Faculty Personality: A Factor of Student Retention

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Abstract

The purpose of this study was to determine the relationship between student retention and faculty personality as it was hypothesized that faculty personality has an effect on student retention. The methodology adopted for this study was quantitative and in two parts 1) using linear regression models to examine the impact or causality of faculty personality types on student retention; and 2) using the 16PF® Questionnaire survey study of faculty personality. Further, this study identified non-personality related factors that had a significant impact on student retention; these factors acted as controlled factors in the regression study on faculty personality. Using the 16Pf® Questionnaire, 180 item responses were aggregated into 19 raw scores and 43 sten scores; each represented one of the personality factors described by the 16Pf® Questionnaire. In addition, linear regression models were used to examine the impact of faculty personality types on student retention data. The ultimate findings indicated that student retention largely depended on student GPA. Students who possessed a high GPA tended to be more successful at completing their courses in the short and long term. Students who possessed a high GPA was a dominate factor; however, faculty personality factors also had a significant contribution to students completing their degree program.

Faculty Personality: A Factor of Student Retention

Online learning continues to evolve and is a rapid growing means of higher education. However, there is a paucity of research regarding the recruitment of successful online instructors. From an administrative perspective, Patrick and Yick (2005) argued that with the increasing prevalence of online education, institutions of higher education might encounter challenges as these institutions seek to hire faculty who have the skills, knowledge, and competencies that best fit the unique characteristics and personality associated with online teaching.

Retention in courses is dependent on many factors including course design, modality, and as the subject of this study, faculty personality. Many faculty understand how to navigate a learning management system, present material, and provide their experience and expertise; however, the role they perform in the classroom regarding mentoring, coaching, and classroom interaction may be influenced by their unique personalities.

This study examined personality traits as a factor of student retention and focused on online faculty within the School of Business at an online university; an understanding of how personality may affect retention can be used as information to increase overall completion rates by implementing processes and procedures that have short-term and long-term effects.

Literature Review

In 2012, the graduation rate for first time students studying to obtain a bachelor's degree was 59% (Institute for Education Sciences, 2015). Institutions have been working to discover the reasons behind the 41% that do not successfully complete. According to Bowman and Denson, many studies have been conducted on student departure in relation to institutional characteristics and student characteristics (2014). However, to date, no studies have specifically associated faculty personality traits to student retention. In this review, studies on student retention were examined, personality questionnaires, and work completed on faculty personality.

Student Retention

Student retention has been studied throughout the years, and it has particularly become a topic of interest in the online domain during the past decade. This research was limited to studies on student retention in the online classroom. Liaw (2008) studied the differences between persistent learners and students who withdrew. His study discussed the factors, both internal and external, that caused students to move from one group to the other. In 2011, a group of researchers linked two specific criteria as predictors of student retention: transfer credits and GPA. Boston et al concluded that the more credits a student was allowed to transfer in, the more likely they were to persist. In addition, the stronger the student's GPA, the more likely the student was to stay in classes (Boston, Ice, & Gibson, 2011). Kilburn et al (2014) looked at several drivers of student retention including system availability, value, loyalty, and privacy. The researchers did not review faculty or faculty personality. They found that service quality is a determining factor in retaining students and that the key to providing quality service in online education is to master four variables: continuous system availability, perceived valued added, continuous loyalty enhancement, and guarded privacy.

Personality Questionnaires

Faculty personality would seem to be a key factor in student retention. *Personality* is "the combination of characteristics or qualities that form an individual's distinctive character," as defined by the Merriam-Webster dictionary (2016). In an effort to measure faculty personality, the 16PF® Questionnaire created by Dr. Raymond Cattell was used. In its fifth edition, the questionnaire has been used for decades to study

personality in business, psychology, counseling, and other related fields (iPat, 2015). As shown in Figure 1, the 16PF® measures 16 personality factors.

Figure 1. 16PF® Questionnaire measurement factors.

These personality factors can also be aggregated to five global factors: Extraversion, Tough-Mindedness, Self-Control, Anxiety, and Independence (iPat, 2015).

Other personality surveys include the Big Five Factor, Myers-Briggs Type Indicator® (MBTI), and the Color Code. The Big Five Factor or Five Factor Theory is accepted among many psychologists as the predominate personality theory of today. The five factors are extroversion-introversion, neuroticism, agreeableness, conscientiousness, and openness (Popkins, 1998). Studies were found linking student perception of faculty performance with faculty personality using the Big Five, but none with student retention. For example, a study was done in 2011 that linked faculty personality traits with student evaluations (Patrick, 2011). Myers-Briggs has been used to rate the personalities of educators, according to Sears et al (1997). As shown in Figure 2, Myers-Briggs draws from four personality dimensions: Introversion/Extroversion; Intuition/Sensing; Thinking/Feeling; and Perception/Judging.
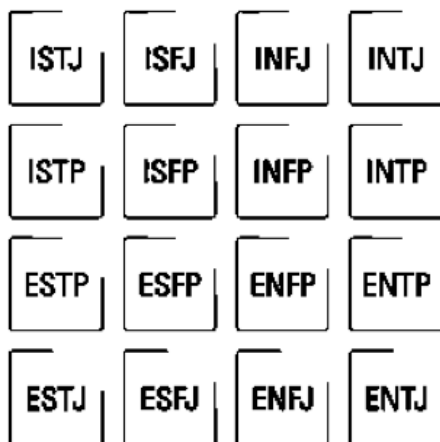

Figure 2. 16PF® Questionnaire measurement factors.

