

## Task classification scheme

### Intrinsic Task Characteristics

#### . Overall task type

- . . Jonassen (2000) task type                      \$Jonassen 2000#
  - . . . *Logical task*  
DF: A specific solution path exists. (e.g. Tower of Hanoi, Puzzle)
  - . . . *Algorithmic task*  
DF: A finite set of rules applies. (e.g. Math questions)
  - . . . *Story task*  
DF: Take verbal form but basically the same as algorithmic problems.
  - . . . *Rule-using task*  
DF: Finite rules are necessary.
  - . . . *Decision-making task*  
DF: Finite outcomes exist. Comparison and argumentation are necessary. (e.g. Which school to attend)
  - . . . *Troubleshooting task*  
DF: Multiple solutions paths exist. (e.g. Fix a car)
  - . . . *Diagnosis-solution tasks*  
DF: Multiple solutions paths. Justification of a selected solution is required. (e.g. Medical diagnosis)
  - . . . *Strategic performance task*  
DF: Multiple solution paths exist. Situated case or design problems. (e.g. Drive a car in different conditions)
  - . . . *Case analysis task*  
DF: Unclear outcome. Criteria for best solution are ambiguous. (e.g. Plan a menu for foreign dignitaries)
  - . . . *Design task*  
DF: Unclear outcome. Criteria for best solution are ambiguous. (e.g. Design a dog house)
  - . . . *Dilemmas*  
DF: No solution may exist. (e.g. Should abortions be banned?)
- . . Whitley and Frost (1972) task type              \$Whitley and Frost 1972#
  - . . . *Responsibility task*
  - . . . *Extension task*
  - . . . *New development task*
  - . . . *Research task*

#### . Abstract task characteristic

- . . Task abstractness                                      \$Jonassen 1997, Jonassen 2000 #
- . . . Domain specificity
- . . Task adaptability                                      \$ADDE project#  
DF: The degree to which a task is adaptable in different settings
- . . Task analyzability                                      \$Perrow 1967, Daft & Macintosh 1981, Hart

- & Rice 1991, Zeffane & Gul 1993#
- . . Task complexity, task simplicity \$Campbell 1988, McMullin & Taylor 1984,  
Byström, & Järvelin 1995#
- . . Task difficulty \$Bass et al 1958, Shaw 1973#
- . . Task routineness \$Hart & Rice 1991#
- . . Task structuredness \$Jonassen 1997#
- . . . *Well-structured task*
- . . . *Ill-structured task*
- . . Task traceability \$ADDE project#
- . . Task usability \$ADDE project#
- DF: The degree to which a task is easy to learn
- . . Task variability \$Poole 1978#
- . . Task variety \$Perrow 1967, Daft & Macintosh 1981, Zeffane & Gul 1993#
- . **Task constraints**
- . . Constraints that need to be satisfied \$Campbell 1988#
- . **Goal**
- . . Satisficing vs. optimizing
- . . . *Satisficing*
- . . . *Maximizing/Optimizing* \$Steiner 1972#
- . . . . *Maximizing goal*
- . . . . *Optimizing goal*
- . . Quantitative vs. qualitative goal \$Li 2004#
- . . . *Quantitative goal*
- . . . *Qualitative goal*
- . **Product** \$Li 2004#
- . . *Physical product*
- . . *Intellectual product*
- . . *Decision/solution product*
- . **Task structure**
- . . Task classifications based on task structure
- . . . Campbell (1988) task type based on task complexity \$Campbell 1988#
- . . . . *Decision task*
- . . . . *Judgment task*
- . . . . *Problem task*
- . . . . *Fuzzy task*
- . . Task clarity
- . . . Assumptions agreed upon/not agreed upon \$McMullin & Taylor 1984#
- . . . Assumptions explicit/not explicit \$McMullin & Taylor 1984#
- . . . Given state clarity \$Reitman 1965, McMullin & Taylor 1984#
- . . . . *Well-defined given state*
- . . . . *Ill-defined given state*
- . . . Goal clarity \$Reitman 1965, Frost 1976#
- . . . . *Well-defined goal*
- . . . . *Ill-defined goal*
- . . . Solution path clarity \$Frost 1976#
- . . . . Rule usage \$Hrebiniak 1974#

DF: The degree to which a task performer should follow standard procedures or rules

- . . . . . *Prescribed process*
- . . . . . *Non-prescribed process*
- . . . Task certainty, task predictability
  - . . . . . Given state certainty
  - . . . . . Goal certainty
  - . . . . . Solution path certainty                      \$Campbell 1988#
    - DF: Presence of uncertainty or probabilistic linkages in the solution path
    - . . . . . *Number of unexpected events in the task process*
- . . . Task diffuseness
- . . . Task multiplicity
  - . . . . . Given state multiplicity
    - . . . . . . *Single given state*
    - . . . . . . *Multiple given states*
  - . . . . . Goal multiplicity                              \$Campbell 1988#
    - . . . . . . *Single goal*
    - . . . . . . *Multiple goals*
  - . . . . . Solution path multiplicity                \$Campbell 1984, Shaw 1973#
    - . . . . . . *Single path*
    - . . . . . . *Multiple paths*
- . . . Subtask structure
  - . . . . . Task stage                                      \$White 1975, Hersh 1999, Vakkari 2001#
  - . . . . . The number of subtasks
  - . . . . . Interrelated and conflicting subtasks    \$Campbell 1988#
  - . . . . . Task identity                                    \$Hackman & Oldham 1976#
    - DF: The degree to which a task requires completion of a "whole" and identifiable piece of work; that is, doing a task from beginning to ending with a visible outcome.
- . . . Task scope                                        \$Whitley & Frost 1972#
  - . . . . . *Task addressing local problems*
  - . . . . . *Task addressing global problems*
- . **Task requirement and process**
  - . . . Task classifications based on task requirement and process
    - . . . . . Carter et al. (1950) task type                \$Carter et al. 1950#
      - . . . . . . *Clerical task*
      - . . . . . . *Discussion task*
      - . . . . . . *Intellectual construction task*
      - . . . . . . *Mechanical assembly task*
      - . . . . . . Motor coordination and reasoning task
    - . . . . . McGrath (1984) task type                      \$McGrath 1984#
      - . . . . . . *Generate*
      - . . . . . . . *Planning tasks*
      - . . . . . . . *Creativity tasks*
      - . . . . . . Choose
        - . . . . . . . *Intellectual task*
        - . . . . . . . *Decision-making task*

