



# Reconsidering Education and Learning in HCI:

A Social Cultural View of  
Special Education and Technology

Gillian R. Hayes  
Department of Informatics, UC Irvine  
February 1, 2008  
Human-Computer Interaction Consortium



# Reconsidering Education and Learning in HCI:

A Social Cultural View of  
Special Education and Technology

Gillian R. Hayes

Department of Informatics, UC Irvine

February 1, 2008

Human-Computer Interaction Consortium

Education and HCI (Call)

Use social and cultural constructions

Backdrop of Special Ed



LU CI

# Reconsidering Education and Learning in HCI:

A Social Cultural View of  
Special Education and Technology

Gillian R. Hayes  
Department of Informatics, UC Irvine  
February 1, 2008  
Human-Computer Interaction Consortium

Education and HCI (Call)

Use social and cultural constructions

Backdrop of Special Ed



LU CI

# Reconsidering Education and Learning in HCI:

A Social Cultural View of  
Special Education and Technology

Gillian R. Hayes  
Department of Informatics, UC Irvine  
February 1, 2008  
Human-Computer Interaction Consortium

Education and HCI (Call)

Use social and cultural constructions

Backdrop of Special Ed





Kuwait -- Jem (Flickr)



<http://flickr.com/photos/extraketchup/408727666/>

Extra Ketchup creative commons from Flickr

I'm the administrator of this wonderful (okay, I'm biased) computer lab built from barebone parts and open source software back in 2002-2003. As a private school, GHCA would not have been able to afford a typical Microsoft or Apple lab. However, with Linux we were able to get the most modern hardware at the time. Even better yet, that hardware is still more than fast enough even though it is 5 years old, thanks to Linux!



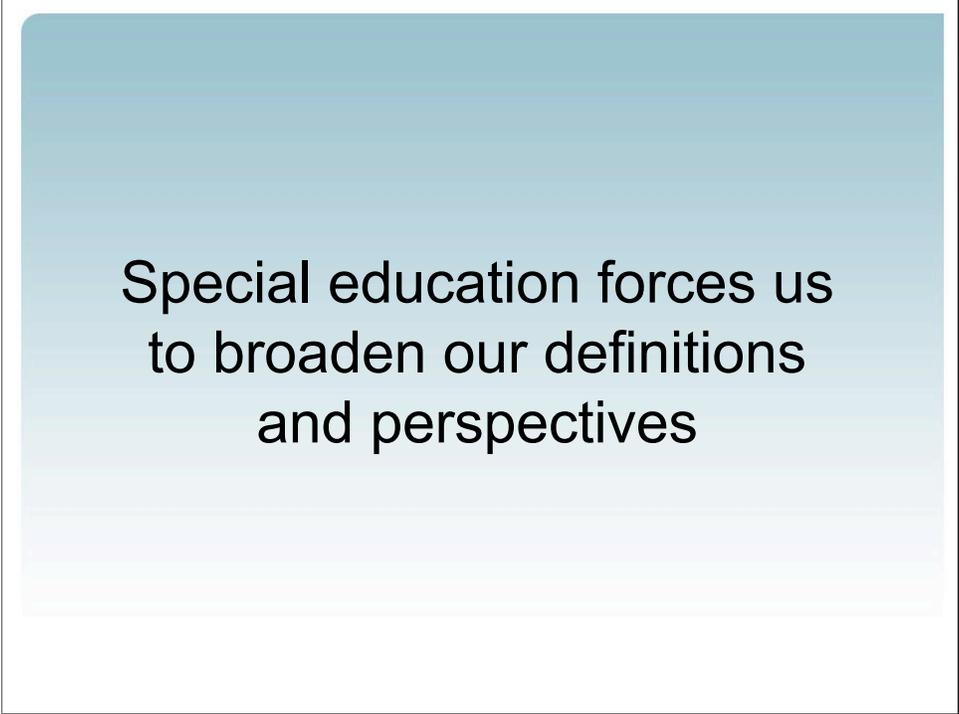
<http://flickr.com/photos/judybaxter/141040800/>

Old Shoe Woman's photo stream

3rd graders on field trip to agricultural center for university of Ga in Tifton



From Southern Illinois University's Center for Autism Spectrum Disorder



Special education forces us  
to broaden our definitions  
and perspectives

Liken to sense-making broadening educational technologies to include things like wikis and blogs

# H.A.V.E.N. Academy



Hope, Achievement, Victory, Encouragement, Nobility

Special school, SEBD and Dual Disability

3 years in field

Describe classrooms

## Education is...

- Learning skills and overcoming fears and aversions (e.g., brushing teeth)
- Job training: Practical Assessment Exploration System (PAES)
- Behavior analysis and modification
- Academics

Videos -- teethbrushing and PAES

Technology is...



