Applying Learning Theory to Mobile Learning

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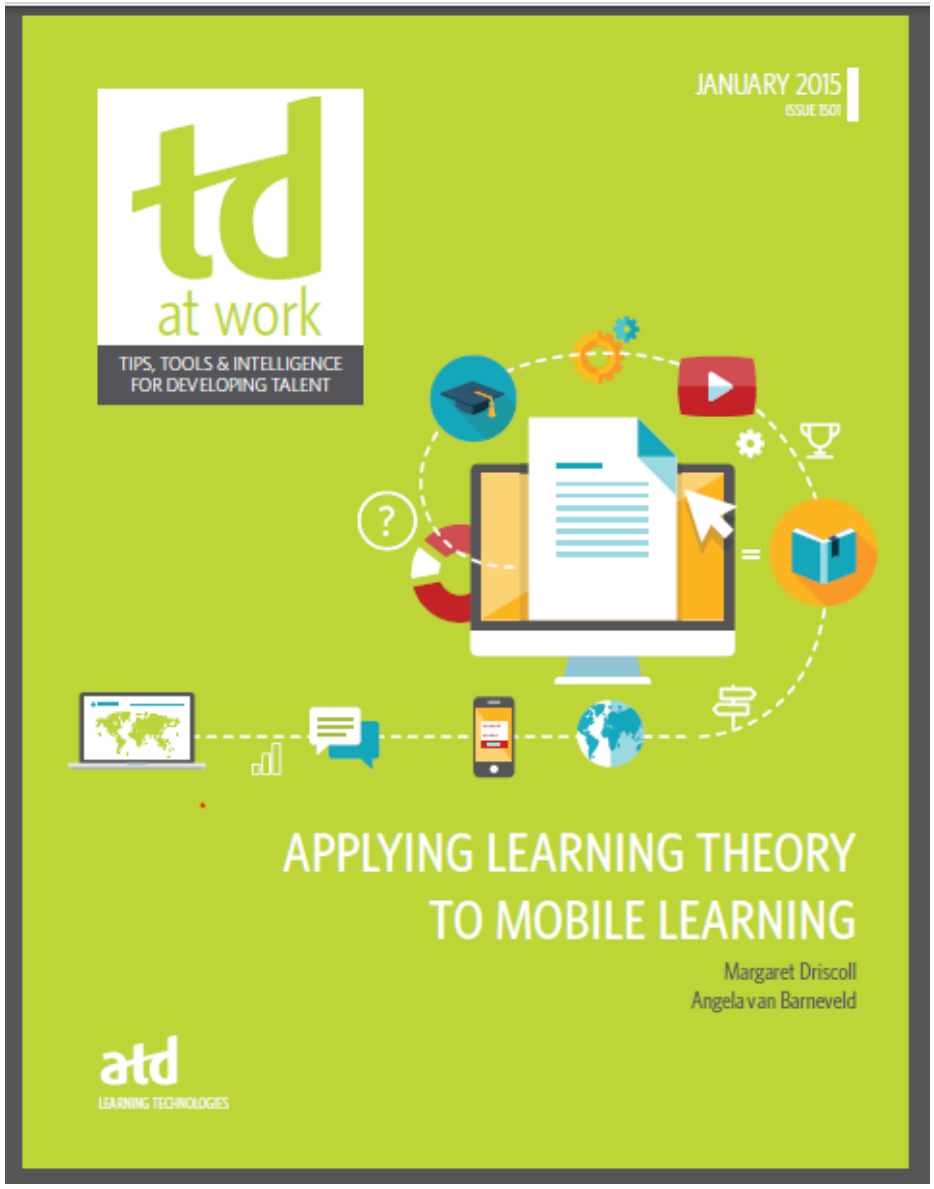


Thank you to *TD at Work* personnel who encouraged and helped us produce this booklet.

How do you define mobile learning?

- In the chat… what is your domain and how do you define mobile learning?
    - E.g., I'm at a national retailer and I define mobile as what I need when I need it (WINWINI)
    - E.g., I'm at a bank and I define mobile as learning on a phone.

Definitions

PERFORMANCE

Any activity that allows individuals to be more productive when consuming, interacting with, or creating information mediated through a compact portable digital device that the individual carries on a regular basis, has reliable connectivity, and fits in a pocket or purse (The eLearning Guild, 2007).

MOBILITY

f training by
ch as Mobile
udio players, as well as digital cameras and voice recorders, pen scanners etc. M-learners are seeking lessons in small, manageable formats that they can undertake when it suits them (Wikipedia).

Goal

After this presentation you will have:

- A framework for thinking how about mobile learning fits the larger context of the training organization’s mobile strategy
- An updated and extended view of current research on mobile learning
- A summary of learning theories and mobile examples
- Guidelines to curate, design, purchase and evaluate mobile learning solutions

What mobile learning looks like to a lot of people

Primary differences between eLearning and mobile learning

1. Real Estate
2. Context
3. Duration

New technologies are always used to do old tasks – until some driving force causes it to be used in a new way

~ Marshall McLuhan (1964)

AHA!

