Socio-constructivist scenarios with Community, Content and Collaboration Management Systems

Saab Training Systems Science Council’s seminar

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TECFA

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Code: goteburg-2003
**Goal of this talk**

Discuss pedagogical & technical support for socio-constructivist pedagogies on the Internet

Contrast this with traditional e-learning

(note: skips simulation, tele-teaching, virtual libraries, etc. !! )

**Menu of this talk**

The case for socio-constructivist activity-based teaching

Current methods and tools for distributed learning

Internet spirit 2002: C3MS Portals

C3MS portals & educational scenario scripting

Standardization & quality issues

Some conclusions
1. The case for socio-constructivist activity-based teaching

All learning theories address real problems
All pedagogical models have their usefulness

but ...

Computer-based instruction (CBT) - what is sold as “e-learning” today - gets too much attention!

Rich activity-based educational designs do not ...
1. Some major theories about learning

- **Behaviorism**
  - *(reach knowledge objectives)*

- **Constructivism**
  - *(construct)*

- **Social Cognition**
  - *(interact with others)*

- **Situated & Shared Cognition**
  - *(interact with the situation)*

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1.2. The issue of knowledge Transfer

Traditional learning by projects

Traditional e-learning

how ??

students are lost

students can’t apply

how ??

Structured socio-constructivist learning: scaffolding guidance
1.3. Structured socio-constructivist pedagogical scenarios

- Open ended & “rich” socio-constructivist designs are more effective if individuals and groups have to evolve within somewhat specified scenarios.

![Diagram showing components of socio-constructivist scenarios]

- Freedom
- Construction
- Monitoring
- Structure
- Scaffolding
- Guidance

open collaboration
• Scenarios are sequences of activity phases within which group members do tasks and play specific roles.

• This *orchestration* implies organizing workflow loops.

... this is just the (abstract) “ur-loop” ... hold on!

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1.4. The computer in a socio-constructivist perspective

- the computer is merely a facilitating structure, a thinking, working & communication tool

<table>
<thead>
<tr>
<th>Elements</th>
<th>teacher (manager)</th>
<th>learner (worker)</th>
<th>computer (tool)</th>
<th>designer (resource)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goal setting</strong></td>
<td>helps or defines</td>
<td>defines or refines</td>
<td></td>
<td>provides ideas &amp; half-baked models</td>
</tr>
<tr>
<td><strong>planning</strong></td>
<td>suggests &amp; controls</td>
<td>does</td>
<td>provides tools</td>
<td></td>
</tr>
<tr>
<td><strong>monitoring</strong></td>
<td>audits &amp; helps on demand</td>
<td>self-observation, diaries</td>
<td></td>
<td>observes</td>
</tr>
<tr>
<td><strong>contents</strong></td>
<td>suggests, produces</td>
<td>uses &amp; produces (!)</td>
<td>storage, search &amp; awareness tools...</td>
<td>can provide &amp; develop</td>
</tr>
<tr>
<td><strong>tool use</strong></td>
<td>configures, helps</td>
<td>selects, learns, uses</td>
<td>offers reflection</td>
<td></td>
</tr>
</tbody>
</table>

- Most student and teacher activities should be supported by computational tools and lead to new “contents”
1.5. Learning within a community and within context

A sampler of arguments:

- members of a community tend to make better progress (peer help and mutual stimulation)
- some goals can’t be reached alone (distributed cognition)
- a group can develop special language and practice adapted to specific problems
- knowledge through enculturation (collective memory)
- cognition is tied to experience (grounded)
- communities can extend beyond formal groups of learners
- a lot of learning is informal
- good communities are knowledge management aware
1.6. Requirements for socio-constructivist tools


**Minimal (!) requirements:**

- Content & knowledge management
- Document & knowledge exchange
- Project mgmt support
- Community management

... more as needed
2. Current methods and tools for distributed learning

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- Bad content transmission: web pages / videos
- Good content transmission: instructional pedagogies
  - "Learning Management Systems"
- Socio-constructivist pedagogies: ?

Listen
Look at multi-media
Surf on the Web

Do
Discuss
Build
Socio-constructivists were first - what went wrong?

