

**Office of Academic  
Planning and Assessment**

A Report of the Course Embedded

PHIL 2306: Contemporary Moral Issues Pre- to Post-Assessment

2019-2020

## **Description of Introduction to Philosophy Pre- to Post-Test Assessment**

Each fall and spring semester the a locally developed, pre- to post-test is administered within sections of PHIL 2306: Contemporary Moral Issues. The instrument consists of 25 multiple choice questions and is administered to students enrolled in those courses at the start and end of each semester. As the instrument was developed by faculty with expertise in teaching and assessing these concepts, it is assumed that the instrument has content related validity (Banta & Palomba, 2015). Additionally, as this test was embedded within normal sections of PHIL 2306, the student scores represent authentic student work (Banta & Palomba, 2015; Kuh et al. 2015).

The student data presented within this report reflect student performance regarding the Texas Higher Education Coordinating Board's Core Learning Objectives of Social Responsibility and Personal Responsibility (THECB, 2020). The THECB (2020) defines these concepts as follows:

- Social Responsibility – intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities
- Personal Responsibility – ability to connect choices, actions and consequences to ethical decision-making

These data should therefore be used in conjunction with other data to fully understand student knowledge and ability with regards to these Core Learning Objectives.

## **Methodology**

A total of 298 students took the pre-test and a total 161 students took the post-test for all sections of PHIL 2306: Contemporary Moral Issues for the 2019-2020 academic year; however not all student test scores were used for analysis. In order to determine whether student performance increased from pre-to-post, a dependent samples *t*-test was used for analysis. Student SamID's were collected along with student scores in order to identify each student's score on both the pre- and post-test. A total of 121 students provided their SamID's and took both the pre- and post-tests. All statistical analysis was therefore conducted on only those students for whom both pre- and post-test scores could be identified. In order to further disaggregate the results, the data was also analyzed separately for face-to-face and online students. The 2019-2020 academic year brought an additional challenge due to the COVID-19 crisis. Midway through the spring 2020 semester, SHSU entered a period of emergency remote instruction. Therefore, student results for both the fall and spring semesters were also analyzed individually in order to understand what differences may have existed in the TACTS scores for students enrolled in fall and spring semesters.

Prior to conducting inferential statistics to determine whether differences were present between the students' pre- to post-test scores, checks were conducted to determine the extent to which these data were normally distributed. Half of the standardized skewness and kurtosis coefficients were within the limits of normality of +/-3 for the face-to-face and combined populations, while all four were within the limits of normality for the online population (Onwuegbuzie & Daniel, 2002). Therefore, parametric dependent samples *t*-tests were used for all statistical analysis. Readers are directed to Table 1 for a breakdown of these results.

Table 1

*Standardized Skewness and Kurtosis Values for Student Pre- and Post-test Scores*

Student Population	Standardized Skewness Coefficient	Standardized Kurtosis Coefficient
Face-to-Face Students		
Pre-Test	-0.10	0.06
Post-Test	-4.45	7.14
Online Students		
Pre-Test	-2.54	0.97
Post-Test	-0.77	-0.74
All Students		
Pre-Test	-1.47	0.53
Post-Test	-4.09	5.42

**Results**

A parametric dependent samples *t*-test revealed a statistically significant difference between the pre-to-post scores for students enrolled in face-to-face sections of PHIL 2306: Contemporary Moral Issues for the 2019-2020 academic year,  $t(84) = -9.68, p < .001$ . This difference represented a large effect size (Cohen's *d*) of 1.14 (Cohen, 1988). The average student score increased from 58.49% to 72.61%, for an increase of 14.12%. This equated to an average increase of 3.53 questions answered correctly from pre-to-post. Readers are directed to Table 2 for a breakdown of these results.

Table 2

*Descriptive Statistics for Student Pre- and Post-Scores on Course-Embedded Test in PHIL 2306: Contemporary Moral Issues for 2019-2020 (Face-to-Face)*

Test Version	<i>M</i>	<i>SD</i>	<i>M</i> %	<i>SD</i> %
Pre-test Scores	14.62	2.77	58.49	11.09
Post-test Scores	18.15	3.39	72.61	13.54

*Note.* The number of students was 85.

A parametric dependent samples *t*-test revealed a statistically significant difference between the pre-to-post scores for students enrolled in online sections of PHIL 2306: Contemporary Moral Issues for the 2018-2019 academic year,  $t(35) = -4.39, p < .001$ . This difference represented a moderate effect size (Cohen's *d*) of 0.61 (Cohen, 1988). The average student score increased from 61% to 69.11%, for an increase of 8.11%. This equated to an average increase of 2.03 questions answered correctly from pre-to-post. Readers are directed to Table 3 for a breakdown of these results.