In 1997, a study was conducted using the Myers-Briggs instrument that measured the personality of potential educators; it concluded that students that were an SFJ type (Sensing/Feeling/Judging) tended to complete the teaching program and go on to remain teachers (Sears & Kennedy). While other similar studies have been conducted on educators, no studies were found on faculty and student retention.

The Color Code is a more modern view of personality testing. Psychologists related personality in terms of color dimensions. Dr. Taylor Hartman contends that these behavior-based models are missing a key component—motive. The Color Code takes into account the motive behind the behavior and therefore gives a more accurate picture of the person's personality (ColorCode Personality Science, n.d.). No peer-reviewed research on the color code personality test was found.

Participants

All faculty within an online School of Business were contacted via email to complete the 16 PF® Questionnaire via the Internet. Fifty-eight faculty (30 women and 28 men) ranging from Instructors (91%), Assistant Professors (2%), and Associate Professors (7%), voluntarily participated in this study; informed consent was obtained from all participants. Further, of the 58 responses, 52 were part-time faculty (90%), five were full-time faculty (9%), and one was Program Director (2%) (Table 1); all participants completed the same 16PF® Questionnaire.

In examining the Instructor rank, 49 (92%) were part-time faculty and four (8%) were full-time faculty. For the Assistant Professor rank, the one respondent (100%) was full-time faculty. At the Associate Professor rank, three respondents (75%) were part-time faculty and one (25%) was Program Director. Lastly, no faculty at the Professor rank completed the survey (Table 1). The researchers did not complete the survey in order to avoid bias.

Table 1

Representation of Faculty Participants by Rank and Employment

Faculty Completed Surveys

	Total n	Total %	Part-time	90%	Full-time	9%	Program Director	2%
Instructor	53	91%	49	92%	4	8%	0	0%
Assistant Professor	1	2%	0	0%	1	100%	0	0%
Associate Professor	4	7%	3	75%	0	0%	1	25%
Professor	0	0%	0	0%	0	0%	0	0%
	58		52		5		1	

A much higher percentage of participants were part-time faculty and of the Instructor rank, which is indicative of the online School of Business faculty population. It is unknown as to why other faculty did not complete the survey; however, the 16PF® administration indicated that survey responses, in general, tend to be low. The response rate for this survey seemed to have followed that trend, with a 17% overall completed survey rate.

For this study, the faculty that completed the survey had a start date range of 2004 – 2015, with one unknown. Of those, one started in 2004 and 2006, three in 2007 and 2009, 12 in 2010, 15 in 2011, five in 2012 and 2013, nine in 2014, and three in 2015. The teaching areas of the faculty who completed the survey ranged from Accounting, Analytics, Business Administration, Economics, Finance, Hospitality Management, Human Resource Management, Management, Marketing, Real Estate Studies, Retail Management, Reverse Logistics, and Transportation and Logistics Management; both undergraduate and graduate course levels were represented.

Methodology

Applying the guidelines from the 16PF® Questionnaire, 180 item responses were aggregated into 19 raw scores and 43 sten scores; each represented one of the personality factors described by the 16PF® Questionnaire. By definition, sten scores indicate an individual's approximate position with respect to the population of values and, therefore, to other people in that population. Student retention data was collected for the period of 2012-2014 for the School of Business. These students were specifically chosen from all the courses/classes taught by those faculty who voluntarily completed the survey. Faculty and students were coded by the course, which allowed each faculty member to be matched with all the students he/she taught and to know whether those students had successfully completed the course.

To ensure the student drops were indeed related to faculty personality, the data was cleaned to eliminate all students who dropped the course during Week 1. These drops were very likely due to financial factors or mismatched due to lack of information and hence may have been highly random and unrelated to faculty personality. After eliminating these students, the average completion rate for each faculty over all the students who continued to Week 2 in all classes this faculty taught for the online School of Business was calculated. The average overall completion rate of each faculty's students for all courses these students took in the School of Business was calculated.

Based on the above calculations, two dependent variables were selected that represented the student retention rate. One, the average completion rate for each faculty of all the students taught, and two, the average completion rate for each student taught by the faculty over all the courses the student has taken. The first course completion rate was viewed as a short-term effect from any one of the courses taught by a faculty, and the second overall course completion rate as a long-term effect that went beyond one particular course and affected the student's completion rate for all courses the students had taken. Each faculty could have taught a student more than once.

To control for factors that may have affected the student completion rate, data was collected on the number of courses the faculty taught for the School of Business, as well as the student average grade and student completion percentage for the program they enrolled in, in the online School of Business. These factors were then used as controlled variables in the following regression study on faculty personality.

Hence, besides the faculty personality factors, three independent variables were included as control variables for factors that were not explained by faculty personality. These were the student's average GPA/Grade, number of courses a faculty taught at the online University reflecting a faculty's experience with teaching at the University, and the average student overall completion percentage for the program reflecting a student's experience with taking courses at the online University. Both were restricted to the School of Business.

Finally, linear regression models were used to examine the impact of faculty personality types on student retention from the data. Several regressions were run to examine whether each of the faculty personality factors had a statistically significant impact on student retention. Insignificant factors were dropped and only the significant factors were reported in the results section.

Results

Examined first was the impact of faculty personality on long-term student retention. As discussed above, this was defined as the long-term effect of a faculty's impact on the retention of a student in the degree program, not just in one particular course. This long-term retention was measured by the average course completion rate of a student during his/her entire time with the institution, and then the average of this overall course completion rate was calculated for all students taught by each faculty who voluntarily completed the survey. In the following regressions, this long-term student retention dependent variable was labeled as "Student Overall Completion Rate."

