

Supplemental Materials. Cognitive Task Analysis Methodology and Example

There are five general steps in cognitive task analysis (CTA, discussed in Clark et al. 2008; p.580). The table below lists these steps and describes the contributions to each step from the subject matter experts (co-authors on this manuscript working in the domains of bioinformatics and bioinformatics education), the relevant theory, and from the literature.

CTA steps ¹ :	Subject Matter Experts	Theoretical contributions	From the literature
1. Collect preliminary knowledge/information	SME (CR, CG, RET) parsing stewardship definition; evaluation of Blooms-level requirements (RET)	Bloom et al. Messick	Standard setting models and methods (Cizek 2012)
2. identify knowledge representations and organizations	Guild structure; career stage (stages of degrees)	Bloom's, Messick	Stewardship literature; Ethical Guidelines statements
3. elicit knowledge	Performance standard setting	Bloom's, Messick	curriculum & training/workforce development considerations across educational contexts
4. analyze and verify data	SMEs engage in iterative range-finding, pinpointing, alignment of KSAs, stages, and other PLDs; validation with alignment of KSAs and guidelines. Iterative and ongoing analysis and revisions of PLDs by all co-authors for observability and relevance.		
5. Format results	Following format for MR construct; SME iteration on PLDs to insure clarity and relevance.		
¹ Adapted from Clark et al. 2008; p.580			