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# Leadership in Online Education: Does it Matter?

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## Abstract

This study was completed using a sample of online students at a university in North Texas. The study explored leadership style as a predictor in students' ratings of overall teaching effectiveness, learning, breadth, examinations, and assignments. A Pearson product-moment correlation was conducted to examine the inter-correlations between the leadership styles, the inter-correlations between the four SEEQ factors of Learning, Breadth, Examinations, and Assignments, and the relationship between the four SEEQ factors and the leadership styles. Transformational leadership was highly correlated with transactional leadership and passive avoidant leadership style was negatively correlated with transactional leadership and transformational leadership. The inter-correlation of the SEEQ factors showed that the four factors were highly correlated. Learning and transformational leadership were positively correlated. Breadth and transformational leadership were positively correlated. Examinations and transformational leadership were positively correlated. Assignments and transformational leadership were positively correlated. Breadth and transactional leadership were positively correlated. Examinations and transactional leadership were positively correlated. Assignments and transactional leadership were positively correlated. Passive Avoidant leadership negatively correlated with all four dimensions of the SEEQ. Multiple regression indicated that transformational leadership was a predictor all 4 dimensions – Learning, Breadth, Examinations, and Assignments. Transactional leadership was a predictor for Breadth and Examinations. Student age was a predictor for three dimensions of the *SEEQ* – Learning, Examinations, and Assignments.

*Keywords: Online Education, Leadership Style, Student Evaluation of Educational Quality(SEEQ), Online Teaching Pedagogy, Multi-factor Leadership Questionnaire(MLQ), Education Leadership, Transformational Leadership, Teaching Effectiveness*

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## Introduction

“Online education has generated tremendous excitement both inside and outside higher education” (Volery & Lord, 2000, p. 216) prompting academic leaders to reexamine factors that can contribute to teaching quality and effectiveness in a technological environment. Research has revealed continued growth in online learning programs at for-profit and private institutions in the last decade (Allen & Seaman, 2015) partly due to the need to remain a competitive force in the industry. A Babson Research Survey conducted by Allen and Seaman (2015) revealed that the “proportion of academic leaders who report that online learning is critical to their institution’s long term strategy has grown from 48.8% in 2002 to 70.8% in 2015” (p. 4). This persistent surge in online education has helped institutions expand access and provide additional learning opportunities at a distance, in some instances internationally, allowing them to have early

insight into and capitalize on promising market opportunities (Volery & Lord, 2000).

Consequently, this surge in diverse audiences and the increased availability of online education does not come without challenges that may influence teaching quality and effectiveness. Reexamining the overall method or practice of teaching in the online format has been explored as one approach to improving teaching effectiveness in online education (Pelz, 2010; Crawford-Ferre & Wiest, 2012; Kop, Fournier, & Mak, 2001). “Pedagogical issues include the identification of learning goals, philosophical changes in teaching and learning, re-conceptualization of the teacher’s role, evaluation of student and instructor, and the stimulation of interactivity”(Schrum,1998, p. 56). One area that’s gaining attention as a means of managing the online classroom, but has minimal empirical research regarding its influence on teaching effectiveness in online education, is professor leadership style.

## Literature Review

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Utilizing the behaviors of transformational, transactional, and passive avoidant leadership styles as described in the *Multifactor Leadership Questionnaire* by Bass (1985), Lowe, Kroeck & Sivasubramaniam (1996) conducted a meta-analysis on leadership and its relationship to organizational measures of effectiveness. Correlational results of combined published and unpublished studies ( $k = 111$ ,  $N = 33,188$ ) indicated that the "association between leadership style and effectiveness were higher for transformational scales (.71, .61, .60) than for transactional scales (.41, .05)" ( $p < .001$ ), with *Charisma* correlating most highly with leader effectiveness for all types of criteria. *Management-by-Exception*, on the other hand, exhibited the lowest correlation with effectiveness. The means for the transformational scales of *Charisma* (2.52), *Individualized Consideration* (2.50), and *Intellectual Stimulation* (2.48) were found to be higher than the means of the transactional scales of *Contingent Reward* (1.83) and *Management-by-Exception* (2.32) indicating that transformational behaviors were more frequently observed than transactional behaviors across all studies. Within the same meta-analysis, Lowe et al. (1996) investigated the relationship between leadership style and effectiveness in public versus private organizations. Correlational analysis indicated that transformational leadership behaviors were more commonly observed in public organizations than in private organizations. Leaders exercise charisma most often in public organizations ( $k = 23$ ,  $N = 3,670$ ,  $r_c = .74$ ,  $p < .01$ ) over private ( $k = 23$ ,  $N = 2,257$ ,  $r_c = .59$ ,  $p < .01$ ). Individualized consideration was more prevalent in public organizations ( $k = 22$ ,  $N = 3,483$ ,  $r_c = .63$ ,  $p < .01$ ) than in private organizations ( $k = 22$ ,  $N = 2,271$ ,  $r_c = .54$ ,  $p < .01$ ). Intellectual Stimulation was utilized more in public organizations ( $k = 23$ ,  $N = 3,483$ ,  $r_c = .65$ ,  $p < .01$ ) over private ( $k = 23$ ,  $N = 2,398$ ,  $r_c = .47$ ,  $p < .01$ ).