In the following Regression Analysis 1 (Figure 3), all three control variables were included (as discussed in the above Methodology section): the student grade, the faculty experience measured by the number of courses taught by the faculty, and the student experience measured by the student's average percentage of completion into the degree program. Also included, was the faculty personality factors that have shown some significant correlation with student long-term retention in the preliminary screening process. These factors were: Vigilance, Privateness, Self-Reliance, Perfectionism, Self-Esteem, Entrepreneurship, and Sociability.

Regression Analysis 1

R²	0.978		
Adjusted R²	0.973	n	57
R	0.989	k	10
Std. Error	0.008	Dep. Var.	**Student Overall Completion Rate**

ANOVA table

Source	SS	df	MS	F	p-value
Regression	0.1167	10	0.0117	200.55	1.87E-34
Residual	0.0027	46	0.0001		
Total	0.1194	56			

Regression output

variables	coefficients	std. error	t (df=46)	p-value	95% lower	95% upper	VIF
Intercept	0.0579	0.0270	2.1445	3.73%	0.0036	0.1123	
Student Degree Completion Rate	0.8843	0.0406	21.8067	0.00%	0.8027	0.9659	3.17
Student Grade	0.0120	0.0031	3.8918	0.03%	0.0058	0.0183	2.56
Faculty Number of Courses Taught	-0.0000	0.0000	-1.6174	11.26%	-0.0000	0.0000	1.16
Anxiety: Raw9/Vigilance	0.0001	0.0003	0.1715	86.46%	-0.0006	0.0007	1.57
Extraversion: Raw11/Privateness (-)	0.0004	0.0003	1.3013	19.96%	-0.0002	0.0010	1.91
Extraversion: Raw14/Self-Reliance (-)	-0.0006	0.0003	-2.4772	1.70%	-0.0011	-0.0001	2.18
Self-Control: Raw15/Perfectionism	-0.0005	0.0003	-1.7332	8.98%	-0.0010	0.0001	1.76
Self-Esteem: Raw17/Impression Management	0.0002	0.0003	0.7300	46.91%	-0.0003	0.0007	1.64
Entrepreneurial: Sten29	-0.0015	0.0010	-1.5637	12.47%	-0.0034	0.0004	2.13
Social: Sten38	0.0007	0.0008	0.9180	36.34%	-0.0009	0.0024	1.40
							1.95
							mean VIF

Figure 3. Regression Analysis 1 of control variables (student grade, faculty experience, and student degree completion rate) and faculty personality factors (vigilance, privateness, self-reliance, perfectionism, self-esteem, entrepreneurship, and sociability).

The explanatory power of this regression was extremely good; the regressors jointly explained 97.8% of all the variations in the dependent variable. The regression was overall significant. Two of the three control variables were not surprisingly positive and significantly affected long-term student retention. The faculty experience showed up as insignificant, which was consistent with its close to zero coefficient. However, if any impact was present, the effect seemed to be slightly negative, i.e. a student's retention rate tended to drop slightly as the faculty taught more courses for the online University. This could have been interpreted as a slightly burned out effect for seasoned faculty. Yet, the impact was hardly justified as of any significance.

Among the faculty personality factors, Vigilance and Self-Esteem were obviously insignificant and hence were dropped as well as the faculty experience factor in Regression Analysis 2 (Figure 4). All the signs of the coefficients stayed the same. Self-Reliance and Perfectionism were significant at the 5% significance level and Entrepreneurship was significant at the 10% level. The study showed that faculty, who tended to be more reliant on one's own powers and resources versus working in a group, were less likely to accept any standard short of perfection, or more innovative or experimental, also tended to "scare" students away and thus reduced the student long-term retention. This was not to say that these were "bad" characteristics, but rather indicated these characteristics may be a poor match for online education.

Regression Analysis 2

R²	0.976		
Adjusted R²	0.973	n	57
R	0.988	k	7
Std. Error	0.008	Dep. Var.	**Student Overall Completion Rate**

ANOVA table

Source	SS	df	MS	F	p-value
Regression	0.1165	7	0.0166	285.72	1.90E-37
Residual	0.0029	49	0.0001		
Total	0.1194	56			

Regression output

variables	coefficients	std. error	t (df=49)	p-value	confidence interval 95% lower	95% upper	VIF
Intercept	0.0608	0.0257	2.3649	2.20%	0.0091	0.1124	
Student Degree Completion Rate	0.8831	0.0390	22.6361	0.00%	0.8047	0.9615	2.93
Student Grade	0.0124	0.0031	4.0288	0.02%	0.0062	0.0186	2.54
Extraversion: Raw11/Privateness (-)	0.0003	0.0003	0.9799	33.20%	-0.0003	0.0008	1.61
Extraversion: Raw14/Self-Reliance (-)	-0.0006	0.0003	-2.3688	2.18%	-0.0011	-0.0001	2.16
Self-Control: Raw15/Perfectionism	-0.0005	0.0002	-2.0136	4.96%	-0.0010	-0.0000	1.34
Entrepreneurial: Sten29	-0.0016	0.0009	-1.7080	9.40%	-0.0035	0.0003	2.06
Social: Sten38	0.0008	0.0008	1.0525	29.77%	-0.0007	0.0023	1.23
							1.98
							mean VIF

Figure 4. Regression Analysis 2 of control variables (student grade and student degree completion rate) and faculty personality factors (privateness, self-reliance, perfectionism, entrepreneurial, and social).

