“A diagrammatic language to build and share STEM teaching narratives”

José-Luis Fernández-Vindel
Tina Wilson
Context and Motivation
Context and Motivation
Context and Motivation

OER
Context and Motivation

OER :: STEM
Context and Motivation

OER :: STEM

Math
Context and Motivation

OER :: STEM

Math

English
Context and Motivation

OER :: STEM

Math

English

José Luis Fernández Vindel

viernes 13 de abril de 12
Context and Motivation

OER :: STEM

Math

English
Context and Motivation

OER :: STEM

Math

English

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viernes 13 de abril de 2012
Context and Motivation

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Math

English
Context and Motivation

OER :: STEM

Math

English

260.000

260.000
Context and Motivation
Context and Motivation

OER :: STEM :: videos/narratives
Context and Motivation

OER :: STEM :: videos/narratives

Tina Wilson

STEM 2012

José Luis Fernández Vindel
Objectives
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• Help to produce STEM animations
Objectives

• Help to produce STEM animations
• multilingual (without reissue)
Objectives

• Help to produce STEM animations
• multilingual (without reissue)
• pedagogically effective
Methodology
Methodology
Methodology

(1st) Uncouple video, audio, text
Methodology

(1st) Uncouple video, audio, text

```html
<video src=...>
  <track kind=subtitles ...>
  <track kind=captions ...>
  <track kind=descriptions ...>
  <track kind=chapters ...>
  <track kind=metadata ...>
</video>
```
Methodology

(1st) Uncouple video, audio, text

<video src=...
  <track kind=subtitles ...>
  <track kind=captions ...>
  <track kind=descriptions ...>
  <track kind=chapters ...>
  <track kind=metadata ...>
</video>
Methodology

(1st) Uncouple video, audio, text

<video src=...>
  <track kind=subtitles ...>
  <track kind=capions ...>
  <track kind=descriptions ...>
  <track kind=chapters ...>
  <track kind=metadata ...>
</video>

Still depending on translation of texts
Methodology
Methodology

(2nd) Self-explanatory graphic language?
Methodology

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Used in other definitions
Methodology

(2nd) Self-explanatory graphic language?

Used in other definitions

Need linking between animations
Methodology

(2nd) Self-explanatory graphic language?

Used in other definitions

Need linking between animations

Structured production of animations
Methodology

Learning Design :: Conceptual Dependency
Methodology

Learning Design :: Conceptual Dependency

Set
- Subset
- Intersection
- Union
- Complement

Set Equality

Set Algebra
Methodology

Learning Design :: Conceptual Dependency

Set

Subset
Set Equality
Intersection
Union
Complement
Set Algebra

Compendium (LD)
Methodology

Learning Design :: Conceptual Dependency

Associative, Transclusive, Categorical Relationships
Methodology

Contextual Structure: Relationships + First icons
Methodology

Contextual Structure: Relationships + First icons
Methodology

Contextual Structure: Relationships + First icons

Iterative process
Methodology

Internal Structure: Animations / Proper Language
Methodology

Internal Structure: Animations / Proper Language

• Symbol / Icon of the concept
Methodology

Internal Structure: Animations / Proper Language

- Symbol / Icon of the concept
- Symbols / Icons required
Methodology

Internal Structure: Animations / Proper Language

• Symbol / Icon of the concept
• Symbols / Icons required
• Animated, intuitive definition:
Methodology

Internal Structure: Animations / Proper Language

• Symbol / Icon of the concept
• Symbols / Icons required
• Animated, intuitive definition:
  • Generalization, instance; ‘for all’, ‘exists’; ...
Methodology

Internal Structure: Animations / Proper Language

- Symbol / Icon of the concept
- Symbols / Icons required
- Animated, intuitive definition:
  - Generalization, instance; ‘for all’, ‘exists’; ...
- Examples, counterexamples
Methodology

Internal Structure: Animations / Proper Language
Methodology

Internal Structure: Animations / Proper Language

Compendium video nodes
Methodology

Exporting Contextual / Internal Struct. + Animations
Methodology

Exporting Contextual / Internal Struct. + Animations

- Compendium: XML export
Methodology

Exporting Contextual / Internal Struct. + Animations

- Compendium: XML export
- Short animations + wrap around metadata
Methodology

Exporting Contextual / Internal Struct. + Animations

- Compendium: XML export
- Short animations + wrap around metadata
- Textual information
Methodology

Exporting Contextual / Internal Struct. + Animations

• Compendium: XML export
• Short animations + wrap around metadata
• textual information
• links to requiered concepts/icons/animations
• First steps. Evaluating feedback.
• First steps. Evaluating feedback.
• “Logic and Discrete Structure”: 1500 students
• First steps. Evaluating feedback.
• “Logic and Discrete Structure”: 1500 students
• LabSpace (Open University UK)
• First steps. Evaluating feedback.
• “Logic and Discrete Structure”: 1500 students
• LabSpace (Open University UK)
• Social experience (¿Youtube?)
Thank you for your attention