E-Learning Strategies to Accelerate Time-to-Proficiency in Acquiring Complex Skills

Preliminary findings of Doctorate Research

Raman K. Attri
Sr. Global Technical Training Manager, KLA-Tencor USA
Associate UniSIM Singapore
Doctoral Research Student, Southern Cross University, Australia

Dr. Wing S. Wu
Research Supervisor and co-author
Complex skills to be Acquired by Employees as learners toward Proficiency in Shorter time using E-Learning strategies At or for Workplace
You are in-charge of professional skill development and technical learning on learning technologies for your faculty members.

A new technology has come up in the market and learners (students/professionals) now demand all-mobile-based-courses which requires deployment of new highly complex platform (or technology).

Your faculties would need to acquire new technical and course design knowledge / skills on this platform from scratch.

If your faculty members do not become fully proficient in the skills required to use this new platform within a stipulated time, you risk losing next academic year’s enrollments to other institutions.

Due to faculty geographical locations only option you have is using e-learning.

**How would you make them fully proficient on new skills n shorter time?**
“empirical fact about expertise (i.e., that it takes a long time) sets the stage for an effort at demonstrating the acceleration of the achievement of proficiency........Our vision is that methods for accelerating the achievement of proficiency, and even extraordinary expertise, might be taken to new levels such that one can accelerate the achievement of proficiency across the journeyman-to-expert span post-hiring.”

(Hoffman, Andrews & Feltovich, 2012, p. 9)
Research Question: What and how specific training strategies (methods, techniques, mechanisms, systems, processes, instructional design, methodologies, interventions, etc.) have been used by training experts in various contexts in leading organizations to successfully accelerate acquisition of complex job skills?
• Recruited training experts worldwide with specific project experience
• Reached out to 366 potential training experts
• 84 participants participated in research
• Conducted 71 in-depth interviews
• Collected 100 project cases
• Covering 13 sectors and 42 industries (classified as per S&P)
• Qualitative research - Grounded Theory Approach
• Constant comparison and Case based data analysis
• Theory development driven by theoretical sampling
Complex technical and personal interactions, higher order decision making, problem solving, troubleshooting and critical thinking central part of today’s jobs

Changing nature of workplace requires non-routine cognitive skills (Karoly & Panis, 2004)
Novice to Expert Skill Acquisition Model

Proficient

A ‘proficient’ level individual exhibit a consistent superior performance characterized by reliability, repeatability, reproducibility and consistency of his skills regardless of the situation, problem and challenge (Dreyfus & Dreyfus, 1980, 1986, 1986a, 2008)

Proficiency

A stage when employee is independently productive, fully functioning and up to speed (Williams & Rosenbaum, 2004 in Learning Paths)
“E-learning is an approach to teaching and learning, representing all or part of the educational model applied, that is based on the use of electronic media and devices as tools for improving access to training, communication and interaction and that facilitates the adoption of new ways of understanding and developing learning.” (Sangrà, Vlachopoulos & Cabrera, 2012)
Focus of this Paper

Proven E-learning Strategies which hold potential to accelerate proficiency of learners within a training program and at the workplace
E-learning in Complex Skill Acquisition

- Computer based simulation (Lesgold, Lajoie, Bunzo & Egan (1988)
- Scenario based simulation (Gott and Lesgold, 2000)
- Blended learning (Sims, Burke, Metcalf & Salas, 2008)
- Technology Enhanced Learning (Dror, Schmidt and O’Connor, 2011)
- Active Processing e-learning strategies (Clark and Mayer, 2011)
- Gaming (Dror, Schmidt, O’Connor, 2011)
- Problem based ‘digital laboratory’ (Hinterberger, 2011)
- Scenario Based e-learning (Clark and Meyer, 2013)
- Case based expert system (Arnold et al., 2013)
- Computer based simulation games (Sitzmann, 2011)

* Evidences supporting accelerating proficiency using e-learning
Preliminary Findings: E-learning Strategies To Accelerate Time-to-Proficiency

- **Philosophy**
  - Strategy
  - Guide points

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**sequenced E-learning Path**

- Learner Profiling
- Blended e-learning
- Contextualized Scenario-based e-learning
- Active involvement and Non-linear thinking