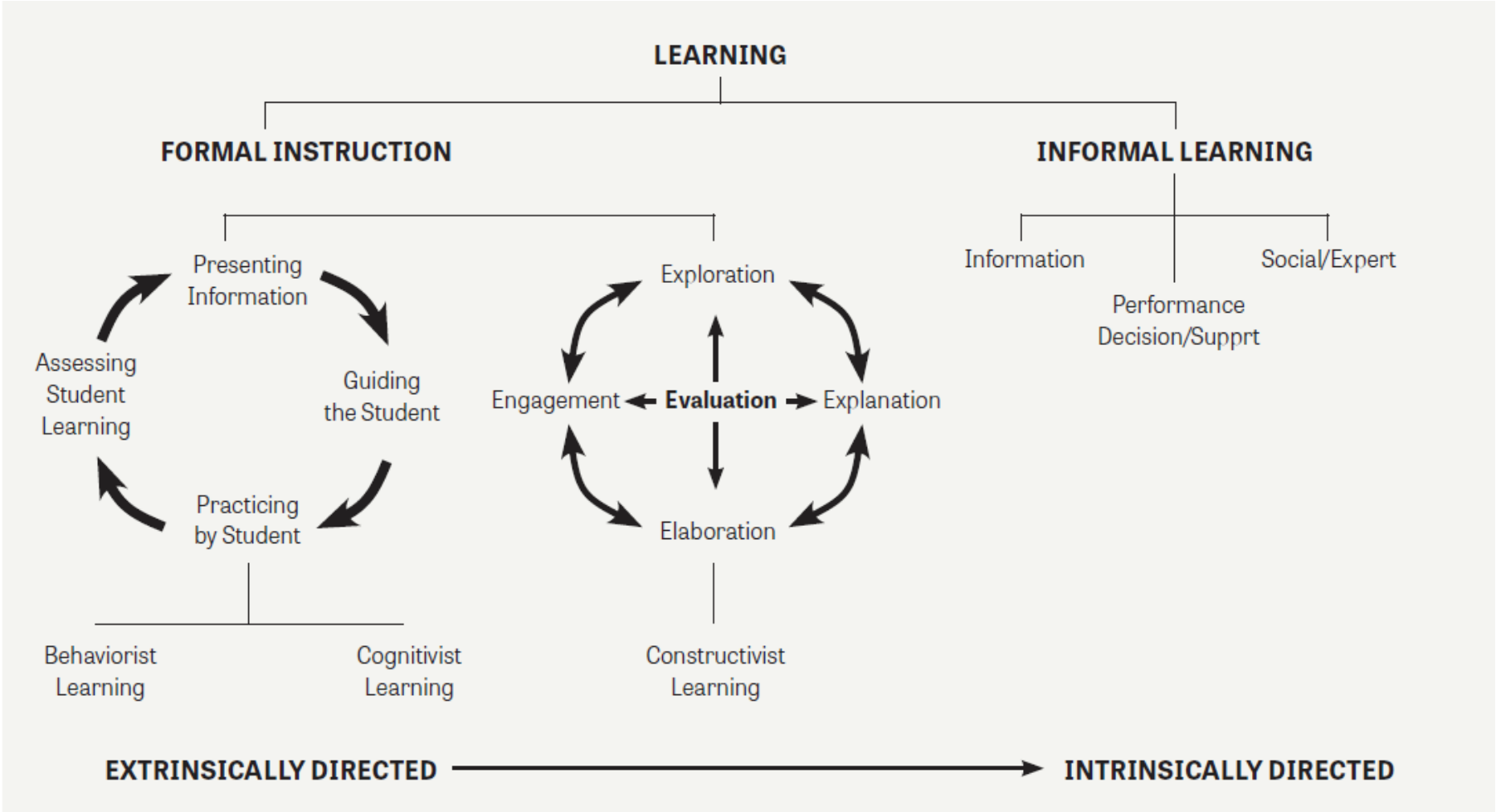
[Design Challenges and Considerations for Responsive eLearning](#) (Upside Learning, 2014)

POLL QUESTION

Have you designed formal learning or informal learning to be delivered on a mobile device?

- Answer YES or NO
- And if yes, describe the program in chat

Formal Instruction & Informal Learning



Adapted from www.adlnet.gov/wp-content/uploads/2012/12/12079.pdf *and* Alessi & Trollip (1991). *Computer-based instruction: Methods and Development.*

POLL QUESTION

Would you agree with this statement; *“In the last 7 years mobile learning has overcome many of the initial barriers to adoption. “*

TRUE

FALSE

Research

Research: Drivers and barriers of mobile learning

Drivers	The Elearning Guild (2007)	Towards Maturity (2014)
1.	Increase learner/user access and availability	Increase learning access and flexibility
2.	Accommodate learner/user needs	Increase on-the-job productivity
3.	Increase speed of content delivery	Support organizational change and provide a faster response to changing business conditions
4.	Improve learner/user performance	Increase the reach of learning solutions
5.	Reduce costs	Increase the ongoing sharing of good practice

