Assessment and Learner Modeling
Working Group

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VISION: MY Lifelong Learning Companion

- Knows what I know
- Knows my experiences and achievements
- Knows what I want/need to know
- Understands how I learn best
- Understands how I prefer to learn
- Finds learning opportunities for me
- Appreciates my time constraints
- Communicates with other agents to arrange opportunities for me

Questions: MY Lifelong Learning Companion

- Keeps all raw data it can?
- Can safeguard my privacy?
- Is for my benefit or for my employer's benefit?
- Is it just a sophisticated LMS?
- Does it attend training with me and coach me based on what it knows about me? Or hand off that information to a more domain specific tutor?
- How do we standardize format so that it could communicate to domain-level tutors?
- Does it model my knowledge based on principles from learning science (e.g., forgetting?)

1. What are the most salient findings and/or results that feed most directly into the ILCC vision? <u>What do we know now?</u>

- When we have good expert domain models (e.g., some educational domains)
  - <u>Assessing and Modeling student skills</u>
- When we have a closed or constrained system
  - <u>Tracking changes in student abilities/mastery</u>
- Assessing certain student characteristics, which may impact their learning (e.g., vision, hearing, disabilities)

- Strategies
  - Keep as much raw data as possible over time—for later interpretation
  - Use consensus data for assessment, when there are no good domain/expert models

2a. What ongoing research are you aware of that holds the greatest potential for promoting lifelong learning?

- Are there student <u>traits</u> we ought to represent/use to influence what/how content is presented?
  - what is the payoff? – learning gains vs. learner satisfaction
  - How stable are these traits really?
- How to model and assess student <u>states</u> such as affect/motivation
- Which characteristics are states vs. traits and how to model their effects, when to reassess? E.g., -- memory span—and applying established learning science principles to infer best training practices tailored on an individual basis
- Using Latent Semantic Analysis of writing samples to assess student's expertise in a domain.

2b. What ongoing research are you aware of that holds the greatest potential for promoting lifelong learning?

- Modeling team/collaborative processes/behaviors/tendencies and choosing interventions to improve skills
  - Potential of social network tools (e.g., Facebook, forums, communities of practice) to get data→better understanding
- Potential of E-Portforlios
  - Document student learning over a long period of time
  - Use to assess the training student has received (evaluation of the instruction)
  - Tracking competencies rather than grades

3a. What are the key unknowns and open questions?

- How to track change/model student effectively: across domains and long term.
  - Getting the data in from many different sources, not all digital
  - Reduce current emphasis on exams as primary arbiter of achievement
  - How to make every teacher a researcher—i.e. use and contribute to learner models
- How do we represent group enculturation and how do we accelerate it?
- How to develop tools to analyze large raw and heterogeneous data sets to
  - Develop student type models
- How to deal with privacy and security issues
  - Allow user editing for purpose-based sharing? Then what about authenticity?
  - Your own learning companion should have ability to safeguard you; how can that be implemented?

3b. What are the key unknowns and open questions?
(more generally)

- Interoperability: how to manage interchange of the learner model between applications, humans?
- Privacy and security from the foundation of all aspects
- Granularity in modern LMSs and generally links between conventional e-learning systems and a learner model
- Would a "learning science" for social learning be the same or different from the "learning science" for individual learning?