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**Nano-coaching / nano-mentoring**

**Microlearning**

**Rapid Failure cycles in Compressed timeframe**

- Social connectivity and interactions
- Emotional involvement and stakes
SOME GUIDEPOINTS

- E.g. Activity on learning path to self-learn informational content in an e-learning module
- Approach from business goals – not like individualized or personalized learning path
- Map the learning activities vs. available opportunities and focus is on the optimal order

Strategy:

- Eliminate redundant, irrelevant or wasteful activities in learning path. Select most essential and relevant learning activities (e-learning or otherwise) required for a stated proficiency goal
- Sequence those through readily available resources and avenues in natural settings to achieve that goal in shortest possible time.
**Strategy:**

- Profile learners on their prior learning, current skill assessment and other experience.
- Design a learning path which allows different ‘adaptive’ entry and exit points based on learner’s profile which gives head-start to learners.
- Conduct continuous assessment of learning outcomes and dynamically select activities or modules in the learning path to collectively shorten journey to proficiency.

- Use smart technologies to systematic profile learner’s current knowledge, skill and experience during the journey in a learning path.
**Strategy:** Convert traditional ILT content into a) self-guided pre-work, b) intensive homework c) virtual instructor-led sessions based on complexity and sequence the sessions strategically to prepare learners for ILT sessions and better outcomes from ILT sessions. It cuts down the wait time and speeds up the learning.

- **Skill profiling:** Complexity and difficulty.
- **Pre-ILT modules:** Low complexity skills including informational content
- **Bridging Modules:** Medium complexity skills dispersed between consecutive ILT sessions
- **ILT sessions:** Highly complex skills delivered over time through technology-enabled instructor-led virtual or remote classrooms
- **Self-guided homework assignments:** Highly complex skills requiring deeper thinking – allows space, time and opportunity for reflection before next day’s ILT session
- **E-learning Path:** Sequence all elements of pre-work, ILT sessions, homework etc. as e-learning path.
STRATEGY

- Teach and deliver content to learners in small, very specific bursts. The learners are in control of what and when they’re learning (Eades, 2014)
- Design 5-7 minutes video or short session per learning outcome (Hug, 2005, 2006)
- Sequence the micro-learning sessions arranged as learning path

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By 2015 we’ll be consuming more than
15 HOURS OF MEDIA
PER DAY

51% of Millennials prefer video to text

2000 ATTENTION SPAN
12 SECONDS

2013 ATTENTION SPAN
8 SECONDS

GOLDFISH ATTENTION SPAN
9 SECONDS
Meet Zach. Zach was just promoted to a new division of the Marketing Department. There is nobody on his team yet and he is tasked to recruit talent for a big project coming up.

CONTEXT

- Scenarios
- Problems
- Cases
- Virtual reality
- Simulation
- Games
Contextualized Scenario-Based E-learning

**Philosophy:** Time-to-proficiency gets accelerated if learning happens in context of the actual job or learning is contextualized.

**Strategy:** Design e-learning by contextualizing i.e. linking the task at hand to the realist job environment and realistic challenges (Clark & Mayer, 2013).

- Use variations of scenario-based e-learning including problems, cases, games, virtual reality, simulation etc.
- Several different ways to incorporate context
  - To analyze a real-life scenario
  - to solve the stated problem
  - to describe the root cause
  - to provide recommendation on a solutions
  - to make decision
  - To chose between available options,
  - to explore or extend an option

Highly supported by literature to accelerate proficiency
Philosophy: Higher order complex cognitive skills are typically non-linear in nature i.e. the problem space and approaches could be fuzzy and structured rules may not be applicable all the time.

Strategy: Actively involve the learners into learning in a way to trigger non-linear thinking by driving them to create deliverables or through thinking based assessment or solving job-relevant scenarios.