Privateness and Sociability were much less likely to have a significant impact on student long-term retention. If they did, they both tended to increase student retention. Although roughly a 30% chance that Privateness and Sociability were insignificant, their magnitudes of impact if significant, 0.0003 for Privateness and 0.0008 for Sociability, were actually quite in line with the other more significant factors.

In both regressions, no multicollinearity problem among the regressors was found as the Variance Inflation Factors (VIF) were all very small. The residual was also normally distributed for Regression Analysis 2 (Figure 5). The normal probability plot for residuals of Regression Analysis 1 looked very similar to that for Regression Analysis 2. The difference between the two were that, among the three control variables, the insignificant faculty experience factor in Regression Analysis 2 was eliminated.
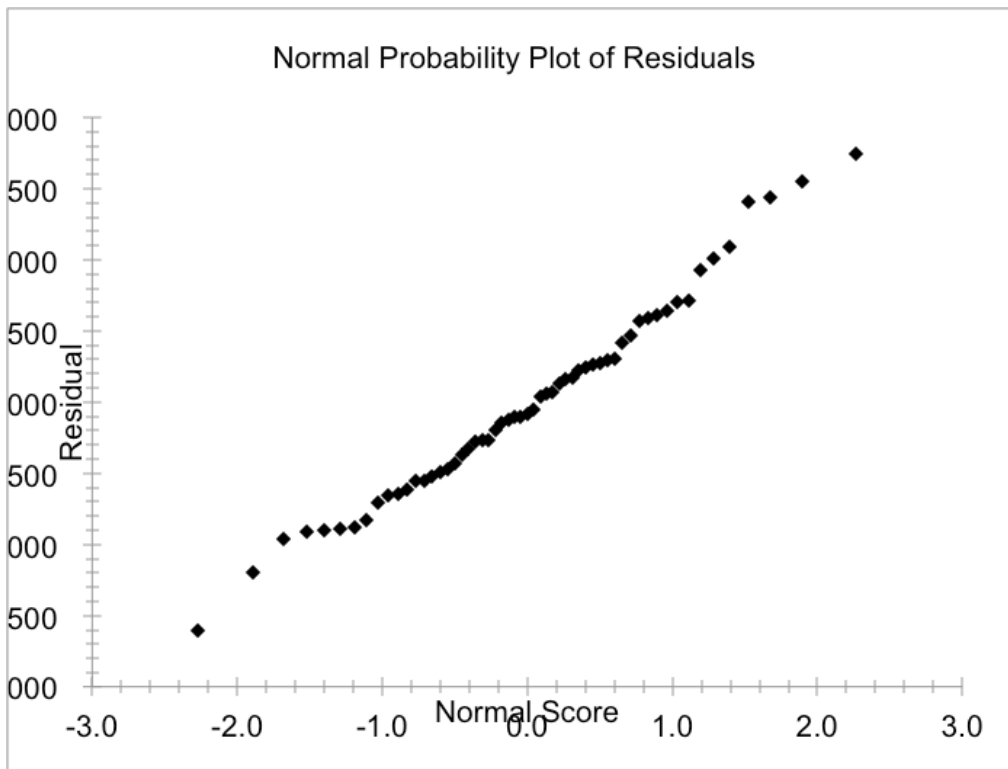
Figure 5. Normal probability plot of residuals for Regression Analysis 2

However, a potential problem in Regression Analysis 2 was present. That is, the Student Degree Completion Rate, which was the average completion rate into the program for all the students taught by a faculty, was not only related to but also depended on the faculty personality factors as shown in Regression Analysis 3 (Figure 6). Among which, Entrepreneurship had a very significant negative impact on Student Degree Completion Rate. The magnitude was actually much larger than the impact of Entrepreneurship on Student Overall Course Completion Rate, shown in both Regression Analyses 1 and 2 (Figures 3 and 4).

Regression Analysis 3

R²	0.659		
Adjusted R²	0.618	n	57
R	0.812	k	6
Std. Error	0.028	Dep. Var.	**Student Degree Completion Rate**

ANOVA table

Source	SS	df	MS	F	p-value
Regression	0.0740	6	0.0123	16.10	3.31E-10
Residual	0.0383	50	0.0008		
Total	0.1122	56			

Regression output

variables	coefficients	std. error	t (df=50)	p-value	confidence interval 95% lower	95% upper	VIF
Intercept	0.6150	0.0333	18.4459	0.00%	0.5480	0.6820	
Student Grade	0.0613	0.0070	8.7025	0.00%	0.0472	0.0755	1.01
Extraversion: Raw11/Privateness (-)	0.0015	0.0009	1.6480	10.56%	-0.0003	0.0034	1.53
Extraversion: Raw14/Self-Reliance (-)	-0.0020	0.0009	-2.3144	2.48%	-0.0038	-0.0003	1.95
Self-Control: Raw15/Perfectionism	-0.0013	0.0008	-1.5591	12.53%	-0.0030	0.0004	1.28
Entrepreneurial: Sten29	-0.0105	0.0031	-3.4451	0.12%	-0.0166	-0.0044	1.66
Social: Sten38	-0.0007	0.0028	-0.2523	80.18%	-0.0063	0.0049	1.23
							1.44 mean VIF

Figure 6. Regression Analysis 3 with control variable student grade and faculty personality factors privateness, self-reliance, perfectionism, entrepreneurial, and social.

Due to this consideration of significant correlation, this control variable, namely the student experience measured by Student Degree

Completion Rate was eliminated in Regression Analysis 4 (Figure 7). In addition, Sociability was eliminated as it was insignificant.