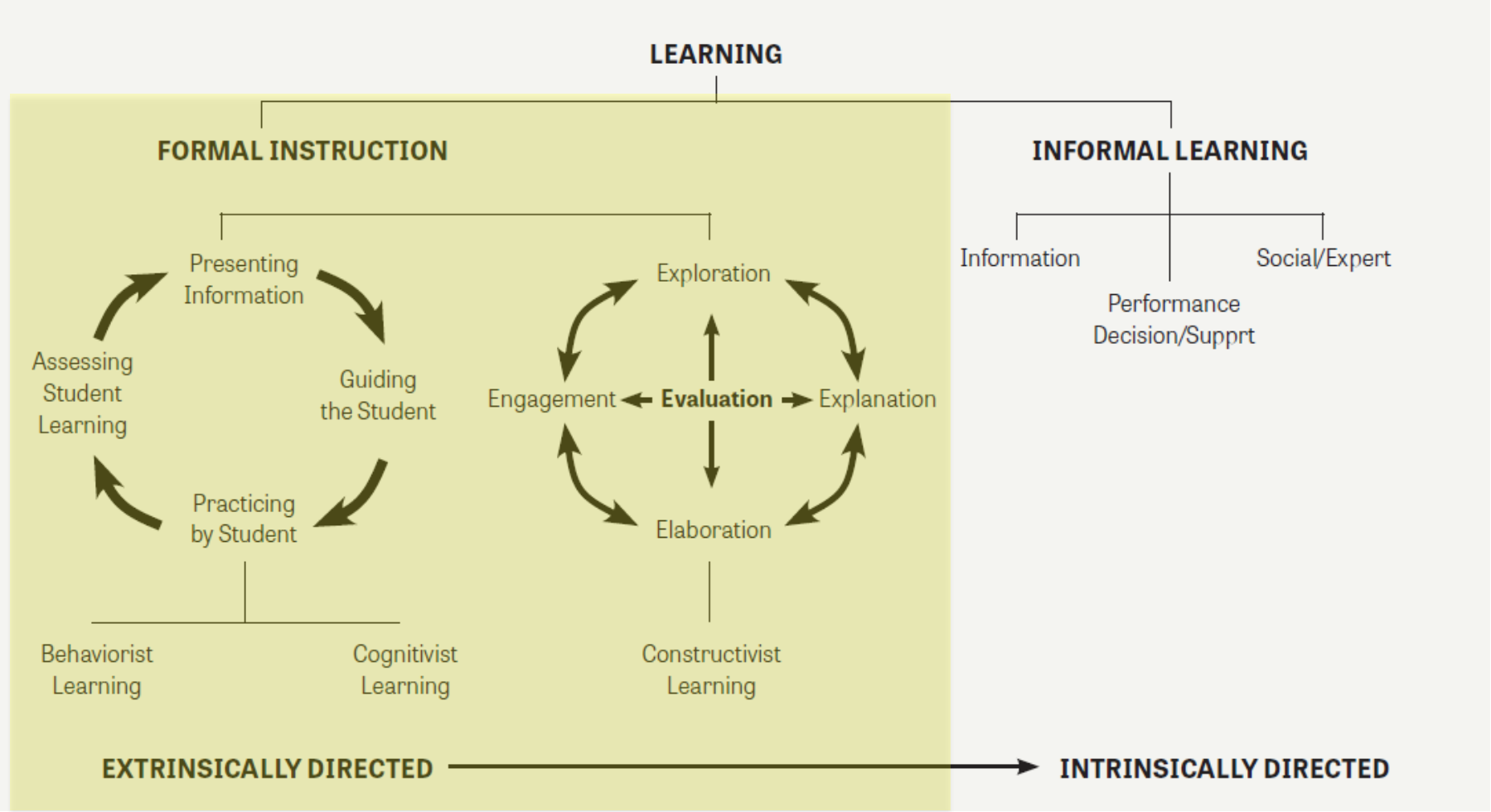
Barriers	The Elearning Guild (2007)	Towards Maturity (2014)
1.	Content developed for other media does not transfer well to mobile	Cost of development, set-up and maintenance
2.	Lack of standards	IT security issues
3.	Security (vulnerable transmission)	Unreliable ICT infrastructure
4.	Screen too small (affordances)	Wide variation in learner's personal technologies
5.	Limited bandwidth (infrastructure)	Complex to support

Research: What are the studies telling us?

- Big focus on perception
- K-20
- Blended solutions
- Academic versus industry research – be savvy
  - Two classes of research – academic and industry
    - Different standards and different agendas/purposes
    - Different levels of transparency
- Cautious transferability
- Much of the research is on adoption of technology and quantification of number of devices

