Self-Directed Adult Learning in a ubiquitous Learning Environment: A Meta-Review
Theunissen, N.C.M., Stubbé, H.E.,
NSCOPE 2009, Hoofddorp, The Netherlands, 30-10-2009

Introduction

- Employees have to face new challenges every day
- Need to become flexible and self-directed in adopting innovations
- Self-directed worker > self-directed learner
- Develop yourself anywhere and anytime
- Supporting learning anywhere & anytime > ubiquitous learning environment (ULE)
- Many ULE initiatives, but a grounded foundation is missing
Central definitions

1. **Self directed learning**
   - Learner takes control over all educational decisions.
   - In interaction with the environment (social and physical)
   - Learner decides what (s)he needs to learn and how (s)he can achieve this.

2. **Ubiquitous learning environment (ULE)**
Self-directed learning meta-review

- Systematic search in Ovid-PsychInfo, 1967-2007
- Criteria:
  - Self-Directed learning
  - Self-Managed learning
  - Student-Centered learning
  - Meta-analysis & literature review
- Output:
  - 63 hits > 18 hits met the criteria
  - 15 publications found
  - Publications between 1982 - 1997 & 2 more recently
- Conclusions self-directed learning:
  - More effective learning
  - It can be learned!

Self-directed learning - Characteristics

1. Learner control
2. Self-regulating learning strategies
3. Reflection
4. Social environment
5. Physical environment

Central definitions

1. **Self directed learning**

2. **Ubiquitous learning environment (ULE)**
   - Supports learning anywhere and anytime,
   - Flexible mix of technologies (PDAs, games, e-learning e.g.)
   - Interactive, adaptive didactical strategies.

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### ULE design consequences

<table>
<thead>
<tr>
<th>Characteristics of elements of Self-Directed learning</th>
<th>Elements of Self-Directed learning</th>
<th>Elements of Ubiquitous Learning</th>
<th>Characteristics of elements of Ubiquitous Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control over all educational decisions</td>
<td>Learner control</td>
<td>Permanence</td>
<td>Work is recorded continuously, saved until deleted</td>
</tr>
<tr>
<td>Control over own learning process</td>
<td></td>
<td>Accessibility</td>
<td>Anytime, anywhere</td>
</tr>
<tr>
<td>Setting goals, planning, self-instruction, self-monitoring, problem solving, strategy use</td>
<td>Self-regulating learning strategies</td>
<td>-</td>
<td>Immediate access to information</td>
</tr>
<tr>
<td>Self-evaluation of performance and learning process</td>
<td>Reflection</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cooperation and collaboration with peers</td>
<td>Interaction with social environment</td>
<td>Interactivity</td>
<td>Synchronous and a-synchronous interaction with experts, teachers and peers</td>
</tr>
<tr>
<td>Learner should be allowed to explore and manipulate in the real world, authentic problems</td>
<td>Interaction with physical environment</td>
<td>Siting of instructional activities</td>
<td>Learning embedded in real life</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Adaptable</td>
<td>Right information, right time, right place, right way</td>
</tr>
</tbody>
</table>
ULE design consequences

1. Learner control
   • The learner can make choices (what, why, how, when)
2. Self-regulating learning strategies
   • The use of learning strategies is stimulated: functionalities for planning and formulating learning goals
3. Reflection
   • Reflection on both the performance and the learning process is stimulated
4. Social environment
   • The learning environment stimulates cooperation with other learners.
5. Physical environment
   • The setting of the assignments and their content are based on the every-day work of the learner.

Grounded development of a ULE for first responders

• Self directed learning elements into ULE scripts
• Story in pictures, combined with questionnaires.
• Presented to first responders (n=62)
ULE scripts for First responders

Four scripts
1. Last minute learning during a crisis
2. Enrichment of team exercises for individual learning
3. Practicing at quiet moments during regular work
4. Serious gaming simulating a crisis

First responders (n=62) about the ULE scenarios

0 = totally disagree to 100= totally agree

<table>
<thead>
<tr>
<th>Scales</th>
<th>General Mean</th>
<th>(SE)</th>
<th>items</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supportive for preparation on disaster</td>
<td>72</td>
<td>(1.19)</td>
<td>6</td>
<td>.93</td>
</tr>
<tr>
<td>Can fit in the organization</td>
<td>73</td>
<td>(1.15)</td>
<td>4</td>
<td>.88</td>
</tr>
<tr>
<td>Decide yourself how to prepare</td>
<td>65</td>
<td>(1.60)</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Like to do this in my free time</td>
<td>38</td>
<td>(1.88)</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>
ULE scripts compared

TNO model ubiquitous self directed learning

Personal Learning Assistant (PLA) supporting self directed learning

Spontaneous learning
- Learning from experiences
- Knowledge sharing
- Informal learning

Organized learning
- Last minute learning
- Enrichment exercises
- Practicing at quiet moments
- Serious gaming

Coaching

Work

Education
Experimental set-up ULE: Personal learning assistant (PLA)

TNO model ubiquitous self directed learning

- Personal Learning Assistant (PLA) supporting self directed learning
- Spontaneous learning: Learning from experiences, Knowledge sharing, Informal learning
- Organized learning: Last minute learning, Enrichment exercises, Practicing at quiet moments, Serious gaming
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