

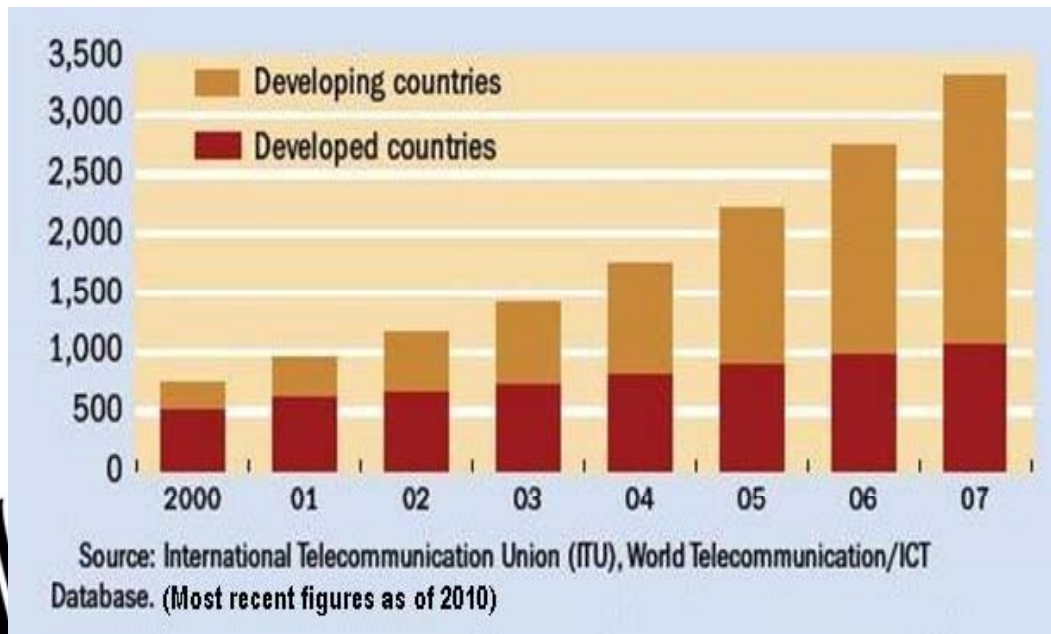
Matthew Kam

Assistant Professor, Human-Computer Interaction Institute
Affiliate Faculty, Center for International Policy and Innovation
Carnegie Mellon University

CMU HCII P and T, August 26, 2010



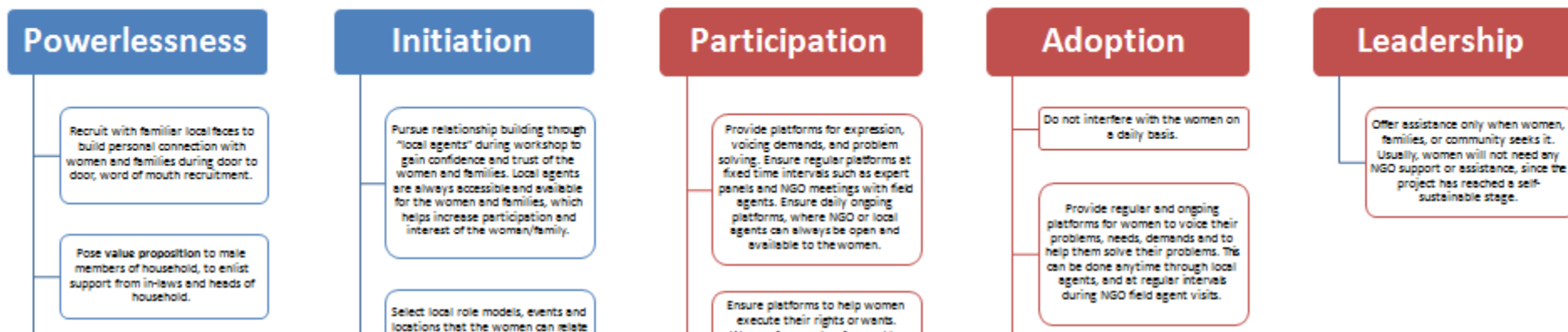
- 1.2 billion personal computers (Computer Industry Almanac)
- 4.6 billion active cellphone accounts in the world (ITU)
- 774 million non-literate adults in the world (UNESCO)



Photographs from Derek Lomas fieldwork

Wumun: Improving Gender Equality in India

- Geeta Shroff's MS thesis (expected to defend Sep 2010)
- Jan 2010: 11-week interviews w/ 18 women + 22 staff members from 12 Non-Govt Orgs