Learning Theory

Formal Instruction & Informal Learning



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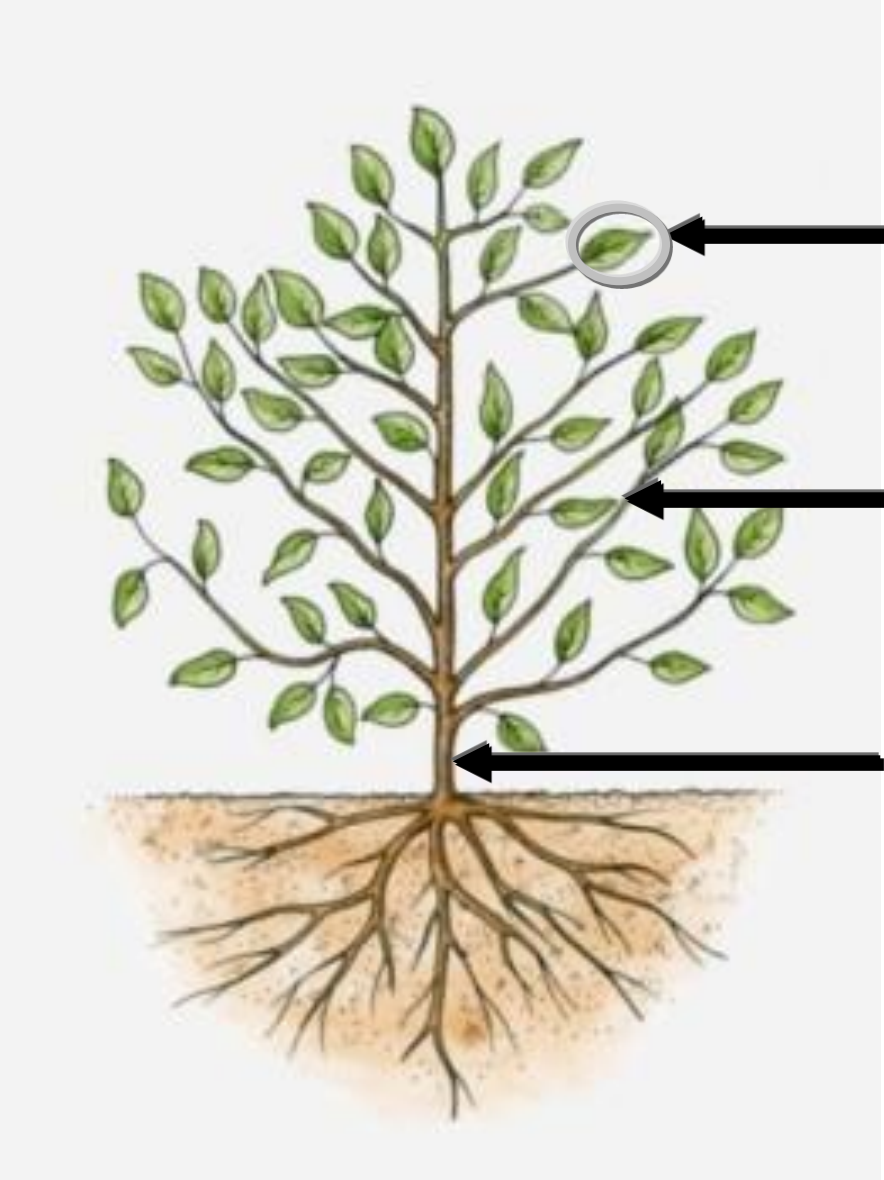
Why care about theory?



Instructional strategies are the tactics that help people learn

Instructional theory prescribes how to better help people learn

Learning theory describes how learning takes place

Comparison of learning theories

Theory	Learning is equated with	Instruction focuses on	Strategies
Behaviorism (Do)	Changes in either the form or frequency of observable performance Learner is reactive to conditions in the environment; passive	Building and strengthening stimulus-response associations (environment)	Instructional cues Practice Reinforcement Recall facts Illustrate concepts Apply explanations Follow procedures
Cognitivism (What, How)	Discrete changes between states of knowledge rather than with changes in the probability of response Learner is viewed as a very active participant in the learning process (internal coding and structuring)	Efficient information processing to connect new information with existing knowledge in some meaningful way	Chunking Feedback Advanced organizers Concept mapping Apply reasoning to solve problem solving in new context
Constructivism	Creating meaning from experience Learners actively build personal interpretations of the world based on individual experiences and interactions; elaboration and interpretation of information	The interaction between learner and environment; knowledge and behavior are contextualized Shift from *teaching* to *learning*	Situate tasks in real-world contexts Multiple perspectives Modeling and coaching Reflection/debrief Advanced knowledge in ill-structured domains Solve problems

Mobile learning examples: Behaviorism

KANJI BOX (iPhone)

- Japanese language study
- Provides an efficient way to practice all aspects of Japanese (kana, kanji, character recognition, vocabulary, reading, writing...)
- Uses drills, quizzes and flash cards, while providing engaging feedback through progress charts, scores and game-like "achievements" for each Japanese level

Behaviorism
- Learner is passive participant
- Building and strengthening through stimulus-response associations (environment)

