Design of Knowledge Analytics Tools for Workplace Learning

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EXECUTIVE SUMMARY

Context. many documents with organizational knowledge + need for workplace learning ➔ knowledge analytics

Problem. requirements for knowledge analytics tools

Solution. candidate design patterns
   (1) provenance & traceability
   (2) human factor & stakeholder rating
   (3) visualization of the proposed solution
Workplace Learning.

• important: informal learning  [Boud et al 2003]
• unstructured, creative, expert driven  [Maier et al 2010]
• content has to be assimilated for daily learning
e.g. mobile devices  [Schäper et al 2015]

How to select content to prepare for diverse learners’ needs?

→ Knowledge Analytics
Knowledge Analytics.

- analytics which use knowledge as input to create value as output

\[
\text{content & context} \quad \{ \text{knowledge} \rightarrow \text{analytics} \rightarrow \text{value} \}\]

[Zack 1999]
Scaling up Technologies for Informal Learning in SME Clusters.

- clusters: health care (UK) & construction (DE)
- developed tools:
  Layers Tool Box, Living Documents, Bits & Pieces, Confer, AchSo! & KEPtool

17 project partners, 7 countries learning-layers.eu
CASE STUDY

Content (data). knowledge elements

Context (meta data). rated wrt benefits/efforts

Analytics.

Knowledge Element Preparation

KEP model [Thalmann 2012]

Value. KEP proposed solution
Goal. develop candidate design patterns for a knowledge analytics tool used for workplace learning

Design Patterns. [Alexander 1977]

“For Context C and Problem P Solution S has worked.”
PROCEDURE (II)

• 7 artifact-driven interviews with experts from Learning Layers on the topics
  (1) factors in KEP model
  (2) KEP proposed solution
  (3) requirements of GUI

• qualitative content analysis [Mayring 2014]

• iteratively identified & described 3 candidate design patterns [Mor et al 2014]
“noticed that there was nothing that was created [by her] work package” (Ex06)
Provenance & Traceability

**Context.** complexity of proposed solution is very high

**Problem.** users don't accept solution

**Solutions.** present solution with reasoning behind it

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<thead>
<tr>
<th>Knowledge Element</th>
<th>Type</th>
<th>Adaptation Criterion</th>
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<tbody>
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<td>1.</td>
<td>Video</td>
<td>Device Requirements</td>
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<td>2.</td>
<td>Video</td>
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Reasoning
Human Factor & Stakeholder Rating

“happy doing the collaborative rating [...] it is important [...] for the project to collect this kind of data” (Ex05)

“you have got people like [A] defending [Topic A], [him] defending [Topic B], [C] defending [Topic C] ” (Ex04)
Human Factor & Stakeholder Rating

Context. several users, different ratings
Problem. reflect all ratings
Solutions. support collective approach to rating
Visualization of the Proposed Solution

“more aggregate views on the results [and to] slice-and-dice results in a way” (Ex03)
Visualization of the Proposed Solution

Context. spreadsheet of selected knowledge elements

Problem. data-oriented and clunky

Solutions. different views to explore solution
CONCLUSION

Summary.
• knowledge analytics for workplace learning
• support with selecting content from large digital library
• developed candidate design patterns

Outlook.
• ground patterns in theories that explain effects
• implement functionality in KEPtool & validate patterns

Thank you for your attention!
REFERENCES