Table 3

*Descriptive Statistics for Student Pre- and Post-Scores on Course-Embedded Test in PHIL 2306: Contemporary Moral Issues for 2019-2020 (Online)*

Test Version	<i>M</i>	<i>SD</i>	<i>M %</i>	<i>SD %</i>
Pre-test Scores	15.25	3.50	61.00	14.00
Post-test Scores	17.28	3.12	69.11	12.49

*Note.* The number of students was 36.

A parametric dependent samples *t*-test revealed a statistically significant difference between the pre-to-post scores for all students enrolled in sections of PHIL 2306: Contemporary Moral Issues for the 2019-2020 academic year,  $t(120) = -10.40, p < .001$ . This difference represented a large effect size (Cohen's *d*) of 0.97 (Cohen, 1988). The average student score increased from 59.24% to 71.57%, for an increase of 12.33%. This equated to an average increase of 3.08 questions answered correctly from pre-to-post. Readers are directed to Table 4 for a breakdown of these results.

Table 4

*Descriptive Statistics for Student Pre- and Post-Scores on Course-Embedded Test in PHIL 2306: Contemporary Moral Issues for 2019-2020 (All Students)*

Test Version	<i>M</i>	<i>SD</i>	<i>M %</i>	<i>SD %</i>
Pre-test Scores	14.81	3.01	59.24	12.03
Post-test Scores	17.89	3.32	71.57	13.28

*Note.* The number of students was 121.

In order to help understand the potential impact of the transition to remote instruction in the spring 2020 semester, PHIL 2306 from the fall and spring semesters were also examined separately. This examination was only done for face-to-face students as, due to a data collection issue in the fall on the part of SHSU Online, the only available online student data were from the spring semester. This examination did reveal meaningful differences in student learning for face-to-face from the fall to spring semesters.

A parametric dependent samples *t*-test revealed a statistically significant difference between the pre-to-post scores for students enrolled in face-to-face courses during the fall 2019 semester  $t(49) = -9.74, p < .001$ . This difference represented a large effect size (Cohen's *d*) of 1.43 (Cohen, 1988). The average student score increased from 58.64% to 73.68%, for an increase of 15.04%. This equated to an average increase of 3.76 questions answered correctly from pre-to-post. Additionally, a parametric dependent samples *t*-test for students enrolled in face-to-face courses in the spring semester also revealed a statistically significant difference  $t(34) = -4.59, p < .001$ . This difference represented a large effect size (Cohen's *d*) of 0.87 (Cohen, 1988). The average student score increased from 58.29% to 71.09%, for an increase of 12.8%. This equated to an average increase of 3.2 questions answered correctly from pre-to-post. The reader is directed to Table 5 for a breakdown of these results.

Table 5

*Descriptive Statistics for Student Pre- and Post-Scores on Course-Embedded Test in PHIL 2306: Contemporary Moral Issues for 2019-2020 by Semester*

	<i>M</i>	<i>SD</i>	<i>M %</i>	<i>SD %</i>
Fall 2019 Semester (n = 50)				
Pre-Test Scores	14.66	2.67	58.64	10.68
Post-Test Scores	18.42	2.58	73.68	10.32
Spring 2020 Semester (n = 35)				
Pre-Test Scores	14.57	2.95	58.29	11.81
Post-Test Scores	17.77	4.30	71.09	17.19

Additional important information regarding student performance can also be gained through an item analysis of student pre- and post-test performance on individual test questions for each of the examined student populations. This item analysis for the fall 2019 semester revealed that students in face-to-face sections scored statistically significantly higher on 11 of the 25 test questions (Questions 2, 5, 7, 8, 9, 12, 17, 20, 21, 24, 25) from pre-to-post. Furthermore, the spring 2020 item analysis revealed that students in face-to-face sections scored statistically significantly higher on 7 of the 25 test questions (Questions 5, 7, 8, 9, 12, 24, 25) from pre-to-post. Readers are directed to Tables 6 and 7 for a complete breakdown of item analysis data for face-to-face students.

