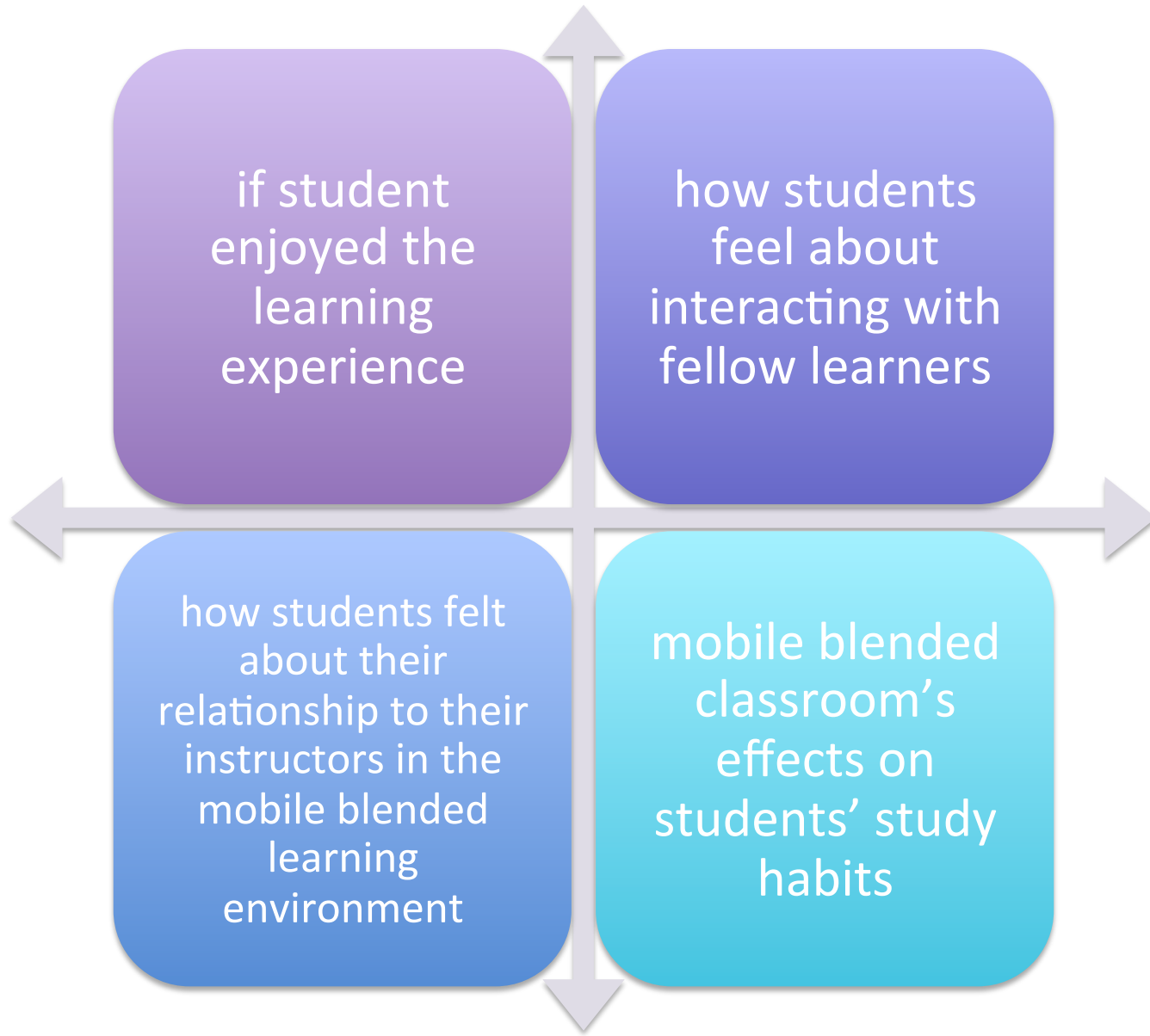
- Capture and analyze **learning in context** with consideration of learner privacy
- Assess the usability of the technology and how it **affects the learning experience (PLE)**
- Look beyond measurable cognitive gains into **changes in the learning process** and practice
- Consider organizational issues in the **adoption of mobile learning practice and its integration with existing practices**
- **Span the lifecycle of the mobile learning** innovation that is evaluated, from conception to full deployment and beyond

CASE STUDY: MOBILE LEARNING IN A BLENDED COURSE

Source:

<http://www.docstoc.com/docs/38964563/Assessing-the-Effectiveness-of-Mobile-Learning-in-Large-HybridBlended>

Focus Areas



Cluster 1 – Overall Satisfaction	Overall satisfaction with this class
Cluster 2 – Course Organization	The mLearning class was well organized
Cluster 3 – Course Activities	The course's activities were engaging
Cluster 4 – Student Interaction	The activities strengthened my connections with my classmates.
	I had more opportunities to help my classmates.
Cluster 5 – Instructor Interaction	The activities strengthened my connections with the instructor.
	I had more opportunities to ask questions.
Cluster 6 – Relationship to Content	I had more opportunities to practice what I learned.
	Mobile learning helped me a great deal in studying the content of this class.
	Mobile learning helped me grasp the course's main points.
	Mobile learning changed my habit of studying alone
Cluster 7 – Sustainability	The modality of mLearn (words, audio, video) fits my learning style
	I felt that my social skills have improved through the use of mobile learning.
	I would like to recommend mobile learning to other students.
	I would like to participate in future mLearn activities.

Overall Satisfaction

Course Organization

Course Activities

Student Interaction

Instructor Interaction

Relationship to Content

Sustainability

BUILDING A SUCCESSFUL MLEARNING FRAMEWORK

Source: <http://www.irrodl.org/index.php/irrodl/article/view/346/875>

Proportionate

Appropriate to the specific learning technologies, to the learners, and to the ethos of the learning

– ideally built in, not bolted on

Alignment between learning
goals and technology

Unintended results

How and what will you measure?

What would success look like?

How can you capture it?

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ACTIVITY, PART 3::

YOUR MINI MOBILE INITIATIVE

CASE STUDY: MOBILE LEARNING IN MEDICAL SCHOOL

Source: <http://www.biomedcentral.com/1472-6920/10/57>

Context

- 57 students in cohort
- 4-year
 - Bachelor of Medicine
 - Bachelor of Surgery
- 2 online tools
 - Blackboard
 - Interlearn
- Access to
 - Internet
 - Customized software
 - Info repositories
- Sharing info within and between cohorts
- 2 RQs
 - In what ways does mobility support learning?
 - What areas need further development?

Session notes	
Overviews	Student information
Lecture notes	Announcements
Tutorial notes	Updated timetables
Practical notes	CBPP information
PBL materials	Learning activities
Applications	Formative assessments (Quizzes;
Weblinks	Assignments)
	Summative assessments (Exams)
	External weblinks

Student Improvement Suggestions

- Better and more electronic learning resources
 - more materials, especially audiovisual resources
 - more flexibility in accessing materials
- **Guidelines/support** on managing the VLE
- Improvements to VLE
 - **Streamlining** organization of information
 - **Reduced the number of clicks** to access resources
 - **Orientation** for students

Johns Hopkins University 10/18/2010

EVALUATING MOBILE APPLICATIONS

Domain	1	2	3	4
Curriculum Connection	Skill(s) reinforced in the app are not clearly connected to the targeted skill or concept	Skill(s) reinforced are prerequisite or foundation skills for the targeted skill or concept	Skill(s) reinforced are related to the targeted skill or concept	Skill(s) reinforced are strongly connected to the targeted skill or concept
Authenticity	Skills are practiced in a rote fashion (e.g., flashcards)	Skills are practiced in a contrived game/simulation	Some aspects of the app are presented in an authentic learning environment	Targeted skills are practiced in a format problem-based
Feedback	Feedback is limited to correctness of student responses	Feedback is limited to correctness of student responses and may allow for student to try again	Feedback is specific and results in improved student performance (may include tutorial aids)	Feedback is specific and results in improved student performance; Data is available electronically to student and teacher
Differentiation	App offers no flexibility (settings cannot be altered)	App offers limited flexibility (e.g., few levels such as easy, medium)	App offers more than one degree of flexibility to adjust settings to meet student needs	App offers complete flexibility to alter settings to meet student needs
User Friendliness	App requires constant teacher supervision in order to use the app	Students need to have the teacher review how to use the app on more than one occasion	Students need to have the teacher review how to use the app	Students can launch and navigate within the app independently
Student Motivation	Students avoid the use of the app or complain when the app is assigned by the teacher	Students view the app as "more schoolwork" and may be off-task when directed by the teacher to use the app	Students will use the app as directed by the teacher	Students are highly motivated to use the app and select it as their first choice from a selection of related choices of apps