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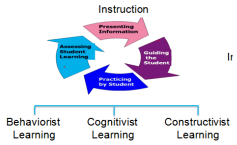
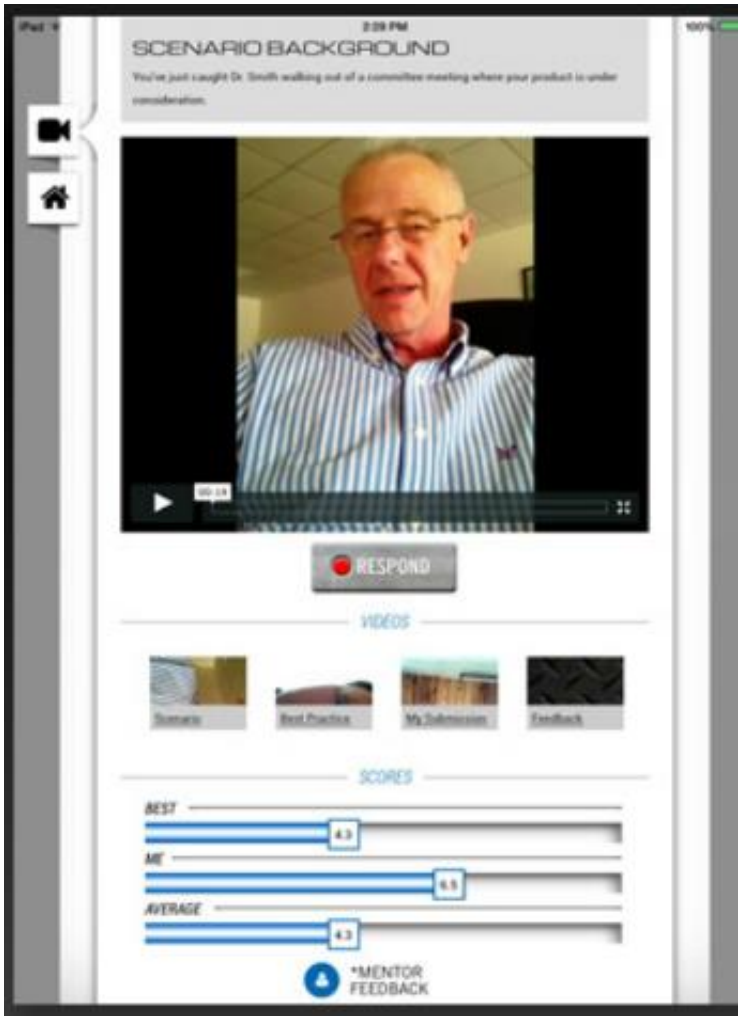


Mobile learning examples: Cognitivism



MX SkillMaster (iPhone)

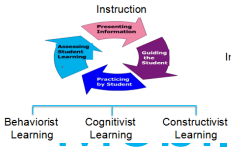
- Role-play for sales reps (*Move the needle on performance*)
- Provides scenario-based practice in a customer service situation (banking, hospitals)
- Uses simulations, deliberate practice, observation (master video), advanced organizer (best practices video), feedback (mentor, scorecard), spaced practice, chunking

Cognitivism

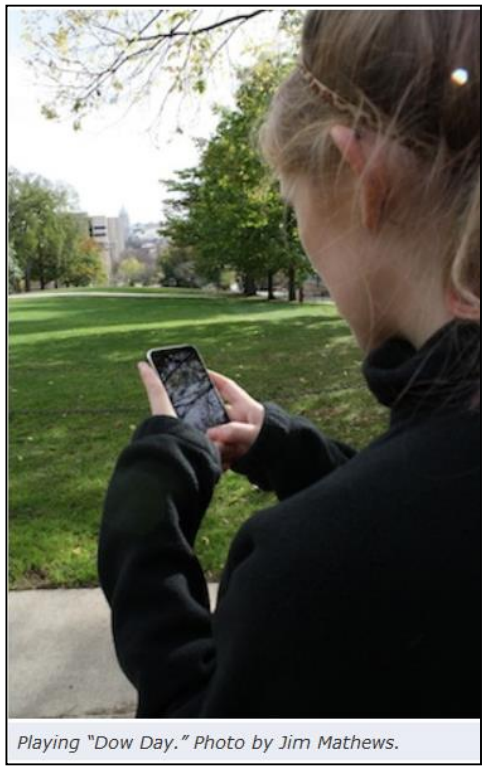
- Learner is active
- Efficient information processing to connect new information with existing knowledge in some meaningful way

BACK

Source: MX SkillMaster by Matrix Achievement! http://portal.sliderocket.com/BJBFK/Skillmaster-Tour-manager-rep-loop



Mobile learning examples: Constructivism



Playing "Dow Day." Photo by Jim Mathews.

Dow Day (iPhone)

- Take the role of a news reporter and investigate the different interests and perspectives of students, police and Dow employees (napalm protest – 2 days in1967, UW-Madison) - given an assignment from the editor
- Uses situated learning, context-specific, location-based, real-life scenarios, game elements, discovery learning

Constructivism

- Learner is active
- The interaction between learner and environment; knowledge and behavior are contextualized
- Shift from *teaching* to *learning*

BACK

http://arisgames.org/featured/dow-day/
http://spotlight.macfound.org/featured-stories/entry/the-magic-of-going-mobile-augmented-reality-design-thinking-power-place/

Comparison of learning theories

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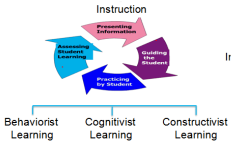


Not a question of WHICH, but WHEN

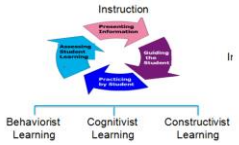
- The critical question instructional designers must ask is not "Which is the best theory?" but "Which theory is the most effective in fostering mastery of specific tasks by specific learners?"