THIS SLIDE IS STILL BEING WORKED



## Agency and Structure

- Individuals *experience* education
- Education is in and of itself an institution

Like the Macro-Micro debate, this is only important in understanding opposing sociological viewpoints (and how we as outsiders can use them in a balanced way)

First going to explore cultural production THEN go into the issues of education as an institution

# Some theorists put forward that what we know as our social existence is largely determined by the overall structure of society. The perceived agency of individuals can also mostly be explained by the operation of this structure. Theoretical systems aligned with this view include: structuralism, and some forms of functionalism and Marxism.

# In the reverse of the first position, other theorists stress the capacity of individual "agents" to construct and reconstruct their worlds. Theoretical systems aligned with this view include: methodological individualism, social phenomenology, interactionism and ethnomethodology.

Special education explicitly  
engages **cultural  
production** implicit in  
regular education

Cultural transmission (and construction) leading to “good citizens” and high functioning individuals who can be “main-streamed”

From Sinclair (1992): Being autistic does not mean being unable to learn. But it does mean there are differences in how learning happens. Input-output equipment may work in non-standard ways. Connections between different sensory modes or different items of stored data may be atypical; processing may be more narrowly or more broadly focused than is considered normal. But what I think is even more basic, and more frequently overlooked, is that autism involves differences in what is known without learning.

Simple, basic skills such as recognizing people and things presuppose even simpler, more basic skills such as knowing how to attach meaning to visual stimuli. Understanding speech requires knowing how to process sounds--which first requires recognizing sounds as things that can be processed, and recognizing processing as a way to extract order from chaos. Producing speech (or producing any other kind of motor behavior) requires keeping track of all the body parts involved, and coordinating all their movements. Producing any behavior in response to any perception requires monitoring and coordinating all the inputs and outputs at once, and doing it fast enough to keep up with changing inputs that may call for changing outputs. Do you have to remember to plug in your eyes in order to make sense of what you're seeing? Do you have to find your legs before you can walk? Autistic children may be born not knowing how to eat. Are these normally skills

# Cultural Transmission

## *Goals:*

“Functioning” in society

Displaying “appropriate behavior”



Cultural transmission is -- the process of passing on culturally relevant knowledge, skills, attitudes, and values from person to person or from culture to culture (LinguaLinks)

These goals tell us as much about the schools and the teachers as they do about the kids

Behavior is often a key goal in the IEP

BIPs -- how to transmit this culture to a largely non-verbal or at least socially less receptive audience

## “Good Citizens”

- ~ follow rules
- ~ are well-mannered
- ~ contribute to the economy



Show PAES Lab video; Show Home Lab video

Questions from earlier about what kinds of jobs... how are we preparing kids to contribute to the economy -- PAES is out of date!

Education

Special Education

Schools

Classrooms

are all structural institutions

There is simply not enough time to describe and discuss the institutional aspects of all of these different levels....

It is worth mentioning however the specific structures the special education instructors and students endure

## Measurement and Accountability

*"It's all about the data"*

- Outcomes Based Education (OBE)
- Individual Educational Plans (IEP)

*"What you want data on ... is the programming, because the IEP goals are what need to be worked on legally."*

No child left behind

Cite similar initiatives in other countries

## Diagnosis and labeling

*This process draws together professional educators, psychologists, and doctors in diagnosing the learning "disorders" of individual students and then prescribing a "treatment."*  
*The effect is that **students are brought together under a totalizing and regulatory gaze, and teachers' role is reconstituted around testing, record-keeping, monitoring, and surveillance.***

Dimitriadis and Carlson (2006)

One example of measurement and accountability

Talk about the need to rediagnose and PROVE that kids continue to need services even after they can "pass for normal"

Wind up having the opposite effect of what you see with the practicing of patients with Alzheimers and so on

## Societal Structure

- For many schools, goal is to maintain societal norms and structure
- Success looks like success
- Special education and disability services are filled with cultural discontinuities

2.6 percent of black students identified as mentally retarded, 1.2 percent of white students. And roughly 1.5 percent of black students are labeled as emotionally disturbed, compared with 0.91 percent of whites. (2002 report from National Academy of Sciences.... Latest data would indicate that No Child Left Behind is broadening these gaps)

The cultural discontinuity hypothesis assumes that culturally based differences in the communication styles of the minority students' home and the Anglo culture of the school lead to conflicts, misunderstandings, and, ultimately, failure for those students.