Table 6

*Percentage of Face-to-Face Students Correctly Answering Pre- and Post-Test Questions for Fall 2019*

	Pre-Test	Post-Test	Mean Difference	Cohen's <i>d</i>
Question 1	64%	80%	16%	
Question 2	82%	96%	14%*	0.62
Question 3	62%	56%	-6%	
Question 4	90%	92%	2%	
Question 5	50%	84%	34%***	0.77
Question 6	80%	80%	0%	
Question 7	10%	46%	36%***	0.87
Question 8	16%	40%	24%**	0.55
Question 9	36%	78%	42%***	0.93
Question 10	26%	40%	14%	
Question 11	68%	66%	-2%	
Question 12	28%	80%	52%***	1.21
Question 13	32%	50%	18%	
Question 14	72%	58%	-14%	
Question 15	98%	98%	0%	
Question 16	42%	28%	-14%	
Question 17	50%	84%	34%***	0.77

Question 18	82%	84%	2%	
Question 19	66%	80%	14%	
Question 20	74%	92%	18%*	0.49
Question 21	60%	86%	26%**	0.60
Question 22	80%	86%	6%	
Question 23	86%	96%	10%	
Question 24	36%	70%	34%***	0.72
Question 25	76%	92%	16%*	0.44

Note.  $n = 50$ . \* significant at  $p \leq 0.05$ ; \*\* significant at  $p \leq 0.01$ ; \*\*\* significant at  $p \leq 0.001$ . Cohen's  $d$  from 0.2 – 0.49 indicate a small effect size, 0.50-0.79 indicate a moderate effect size, and 0.80 and higher indicate a large effect size (Cohen, 1988).

Table 7

*Percentage of Face-to-Face Students Correctly Answering Pre- and Post-Test Questions for Spring 2020*

	Pre-Test	Post-Test	Mean Difference	Cohen's $d$
Question 1	66%	77%	11%	
Question 2	74%	89%	15%	
Question 3	54%	49%	-5%	
Question 4	77%	86%	9%	
Question 5	49%	83%	34%**	0.76
Question 6	77%	63%	-14%	
Question 7	9%	46%	35%***	0.93
Question 8	26%	49%	23%*	0.48
Question 9	40%	66%	26%*	0.53
Question 10	26%	31%	5%	
Question 11	71%	63%	-8%	
Question 12	23%	86%	63%***	1.61
Question 13	34%	54%	20%	
Question 14	63%	77%	14%	
Question 15	89%	91%	2%	
Question 16	40%	51%	11%	
Question 17	69%	66%	-3%	
Question 18	71%	80%	9%	
Question 19	71%	63%	-8%	
Question 20	94%	89%	-5%	
Question 21	57%	77%	20%	
Question 22	94%	86%	-8%	
Question 23	94%	91%	-3%	
Question 24	23%	77%	54%***	1.27
Question 25	66%	89%	23%*	0.56

Note.  $n = 35$ . \* significant at  $p \leq 0.05$ ; \*\* significant at  $p \leq 0.01$ ; \*\*\* significant at  $p \leq 0.001$ . Cohen's  $d$  from 0.2 – 0.49 indicate a small effect size, 0.50-0.79 indicate a moderate effect size, and 0.80 and higher indicate a large effect size (Cohen, 1988).

An item analysis revealed that students in online sections scored statistically significantly higher on 6 of the 25 test questions (Questions 2, 5, 7, 9, 12, 16) from pre-to-post. Readers are directed to Table 8 for a complete breakdown of item analysis data for online students.

Table 8

*Percentage of Online Students Correctly Answering Pre- and Post-Test Questions*

	Pre-Test	Post-Test	Mean Difference	Cohen's $d$
Question 1	58%	61%	3%	
Question 2	83%	97%	14%*	0.48
Question 3	47%	56%	9%	
Question 4	92%	86%	-6%	
Question 5	58%	94%	36%***	0.92
Question 6	78%	83%	5%	
Question 7	31%	56%	25%**	0.51
Question 8	31%	17%	-14%	
Question 9	39%	72%	33%**	0.70
Question 10	39%	25%	-14%	
Question 11	67%	56%	-11%	
Question 12	33%	58%	25%*	0.51
Question 13	36%	42%	6%	
Question 14	72%	86%	14%	
Question 15	94%	94%	0%	
Question 16	47%	75%	28%**	0.59
Question 17	47%	61%	14%	
Question 18	78%	81%	3%	
Question 19	72%	67%	-5%	
Question 20	72%	81%	9%	
Question 21	53%	64%	11%	
Question 22	78%	83%	5%	
Question 23	89%	94%	5%	
Question 24	50%	67%	17%	
Question 25	81%	72%	-9%	

Note.  $n = 36$ . \* significant at  $p \leq 0.05$ ; \*\* significant at  $p \leq 0.01$ ; \*\*\* significant at  $p \leq 0.001$ . Cohen's  $d$  from 0.2 – 0.49 indicate a small effect size, 0.50-0.79 indicate a moderate effect size, and 0.80 and higher indicate a large effect size (Cohen, 1988).

## References

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