Leadership style has been shown to be effective in most industries and although there's limited empirical research in online education, investigators have examined its influence in traditional classrooms and in online environments. Research has indicated that leadership style significantly influences teaching effectiveness. Bolkan and Goodboy (2009) administered the *Multifactor Leadership Questionnaire* (Bass, 1985), the *Class Participation Scale* (Fassinger, 1995b), the *Revised Cognitive Learning Indicators Scale* (Frymier & Houser, 1999), the *Affective Learning Scale* (McCroskey, Richmond, Plax, & Kearney, 1985), the *Student Motivation Scale* (Richmond, 1990), the *Source Credibility Scale* (McCroskey & Teven, 1999), and the *Student Communication Satisfaction Scale* (Goodboy & Martin, 2006) to 165 undergraduate students enrolled in one of eight introductory or upper level communication courses at a mid-sized Eastern university. The results of the Pearson Product-Moment correlation revealed moderate to strong positive relationships between the components of transformational leadership and the various instructional outcomes - cognitive learning, affective learning, state motivation, communication satisfaction, student participation and instructor credibility (accounting for between 12% and 71% of the variance). Pounder (2008) administered the MLQ 5X Short Form and SET to 363 final-year students of the BBA program at a Hong Kong University. Data was analyzed using bivariate correlation analysis. The overall results of the correlation analysis indicated that scores on each of the transformational classroom leadership scales were significantly and positively correlated with scores on each of the classroom leadership outcome scales - Extra Effort, Effectiveness, and Satisfaction. Spearman's rho correlations ranged from 0.29 to 0.47 (0.01

significance level) for the study overall. Eshraghi, Harati, Ebrahimi, & Nasiri (2011) administered Bass and Avolio's *Multifactor Leadership Questionnaire* (MLQ) to 57 managers of physical education offices in Isfahan Province, Iran. The results of correlation coefficient showed that there is a significant relationship between transformational leadership and leadership outcomes at  $p < 0.01$  significance level ( $r = 0.867$ ) indicating that the more transformational a leader is the better the leadership outcomes. Bogler et al. (2013) administered the MLQ to 427 students enrolled in 29 large academic courses led by instructors in web-based instructional environments at Open University. Passive leadership correlated negatively with all measures of satisfaction - general satisfaction, task satisfaction, and social satisfaction. Facets comprising transformational leadership correlated positively with all three measure of satisfaction - general satisfaction, task satisfaction, and social satisfaction. Facets comprising transactional leadership positively correlated with all three measures of satisfaction - general satisfaction, task satisfaction, and social satisfaction. Leithwood & Jantzi (2006) analyzed data from a larger 4-year evaluation of England's National Literacy and Numeracy Strategies to test the effects of a school-specific model of transformational leadership on teachers (motivation, capacities, and work settings), their classroom practices, and gains in student achievement. Their results indicated that transformational leadership had very strong direct effects on teachers' work settings and motivation with weaker but still significant effects on teachers' capacities. Secondly, transformational leadership had a moderate and significant effect on teachers' classroom practices. Leadership, along with teacher motivation, capacity, and work setting explained approximately 25% to 35% of the variation in teachers' classroom practices.

