

Scardamalia, M. (2003). Knowledge Forum (Advances beyond CSILE). *Journal of Distance Education*, 17 (Suppl. 3, Learning Technology Innovation in Canada), 23-28.

Knowledge Forum (advances beyond CSILE)

Knowledge Forum (an extension of the CSILE software discussed in Chapter 1) is a software environment specifically designed to support knowledge building. Like knowledge building theory, discussed in the previous chapter, its design rests on the deep underlying similarity of the socio-cultural and cognitive processes of knowledge acquisition and knowledge creation. In Knowledge Forum these normally hidden knowledge processes are made transparent to users. Support for the underlying concept that these processes are common to creative knowledge work across ages, cultures, and disciplines comes from the fact that Knowledge Forum is used across the whole spectrum ranging from junior kindergarten to graduate level education, and for a broad range of community, health-care, and business organizations involved in creative knowledge work.

Technically, Knowledge Forum is a shared, networked, multimedia database constructed and organized by the participants. However, its focus is on advancing the state of knowledge represented in the database rather than on the more familiar database functions of filing and retrieval. The basic units in Knowledge Forum are ideas, represented in *Notes*. The basic workspace for developing, sharing, organizing, and creating multiple representations of ideas is a *View*. A view provides a backdrop that may be simply white space or may be a complex graphical display of notes constituting an organizational framework for them, and highlighting their relevance to a particular problem, line of inquiry, or design on which the community is working.

Advanced knowledge processes are supported as contributors use Knowledge Forum facilities to:

- *'build-on'* the work of others. Readers can build-on any note--just click the build-on icon that appears on each note and a new, automatically linked note, will appear. These linked notes can be rearranged to form a variety of visual organizations for ideas (a list, a hierarchy, a matrix, and so forth).
- *reference* others' work. Any section of a note can be copied into another note, resulting in automatic insertion of a quote, an icon that returns readers to the original, and compilation of a *bibliography* of cited material. Thus participants are encouraged to recognize the work of others and contribute to it rather than plagiarize.
- *scaffold* advanced knowledge processes. High-level knowledge processes such as theory refinement and constructive criticism are supported through scaffolds that encourage users to identify the knowledge processes that they are engaged in. Scaffolds are customizable, so users can fine-tune these to suit their needs.
- *co-author* notes and views. Authors can allow specified others to write and edit a note or view.
- create *collections*. Through simple drag-and-drop facilities collections of notes can be created.
- *annotate* or comment on a note. Post-it like notes can be inserted within other notes, including multimedia notes; graphic tools support mark-up of multimedia objects.
- *'rise above'* a set of notes or views. Authors can synthesize ideas, create historical accounts, and enhance organizational memory by creating special collections of notes. Rather than simply placing notes in spatial relation to one another (*collection*), it is possible to create a super note--a note that packages other notes and encourages the creation of a higher-order synthesis of them. Likewise authors can create higher-order views at any time.
- *publish* notes and views. Knowledge Forum supports a publication process similar to that of scholarly journals. Users produce notes and views of various kinds, frequently revise them, and can submit them for peer review. 'Published' notes and views appear in a different font and searches can be restricted to published notes on designated topics.

- *search* for ideas. Search facilities allow users to find and order notes in a note reader.
- create *views-of-views*. Participants can create higher-order interpretive frameworks for their growing body of ideas.
- *analyze* knowledge building. Research tools record ongoing activity, and allow concurrent feedback to knowledge processes.

Notes can be contributed to one or more views to represent different ways of conceptualizing the developing knowledge base. Research tools work in the background of Knowledge Forum, recording processes automatically so that, if the community chooses, research into the operations of the community become integral to its operations (see Analytic Toolkit, Chapter 5).

Examples

Figure 2 illustrates a number of these supports as represented in a Knowledge Forum note that has gathered commentary, embedded notes, references with automatically compiled citations, scaffolded discourse, a problem-of-understanding in its problem field, and keywords in the course of its life in Knowledge Forum.