We *need* the **behaviorist's triad** of practice/ reinforcement/ feedback to enlarge learning and memory.

We *need* purpose, decision, values, understanding - the **cognitive categories** - lest learning be mere behavioral activities rather than action.

We also *need* **adaptive learners** who are able to function well when optimal conditions do not exist, when situations are unpredictable and task demands change, when the problems are messy and ill-formed and the solutions depend on inventiveness, improvisation, discussion, and social negotiation.

NEXT



Evaluating learning strategies for a given task

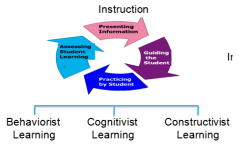
Constructivist Strategies
Cognitivist Strategies
Behaviorist Strategies

High
Low
Level of Learner's Task Knowledge

How much prior knowledge of the subject?

Low
High
Level of Cognitive Processing Required by the Task

Ertmer & Newby (2013). *Behaviorism, Cognitivism, Constructivism: Comparing critical features from an instructional design perspective.*



Evaluating learning strategies for a given task

Constructivist Strategies
Cognitivist Strategies
Behaviorist Strategies

Level of Learner's Task Knowledge

High

Low

Low

High

How much thinking effort is required of the learner and the demands of the task.

Level of Cognitive Processing Required by the Task

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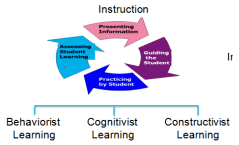

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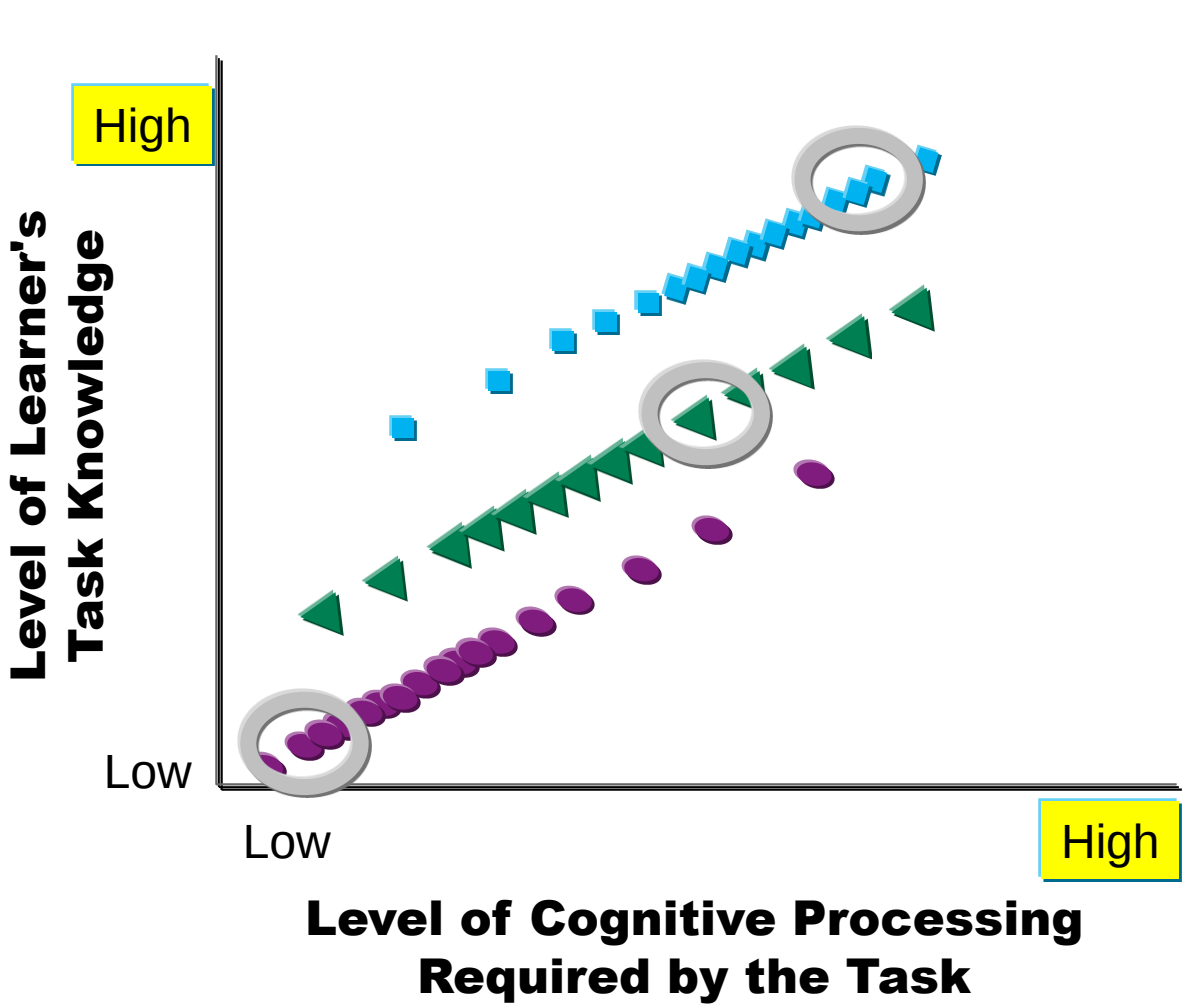