### Leadership and Learning

In regards to Learning and Leadership, overall, leadership plays a significant role in student learning. Brown and Posner (2001) administered the LTI, which measures the frequency of leadership behaviors, and LPI, which measures how they learn, to a managerial sample of 312 participants. They examined leadership in relation to learning tactics - Action, Thinking, Feeling, and Accessing Others. The strongest correlation to leadership was "Thinking". Results of a study by Chang and Lee (2007) indicated that leadership has a significant positive effect on the operation of a learning organization. Collaborative leadership impacted growth in student learning indirectly through building the school's capacity for academic improvement. In a study by Harrison (2011), transformational leadership behaviors had a stronger relationship with student cognitive learning than transactional leadership behaviors in online courses ( $\beta = .50$ ,  $p < .001$ ). Additionally, instructor transformational leadership behaviors will have a stronger relationship with student affective learning than transactional leadership behaviors in online courses.

### Leadership and Breadth

In a study by Leithwood (1993) transformational leadership had significant total effects on all but one initiative (curriculum integration) and significant direct effects on three (teacher in-service, school-community relations, core curricula). Moolenaar 's (2010) research indicated that the more principals displayed transformational leadership behavior in the form of building a shared vision, considering individual teachers' feelings and needs, and intellectually stimulating the teachers, the more their team

was characterized by a willingness to take risks to improve the school by developing and implementing new knowledge and practices ( $\beta = .146, p < .001$ ). In a study by Leithwood and Jantzi (2008), leader's collective efficacy (LCE) was strongly related to developing people and managing the instruction program. Leader's self-efficacy (LSE) had a strong relationship with managing the instructional program followed by developing people.

### **Leadership and Examinations**

In a study by Wooderson-Perzan and Lunenburg (2001), their findings did not support a relationship between the leadership factors of the superintendents and Texas Assessment of Academic Skills scores. Dahar, Faize, Niwaz, Hussain, and Zaman (2010) conducted a study utilizing longitudinal data of academic achievement of the students collected through 'result sheet'. Results of the study indicated that autocratic leadership creates tension in the school and lowers down the academic achievement. Democratic leadership style produces the higher level of academic achievement. Lower level of academic achievement is achieved with laissez faire leadership styles.

### **Leadership and Assignments**

Marks and Printy (2003) conducted a study investigating transformational leadership and instructional leadership at 24 nationally selected restructured schools. The first analysis addresses the relationship between transformational leadership and shared instructional leadership in the sample schools. When transformational and shared instructional leadership coexist in an integrated form of leadership, the influence on school performance, measured by the quality of its pedagogy and the achievement of its students, is substantial

## **Methods**

### **Participants**

Participants in the study were students attending a medium sized university in Denton, Texas. The sample ( $N = 100$ ) included undergraduate, graduate, and post graduate students in wholly online programs and students who were permitted to finish their programs online. Survey Monkey was used to design and distribute the survey. Students were emailed the informed consent, MLQ Short Form, questions that addressed four of the nine dimensions of the SEEQ - Learning, Breadth, Examinations, and Assignments, along with a demographic questionnaire to gather information regarding student age, student gender, student race/ethnicity, student class level, student enrollment status, professor gender, student comfort level with technology and GPA. Surveys were distributed at the end of the Spring 2016 semester and during the mid and end of the Summer 2016 semester.