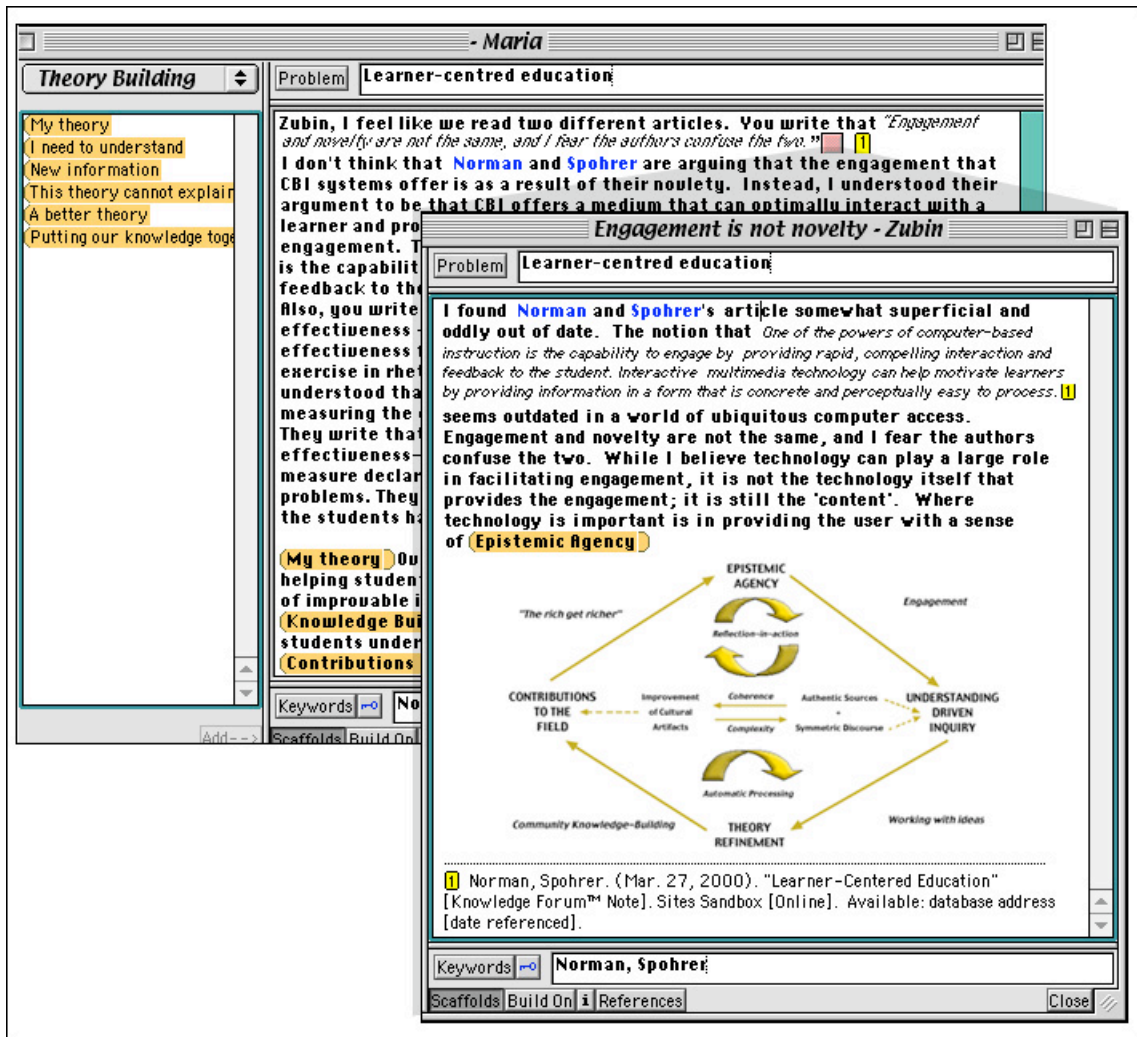


Figure 2: Knowledge Forum notes

Figure 3 illustrates a typical student-constructed view in elementary science, this one serving as an organizer for inquiry into buoyancy. Although many students may contribute notes to the view, a subgroup is responsible for managing the view, organizing it, and maintaining quality control over what is put into it. To help drive understanding they might invite other students, teachers, and telementors or tele-experts to join their discourse. The 'experts' are not there to answer their questions, but rather join into the knowledge building enterprise (see "Participatory Telementoring," Chapter 6). All participants in a knowledge building community share responsibility for the work, which represents their best collective understanding. Views may also be used to enter

official curriculum frameworks. Students then link their notes to goal statements and add commentary to indicate the extent to which their efforts meet or supersede the goals that ministries and departments of education have set for them. Notes can live in multiple views (e.g., in a student-generated view, as indicated above, and also in other views such as a curriculum-standards view or a view of key concepts designed by a subject-matter expert. Thus the students' buoyancy notes can be linked to a curriculum standards view, with annotation of how they address those standards. Through these and many other means participants are encouraged to create increasingly high-level "rise-above" notes and views.