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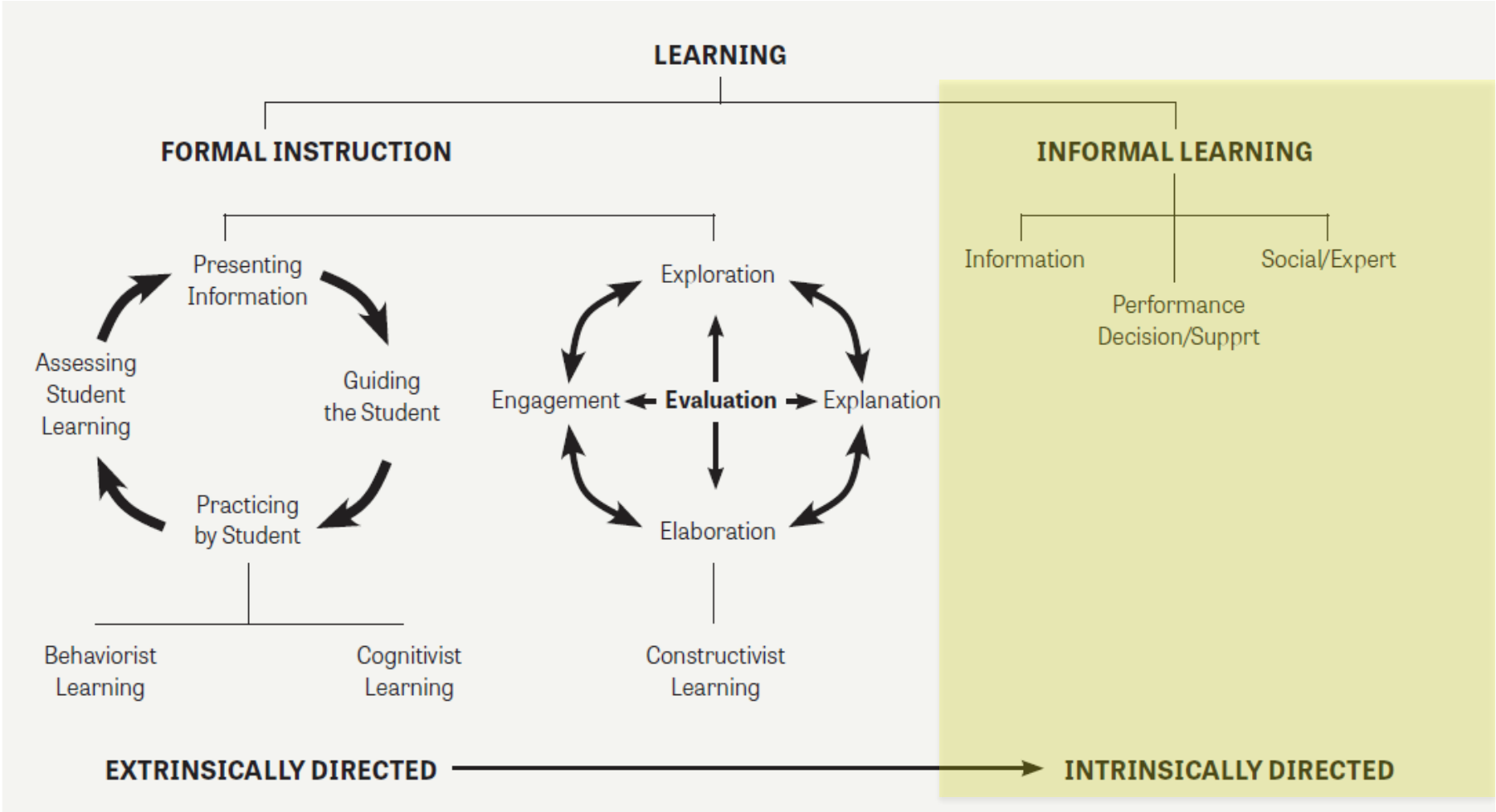
Formal Instruction & Informal Learning



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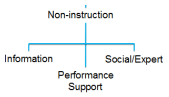
Mobile learning examples: Information/Curation

Mobile learning examples: Performance support

Myfitnesspal (iPhone)

- Provides personal calorie counter/ converter/ recommender / exercise tracker
- At the point of need
- Not intentionally designed for learning



Mobile learning examples: Performance support

Seller support (iPad)

- Provides product information, selling strategies, social support (Find the Expert), and customer collateral