### **Instruments**

The Student Evaluation of Educational Quality (SEEQ), developed by Herbert W. Marsh of the University of Western Sydney, was used to obtain student feedback on teaching quality and effectiveness "Factor analytic support for the SEEQ scales is particularly strong" (Marsh, 2007, p. 322). "The factor structure of SEEQ has been replicated in many published studies, but the most compelling support is provided by Marsh and Hocevar (1991a)" (Marsh, 2007, p. 322) "Starting with an archive of 50,000 sets of class-average ratings (reflecting responses to 1 million SEEQ surveys), they defined 21 groups of classes that differed in terms of course level (undergraduate/graduate), instructor rank (teaching assistant/regular faculty), and academic discipline"(Marsh, 2007, p. 322). "The 9 a priori SEEQ factors were identified in each of 21 separate factor analyses. The average correlation between factor scores based on each separate analysis and factor scores based on the total sample was over .99"(Marsh, 2007, p. 322). The evaluation factors are learning, enthusiasm, organization, group interaction, individual rapport, breadth, examinations, assignments, and overall teaching effectiveness. For this study, questions related to learning, breadth, examinations, assignments, and overall teaching effectiveness were the only dimensions included in the survey as they seemed to be more applicable to an online environment. The Multifactor Leadership Questionnaire (MLQ Short Form) by Bass & Avolio was used to measure the transformational, transactional, and passive avoidant leadership styles. It is a well-established, extensively researched and validated instrument used in thousands of research programs, doctoral dissertations, and master's theses, along with several constructive outcomes for transformational leadership. It's a 45 item questionnaire with a 0-4 likert scale ranging "not at all" to "frequently, if not always. Items 1-36 assess the Transformational, Transactional, and Passive Avoidant styles of leadership while questions 37-45 assess the Outcomes of Leadership – Effectiveness, Extra Effort and Satisfaction. It has been extensively researched and validated and has been used in thousands of research programs, doctoral dissertations, and master's theses, along with several constructive outcomes for transformational leadership. In order to evaluate aspects of reliability, Cronbach's alpha was used to measure the internal consistency of transformational, transactional, and passive avoidant leadership styles. Reliability for transformational was  $\alpha = .959$ , transactional ( $\alpha = .733$ ), and passive avoidant ( $\alpha = .808$ ).

### **Data analysis**

Descriptive statistics were used to illustrate the frequency of data provided by the participants. Additional statistical analysis included a correlation analysis to examine the relationship between the four SEEQ dimensions – learning, breadth, examinations, and assignments and the professor leadership styles – transformational, transactional, and passive avoidant. Correlational analysis was also used to examine the inter-correlations of the SEEQ dimensions and the inter-correlations of the leadership styles. Multiple regression was used to investigate the predictors of the dependent variable based on the available independent variables. For significant categorical variables, ANOVA and Post-Hoc were performed.

## **Results**

Correlations

Pearson product-moment correlations were conducted to measure inter-correlations between transformational, transactional, and passive avoidant leadership styles, the inter-correlations between the SEEQ factors, and the strength of the linear association between the leadership styles and four dimensions of the SEEQ. The results indicated a positive correlation between transactional and transformational leadership styles ( $r = .653, p < .01$ ). Passive avoidant leadership was negatively correlated with both transformational leadership and transactional leadership styles ( $r = -.510, p < .01$ ) and ( $r = -.140$ ), respectively. The results of the inter-correlations between the SEEQ factors of Learning, Breadth, Examinations, and Assignments indicated that Learning was highly correlated with Breadth ( $r = .788, p < .01$ ), Examinations ( $r = .779, p < .01$ ), and Assignments ( $r = .753, p < .01$ ). Breadth was highly correlated with Examinations ( $r = .882, p < .01$ ) and Assignments ( $r = .726, p < .01$ ). Examinations was highly correlated with Assignments ( $r = .701, p < .01$ ).

The results of the Pearson product-moment correlations between SEEQ factors and the leadership styles indicated a positive correlation between Learning and Transformational leadership ( $r = .573, p < .001$ ). Breadth and Transformational leadership were positively correlated ( $r = .643, p < .001$ ). Examinations and Transformational leadership were positively correlated ( $r = .704, p < .001$ ). Assignments and Transformational leadership were positively correlated ( $r = .511, p < .001$ ). Breadth and Transactional leadership were positively correlated ( $r = .231, p < .05$ ). Examinations and Transactional leadership were positively correlated ( $r = .298, p < .001$ ). Assignments and Transactional leadership were positively correlated ( $r = .274, p < .001$ ). Passive Avoidant leadership was negatively correlated with all four dimensions of the SEEQ. Learning and Passive Avoidant were negatively correlated ( $r = -.327, p < .001$ ). Breadth and Passive Avoidant were negatively correlated ( $r = -.404, p < .001$ ). Examinations and Passive Avoidant were negatively correlated ( $r = -.488, p < .001$ ). Assignments and Passive Avoidant were negatively correlated ( $r = -.313, p < .001$ ).

