Evaluation of the Validity and Reliability of the Revised Universal Design in Healthcare Education Instrument

Janet A. Levey, PhD, RN-BC, CNE
*Nursing, Concordia University Wisconsin, Mequon, WI, USA*
Esteban Montenegro, MEd
*Institute of Measurement, Methodology, Analysis and Policy (IMMAP), Texas Tech University, Lubbock, TX, USA*

**Purpose:** The specific aim of this presentation is to discuss the refinement of the Universal Design in Healthcare Education (UDinHE) instrument, face and content validity, and stable reliability indexes.

Healthcare educators teaching in nursing, medicine, dentistry, physical/occupational therapy, physician assistant, and other allied professional fields are preparing a diverse workforce in response to the growing healthcare needs of a heterogeneous community (American Hospital Association, 2015, 2016). Diversity in postsecondary colleges and universities extends beyond ethnicity and includes students with disabilities. Healthcare workers in concordance with patient populations are critical to improved healthcare access and patient outcomes, enhanced communication and understanding of the patient’s context, and increased adherence to treatment plans (American Hospital Association, 2015, 2016; La Veist & Pierre, 2014). Evidence is revealing underrepresented minority healthcare workers practice in underserved communities reducing gaps in access to care (Wayne, Kalishman, Jerabek, Timm, & Cosgrove, 2010). Although healthcare workers are becoming more diverse, a concerted effort must be put forth by postsecondary healthcare educators to address strategies for reducing barriers for underrepresented groups, like students with disabilities, and increase their graduation rate from professional healthcare programs.

To achieve the goal of reducing barriers for students in healthcare academia, universal design (UD) is an innovative teaching pedagogy which focuses on inclusive teaching approaches in the development of curricula and instructional delivery (Burgstahler, 2015; Levey, in-press, 2016, 2017). The UD framework proactively reduces barriers during creation and delivery of course content, materials, assessments, and learning environments for learners, including those with disabilities (Burgstahler, 2015; McGuire, 2011). The UD framework is applicable to all learning environments; including the classroom, online, hybrid, clinical, and simulation and skill labs, for little or no cost to the postsecondary institution.

The practice of UD is embedded in marketing, communication, business, engineering, and elementary through secondary education degree programs, but not in professional healthcare programs (e.g., nursing, medical, physical/occupational therapy, physician assistant). Reasons UD has not been adopted by postsecondary healthcare educators are perceptions of UD and what constitutes inclusive teaching practices (Dallas, Upton, & S Frog, 2014; Levey, in-press, 2014, 2016, 2017). To date, no valid instrument exists to measure healthcare educators’ perceptions towards inclusive teaching methods based in UD. Assessing healthcare educators’ perceptions towards UD is the first step in designing and measuring the effectiveness of an educational intervention.

**Methods:** The initial pilot and study of the Universal Design in Healthcare Education (UDinHE) formerly known as the Inclusive Teaching Strategies in Nursing Education instrument showed promising results, as the exogenous model fit the sample data and most scales had acceptable reliability indexes. However, the endogenous model fell slightly below established parameters (Levey, 2017); an expected result the first time an instrument is tested (Brown, 2015). The revised instrument was broadened to include educators teaching in professional healthcare sciences. The UDinHE instrument is a three-structured model of Knowledge of UD, System Support for UD, and Perceptions of UD based on Rodgers’ Diffusion of Innovation Theory (2003) and demographic questionnaire. The UDinHE contains 33-items using a 5-pt Likert scale ranging from Strongly Agree to Strongly Disagree to assess healthcare educators’
perceptions towards UD. The preliminary evaluation of the instrument consisted of assessed face and content validity of the revised instrument. A convenience sample at the primary investigator’s university assessed the internal consistency and stable reliability over a 2-week period. Data collection occurred during the 2017-2018 academic year. Deans and Program Directors of professional healthcare at the researcher’s university forwarded the survey to faculty currently teaching in their programs (e.g., nursing, physical/occupational therapy, physician assistants, and pharmacy). A sample size of 34 paired surveys were needed to calculate internal consistency indexes (effect size of 0.5, alpha, 0.05, and Power of 0.80). Consent was recorded when participants linked to the survey and results reported as an aggregate.