## Just Special Education?

*Of course not!*

Much of the theory backing up this presentation is in regard to anthropology and sociology of education, not just of special education. Special education merely serves as a powerful backdrop for these discussions because its extreme nature draws attention to these issues.

*Above all, it is expected that the attention of instructors to the disposition of the minds and morals of the youth under their charge will exceed every other care; well considering that though goodness without knowledge is weak and feeble, yet knowledge without goodness is dangerous, and that both united form the noblest character, and lay the surest foundation of usefulness to mankind.*

Inspired  
by Ed Chi

## CLASSROOM RULES

**Do as you're asked when you are asked.**

**Listen in silence.**

**Put up your hand to speak.**

**Arrive on time to lessons with the correct equipment.**

**Keep hands, feet, objects and comments to yourself.**

From Jem's photostream  
Seems to be the UK

## Foreshadowing Sunday: A Wiki of My Very Own

*My interpretation:*

What happens when the culture  
(individual assessment)  
doesn't match the pedagogy and tools  
(radically open collaboration)

## Okay, so now what?

- HCI can benefit from social science *of* education (and vice-versa)
- Means for understanding adoption patterns and decision making around technologies
- Reframing of issues of pedagogy, privacy, and power (just to name a few)

Social science -- ologies :)

Frequently, special educators are left to adapt educational technologies designed for regular education classrooms or technologies designed for use quite outside of education to fit their needs. As a point of discussion, then, it may be that the poor return on investment within education that is sometimes claimed for educational technology is one symptom of the larger problem that we are not examining all aspects of education and all tools and methods related to it holistically. So, policy makers, purchasers, and implementers and designers must consider these issues and ask broader, more difficult question:

We must ask

How can technology  
help *this* learning  
within *this* type of  
educational structure  
in *this* environment?

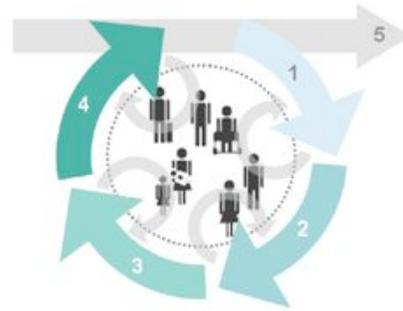
## action research

“comparative research on the conditions and effects of various forms of social action and research leading to social action” that uses “a spiral of steps, each of which is composed of a circle of planning, action, and fact-finding about the result of the action.”

- kurt lewin, 1944

Tradition emergent from social action and educational research  
We can also borrow from educational research itself

Remind you  
of anything?



- 1 Research
- 2 Concept
- 3 Design
- 4 Build
- 5 Launch & measure

Diagram from Flow Interactive

Difference between PAR and UCD is that PAR should involve LOCAL people and LOCAL problems (often see teachers doing PAR on their own classrooms as part of their PhDs and MS projects)

## Social and Technological Action Research

Particularly important in education:

- Situated
- Iterative

Allows us to consider

- Agency and structure
- Local and global issues

comparative research on the conditions and effects of various technologies and research leading to social and technological action that uses a spiral of steps, including planning, technological intervention, and fact-finding about the result of the action

Situated means: (what is learning? What is education?)

Address real world problems with  
a mix of theory, action, and  
technology

comparative research on the conditions and effects of various technologies and research leading to social and technological action that uses a spiral of steps, including planning, technological intervention, and fact-finding about the result of the action

Situated means: (what is learning? What is education?)

## Community-Wide Work in Progress

- What is the meaning of education?
- What is the meaning of learning?
- What is the place for HCI in education and educational technology?
- How can we truly integrate social science theory *and* methods into this work?

We need some more definitions, theories AND tools

Thanks and enjoy the weekend!



[gillianrh@ics.uci.edu](mailto:gillianrh@ics.uci.edu)  
<http://www.star-uci.org>



Gregory\_y's photostream -- Flickr, CCL