	TL	TA	PA	Learning	Breadth	Examinations	Assignments
TL							
TA	.653**						
PA	-.510**	-.140					
Learning	.573**		-.327**				
Breadth	.643**	.231*	-.404**	.788**			
Examinations	.704**	.298**	-.488**	.779**	.882**		
Assignments	.511**	.274**	-.313**	.753**	.726**	.701**	

Multiple Regression Analysis

We examined a hypothesis that there is no relationship between professor’s leadership style – transformational, transactional, passive avoidant - and overall teaching effectiveness when controlling for student age, student race/ethnicity, student enrollment status, student class level, professor gender, student comfort level with technology, and student GPA. Thirteen students answered all three responses that measure overall teaching effectiveness as listed below:

1. Compared with other courses, I would say this course is:

2. Compared with other instructors, I would say this instructor is:
3. As an overall rating, I would say this instructor is:

Due to the lack of survey responses for these questions that address overall teaching effectiveness, the relationship between professor leadership style and the criterion variable, overall teaching effectiveness could not be effectively determined.

We examined a hypothesis that there is no relationship between professor’s leadership style – transformational, transactional, passive avoidant - and Learning when controlling for student age, student race/ethnicity, student enrollment status, student class level, professor gender, student comfort level with technology, and student GPA. Table 1 summarizes the results of the multiple regression analysis. Student age, transformational leadership and transactional leadership positively and significantly correlated with the criterion variable. Student age was significant and accounted for 13% of the variance in predicting student satisfaction with learning ( $\Delta R^2 = .13, p = .000$ ). Transformational leadership was significant and accounted for an additional 25% of the additional variance in predicting student satisfaction with Learning ( $\Delta R^2 = .25, \beta = .511, p = .000$ ). The strong beta indicates that the more transformational students perceived their professors to be, the higher they rated them on Learning. Transactional leadership, while holding the other variables constant, was significant and accounted for an additional 5 % of the variance in predicting student satisfaction with Learning ( $\Delta R^2 = .05, \beta = .30, p = .011$ ). The beta indicates that the more transactional students perceived their professors to be, the higher they rated their professors in the SEEQ dimension of Learning.

**Table 1: Model Summary for Student Age, Transformational Leadership and Transactional Leadership**

Model	R	R Square	Beta	R Square Change	Partial	Sig
1	.356(a)	.127		.127		.006
2	.615(b)	.379	.511	.252	.537	.000
3	.657(c)	.432	.297	.053	.293	.011

Predictors: a. Student Age b. Student Age, Transformational Leadership c. Student Age, Transformational Leadership, Transactional Leadership

For the significant categorical variable student age, a one-way analysis of variance (ANOVA) was calculated to determine if there were differences in the means of the age groups. There was model significance,  $F(2, 97) = 8.486, p = .000$ , indicating at least one significant difference among the means. Since the F-test does not indicate which pairs are significantly different, a post hoc comparison was conducted to examine the difference between variables.

**Table 2: One-Way Analysis of Variance for Student Age and Learning**

Sum of Squares	df	Mean Square	F	Sig
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Between Groups	13.588	2	6.794	8.456	.000
Within Groups	77.652	97	.801		
Total	91.240	99			

Scheffé post-hoc comparisons showed that there was a difference between the 18-24 and 25-34 groups with a significance of  $p = .001$ . The significant difference was higher for the 25-34 group ( $M = 4.76$ ) than the 18-24 group ( $M = 3.95$ ). Null hypothesis 2 was rejected.

**Table 3:** Post-Hoc Scheffe results for Student Age and Learning

(I) Student Age	(J) Student Age	Mean Difference (I-J)	Std. Error	Sig.	95 % Confidence Interval	
					Lower Bound	Upper Bound
18-24	25-34	-.811*	.204	.001	-1.32	-.30
	55 and up	-.553	.267	.123	-1.22	.11
25-34	18-24	.811*	.204	.001	.30	1.32
	55 and up	.259	.291	.675	-.47	.98
55 and up	18-24	.553	.267	.123	-.11	1.22
	25-34	-.259	.291	.675	-.98	.47

\* The mean difference is significant at the 0.05 Level.

We examined the hypothesis that there is no relationship between professor's leadership style (transformational, transactional, and passive avoidant) and Breadth when controlling for student age, student race/ethnicity, student enrollment status, student class level, professor gender, student comfort level with technology, and student GPA. Table 4 summarizes the results of the multiple regression analysis. Transformational leadership was significant and accounted for 38% of the additional variance alone in predicting student satisfaction with Breadth ( $\Delta R^2 = .38, \beta = .614, p = .000$ ). The strong beta indicates that the more transformational students perceived their professors to be, the higher they rated their professors on Breadth. Transactional leadership was significant and added an additional 8% of the variance in predicting student satisfaction with Breadth ( $\Delta R^2 = .08, \beta = .376, p = .001$ ). The beta indicates that the more transactional students perceived their professors to be, the higher they rated their professors in the SEEQ dimension of Breadth. Null hypothesis 3 was rejected.