**Results:** A panel of nine experts in UD working in postsecondary education reestablished the face and content validity of the UDinHE. The overall scale content validity index (S-CVI) was .98. An S-CVI index of .80 or greater is acceptable (Lynn, 1986; Waltz, Strickland, Lenz, 2010). Internal consistency analysis revealed all subscales had a reliability coefficient (Cronbach’s alpha) greater than 0.70, except for the social system at 0.62 for the 22 paired surveys. The low alpha on the social system subscale may be related to the timing of the study during a time of the school year when faculty are navigating a new school year and systems. As hypothesized, there was no significant differences between Time 1 (M = 2.56, SD = 0.51) and Time 2 (M = 2.57, SD = 0.52) (t = -0.26, p = 0.79, d= -0.06) or changes in mean scores indicating stability of the instrument over time. All correlations between subscales were statistically significant at p <.001 (two-tailed) and ranged from 0.53 to 0.83 meaning there is a strong relationship between the constructs.

**Conclusion:** The UDinHE instrument obtained face and content validity and demonstrated stable reliability. A confirmatory factor analysis is the next step in the project. The instrument provides one way to measure healthcare educators’ perceptions towards UD and practices reflective of inclusive teaching methods. The UDinHE has the potential of assessing a program’s accessibility for students in relationship to disability law requirements. Graduating a diverse student body that mirrors society is imperative in meeting the healthcare needs of vulnerable populations (American Hospital Association, 2017). For this reason, the effectiveness of an educational intervention focusing on the adoption of UD by healthcare educators warrants future study.

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**Title:**
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**Keywords:**
face/content validity and stable reliability, healthcare educators and universal design

**References:**


Abstract Summary:
The presentation will discuss the revised Universal Design in Healthcare Education instrument measuring healthcare educators’ perceptions towards inclusive teaching methods based in universal design (UD) and findings from the face/content validity and test-retest reliability. The interactive session also provides real-time UD application in the classroom, online, clinical, and simulation settings.

Content Outline:
1. Introduction

1. Professional healthcare educators are preparing a diverse workforce in response to the growing healthcare needs of a heterogeneous community.
2. At the postsecondary level, diversity extends beyond ethnicity and includes students with disabilities. Postsecondary healthcare educators need to put forth a concerted effort to address strategies for reducing barriers for underrepresented groups, like students with disabilities, in healthcare education and increasing their graduation rate from professional healthcare programs.
3. An approach to reducing barriers for students in healthcare academia is universal design (UD) which focuses on inclusive teaching approaches in the development of curricula and instructional delivery across teaching/learning settings.
4. UD is well known in other disciplines, but not in professional healthcare programs. The literature suggests the reasons UD has not been adopted by postsecondary healthcare educators are perceptions of UD and what constitutes inclusive teaching practices.
5. To date, no valid instrument exists to measure healthcare educators’ perceptions towards inclusive teaching methods based in UD. Assessing educators’ perceptions towards UD is the first step in designing and measuring the effectiveness of an educational intervention.