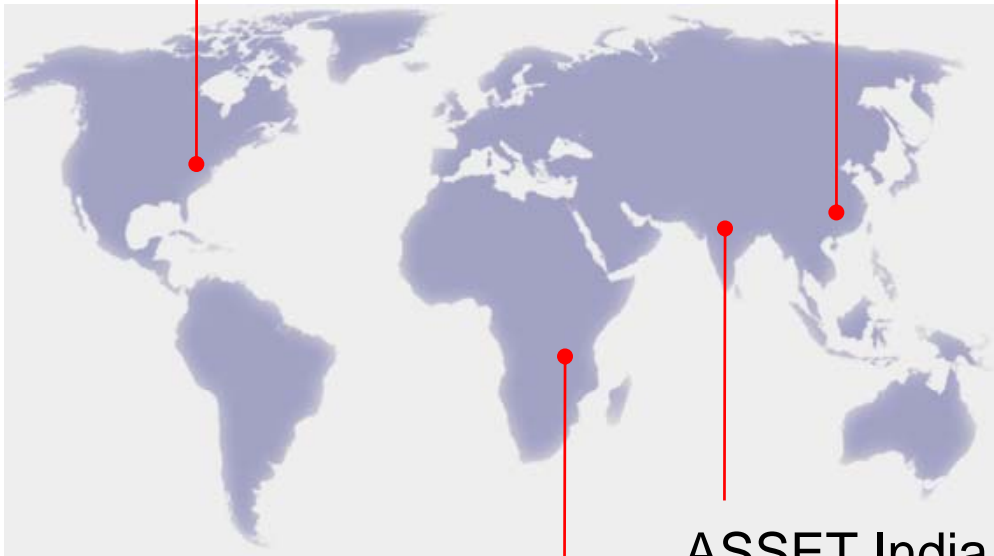
- Jul 2010: 3-week co-design sessions w/ 37 women + 25 staff members from 8 NGOs



MILLEE: International Collaborators

Sesame Workshop

Chinese Academy of Sciences



Current and previous funders:

- MacArthur Foundation
- Microsoft
- National Science Foundation
- Nokia
- Qualcomm
- Verizon