**Table 4:** Model Summary for Transformational and Transactional Leadership

Model	R	R Square	Beta	R Square Change	Partial	P-Value
1	.614a	.376	.614	.376		.000
2	.677	.459	.368	.083	.364	.001

Predictors: a. Transformational Leadership b. Transformational Leadership, Transactional Leadership

We examined a hypothesis that there is no relationship between professor's transactional leadership style (transformational, transactional, and passive avoidant) and Examinations when controlling for student age, student race/ethnicity, student enrollment status, student class level, professor gender, student comfort level with technology, and student GPA. Student age was significant and accounted for 9% of the variance in predicting student satisfaction with Examinations ( $\Delta R^2 = .09, p = .026$ ). Transformational leadership was significant and accounted for an additional 37% of the variance in predicting student satisfaction with Examinations ( $\Delta R^2 = .37, \beta = .62, p = .000$ ). The strong beta indicates that the more transformational students perceived their professors to be, the higher they rated them on Examinations. Transactional leadership was significant and accounted for an additional 4% of the variance in predicting student satisfaction with Examinations ( $\Delta R^2 = .04, \beta = .28, p = .023$ ). The beta indicates that the more transactional students perceived their professors to be, the higher they rated their professors in the SEEQ dimension of Examinations.

**Table 5:** Model Summary for Student Age, Transformational and Transactional leadership

Model	R	R Square	Beta	R Square Change	Partial	P-Value
1	.305a	.093		.093		.026
2	.681b	.464	.620	.371	.640	.000
3	.708c	.501	.247	.037	.262	.023

Predictors: a. Student Age b. Student Age, Transformational Leadership c. Student Age, Transformational, Transactional Leadership

For the significant categorical variable student age, a one-way analysis of variance (ANOVA) was calculated to determine if there were differences in the means of the age groups. There was significance,  $F(2, 95) = 4.820, p = .010$ , indicating at least one significant difference among the means. Since the F-test does not indicate which pairs are significantly different, a post hoc comparison was conducted to examine the difference between categories.

**Table 6:** One-Way Analysis of Variance For Student Age and Examinations

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	12.526	2	6.263	4.820	.010
Within Groups	123.434	95	1.299		
Total	135.959	97			

Scheffé post-hoc comparisons showed that there was a difference between the 18-24 and 25-34 groups with a significance of .001. The significant difference was higher for the 25-34 group ( $M = 4.56$ ) than the 18-24 group ( $M = 3.74$ ). Null hypothesis 4 was rejected.

**Table 7:** Post-Hoc Scheffe results for Student Age

(I) Student Age	(J) Student Age	Mean Difference (I-J)	Std. Error	Sig.	95 % Confidence Interval	
					Lower Bound	Upper Bound
18-24	25-34	-.819*	.266	.011	-1.48	-.16
	55 and up	-.406	.340	.493	-1.25	.44
25-34	18-24	.819*	.266	.011	.16	1.48
	55 and up	.413	.375	.549	-.52	1.35
55 and up	18-24	.406	.340	.493	-.44	1.25
	25-34	-.413	.375	.549	-1.35	.52

\* The mean difference is significant at the 0.05 Level.

We examined a hypothesis that there is no relationship between professor's transactional leadership style – transformational, transactional, and passive avoidant - and Assignments when controlling for student age, student race/ethnicity, student enrollment status, student class level, professor gender, student comfort level with technology, and student GPA. Student age was significant and accounted for 10% of the variance in predicting student satisfaction with Assignments ( $\Delta R^2 = .096, p = .023$ ). Transformational leadership was significant and accounted for an additional 19% of the variance in predicting student satisfaction with Examinations ( $\Delta R^2 = .188, \beta = .442, p = .000$ ). The beta indicates that the more transformational students perceived their professors to be, the higher they rated them on Assignments.