1. Body

1. Purpose: The specific aim of this presentation is to discuss the refinement of the Universal Design in Healthcare Education (UDinHE) instrument, face and content validity, and stable reliability indexes.
   1. The initial pilot and study of the UDinHE formerly known as the Inclusive Teaching Strategies in Nursing Education instrument showed promising results.
   2. The exogenous model fit the sample data and most scales had acceptable reliability indexes. However, the endogenous model fell slightly below established parameters (Levey, 2017).
   3. The revised instrument was broadened to include educators teaching in professional healthcare sciences.
2. Methods
   1. Instrument: The UDinHE instrument is a three-structured model of Knowledge of UD, System Support for UD, and Perceptions of UD based on Rodgers’ Diffusion of Innovation Theory (2003), along with a demographic questionnaire.
   2. UDinHE contains 33-items using a 5-pt Likert scale (strongly disagree to strongly agree) to assess healthcare educators’ perceptions towards UD.
   3. Content Experts: Content experts evaluated the revised instrument for assessed face and content validity.
   4. Design/Sample: A convenience sample at the primary investigator’s (PI) university assessed the internal consistency and stable reliability over a 2-week period.
3. Results
   1. A panel of nine postsecondary education experts in UD reestablished the face and content validity of the UDinHE.
   2. Internal consistency analysis revealed all subscales had a reliability coefficient (Cronbach’s alpha) greater than 0.70, except for the social system at 0.62 for the 22 paired surveys. The low alpha on the social system subscale may be linked to the timing of the study relative to the school year calendar.
   3. There was no significant differences between Time 1 (M = 2.56, SD = 0.51) and Time 2 (M = 2.57, SD = 0.52) (t = -0.26, p = 0.79, d= -0.06) or changes in mean scores indicating stability of the instrument over time.
   4. All correlations between subscales were statistically significant at p <.001 (two-tailed) meaning there is a strong relationship between the constructs.

III. Conclusion
1. The UDinHE instrument obtained face and content validity and demonstrated stable reliability.
2. The instrument provides a way to measure healthcare educators’ perceptions towards UD and practices reflective of inclusive teaching methods.
3. The UDinHE has the potential of assessing a program’s accessibility for students in relationship to disability law requirements. For this reason, the effectiveness of an educational intervention focusing on the adoption of UD by healthcare educators warrants future study.

First Primary Presenting Author

**Primary Presenting Author**

Janet A. Levey, PhD, RN, BC, CNE
Concordia University Wisconsin
Nursing
Associate Professor
Mequon WI
USA

**Professional Experience:** 2012-2015 — Assistant Professor at Concordia University Wisconsin, Mequon, WI 2015- Earned PhD in Nursing from Marquette University, Milwaukee, WI. 2016-Present—Promoted rank to Associate Professor at Concordia University Wisconsin, Mequon, WI Board Certified in Ambulatory Care Nursing by the American Nurses Credentialing Center and a Certified Nurse Educator by the National League for Nursing. Since 2015, published five manuscripts in peer-reviewed journals and made 16 presentations at national and international nursing and other inter-disciplinary related conferences. Received grants and awarded the Midwest Nursing Research Society Outstanding Dissertation Award and the Wisconsin Nurses Association Norma Lang Excellence in Nursing Research Award.

**Author Summary:** Dr. Levey earned her PhD in Nursing from Marquette University and committed to ensuring education and practice access for all students. Her research focus is on universal design for instruction and cultural diversity. She has disseminated her research at national/international conferences and in publications. Dr. Levey is an associate professor and received the Midwest Nursing Research Society Outstanding Dissertation Award and the Wisconsin Nurses Association Norma Lang Excellence in Nursing Research Award.

Second Author

Esteban Montenegro-Montenegro, MEd
Texas Tech University
Institute of Measurement, Methodology, Analysis and Policy (IMMAP)
Graduate Research Assistant
Texas Tech University
Lubbock TX
USA

**Professional Experience:** Candidate to Doctor in Educational Psychology, Research, Evaluation, Measurement, and Statistics Program (REMS), Texas Tech University, Lubbock, TX, Present. Master of Education with concentration in Research, Evaluation, Methods and Statistics (REMS), Texas Tech University, Lubbock, TX, August, 2017. Statistical analyst and psychometrics consultant, Stats Camp, operated by Yhat Enterprises and sponsored by the Institute for Measurement, Methodology, Analysis and Politics, Texas Tech University. Present.

**Author Summary:** Esteban is a PhD. student at College of Education in Texas Tech University. He is part of the program for Research, Evaluation, Methods, and Statistics (REMS). He has been consultant in
different projects related to psychometrics. His main interest is latent variable modeling and Bayesian approaches.