

OVERVIEW OF THE INSTITUTE FOR RESEARCH ON LEARNING

William J. Clancey

Institute for Research on Learning
2550 Hanover Street, Palo Alto, CA 94304
USA
Tel. (415) 496-7925
E-mail: Bill_Clancey@irl.com

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ABSTRACT

The Institute for Research on Learning (IRL) is a non-profit organization founded in 1986 in Palo Alto, California, committed to understanding what leads to successful learning in the schools, the workplace, and everyday life. A basic premise of IRL research, that people learn best when they are engaged with others, leads IRL's researchers to perceive schools and workplaces as *communities of learners* and to focus on the design of environments, technology, and activities that support learning as a collaborative activity. IRL pursues its research in collaboration with schools, universities, corporations, and government agencies—in the actual settings in which learning takes place.

KEYWORDS: Laboratory overview, learning, design processes, socio-technical systems design, participatory design, communities of practice, ethnographic analysis

MISSION AND THEMES

Understanding design processes and tools in terms of communities of learners is fruitful for inventing new kinds of social-technological interactions that respect and enhance human capabilities. Because of IRL's interdisciplinary character and views about cognition and learning, we have specific concerns about the nature of research, participation of users in design processes, and the appropriate use of computers.

Specifically, IRL engages in “action research,” which depends on multidisciplinary research teams forming partnerships with people in target communities (schools and workplaces) to develop technology and organizational processes over a significant period of time. It is through this interaction that new workplace practices can evolve that embody integrated views about the nature of organizations, learning, and knowledge. For example, our design processes aim to avoid deskilling brought about by the computerization of work, to break down organizational and technological barriers to participation

and coordination, and to invent new ways of mediating human interactions (e.g., by shared visual workspaces).

IRL research in the workplace attempts to reorient previous attempts to improve productivity that focused too narrowly on individual efforts and modeling only physical and technological processes (as opposed to human communication, creation of ideas, and social construction of values). A key idea is that descriptions of behaviors—in the form of procedures, grammars, or schemas—are always impoverished and potentially demeaning, relative to the dynamic processes by which people create information and construct new representations in the course of everyday, “routine” activity.

In particular, we promote ecological approaches to psychology, which are based on the idea that when people act, they are not executing schemas, rules, or procedures that they retrieve from memory, but are always constructing something new. This perspective helps us understand what is problematic for new users of computer systems. The rejection of memory-as-stored-structures leads us to view perceptual processes not as input to a cognitive processor. Rather, categorizing what we see on a computer screen is intricately tied to our work sequence. What we see and what we do arise together—during interaction—producing new, coordinated compositions of perception and action, which bias future behavior.

BRIEF HISTORY

IRL was founded by David Kearns (now Undersecretary of Education), John Seely Brown (Xerox Vice President of Research), and James G. Greeno (Professor of Education, Stanford University). The initial interests were 1) to combine cognitive and social perspectives of human learning, 2) bring educational research in Artificial Intelligence to industry application, and 3) develop a new kind of multidisciplinary research institute. Funding has been provided by foundation gifts, government agencies,

and research partnerships with industry. The Executive Director of IRL is Peter Henschel, a policy specialist with extensive experience relating government, businesses, and schools.

MEMBERS

IRL researchers deliberately frame problems and projects to integrate diverse points of view. For example, we require that every project include computer and social scientists.

IRL's Principal Scientists and Their Areas of Speciality

William J. Clancey	computer science, AI, cognitive science
Penelope Eckert	sociolinguistics, ethnography
Shelley Goldman	education, anthropology
James G. Greeno	psychology, education, mathematics
Rogers Hall	computer science, mathematics
Brigitte Jordan	anthropology, interaction analysis
Charlotte Linde	linguistics, ethnography, discourse analysis
Jeremy Roschelle	computer science, education, physics
Susan Stucky	linguistics
Etienne Wenger	computer science, anthropology

KIND OF WORK

IRL's research and technology development has the following characteristics:

Research-in-Action. Our view of the research process parallels our view of learning. We do not believe that research results can simply be transferred or applied to schools or industry. IRL's projects are examples of research-in-action, of collaborative work between researchers, designers, and educators to produce immediately useful findings throughout the research process.

Real-Life Settings. IRL's researchers study learning as it takes place in real-life situations, rather than relying on conventional survey and laboratory research methods. This allows IRL researchers to analyze actual learning processes, retaining the important aspects of social interaction.

Innovative Research Methods. Studying learning in its natural settings requires new ways of doing research. We are developing methods particularly suited to dealing with the full complexity of actual learning situations. Research methods include ethnography, video-based interaction analysis, discourse analysis, participatory design, and reciprocal evolution.

Socio-Technical Systems. We develop computer programs in order to develop theories about

representation creation and use, to gain experience in creating multidisciplinary collaborative teams, and to promote our point of view and methods via prototype demonstrations and tools usable in other communities. Consistent with our views about the relation between computer and human capabilities, we focus on tools that facilitate conversations for constructing information and meaning, rather than trying to automate what people do.

SAMPLES OF WORK

Envisioning Machine — physics simulation program; study of collaborative construction of meaning, role of gestures and computer simulation.

Picasso — communication technology incorporating a fax, file transfer, remote screen sharing and control; study of learnability and usability of alternative designs; study of collaboration at a distance involving multiple representations; study of design evolution in the context of use.

Videonoter — video interaction analysis tool for recording and overlaying multiple streams of data and interpretations.

MultiMediaWorks — multimedia composing tool; Apple Classroom of Tomorrow project; study of collaboration involving "repurposing" of video, pictures, and sound for student compositions.

Workplace Project — study of the ways in which people use technological, spatial, temporal, and social resources in a distributed workplace (focusing on an airlines control room). This collaboration between Xerox PARC and Steelcase (affiliated with IRL through Brigitte Jordan) has developed into a new project that will involve IRL, Steelcase designers, and their customers.

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