Student Motivation

Authenticity

Curriculum Connection

User Friendliness

Differentiation

Feedback

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Curriculum Connection	Skill(s) reinforced in the app are not clearly connected to the targeted skill or concept	Skill(s) reinforced are prerequisite or foundation skills for the targeted skill or concept	Skill(s) reinforced are related to the targeted skill or concept	Skill(s) reinforced are strongly connected to the targeted skill or concept
Authenticity	Skills are practiced in a rote or isolated fashion (e.g., flashcards)	Skills are practiced in a contrived game/simulation format	Some aspects of the app are presented an authentic learning environment	Targeted skills are practiced in an authentic format/problem-based learning environment
Feedback	Feedback is limited to correctness of student responses	Feedback is limited to correctness of student responses and may allow for student to try again	Feedback is specific and results in improved student performance (may include tutorial aids)	Feedback is specific and results in improved student performance; Data is available electronically to student and teacher
Differentiation	App offers no flexibility (settings cannot be altered)	App offers limited flexibility (e.g., few levels such as easy, medium, hard)	App offers more than one degree of flexibility to adjust settings to meet student needs	App offers complete flexibility to alter settings to meet student needs
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The Thing(s) To Measure

vs

How To Measure

How do I ask?

- Questionnaires
 - Paper
 - Online
- Interviews
 - Individual
 - Focus Group
- Observations
 - Classroom
 - Online
- Focus groups
- Surveys
- Tracking tools
- Journaling
- Pre post tests
- Debriefs