1993

Teaching & learning with the Web
(thesis = learning by projects)

web pages & forums

Moos Wikis
...many good little things

2002

Open-ended scaffolded collaborative learning

???

Web-based training
WBT Systems
(anti-thesis = “instructional design”)

“E-learning”
Learning management Systems

synthesis?
4 hypothesis on the future of socio-constructivist tools:

1. It won’t happen, because *you can do good things without much specific learning technology*

2. It won’t happen because “*micro-worlds* constructivists” do more “sexy stuff”, e.g. interactive simulations

3. It won’t happen because systems that emphasize the teacher’s role as manager *won’t attract money* ....

4. It will happen, because countries with strong socio-constructivist elements in their curricula *perform well* (e.g. Finland in the PISA/OECD test)

My hypothesis: It won’t fully happen in the next future, ...
... but *we can improve* on the situation.

• People *like tools for doing, thinking, collaborating* on which we will build

• The same tools are of general use for the “learning organization”
3. Internet spirit 2002: C3MS Portals

Community, Content, & Collaboration Management Systems

- Weblogs (blogs)
- Slashdot-like engines (News + discussion)
- Groupware (event calendar, forums, sharing)
- Small Content Management (CMS)
- Plugin architecture (extensions !!)
- emerging C3MS Kits (portalware)

- ... it’s a MEGA trend !
- Examples: PostNuke, PhpWebSite, Drupal, Jetspeed, ....
Base features of the C3MS portal

- **Integration** of most applications (authentication, interfaces, ...)
- User system (administrator, members, invited, ..)
- **Plug-in architecture**! (YOUR organization can write modules)
WOW ...

• it works (thousands of sites, some of which thrive)
• people even learn with them
• some good communities of practice or communities of interest
• many people join to improve these systems and write modules:
  • like: collaborative hypertexts (wikis), pictures galleries, simple content management systems, event calendars, chats, project managers, file-upload, glossary management, weather, shout boxes, chats, ....
  • might be useful to support educational scenarios

STRANGE ...

• major use in education is limited to student portals and user support in industry
• weblogs (diaries) are getting a bit popular
• overall: little creative use in education (few documented socio-constructivist scenarios)
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4.1. planning example: Study architectures of Göteborg

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>GLOSSARY activity (scenario)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities (scenarios)</td>
<td>Stages</td>
</tr>
<tr>
<td>1</td>
<td>Teach portal to students</td>
</tr>
<tr>
<td>2</td>
<td>Make a glossary</td>
</tr>
<tr>
<td>3</td>
<td>Find research subjects</td>
</tr>
<tr>
<td>4</td>
<td>Make a research plan</td>
</tr>
<tr>
<td>5</td>
<td>Field trip</td>
</tr>
<tr>
<td>6</td>
<td>......</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Simple activity</th>
<th>Description</th>
<th>Available C3MS modules</th>
</tr>
</thead>
<tbody>
<tr>
<td>CoEdit</td>
<td>make collaborative documents</td>
<td>Wiki (phpWiki portal module), CMS (EzCMS module)</td>
</tr>
<tr>
<td>BrainStorm</td>
<td>Generate Ideas</td>
<td>Wiki, News Engine, Forums, Bulletin Boards</td>
</tr>
</tbody>
</table>
Result (one single activity of the whole project)

(previous step: learn portal)

<table>
<thead>
<tr>
<th>Instantiated example &quot;glossary&quot; activity (activity 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stages</strong></td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
</tbody>
</table>

(next step: find research subjects)
4.2. So what does “scripting scenarios” mean?

TecfaSEED catalog

define scenarios

innovations from the “field”

scenarios and modules

selection & configuration

Teacher’s portal

TECFA modules

extra modules

standard modules

C3MS portalware

installation + configuration

program

download/ plug (& adapt)
# 5. Standardization & quality issues

## 5.1 Standards (mostly just emerging)

<table>
<thead>
<tr>
<th></th>
<th>behaviorist</th>
<th>socio-constructivist</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data</strong></td>
<td>metadata, quizzing, packaging, simple sequencing</td>
<td>metadata structured text</td>
</tr>
<tr>
<td></td>
<td>learning design (new)</td>
<td>internet formats</td>
</tr>
<tr>
<td></td>
<td>learning objectives</td>
<td></td>
</tr>
<tr>
<td><strong>Systems</strong></td>
<td>IMS compliant Learning Content &amp; Management Systems ?</td>
<td>portals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>web services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bricks for portals</td>
</tr>
<tr>
<td><strong>Learning design</strong></td>
<td></td>
<td>?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>?</td>
</tr>
</tbody>
</table>

