Assessing Learner Characteristics and Technology Capabilities: Survey Development & Validation

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Melissa J. Miszkiewicz, M.S.
Director, Academic Computing
miszkimj@buffalostate.edu

Barbara J. Dray, Ph.D.
Assistant Professor, Teacher Education & Special Education
University of Colorado Denver
barbara.dray@ucdenver.edu

Kelly S. Marczynski, Ph.D.
Assistant Director/Senior Research Scientist, Center for Health & Social Research
marczyks@buffalostate.edu

Instrument Genesis

Development of an Online Bilingual Special Education Certification Extension Program prompted the initial development

Key pieces of literature:

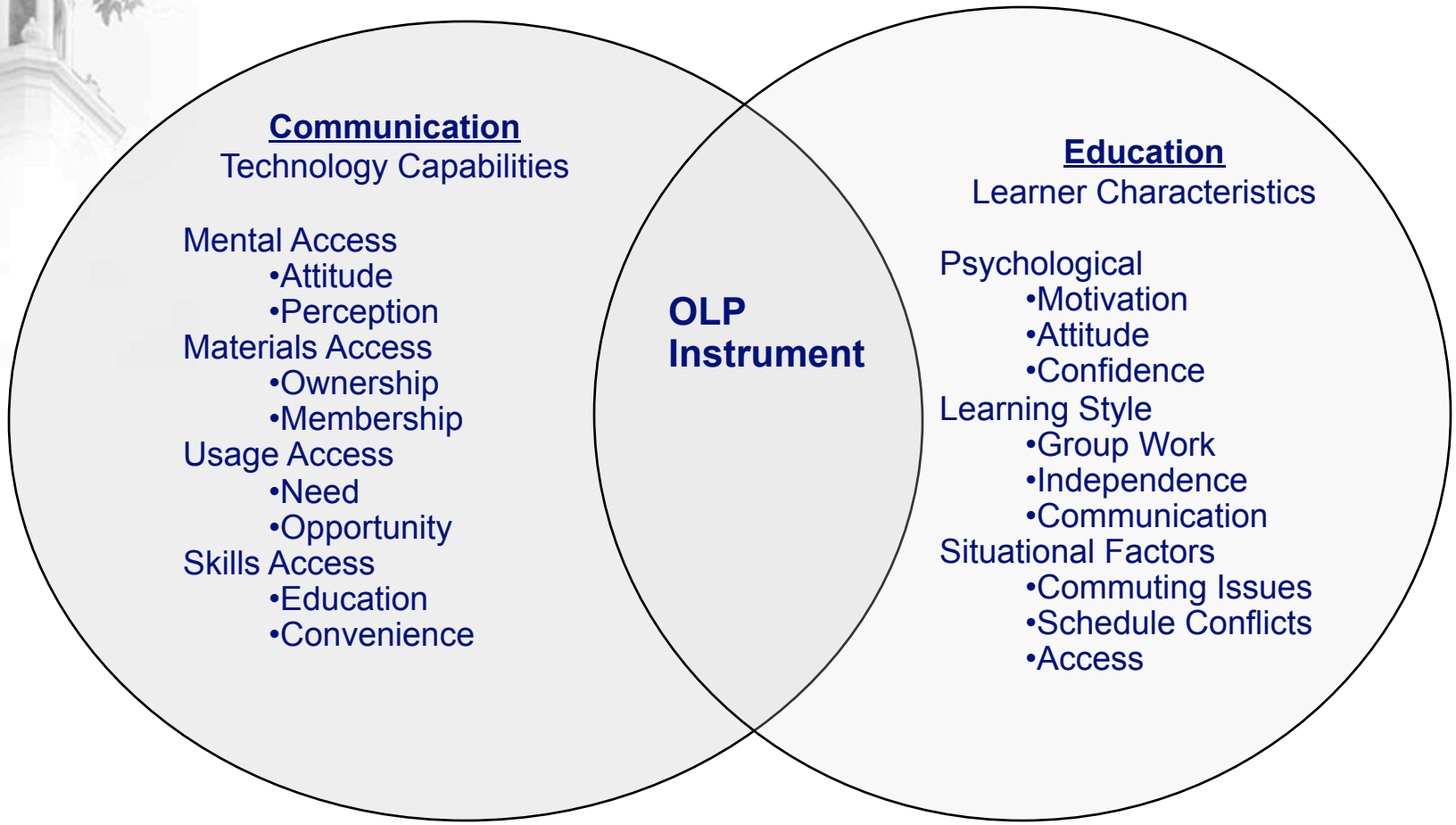
Bernard, Robert M., Brauer, Aaron, Abrami, Philip C., Surkes, Mike (2004).The development of a questionnaire for predicting online learning achievement. *distance education*. *25*, 31-47.