University of Nairobi

ASSET India Foundation

Byrraju Foundation

Dhirubhai Ambani Institute of ICT

IIT Hyderabad

Suraksha



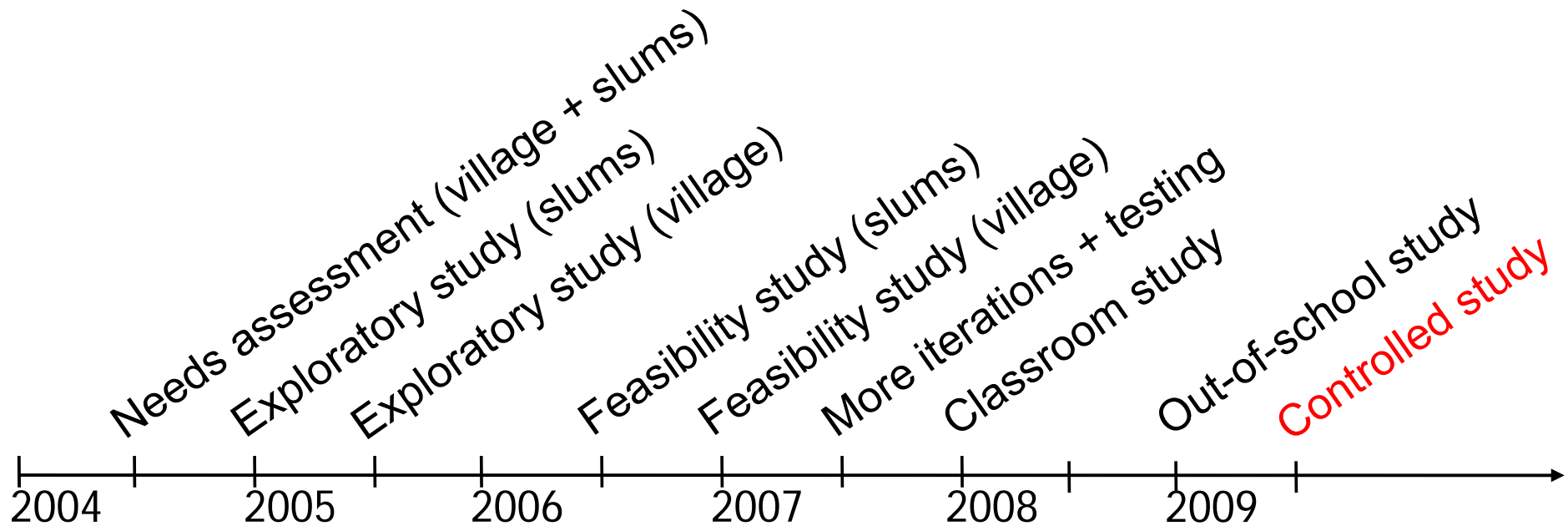
Multidisciplinary Collaborators at CMU

- Local project manager – Indrani Vedula
- School of Design – Jodi Forlizzi, Stephanie Meier
 - Visual design
- Entertainment Technology Center – Hanika Khakhanis
 - Videogame design
- Language Technologies Institute – Maxine Eskenazi
 - Evaluation of speech technologies for language learning
- Dept. of Modern Languages – Pooja Reddy, Sue-mei Wu
 - Second Language Acquisition and Reading Science



Project Timeline

- 10 rounds of fieldwork, >12 months total in India
- Human-centered design process with 100 children



MILLEE Next Steps (starting Year 7)

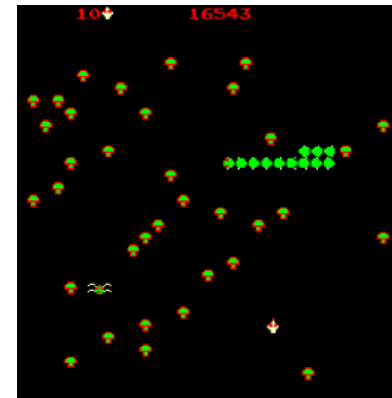
- w/ Anuj Kumar, Pooja Reddy and Indrani Vedula
- Improve access to quality ESL (English as Second Language) instruction in rural India
 - ESL learning games on cellphones
- Controlled experiment with 800 rural children in 40 villages (with Nokia grant and 450 cellphones donation)
 - Official 5th-grade English curriculum in India
 - Test for transfer to standardized English test in India



Traditional Village Games

[in ACM CHI 2009 – Best Paper Honorable Mention]

- How are traditional Indian village games different from existing Western videogames?
- Compared game elements against 296 game design patterns documented in Bjork and Holopainen 2005



Analysis: Differences in Games

- Identified 37 non-trivial differences
 - Difficulty based on sub-goals
 - Resource management
 - Skill acquisition
 - Score keeping
 - Rituals associated with space
 - Inter-team interactions

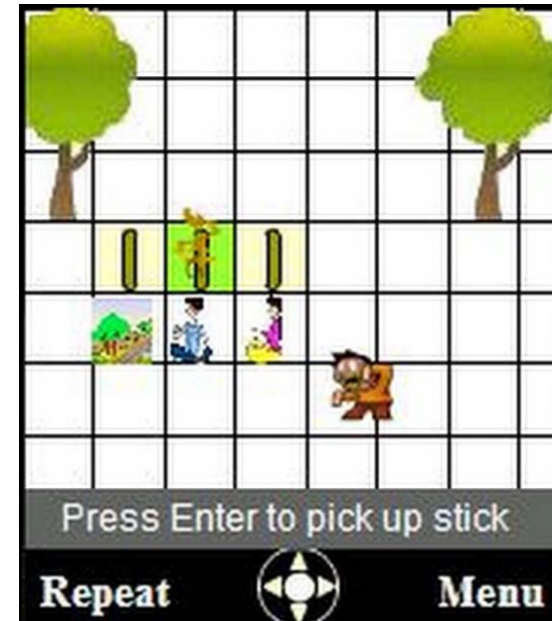


Prototypes: Videogame Design

- Designed videogames based on traditional village games (Kam et al. 2009)