Regression Analysis 4

R²	0.726		
Adjusted R²	0.699	n	57
R	0.852	k	5
Std. Error	0.025	Dep. Var.	**Student Overall Completion Rate**

ANOVA table

Source	SS	df	MS	F	p-value
Regression	0.0867	5	0.0173	27.02	3.03E-13
Residual	0.0327	51	0.0006		
Total	0.1194	56			

Regression output

variables	coefficients	std. error	t (df=51)	p-value	95% lower	95% upper	VIF
Intercept	0.6048	0.0282	21.4791	0.00%	0.5483	0.6613	
Student Grade	0.0666	0.0064	10.3385	0.00%	0.0536	0.0795	1.01
Extraversion: Raw11/Privateness (-)	0.0016	0.0009	1.8941	6.39%	-0.0001	0.0033	1.53
Extraversion: Raw14/Self-Reliance (-)	-0.0024	0.0008	-2.9839	0.44%	-0.0040	-0.0008	1.95
Self-Control: Raw15/Perfectionism	-0.0016	0.0007	-2.2557	2.84%	-0.0031	-0.0002	1.11
Entrepreneurial: Sten29	-0.0109	0.0027	-3.9959	0.02%	-0.0164	-0.0054	1.59
							1.44
							mean VIF

Figure 7. Regression Analysis 4 with control variable student grade and faculty personality factors privateness, self-reliance, perfectionism, and entrepreneurial.

Although the overall explanation power decreased, the R-square fell from 97.6% to 72.6% while the adjusted R-square also fell from 97.3% to 69.9%, as one of the most significant dependent variables from the regression was removed, i.e. the Student Degree Completion Rate; the remaining regressors were now all significant up to the 10% significant level. Self-Reliance and Entrepreneurship were definitely significant at the 1% significance level, Perfectionism was definitely significant at the 5% significance level, and Privateness was just a bit short of the 5% significance level but was definitely significant at the 10% level. Again, no multicollinearity issue and the residuals were normally distributed as shown in Figure 8.
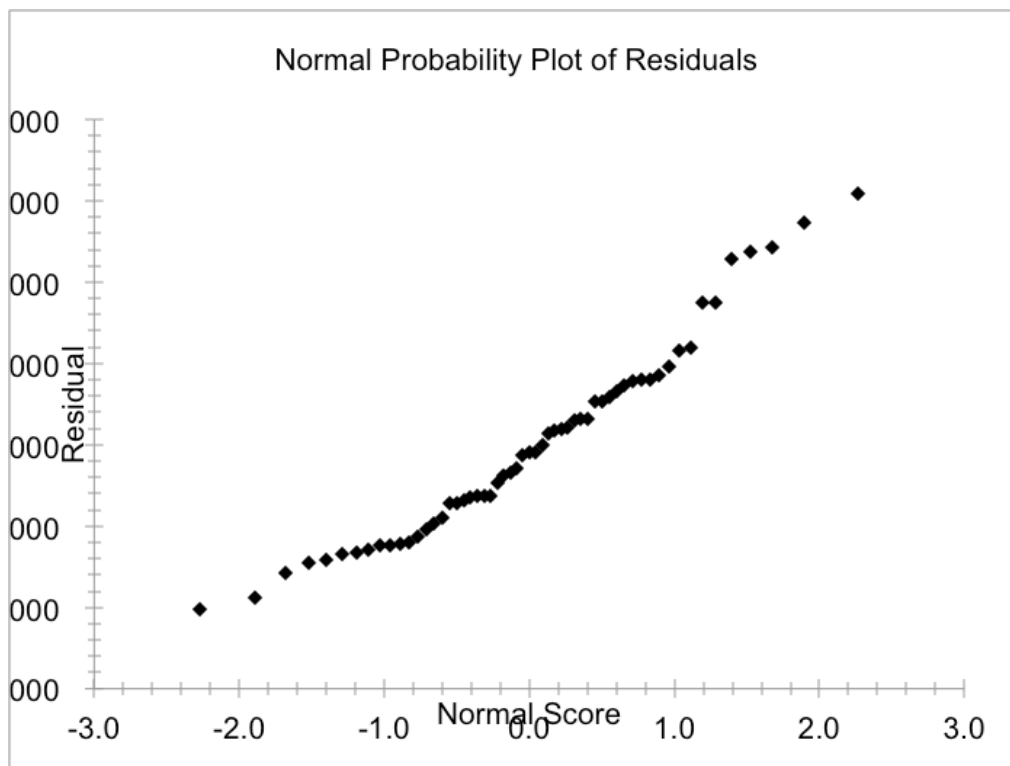

Figure 8. Normal probability plot of residuals for Regression Analysis 4.

Comparing Regression Analysis 3 (Figure 6) with Regression Analyses 1 and 2 (Figures 3 and 4), the directions of the impacts all remained the same, but the magnitudes of the faculty personality factor coefficients in Regression Analysis 3 all increased compared to the first two, especially for the Entrepreneurship coefficient. It can be concluded with confidence that students' GPA and a faculty's Privateness personality both contributed positively to student long-term retention. This could be due to the nature of online education that makes Privateness become a desirable characteristic for long-term student retention. It would be interesting to find out whether this may be the same for students taking ground courses. On the other hand, Self-Reliance, Perfectionism, and Entrepreneurship all hurt student long-term retention. The magnitudes in decreasing order were Entrepreneurship, Self-Reliance, and Perfectionism. This also happened to be in the decreasing order of significance for the three. Privateness had the least significance and the smallest impact.

