

## Grounded development of a ubiquitous learning environment for first responders

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## Introduction

- First responders (e.g. police, fire services, medical support troops) have to face new challenges every day
- Need to become flexible and **self-directed**
  - in adopting innovations on disaster management
  - e.g. network centric operations
- A **ubiquitous learning environment (ULE)** could support learning anywhere and anytime
- 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)

- Supports learning anywhere and anytime
- Flexible mix of mobile technologies (PDAs, game consoles e.g.)
- Interactive, adaptive didactical strategies

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## Grounded development of a ULE for first responders

### 1. Self directed learning

- Systematic meta-review on self-directed learning
- To define the elements that stimulate self-directedness
- PsycInfo, 1967-2007

### 2. Ubiquitous learning environment (ULE)

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

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## 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

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## Self-directed learning - Characteristics

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

Stubbé, Theunissen, N.C.M. (2008). Self-directed adult learning in a ubiquitous learning environment: a meta-review. Proceedings - Special Track on Technology Support for Self-Organised Learners during 4th EduMedia Conference 02. - 03. June 2008 in Salzburg (PDF available thru [www.ntheunissen.nl](http://www.ntheunissen.nl))

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## ULE design consequences

Table 2. Combination of the characteristics of self-directed learning and Ubiquitous Learning Environment

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

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## 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



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## First responders (n=62) about the ULE scenarios

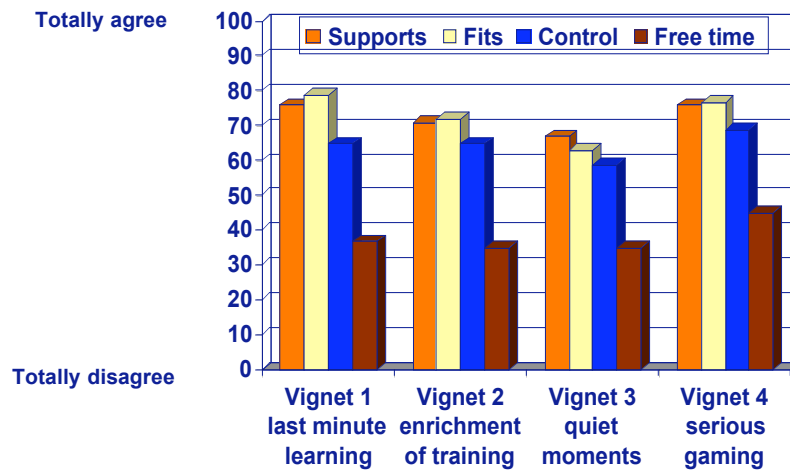
0 = totally disagree to 100= totally agree

Scales	General Mean	(SE)	items	$\alpha$
Supportive for preparation on disaster	72	(1.19)	6	.93
Can fit in the organization	73	(1.15)	4	.88
Decide yourself how to prepare	65	(1.60)	1	-
Like to do this in my free time	38	(1.88)	1	-

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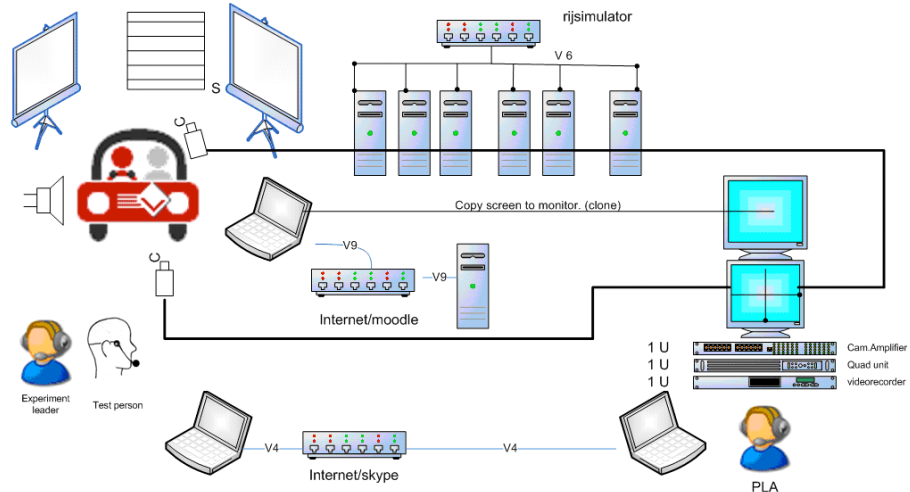
## ULE scripts compared



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



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