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Research Briefs from the Office of Research and Planning
Ronald Reagan Museum Pre-Post Assessment

***Overview*:** In fall 2010, the thirty-four students enrolled in the college study skills and strategies course (CHC-090) were invited to visit the Ronald Reagan Museum with their instructor. In an effort to evaluate student learning outcomes, an assessment was administered to collect student attitudes as perceived before and after the field trip.

***Methodology*:** A nine question pre-post assessment was developed to evaluate the student's attitude of critical thinking and engagement. Prior to and at the conclusion of the field trip students were asked to respond to the same nine questions to determine what affect the field trip had on the attitude as perceived by the students. Respondents used a seven-point scale, with anchors; 1-not at all true of me and 7-very true of me. The first 5 questions were related to Critical Thinking (CT), and the last four were developed by the course instructor.

The questions on critical thinking were taken and adapted from the Motivated Strategies for Learning Questionnaire (MSLQ). The critical thinking measure was designed to measure "…the degree to which students report applying previous knowledge to new situations in order to solve problems, reach decisions, or make critical evaluations…" (Pintrich, Smith, Garcia, & McKeachie, 1991, pp. 22). The critical thinking measure has been tested for reliability and validity and has been used in numerous studies (Bandalos, Finney, & Geske, 2003; Green, 2000; Pintrich, Smith, Garcia, & McKeachie, 1993).

Effect Size and Statistical Significance. The effect size statistic is commonly used in meta-analyses. A meta-analysis uses quantitative techniques to determine the average effect of a given technique. One method of interpreting effect size was developed by Jacob Cohen. Jacob Cohen defined "small," "medium," and "large" effect sizes. He explained that an effect size of .20 can be considered small, an effect size of .50 can be considered medium, and an effect size of .80 can be considered large. Effect size is calculated by dividing the difference of the two means by the pooled standard deviation. It is important to mention that the number of students in each group does not influence Effect Size; whereas, when statistical significance is calculated the number of students in each group does influence the significance level (i.e. "p" value being lower than .05). Accordingly, using Cohen as a guide, a substantial effect would be .20 or higher.

***Sample*:** The instrument was completed by a total of 24 students. Two of the respondents did not answer all of the questions in both the pre- and post-assessments.

***Findings*:** The field trip had a substantial (ES= .30) impact on the students attitude toward question 5, when a theory, interpretation, or conclusion is presented to me, I try to decide if there is good supporting evidence.

Questions 1, 4, 6, and 8 had a negative effect size, illustrating that student's perceived these statements were less true of themselves following the field trip than they did prior to the field trip. In addition, the field trip had a substantially (ES= -.20) negative impact on the students attitude toward Question 6, I feel like an important member of this class.

Reference:

Bandalos, D.L., Finney, S.J., & Geske, J.A. (2003). A model of statistics performance based on achievement goal theory. *Journal of Educational Psychology*, *95*, 604-616. Retrieved July 27, 2006 from the PsycARTICLES database.

Green A.L. (2000). The perceived motivation for academic achievement among African American college students. *Dissertation Abstracts International.* (UMI No. 9990378).

Pintrich, P. R., Smith, D. A. F., Garcia,T., & McKeachie, W. J. (1991). A manual for the use of the motivated strategies for learning questionnaire (MSLQ). *National Center for Research to Improve Postsecondary Teaching and Learning*. (ERIC Document ED338122)

Pintrich, P.R., Smith, D.A.F., Garcia, T., & McKeachie, W. (1993). Reliability and predictive validity of the motivated strategies for learning questionnaire (MSLQ). *Educational and Psychological Measurement*, *53*, 801-813.

Table 1: Means, Standard Deviations, Effect Size and 95% Confidence Intervals, and P Values for Pre/Post Assessment.

Question	Pre-Assessment			Post-Assessment			Effect Size & 95% CI Lower & Upper ES			P-Value
	Mean	N	SD	Mean	N	SD	ES	Lower	Upper	
1. I often find myself questioning things I hear or read to decide if I find them convincing (CT)	3.75	24	1.82	3.71	24	1.33	-0.03	-0.59	0.54	.857
2. I treat new material as a starting point and try to develop my own ideas about it (CT)	3.79	24	1.67	3.96	24	1.57	0.10	-0.46	0.67	.257
3. I try to play around with ideas of my own related to what I'm learning (CT)	4.09	22	1.77	4.32	22	1.73	0.13	-0.46	0.72	.329
4. Whenever I read or hear an assertion or conclusion, I think about possible alternatives (CT)	3.92	24	1.47	3.75	24	1.39	-0.12	-0.68	0.45	.517
5. When a theory, interpretation, or conclusion is presented to me, I try to decide if there is good supporting evidence (CT)	3.75	24	1.68	4.25	24	1.68	**0.30**	-0.28	0.86	.282
Total Questions 1-5 Critical Thinking (CT)	3.85	22	1.47	3.94	22	1.33	0.06	-0.53	0.65	.548
6. I feel like an important member of this class	4.50	22	1.85	4.14	22	1.73	**-0.20**	-0.79	0.39	.259
7. I think that everyone in this class has something important to contribute to the class	4.50	24	1.98	4.50	24	1.75	0.00	-0.57	0.57	.217
8. I think everyone in this class has something important to contribute to society	4.71	24	1.99	4.42	24	1.91	-0.15	-0.71	0.42	.221
9. I am excited about visiting various public places and trying new things	5.00	24	1.98	5.17	24	1.83	0.09	-0.48	0.65	.344