Next, the impact of faculty personality was examined on short-term student retention. As discussed above in the Methodology section, this was defined as the short-term effect as a faculty's impact on the average completion rates for all students that one particular faculty taught among all the courses taught. This short-term retention was measured by the average course completion rate of all students from 2012-2014 taught by each faculty who voluntarily completed the survey. In the following regressions, this short-term student retention dependent variable was labeled as "Student Single Course Completion Rate."

Again, all three control variables were included as was done for the long-term analysis: the student grade, the faculty experience measured by the number of courses taught by the faculty, and the student experience measured by the student's average percentage of completion into the degree program. Also included were the faculty personality factors that showed some significant correlation with student short-term retention in the preliminary screening. These factors were Reasoning, Emotional Stability, Privateness, Rule-Consciousness, Perfectionism, and Infrequency/Inconsistence. It was already quite interesting to find out that the faculty personality factors that influenced short-term retention significantly did not necessarily coincide with those that influenced long-term retention significantly. Only Privateness and Perfectionism had a significant impact on both long-term and short-term retention simultaneously.

Regression Analysis 5 (Figure 9) showed that the overall explanation power on short-term retention was far worse than the explanation power for long-term retention. The regressors could only explain 71.1% of the variation in short-term retention versus the 97.8% in Regression Analysis 1 for long-term retention. However, the coefficients of faculty personality factors were statistically more significant and the magnitudes were on average larger in the short-term retention regression analysis compared to the long-term retention. Reasoning, Perfectionism, and Infrequency/Inconsistence were all strongly significant at the 1% significant level, Rule-Consciousness was almost significant at the 5% significant level, and Privateness was definitely significant at the 10% significant level, while Emotional Stability fell just short of the 10% significant level. However, overall, all faculty personality factors included in this regression demonstrated a reasonably sizable and significant impact on the short-term student retention.

Regression Analysis 5

R²	0.711		
Adjusted R²	0.656	n	57
R	0.843	k	9
Std. Error	0.015	Dep. Var.	**Student Single Course Completion Rate**

ANOVA table

Source	SS	df	MS	F	p-value
Regression	0.0257	9	0.0029	12.87	4.99E-10
Residual	0.0104	47	0.0002		
Total	0.0361	56			

Regression output

variables	coefficients	std. error	t (df=47)	p-value	confidence interval 95% lower	95% upper	VIF
Intercept	0.7700	0.0431	17.8707	0.00%	0.6833	0.8567	
Student Degree Completion Rate	0.0338	0.0679	0.4971	62.14%	-0.1029	0.1704	2.33
Faculty Number of Courses Taught	-0.0001	0.0000	-3.7851	0.04%	-0.0001	-0.0000	1.07
Grade	0.0258	0.0057	4.5318	0.00%	0.0143	0.0373	2.27
Cognitive: Raw2/Reasoning	0.0025	0.0008	3.0634	0.36%	0.0008	0.0041	1.36
Anxiety: Raw3/Emotional Stability (-)	0.0012	0.0007	1.6257	11.07%	-0.0003	0.0026	1.31
Extraversion: Raw11/Privateness (-)	-0.0009	0.0005	-1.9035	6.31%	-0.0018	0.0000	1.25
Self-Control: Sten6/Rule-Consciousness	-0.0034	0.0017	-2.0099	5.02%	-0.0068	0.0000	2.11
Self-Control: Sten15/Perfectionism	0.0063	0.0016	3.8708	0.03%	0.0030	0.0096	2.37
Independence: Sten18/Infrequency (-)	0.0006	0.0001	4.2560	0.01%	0.0003	0.0008	1.16
							1.69
							mean VIF

Figure 9. Regression Analysis 5 with control variables student degree completion rate, faculty number of courses taught, grade, and faculty personality factors reasoning, emotional stability, privateness, rule-consciousness, perfectionism, and infrequency.

For the long-term impact, the faculty experience measured by the total number of courses a faculty taught at the online University did significantly affect the short-term student retention. Again, its impact was a bit surprising; it was negative and highly significant at the 1%

significant level. Student grade was still the most significant factor, and also had a greater short-term impact than long-term as demonstrated by the higher coefficient in the short-term retention regression than in the long-term if compared to Regression Analyses 1 and 2 (Figures 3 and 4).

Another rather surprising finding was that although Privateness and Perfectionism affected both short-term retention and long-term retention, the direction of their impact was reversed. For the short-term retention, Regression Analysis 5 (Figure 9) suggested that Privateness decreased (rather than increased) student completion rate, while Perfectionism had a quite significant and sizable positive (not negative) impact on short-term retention.

For the faculty personality factors that did not significantly affect long-term retention, Reasoning significantly increased short-term student retention. Its scale was 0.0025 with a significant level of 1%. Emotional Stability was the least significant and yet still seemed to have positively contributed to short-term student retention with a scale of 0.0012. Infrequency/Inconsistence seemed to be the opposite of Rule-Consciousness; Rule-Consciousness significantly decreased short-term student retention with a scale of 0.0034 at close to 5% significant level, while Infrequency/Inconsistence increased short-term student retention with a scale of 0.0006 at close to 1% significant level. This suggested that students may prefer to have some flexibility with their instructors in terms of keeping the rules. Since the online University has a large proportion of military students, some flexibility and the willingness to work with students under special cases can be a desirable characteristic to retain students in the short-term. But, this factor showed no significant long-term effect on retention.