McVay, Marguerita (2001). How to be a successful distance education student: Learning on the Internet. New York, NY: Prentice Hall.

Mattice, N. J. & Dixon, P. S. (1999). Student preparedness for distance education. Santa Clarita, CA: College of the Canyons. (ERIC Document Reproduction Service No. ED436216)

van Dijk, Jan (2002). A framework for digital divide research. *Communication Institute for Online Scholarship, Inc.*. *12*,

Intersection



van Dijk, 2002

Bernard, et al., 2004
McVay, 2001
Mattice, et al., 1999

Methods

- Theory vs. Reality (need)
- Identify and Compare
- Create Instrument and refine Item Pool
- Test Item Pool
  - **Construct validity (face validity)**
  - **Content validity (cognitive item analysis)**
  - **Criterion related validity (external validity)**

McDowell, Ian (2006) Measuring Health. Oxford University Press, (pp.30-54).

Construct Validity

Phase 1

- Face validity

  Discussions among developer

  – What is the need?

  – What do we want to ask?

  – How do we ask it?

Content Validity

Phase 2

- Cognitive Item Analysis
  - What did the whole question mean to you?
  - Would you re-word the question? How?
  - When you created your response, what was it that you had in mind?

Converse, J.M., and Preser, S. (1986). Survey questions: handcrafting the standard questionnaire. Sage University Paper Series on Quatitative Applications in the Social Sciences, series no. 07-063. Newbury Park: Sage Publications

Example Question 1

Original Question	Feedback	Revised Question
I do not give up easily, even when confronted withobstacles.	•I pursue challenges •This asks me if I can be defeated or scared off easily. I definitely do not.	I do not give up easily when confronted with technology related obstacles (e.g., Internet connection issues, difficulty with downloads, difficulty locating information, unable to contact instructor immediately, etc.).

Example Question 2

Original Question	Feedback	Revised Question
I believe I am responsible for my own education; what I learn is ultimately my responsibility.	•Do I take pride in my education •That me, and me alone, is responsible for how I perform in class. •Do not rely on anything or anyone but yourself. This is the only way you will learn and accomplish things effectively	I believe I am responsible for my own education; what I learn is ultimately myresponsibility. For example, I am responsible for communicating with my professor when I have difficulty understanding, obtaining answers to questions I might have about assignments, material, and content, etc.

Example Question 3

Original Question	Feedback	Revised Question
I am comfortable working in alternative learning environments.	•This asked me if I was comfortable working outside the regular education sector and servicing students who are special education or who simply have different emotional/ physical needs. •Am I flexible? •Working with variety, can I do it? •Do I adapt well to change.	I am comfortable working in alternative learning environments. Alternative learning can be defined as spaces outside of the traditional classroom such as library, online, home, etc.

Criterion Related Validity

Phase 3

- Compares to other measures/scales
  - Mattice (1999), McVay (2001), Bernard (2004)
  - van Dijk
- Larger sample
- Broader sample (online, web enhanced)

Phase 3: Large-scale validation

- N = 500, Mid-sized urban teacher college in the North East
- Undergraduate/Graduate students accessing technology-mediated learning
  - Web-enhanced, Podcasts, Entirely online courses
- Mostly in the age bracket - Under 21 & 21-25
- Race/Ethnicity – 74% White, 13% African American, 7% Hispanic, 5% Asian Pacific Islander, >1% American Indian, 2% Mixed Race, >1% Other
- Mostly English Dominant – with 8 different language groups represented.

Phase 3: Preliminary Findings

Question	Implications	Outcomes
Question 32 Ability to download 488/501 - .doc 392/501 - .xls 440/501 – .ppt 375/501 - .pdf 341/501 - .mov 437/501 - .jpeg	Classroom – Most students know how to do this, therefore able to provide Institution – Some are not able to do this, provide tutorial	Link to a tutorial, not needed to go over in class. Spend minimal time creating help document – text version versus video or webinar.

Phase 3: Preliminary Findings

- Subscale 1: Learner Characteristics (14 items)
  - SD were all above .5 with a range of .537 to .759
  - Cronbach's Alpha of .845
  - Alpha would not be increased if you removed any single item
- Subscale 2: Technology Capabilities (24 items)
  - Findings forthcoming
- Comparison with other scales/measures
  - Findings forthcoming

Implications and Discussion

- What have we learned about survey creation and our own ability to communicate?
- What are the implications for future research
  - Technology needs for teachers/training
  - Access to education based on delivery systems
  - Students who “use” and students who do not
  - Trends
  - Readiness for online learning
  - Variances between student & faculty across the digital divide
  - Variances between faculty only, students only, districts, etc.