- . . . . Negotiate
- . . . . . *Cognitive conflict task*
- . . . . . *Mixed-motive task*
- . . . . . *Execute*
- . . . . . *Contests/Battle*
- . . . . . *Performance*
- . . . Intellectual task type (Hackman 1968)      \$Hackman 1968#
- . . . . . *Production task*
- . . . . . *Discussion task*
- . . . . . *Problem-solving task*
- . . Ability requirement      \$Hackman 1969#
- . . . Required knowledge/skill
- . . . Required experience
- . . . Required cognitive capabilities      \$Campbell 1988#
- . . . Skill variety      \$Hackman & Oldham 1976#
- DF: The degree to which a task requires a variety of different activities, or the use of a number of different skills and talents, in carrying out the task.
- . . Behavior requirement      \$McGrath 1984, p. 54#
- . . . Intellectual-motor requirement
- . . Materials requirement      \$Algon 1999, Bikson 1987#
- . . . *Tasks interacting with objects*
- . . . *Tasks interacting with people*
- . . . *Tasks interacting with ideas*
- . . Task feedback      \$Hackman & Oldham 1976#
- DF: The degree to which carrying out work activities required by the task results in the task performer obtaining direct and clear information about the effectiveness of their personal performance.

### **Extrinsic Task Characteristics**

- . **Locus of task**
- . . Degree of local decision making on task
- . **Imposition**      \$Li 2004, McMullin & Taylor 1984#
- . . *Internal imposition*
- . . *External imposition*
- . **Task autonomy**      \$Hackman & Oldham 1976#
- DF: The degree to which a task provides substantial freedom, independence and discretion of the task performer in scheduling the work and in determining the procedures to be used in carrying it out.
- . . Unity of control      \$Hrebiniak 1974#
- DF: The number of supervisors
- . . Closeness of supervision      \$Hrebiniak 1974#
- DF: The degree to which a supervisor influences on the task
- . . Closeness of control      \$Hrebiniak 1974#
- DF: The degree to which a supervisor influences on the task performer's control over his subordinates

- . **Task significance** \$Hackman & Oldham 1976#  
DF: The degree to which a task has a substantial impact on the lives or work of other people
- . **Task urgency** \$Li 2004#
- . **Task frequency**
- . . Quantitative frequency
- . . Qualitative frequency \$Li 2004#
- . . . *Unique*
- . . . *Periodical*
- . . . *Routine*
- . **Task risk** \$McMullin & Taylor 1984#
- . **Task reward** \$McMullin & Taylor 1984#

### Task Performer

- . **Individual as task performer** \$Kraut et al. 1994#
- . **Group as task performer**
- . . Cooperating/Mixed-motive groups \$Laughlin 1980#
- . . . *Cooperating groups*
- . . . . *Intellective tasks*
- . . . . *Decision-making tasks*
- . . . . *Mixed-motive groups*
- . . . . . *Two-person, two-choice tasks*
- . . . . . *Bargaining and negotiation tasks*
- . . . . . *Coalition formation*
- . . . . *Mixed-motive groups*
- . . Division of labor \$Steiner 1972#
- . . . *Unitary group*
- . . . *Divisible group*
- . . Group contribution pattern \$Steiner 1972#
- . . . *Disjunctive group*
- . . . *Conjunctive group*
- . . . *Additive group*
- . . . *Discretionary*
- . **Interaction of task performers**
- . . Task interdependence \$Tushman 1978, Zeffane & Gul 1993#  
DF: The degree to which individuals need to work with other individuals in order to accomplish their tasks
- . . Direction of interaction \$Kiggundu 1981#
- . . . *Receive interaction*
- . . . *Initiate interaction*
- . . Group integration \$Kraut et al. 1994#  
DF: The degree to which a task performer considered himself as part of a work group, and the ease of maintaining working relationships with work group members.
- . . Friendship opportunities \$Sims et al. 1976#

### **Relationship between Task and Performer**

- . **Task familiarity** \$McMullin & Taylor 1984, Shaw 1973#
- . **Task novelty**
- . **Task manageability** \$Hrebiniak 1974#
- . **Intrinsic interest** \$Shaw 1973#  
DF: The degree to which the task in and of itself is interesting, motivating, or attractive to a task performer
- . **Goal acceptance** \$Frost 1976#  
DF: The degree of a willingness to exert an effort sufficient to meet the goal
- . **Belief for success**
- . **Salience of task** \$Li 2004#

### **Measurement of Task Performance**

- . **Task productivity**