The VIFs were again very small and the normal probability plot of the residuals in Figure 10 indicated no irregularity in the error term. Also, although the explanatory power on short-term student retention was not as high as the long-term one, the regression for short term retention had a much smaller p-value, which was consistent with the more significant coefficients and the larger magnitudes of these coefficients, indicating a more significant impact of faculty personality data on short-term student retention.
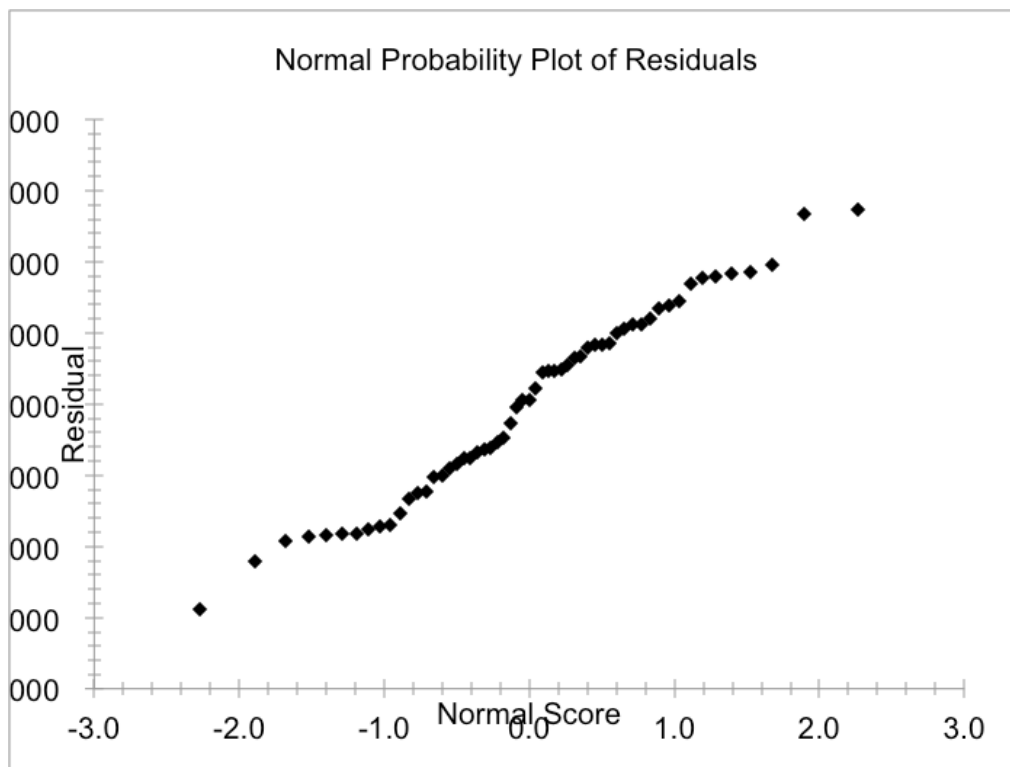

Figure 10. Normal probability plot of residuals for Regression Analysis 5.

Another interesting finding was that the student experience measured by the Student Degree Completion Rate was no longer significant in this short-term student retention regression. Hence, it could safely be removed as it was correlated with several faculty personality factors as discussed above. But, this time, since it was insignificant, removing this independent variable had almost no impact on the explanatory power. The R-square in Regression Analysis 6 (Figure 11) was still 71% comparing to the 71.1% in Regression Analysis 5 (Figure 9). The adjusted R-square actually increased slightly as anticipated. The p-value also became slightly smaller, indicating a more significant overall fit as well.

Regression Analysis 6

R² 0.710
Adjusted R² 0.661　　　　　n 57
R 0.843　　　　　k 8
Std. Error 0.015　　　　Dep. Var. **Student Single Course Completion Rate**

ANOVA table

Source	SS	df	MS	F	p-value
Regression	0.0256	8	0.0032	14.68	1.40E-10
Residual	0.0105	48	0.0002		
Total	0.0361	56			

Regression output

variables	coefficients	std. error	t (df=48)	p-value	95% lower	95% upper	VIF
Intercept	0.7879	0.0234	33.6221	0.00%	0.7408	0.8350	
Faculty Number of Courses Taught	-0.0001	0.0000	-3.8116	0.04%	-0.0001	-0.0000	1.07
Grade	0.0279	0.0039	7.2045	0.00%	0.0201	0.0356	1.07
Cognitive: Raw2/Reasoning	0.0025	0.0008	3.1745	0.26%	0.0009	0.0041	1.34
Anxiety: Raw3/Emotional Stability (-)	0.0012	0.0007	1.6520	10.51%	-0.0003	0.0026	1.31
Extraversion: Raw11/Privateness (-)	-0.0008	0.0004	-1.8591	6.91%	-0.0017	0.0001	1.21
Self-Control: Sten6/Rule-Consciousness	-0.0034	0.0017	-2.0579	4.51%	-0.0068	-0.0001	2.10
Self-Control: Sten15/Perfectionism	0.0062	0.0016	3.8699	0.03%	0.0030	0.0094	2.35
Independence: Sten18/Infrequency (-)	0.0006	0.0001	4.2717	0.01%	0.0003	0.0008	1.16