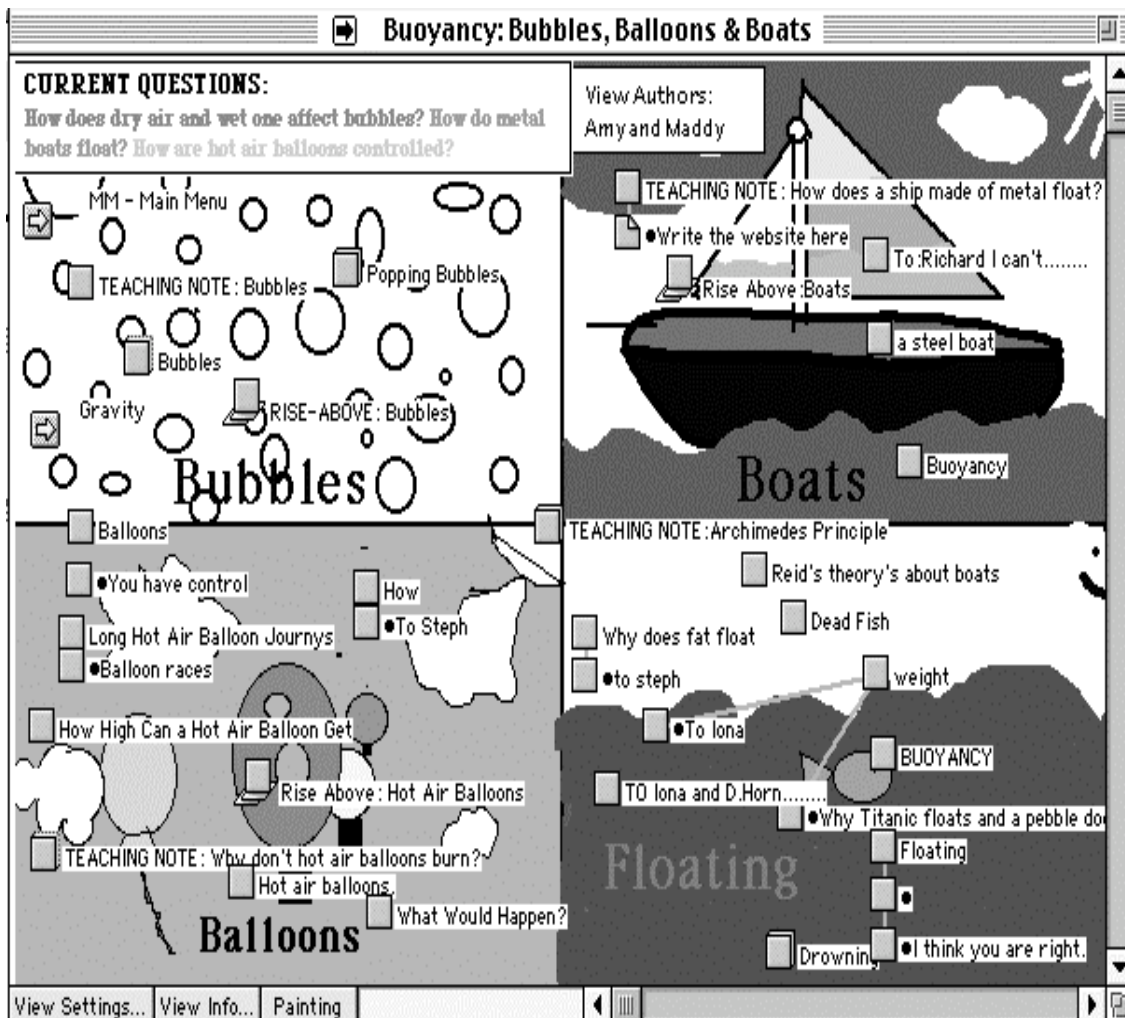


Figure 3: A student-constructed view in elementary science

Figure 4 shows a Knowledge Forum view used by a multidisciplinary health-care team in a rehabilitation institute (see “Interprofessional Knowledge Building in Health Care,” Chapter 6). Here the view serves not only to organize contributed reports about patients but serves to organize the team’s actual pain management—the view representing, in effect, a treatment model. Interview and database analysis research indicated that use of Knowledge Forum in this context not only helped coordinate action and information sharing but resulted in progress toward higher-level conceptualization of pain management (Russell, 2002).