Source: http://www.01click.net/

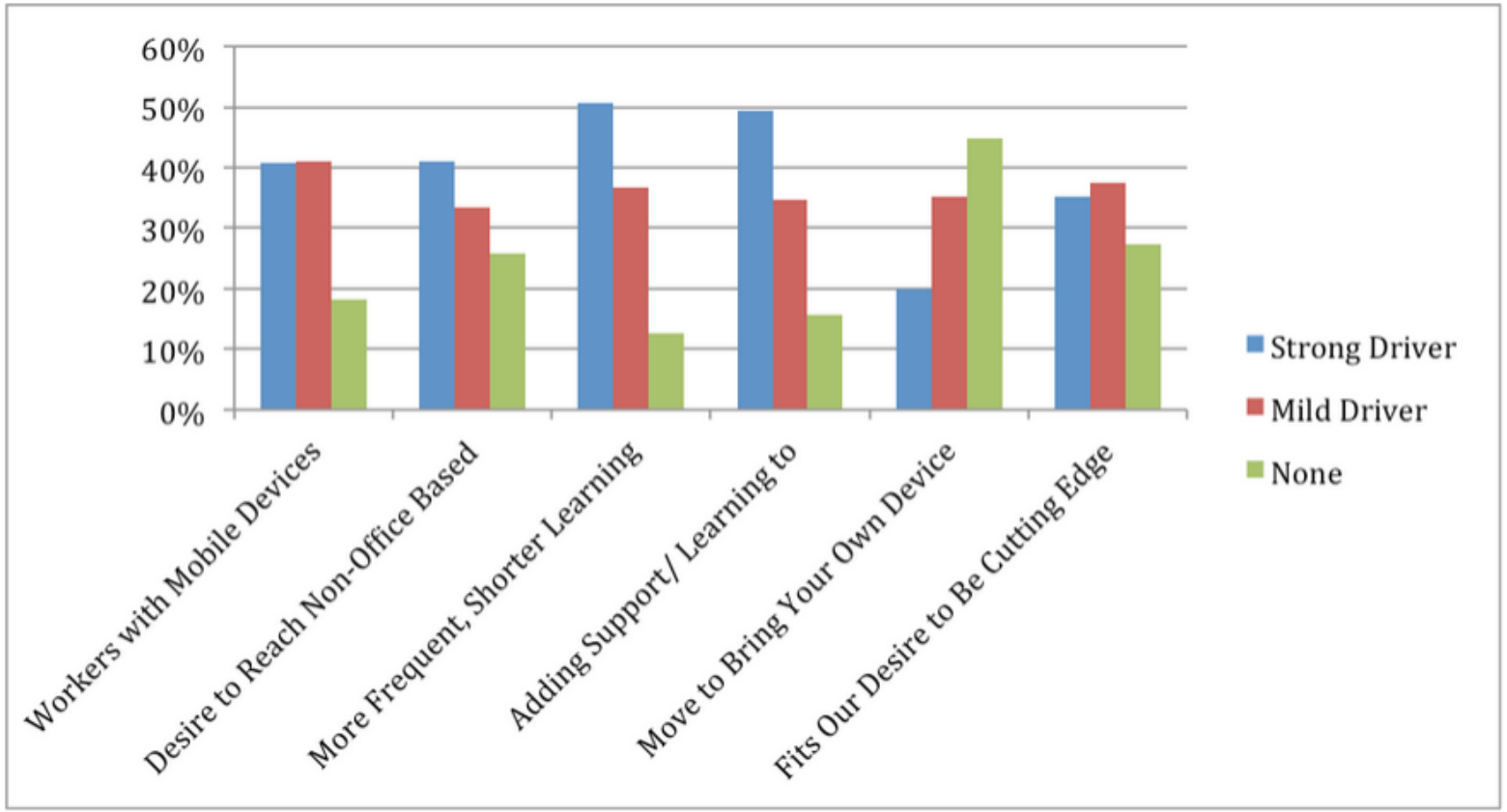
Use the chat window to share your experience.

Not using mobile learning yet? What drivers are you *observing* in other organizations?

Mobile Learning Pulse Survey Fall 2012

Current State of and Aspirations for Mobile Learning

Drivers for organizations' interest in Mobile Learning:



Source: http://masie.com/Surveys/Page-2.html

Summary: Guidelines

- If you want your mobile learning to be useful and effective:
  - Start with a clear reason/purpose for going mobile
    - Business reason
    - Educational reason
    - Political / Organizational reason
  - Choose an appropriate type of learning for the device in use
    - What are you teaching?
    - What is the scenario/ context in which learners will consume training?
  - Optimize the design for mobile
    - Consider using mobile learning as part of a blended learning solution
    - Avoid the “create once use many” strategy
    - Leverage the device’s capabilities context awareness, built in tools
  - Conduct formative and summative evaluations - feedback, feedback, feedback


Any
Questions

Thank You

References, Readings, and Resources

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Recommended Readings

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Resources

- Mobile Learning (curated site)
- Mobile Learning Handbook (ADL)
- Mobile Learning Portal (articles)
- Mobile Learning: Everything an instructional designer need to know (SH!FT)
- Design Challenges and Considerations for Responsive eLearning (Upside Learning)
- KanjiBox (iTunes)
- Wall Street Survivor ()
- MX Skill Master (Matrix Achievement)
- Learning Theories (PBWorks)
- 10 Tips for Designing Mobile Learning Content (Elearning Guild)
- mLearning is not eLearning on a Mobile Device (Float Mobile Learning)