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Increasing BSN Student Affect Positively Towards Statistics

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Background

STAT-36

Schau & Emmioglou (2012, p. 86) "... examined the attitudes of about 2200 students enrolled in 101 sections of post-secondary introductory statistics service courses located across the United States. Using the Survey of Attitudes Toward Statistics-36, we assessed students' attitudes when they entered and left their courses, as well as changes in attitudes across their courses." The Affect scale assesses "students' positive and negative feelings concerning statistics" (Schau & Emmioglou, 2012, p. 87). Cronbach's alpha reliability estimates were .81 for the pre-test and .85 for the post-test. Their research investigation included 2209 participants whose pre-test Mean was 4.16 (s=1.12) and a post-test Mean of 4.30 (s=1.32).

ADQ

Hilty et al. (2018b,; Hilty, Hinze, & Clark, 2018a) report the development of the Affective Domain Questionnaire based on the Krathwohl, Bloom, and Masia's (1964) taxonomy.

Responding	
2.1	Acquiescence in responding
2.2	Willingness to respond
2.3	Satisfaction in response
Valuing	
3.1	Acceptance of a value
3.2	Preference of a value
3.3	Commitment
Organization	
4.1	Categorization of a value
4.2	Organization of a value system
Characterization by a value	
5.1	Generalized set
5.2	Characterization

KRATHWOHL et al . Definitions

Responding, the individual is perceived as responding regularly to the affective stimuli.

2.1 Acquiescence in responding, s/he is merely complying with expectations (e.g., at the request of his teacher).

2.2 Willingness to respond, s/he responds increasingly to an inner compulsion (e.g., has an interest in social problems broader than those of the local community).

2.3 Satisfaction in response, s/he responds emotionally as well (e.g., works with clay, especially in making pottery for personal pleasure).

Background (Cont'd)

KRATHWOHL et al . DEFINITIONS (Cont'd)

Valuing describe increasing internalization.

3.1 Acceptance of a value (e.g., continuing desire to develop the ability to write effectively and hold it more strongly),

3.2 Preference for a value (e.g., seeks out examples of good art for enjoyment of them to the level where s/he behaves so as to further this impression actively),

3.3 Commitment (e.g., faith in the power of reason and the method of experimentation).

Organization

4.1 Conceptualization of a value (e.g., to find out and crystallize the basic assumptions which underlie codes of ethics)

4.2 Organization of a value system (e.g., weighs alternative social policies and practices against the standards of public welfare).

Characterization

5.1 Generalized set (e.g., views all problems in terms of their aesthetic aspects, or readiness to revise judgments and to change behavior in the light of evidence).

5.2 Characterization (e.g., develops a consistent philosophy of life).

ADQ Psychometric Findings

Hilty et al. (2018b) using SPSS 25's exploratory principal axis factor analysis (EPFA) found three common factors accounting for 58% of the variance. The first factor combined the questions measuring the Krathwohl et al (1964) theoretical categories of 2.1, 2.2, 2.3, 3.1 (refer to the table in the first column). The second factor groups the questions measuring theoretical categories 3.2, 3.3, 3.4, 4.1, 4.2. The third common factor assembled the questions measuring the 5.1 and 5.2 categories. The coefficient alpha reliability estimates were greater than .80 (First Factor, .895; Second Factor, .931; Third Factor, .896).

Hilty, Hinze, & Clark (2018c) found the three ADQ common factors differentiated changes of affect across four assessments in an interprofessional educational intervention. All differences were significant at p=.001. Coefficient alpha reliability estimates ranged from .896 to .939 (factor 1), .878 to .954 (factor 2), and .889 to .950 (factor 3).

Methods

The participants were approximately 67 Bachelor of Science in Nursing (BSN) students in a traditional undergraduate program. The Affect scale of the STAT-36 and the ADQ common factors were used to measure affect. Hypothesis: There would be a difference in pre-test and post-test scores.

Results

Using SPSS 25, the dependent t-test found significant differences between the pre- and post-test scores for the STAT-36 Affect scale (p=.004). The descriptive statistics for the BSN students in this educational intervention were (pre-test $M = 4.21$, $s=1.54$; post-test $M = 4.62$, $s=1.224$) for the STAT-36 Affect scale. There were no significant differences among the ADQ three common factors for the pre- and post-test comparisons.

Conclusions

This preliminary investigation found significant changes in affect towards statistics for BSN students during a 16 week semester course. A replication will be implemented in the near future.

References

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