**Table 8:** Model Summary for Student Age and Transformational Leadership

Model	R	R Square	Beta	R Square Change	Partial	P-Value
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1	.309a	.096	.096	.023		
2	.533b	.284	.442	.188	.456	.000

Predictors: a. Student Age b. Student Age, Transformational Leadership

For the significant categorical variable student age, a one-way analysis of variance (ANOVA) was calculated to determine if there were differences in the means of the age groups. There was significance,  $F(2, 96) = 6.384, p = .002$ , indicating at least one significant difference among the means. Since the  $F$ -test does not indicate which pairs are significantly different, a post hoc comparison was conducted to examine the difference between variables.

**Table 9:** One-way Analysis of Variance for Student Age

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	9.585	2	4.793	6.384	.002
Within Groups	72.071	96	.751		
Total	81.657	98			

Scheffé post-hoc comparisons showed that there was a difference between the 18-24 and 25-34 groups with a significance of .001. The significant difference was higher for the 25-34 group ( $M = 4.71$ ) than the 18-24 group ( $M = 4.0$ ). Null hypothesis 5 was rejected.

**Table 10:** Post-Hoc Scheffe results for Student Age

(I) Student Age	(J) Student Age	Mean Difference (I-J)	Std. Error	Sig.	95 % Confidence Interval	
					Lower Bound	Upper Bound
18-24	25-34	-.714*	.200	.003	-1.21	-.22
	55 and up	-.214	.258	.710	.86	.43
25-34	18-24	.714*	.200	.003	.22	1.21
	55 and up	.500	.284	.217	-.21	1.21
55 and up	18-24	.214	.258	.710	-.43	.86
	25-34	-.500	.284	.217	-1.21	.21

\* The mean difference is significant at the 0.05 Level.

## Conclusion and Implications

When considering the nuances of online education and the tasks and competencies associated with maintaining an effective online environment, leadership style may make a difference in how students perceive their classroom experiences and how well the professor manages the overall classroom. Results of the multiple regression indicated that transformational leadership was a predictor for all four SEEQ dimensions - Learning, Breadth, Examinations, and Assignments, most like due to the behaviors or attributes that comprise each transformational facet. Transactional leadership was a predictor for Breadth and Examinations. The results of the Pearson correlation coefficient showed that Transformational leadership positively correlated with Transactional leadership ( $r = .653$ ). The shared variance between these two independent variables is most likely due to them measuring the same or similar underlying constructs. "Though transformational and transactional leadership are often presented as being at opposing ends of a spectrum, a combination of select elements from both leadership styles may yield the best results" (Lai, 2011, p. 4). Breadth of concepts, ideas, and other points of view beyond the textbook may improve a student's chances of performing well on examinations. If the student does well on the examination, they should expect a grade that reflects their effort. Student age was a predictor for Learning, Examinations, and Assignments. These results are significant in reinforcing the concept of transformational leadership as an effective leadership style in education. This is noteworthy in terms of shaping the best pedagogy for online instructors. Leithwood & Poplin (1992) state that "instructional leadership no longer appears to capture the heart of what administrators will have to become" (p.8). "Transformational evokes a more appropriate range of practice; it ought to subsume instructional leadership as the dominant image of school administration" (Leithwood, 1992, p. 8). This study coincides with the literature concluding that there's no definitive list of student characteristics associated with ratings of teaching effectiveness. Student age was the only variable that was shown to be a predictor of Learning, Examinations, and Assignments. The sample sizes and distributions may have been a factor in the results. This study also coincides with the literature concluding that leadership style does matter in the online classroom. Transformational leadership was a predictor for the four SEEQ dimensions may indicate that professors who are more transformational in the online classroom, may receive higher ratings in student satisfaction with Learning, Breadth, Examinations, and Assignments. Moreover, considering the continued growth in online education and the fact that many academic leaders consider online education as a critical piece to their long term strategy, one area of focus should be on professor professional development in Leadership. Veteran and aspiring teachers may benefit from leadership education. Understanding their own leadership style and how it can influence outcomes in online classroom may potentially influencing overall ratings of teaching effectiveness. From this study, it can be inferred that teacher leaders would take time to understand their students and their individual needs. They would promote a collaborative learning environment that's student-centric where content is designed to promote meaningful learning experiences for the student. Er go, this leads to an enhanced understanding and development of online teaching pedagogy that results in effective teaching practices.

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