issues of interface

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Most treatments of the concept of interaction in distance education have failed to consider the interaction that occurs between the learner and the technologies used to deliver instruction.

- interaction with content
- interaction with instructors
- interaction with classmates
- interaction with interfaces
(Swan, et al, 1998/99)
(Garrison, et al, 2003)
SOCIAL PRESENCE
interaction w/ classmates

COGNITIVE PRESENCE
interaction w/ content

TEACHING PRESENCE
interaction w/ instructors

LEARNING

(Moore, 1989)
(Hillman, et al 1994; Swan, 2003)
Interface Issues & Interaction with Course Content

- structure (Romiszowski & Cheng, 1992)
- navigational transparency (Eastmond, 1995)
- communication potential (Irani, 1998)

(Swan, et al, 2000)

study of correlations between course design factors & perceived learning in 73 SLN courses

found clarity, consistency & simplicity of course designs significantly related to learning
Interface Issues

& Interaction with Course Content

experimental comparisons of the effects of differing combinations & sequencing of multimedia presentations of information on learning

(Mayer, 2001)
<table>
<thead>
<tr>
<th><strong>MODALITY</strong></th>
<th>better transfer from animation and narration than from animation and text</th>
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<tbody>
<tr>
<td><strong>CONTIGUITY</strong></td>
<td>better transfer when narration and animation are presented simultaneously rather than sequentially</td>
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<tr>
<td><strong>MULTIMEDIA</strong></td>
<td>better transfer from animation and narration rather than from narration alone</td>
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<tr>
<td><strong>PERSONALIZATION</strong></td>
<td>better transfer when narration is conversational rather than formal</td>
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<tr>
<td><strong>COHERENCE</strong></td>
<td>better transfer when irrelevant video, narration, and/or sounds are excluded</td>
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<tr>
<td><strong>REDUNDANCY</strong></td>
<td>better transfer from animation and narration than from animation, narration and on-screen text</td>
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<tr>
<td><strong>PRETRAINING</strong></td>
<td>better transfer when explanations of system components precedes rather than follows a narrated animation</td>
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<tr>
<td><strong>_SIGNALING</strong></td>
<td>better transfer when different parts of a narration are signaled</td>
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<tr>
<td><strong>PACING</strong></td>
<td>better transfer when the pace of presentation is learner controlled</td>
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Interface Issues & Interaction with Course Content

experimental comparisons of the effects of differing combinations & sequencing of multimedia presentations of information on learning

(Mayer, 2001)

(Lin, 2002) animated presentations support greater learning of math concepts than video; interaction between graphical presentation & epistemological beliefs on attitudes toward learning
Interface Issues & Interaction with Course Content

empirical comparisons of the effects of differing interfaces & interface structures on learning

(Gutl & Pivec, 2003) Virtual Tutor (VT)
(Chang et al, 2002) Hierarchical Hyper-Concept Map (HHCM)
Interface Issues & Interaction with Instructional Design

matching *instructional design* with *learning and cognitive styles*

*organizational structure* (hypermedia architecture) and cognitive styles *(Graff, 2003)*

*instructional sequence* and learning styles, Adaptive ExplanAgent *(Danchak & Polhemus, 2003)*
Interface Issues

& Interaction with Course Instructors

cong of “teaching presence” (Anderson, et al, 2001)
- design and organization, facilitating discourse, direct instruction

(Shea, et al, 2003)

large scale correlational analysis of student surveys from variety of SLN courses shows strong relationships between teaching presence in all categories and student satisfaction with and perceived learning from online courses.
(Shea, et al, 2003)

<table>
<thead>
<tr>
<th></th>
<th>SUMMER 2002 (n=1140)</th>
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<th>SPRING 2003 (n=6088)</th>
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teaching presence of instructors
(Shea, et al, 2003)

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teaching presence of classmates
Interface Issues & Interaction with Course Instructors

Experimental comparisons of individualized instructor feedback vs. model-comparison feedback on assignments

(Riccomini, 2002) preservice educators’ behavior analysis & instructional analysis skills

(Kashy, et al, 2003) undergraduate physics students’ grades on homework, quizzes, midterm & final exam
Interface Issues & Interaction with Course Instructors

Theoretical refinements of concept of teaching presence and its effects on learning (Wu, 2003) importance of applying principles of collaborative learning to online interaction – structuring interaction in authentic tasks, applying questioning strategies, role assignment, interdependence, reflection

(Vandergrift, 2003) importance of “restrained presence”
Interface Issues & Interaction with Classmates

A great deal of work exploring how online discussion differs from face-to-face discussion which relates these differences to media -- i.e., interface

- More equitable (Harasim, 1990)
- More democratic (Hiltz, 1994)
- More supportive of multiple perspectives (Picciano, 2003)
- More reflective (Garrison, 2003)
Interface Issues & Interaction with Classmates

(Hewitt, 2003)

studies of patterns of interactivity in online discussions
Interface Issues & Interaction with Classmates
(Hewitt, 2003)

User logs --

98% read messages before posting
82% read only messages flagged as unread
90% respond to messages < 48 hours old

Monte Carlo simulation --
Interface Issues
& Interaction with Classmates
(Hewitt, 2003)

Patterns of interactivity in online discussion are governed as much by a feature of the interface (flagging unread notes, displaying messages individually) as by course requirements, learner characteristics and/or teaching presence.
CADMOS-E, a systematic evaluation method for evaluating delivery of online instruction employing mixed methodologies for analyzing student survey results found contribution of “web-based resources to the acquisition of knowledge and skills” the single best predictor of perceived effectiveness.
### Interface Issues

#### Learner Preferences

*(Ehlers, 2004)*

#### The Individualist

(N=328)
- Content-Oriented
- Content related QP
- Individualised Learning Scenarios
- Course Material: Didactics
- Self-directed Learning
- Presence Courses, Interaction- and Communication

#### The Result-Oriented

(N=235)
- independently & goal-oriented
- Individualization
- Stand Offers
- Work Integrated Learning
- Instrumental Purpose orientation
- Learn- and Media Literacy
- Presence Courses, Interaction- and Communication

#### The Pragmatic

(N=293)
- Need oriented
- Individualized offers
- Tutor Support
- Non-Financial Costs
- Information & Advise
- Personalisation of LE
- Didactic Requirements

#### The Avant-Gardist

(N=392)
- Interaction-Oriented
- Discussion/ Communication
- Tutor Support
- Media/ Technology vanguard
- Virtual Learning Groups
- Information & Advise
- Rich Didactic Concept
Interface Issues

Do different sorts of interfaces best support different kinds of learning, and if so, what interfaces support what learning?

Do students really learn better from preferred interfaces, and if so, does it make sense to design for differing learner preferences?

How might threaded discussion interfaces best be designed to support collaboration and learning?

In blended courses, what course elements are better put online and what elements work better face-to-face? Are there optimum blended designs?
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Moore, M.G. Three types of interaction. *American Journal of Distance Education, 3* (2), 1-6, 1989.