Playground



Digital Version

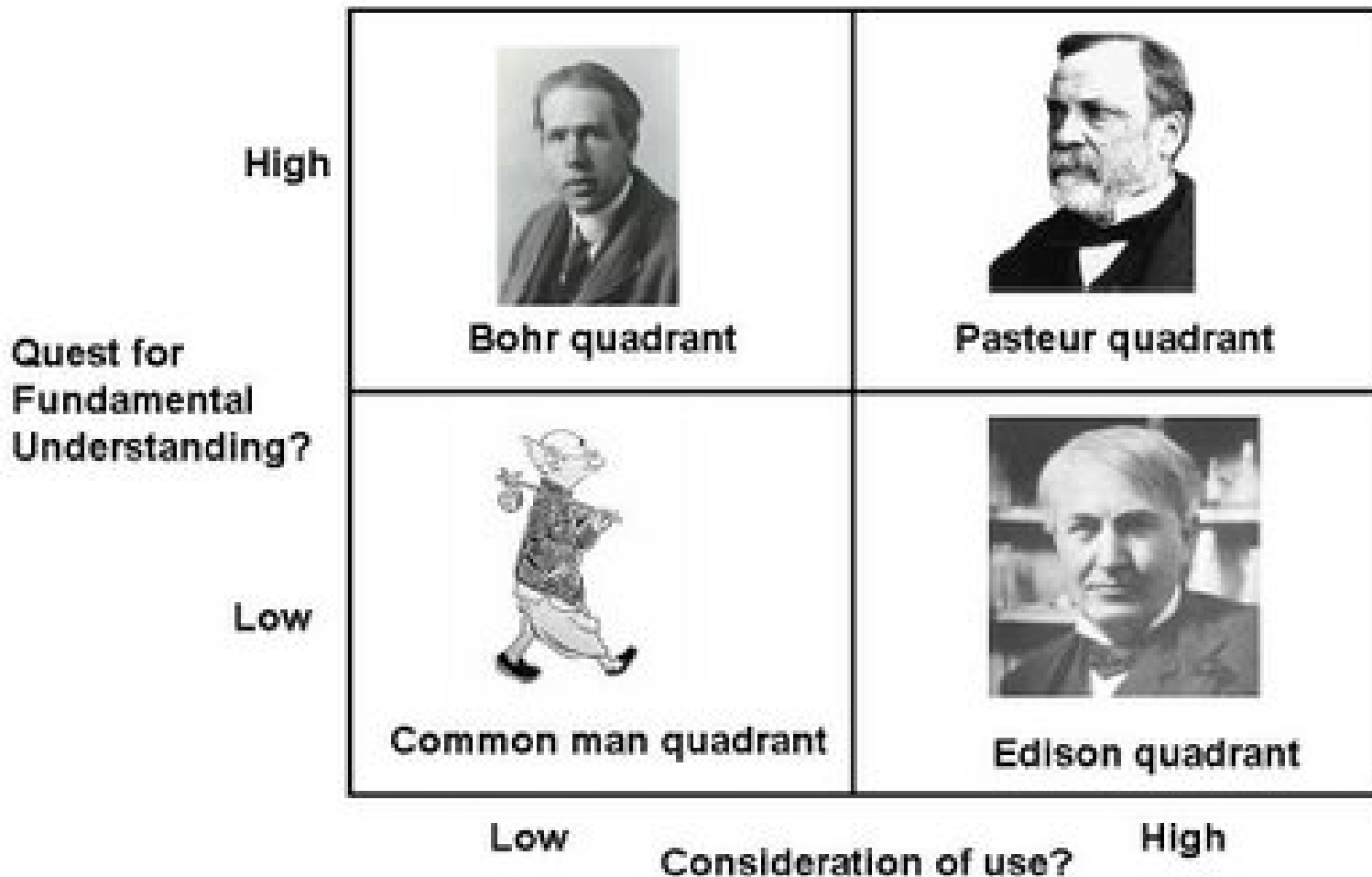


Emerging Conceptual Framework

- What is the theoretical relationship between culture, cognition and learning?
- How do we design educational interventions for **non-schooled learners**?
 - Sociocultural theories of learning (Bronfenbrenner 1979, Lave 1988, Luria 1977, Rogoff 2003, Scribner & Cole 1981)
 - Cognitive neuroscience research on literacy (Dehaene 2009)
- Integrate into existing HCI models and processes, **regularities in patterns of cultural processes** (Rogoff 2003)



Pasteur's Quadrant



Mobile Learning Infrastructure

- One-year bridge curriculum + educational games based on Chall's stages of reading development (1983)
 - Study microgenetic development of interlanguage subsystems
 - Study relationships with “print exposure” constructs
 - Study localization to one Southeast Asian country



Other Possible Topics

- Interdisciplinary work and collaboration
- Differences and values
- Ethical issues
- Range of methodologies
- Picking problems
- Reward structure



Contact Info

Matthew Kam

Assistant Professor

Carnegie Mellon University

Human-Computer Interaction Institute

Email: mattkam@cs.cmu.edu

Homepage: <http://www.cs.cmu.edu/~mattkam>