Active participation:
incorporate interactivity and encourages learning by doing
- Generate some deliverables
- Compute something
- Process information actively
- Transform content

Thinking based assessment:
questions that require some kind of research, active involvement and deeper thinking

Trigger non-linear thinking process in learners:
higher order scenarios, real-life cases and job relevant assessment
Let’s recollect
Rapid Failure Cycles in Compressed Time Frame

• Set performance threshold for the learning outcome
• Assign milestones to deliverables for each outcome
• Add desirable errors in the activities or cases
• Speed up failure cycles or errors

Philosophy & Strategy: Build several rapid failure cycles or desirable errors within a ‘compressed timeframe’ with realistic time pressures to accelerate time-to-proficiency.
PHILOSOPHY: Workplace challenges and consequences drive emotions in each task assigned to an individual (e.g. aggressive timelines within complex interactional spaces) which impacts speed-to-proficiency. Far transfer & time-to-proficiency appears to have some link with emotional involvement and stakes during learning.

STRATEGY

• Drive learning with stakes and high degree of emotional involvement rather than always design for ‘safe place to learn’
• Promote learners’ emotional involvement, emotional reactions to stakes in learning and sense of ‘what is on the line’.

• Building peer-to-peer communication and collaboration which promote peer recognition;
• Driving learning goals or outcomes closely or directly linked to on-the-job success or failure;
• Allowing tangible sense of achievements while completing e-learning modules (like credits, points, scores);
• introducing pressure of quality and timeline with peer review of the deliverables;
• putting stakes in learning like consequences, etc.
Philosophy and Strategy: Provide coaching in timely fashion from a ‘network of coaches’ at the ‘moment of need’ eliminating need for learners to browse through the piles of information.

SOME GUIDEPOINTS

- Very short burst support
- Supported by mobile technology
- Enables frequent, short, targeted, asynchronous coaching interactions
- Makes it easy for managers (or peers, or network of coaches or experts) to give timely feedback
- that support employees job performance

(Elliott Masie)
Social Interconnectivity and interactions

**Philosophy:** Acquisition of complex skills and knowledge gets accelerated by learning by ‘purposeful’ doing with each other, discussions, conversations with peers and asking questions from experts (and even from peers).

**STRATEGY**
- Allows learners to connect and interact with anyone and everyone instantly (preferred) at the ‘moment of need’.
- Focus on ‘learning by socializing and connecting’ though may use ‘social networking’ platforms.
- Drive interactions and connectivity by learning outcomes.

Not a social ‘networking’
Let’s put it together
Conceptual Training Model
Conceptual Training Model

Hypothetical Proficiency Level

PRE-ILT PHASE
ILT PHASE
POST-ILT ON-THE-JOB LEARNING PHASE
SUSTAIN & MAINTAIN PHASE

Traditional ILT

Traditional On-the-job Learning

Targeted/Desired Proficiency
Conceptual Training Model

![Conceptual Training Model Diagram]

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e-Learning strategies by proficiency phase

Hypothetical Proficiency Level

Time

N0 N1 N2 N3 N4 N5 N6 N7 N8

Pre-training

ILT Phase

Bottled ILT

On-the-Job Learning

Traditional ILT

Targeted/Desired

Proficiency

N0 N1 N2 N3 N4 N5 N6 N7 N8

Sustain & Maintain Phase

POST-ILT ON-THE-JOB LEARNING PHASE

Sequenced E-learning Path

POST-ILT PHASE

P1 P2 P3 P4 P5

Rapid Failure Cycles in Compressed Timeframe

Social connectivity and interactions

Emotional involvement and stakes

Active Involvement and Non-linear thinking

Contextualized Scenario-based e-Learning

Learner Profiling

Blended e-Learning
Discussion: Orchestrating 10 E-learning Strategies Together

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Niche area - no such comprehensive study or a conceptual model on e-learning strategies in relationship to shortening time-to-proficiency.

If orchestrated strategically in an existing training program or a new design, 10 suggested strategies may accelerate time-to-proficiency and shorten their time-to-readiness of learners.

Different mix of suggested strategies may work in conjunction with each other depending on the context and complexity of the job.

Validating each strategy for its effectiveness in shortening time-to-proficiency and appropriate mix could be topic for future research.
Interested to read more?

Personal Resonance© Accelerating Time-to-Expertise
Training and learning strategies to shorten time-to-proficiency
http://www.personal-resonance.com

Raman K. Attri
Researcher: Accelerating Time-to-Expertise
E-mail :rkattri@hotmail.com
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