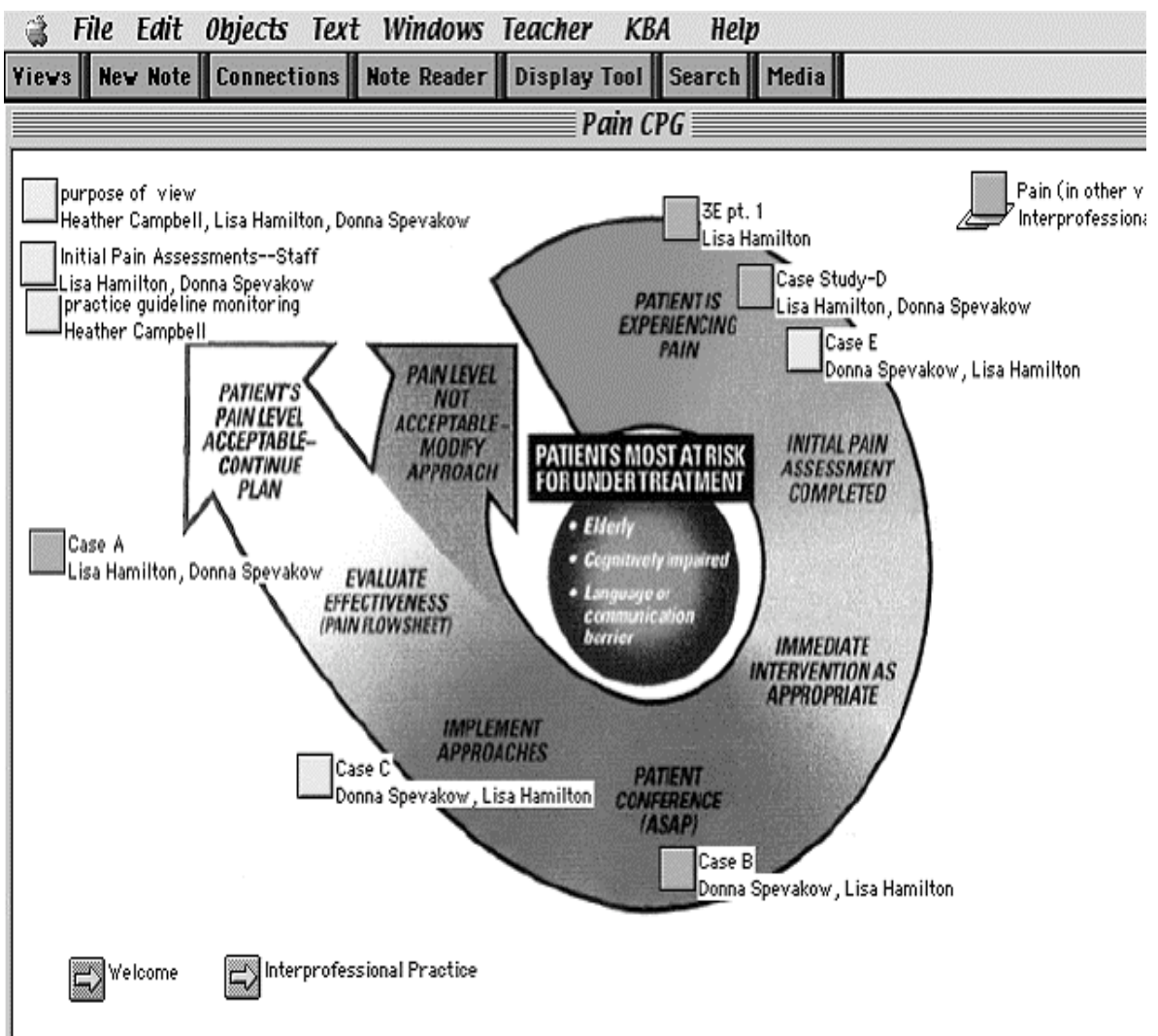


Figure 4: A Knowledge Forum view used by a multidisciplinary health care team

Overall, evaluative research on uses of CSILE/ Knowledge Forum has shown significant gains on a wide range of cognitive indicators (Scardamalia, Bereiter, & Lamon, 1994).

Knowledge Forum operates on either a local area network or over the Internet. Communities set access privileges and permissions so that guests can join online activities. With appropriate permissions, participants from anywhere in the world can also virtually visit each other's databases. A Palm KF version is in prototype version, designed to allow synchronization of online and offline work.

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References:

- Russell, A. (2002). The role of epistemic agency and knowledge transforming discourse in the formation of an interprofessional knowledge building community in health care. Paper presented at the Symposium on *Collaborative Learning Technologies: Representations, Content Learning, and Cultural Context*. Annual meeting of the American Educational Research Association, April, 2002. New Orleans, Louisiana.
- Scardamalia, M., Bereiter, C., & Lamon, M. (1994). The CSILE project: Trying to bring the classroom into World 3. In K. McGilley (Ed.), *Classroom lessons: Integrating cognitive theory and classroom practice* (pp. 201-228). Cambridge, MA: MIT Press.