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5.2. Data standards

A. The behaviorist IMS/ADL/SCORM e-learning framework
   • Describes CBT contents as data
     • Mostly sequential contents transfer + quizzing
     • Unclear instructional standards: page-turning “shovelware” only?
   • Modularity
     • Allows for modular management of reusable learning contents
     • But: how easily can contents be hacked à part and repurposed?
   • New: Learning Design (LD) educational markup language
     • unclear how fully standards compliant interpreters will work
     • unclear if we will get interpreters for “active” and open scenarios
   • Summary: good standards for instructionalist pedagogies

B. Socio-constructivist standards: none really, but:
   • text encodings (like DITA or DocBook)
   • people are encouraged to use standard data formats
   • unclear if we will be able to use parts of IMS, e.g. LD
5.3. Portals

A sampling of standards your IT department should track:

- SOAP (Simple Object Access Protocol)
- UDDI (Universal Description, Discovery and Integration)
- WSDL (Web Services Description Language)
- WSIF (Web Services Invocation Framework)
- WSFL (Web Services Flow Language)
- ebXML Messaging Service Specification
- WSIL (Web Services Inspection Language)
- WSRP (Web Services for Remote Portals)
- Portlets (Java-server specific portal plug-ins)

The current situation:

- little serious use of this in education
- complicated, so the cost will be very high
5.4. Costs and benefits of current standards

The goals:
- beat elite American graduate schools
- turn our own industries into better learning organizations
- produce flexible and active citizens

The educational technology priorities (IMHO):
- support activity-based learning (project, problem-based, etc.)
- support open & informal learning (via community portals)

CBT/e-learning “Shovelware” can’t help with this
- very appropriate for “elementary learning” based on knowledge transfer, ok for drill & practise, etc.

Do we really need standards for open activity-based learning?
- any tutorial can do, students have to rebuild “it” anyhow
- printable documents are generally more useful
- “real” information does not appear as pedagogical material
5.5. (No) conclusion

Standards are *just emerging*

- emerging e-learning standards are very **complex**, 
  - *not sure if industry can/will implement* full interpreters 
  - not sure if we will get tools for open activity-based learning 
  - rich **pedagogical standards are missing** (and even CBT is not clear)
- If you are interested in our “C3MS” approach, choose either: 
  - Java-based **enterprise portals** that implement emerging standards 
  - popular **open source kits** (“street standards”) 
  - use them **simultaneously** for activity-based teaching, informal learning, knowledge management and community building

It is **too early for quality guidelines**, difficult to find criteria for: 
- teacher as a manager of projects and tasks 
- quality of student productions 
- good scenario suggestions and associated tools 
- the “learning experience” 
- integration of the learning environment with work and community
6. Some conclusions

(1) Shift the focus from learning *materials* to learning *activities*

(2) Protect our employees, children and students from too much behaviorist e-learning!

(3) Do not overscript, be somewhat “authentic” e.g. don’t transform construction into programmed learning

(4) Use *standards* from the “*real world*”

(5) Start with pedagogies & technologies that are somewhat *familiar*. E.g. use real workplace tools if possible.

(6) Most standards are still missing or unimplemented, most refer to either data or computer programs, nothing (IMHO) about the real learning experience ... how about (rich) educational standards?
6. Some conclusions

Just born:
Tecfa SEED community site
http://tecfaseed.unige.ch/door/

Available now:
- exchange & some support
- examples of running portals (school & university education)

Available soon (summer 2003):
- repackaged and documented “PostNuke” C3MS software
- modules for activity planning, project management, etc.
- Catalog = cookbook with “half-baked” scenarios and tools

SEED is an European IST programme project (No IST-2000-25214) and the swiss part is sponsored by the Swiss Federal Office for Education and Science (No OFES: 00.0287).
6. Some conclusions