Types of Questionnaires

Paper distributed in class

Mail

E-mail

Online, e.g., SurveyMonkey

Twitter poll

Facebook



Types of Interviews

Face-to-face

Telephone or Skype

Teleconference

Synchronous Chat

Asynchronous forum

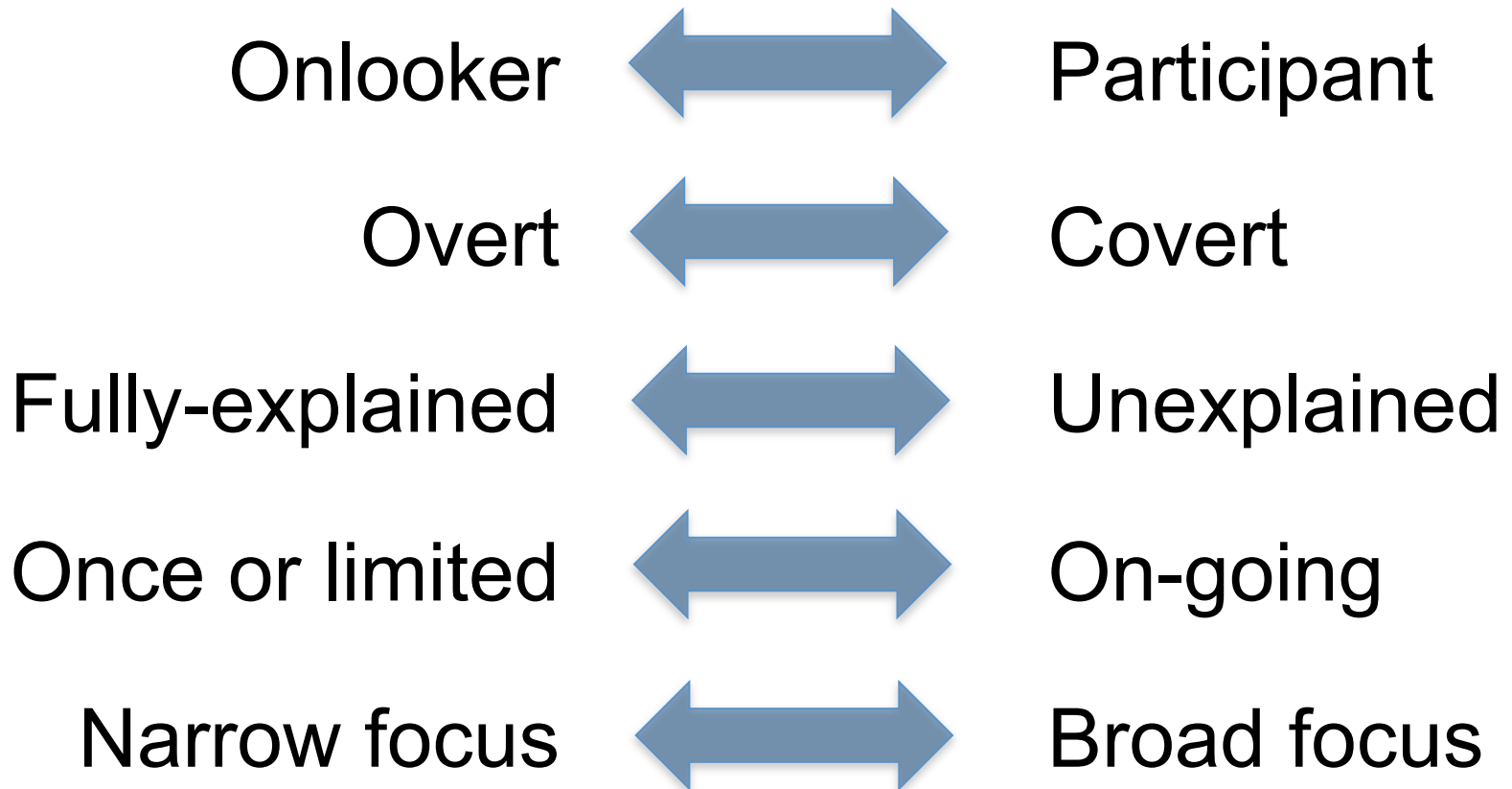
Focus group

Twitter poll

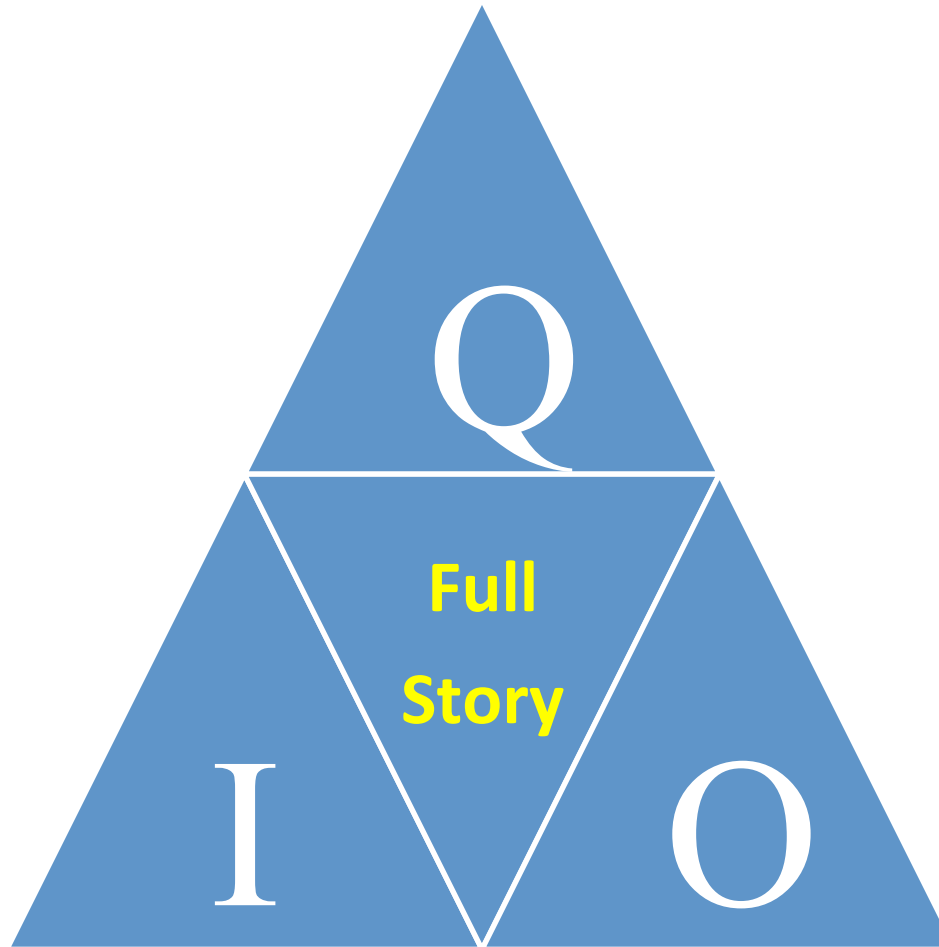
Facebook



Observation Options



Triangulate to Tell the Full Story



What strategies will you use to measure?

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DISCUSSION/QUESTIONS

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<http://www.educause.edu/eli>

Resources

<http://tinyurl.com/mecar>