1.45 mean VIF

Figure 11. Regression Analysis 6 with control variables (faculty number of courses taught and grade) and faculty personality factors (reasoning, emotional stability, privateness, rule-consciousness, perfectionism, and infrequency).
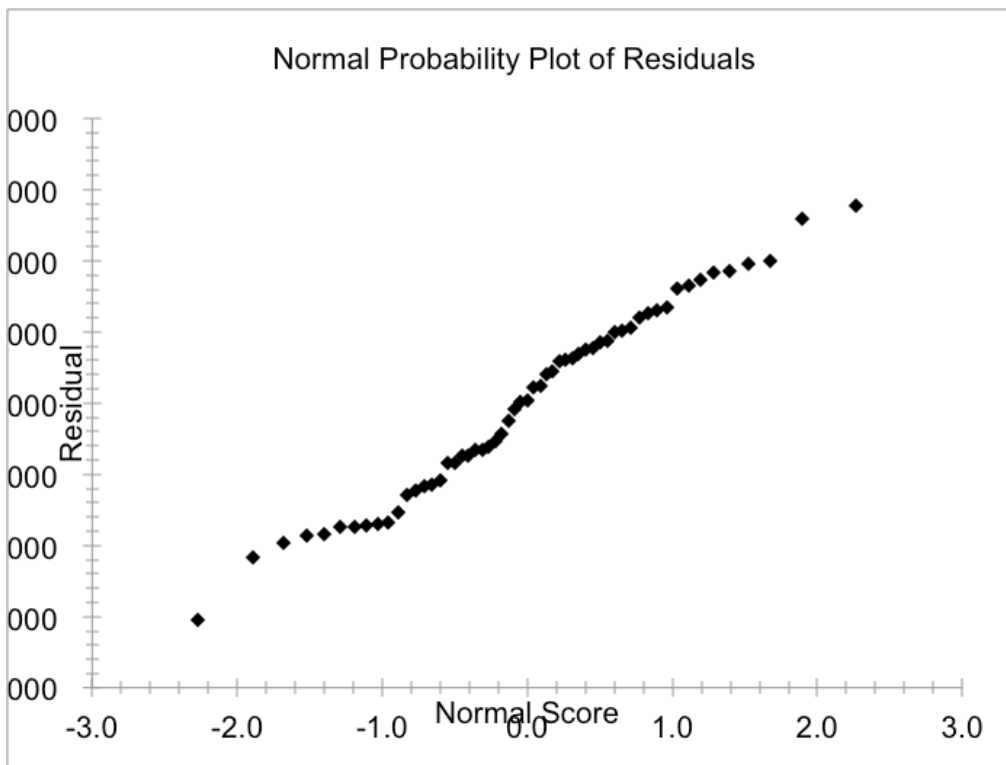

Normal Probability Plot of Residuals

Figure 12. Normal probability plot of residuals for Regression Analysis 6.

Rule-Consciousness now became significant at the 5% significance level. However, the overall magnitude and significance of all coefficients relating to faculty personality factors remained similar as in Regression Analysis 5 (Figure 9). All the signs were the same, so a difference between these two regressions was not found. The normal probability plot of the residuals was slightly more linear, as shown in Figure 12.

Discussion

In this study, it was found that student retention largely depended on the student GPA, i.e. better students definitely tended to be more successful in completing their courses in the short-term as well as finishing their degree in the long-term. Although this turned out to be the number one dominant factor in determining student retention, faculty personality factors still played a significant role in retaining students both in a single course-wide base in the short-term and in the long-term perspective in terms of completing the degree program.

This study reviewed 19 raw factors and 43 sten factors measuring various areas of faculty personality and finally identified four factors that statistically significantly affected the long-term student retention measured by the Student Overall Completion Rate. They were Entrepreneurship, Self-Reliance, Perfectionism, and Privateness in the decreasing order of magnitudes and significance. On the other hand, the factors that statistically significantly affected the short-term student retention measured by the Student Single Course Completion Rate were Infrequency/Inconsistence, Perfectionism, Reasoning, Rule-Consciousness, Privateness, and Emotional Stability, in the order of decreasing significance, and Perfectionism, Rule-Consciousness, Reasoning, Emotional Stability, Privateness, and Infrequency/Inconsistence in the decreasing order of magnitude.

A couple of surprising results may need further study. One was that the factors that had a significant impact on short-term student retention did not exactly match up with the factors that significantly affected long-term retention. Two common factors that affected both short-term and long-term actually had exactly the opposite effect on short-term retention versus long-term. This could be partly because these individual characteristics could reflect the same global factor defined in the 16PF® Questionnaire. For example, both Privateness and Self-Reliance reflected Extraversion, but in the opposite way, i.e. the more Privateness and the more Self-Reliance, the less likely was a person to be Extraversion. Five such global factors exist: Extraversion, Independence, Tough-Mindedness, Self-Control, and Anxiety. For a future study, an index combined with all factors for the same global factor could be designed and then an index calculated for each of these five global factors from the 19 raws and 43 stens. Using these indexes as regressors may improve regression result.

This study also provided several regression analyses and tradeoffs can be identified in determining which one was the best to use. If the main purpose was to find the most predictive model, then Regression Analysis 1 (Figure 3) was the best as it has the largest R-square among all of the six models. Yet, the coefficients of the key independent variables were most significant in the more selective regressions, Regression Analysis 4 (Figure 7) for long-term and Regression Analysis 6 (Figure 11) for short-term. In addition, in Regression Analysis 1 (Figure 3), the relationships between the key independent variables and the dependent variable were mediated or confounded by one of the control variables, the student experience factor. The evidence was that the coefficients of the key independent variables became less significant or non-significant when this control variable, the Student Degree Completion Rate was added to the model. However, in spite of these differences and trade-offs among the models, their results on the direction of the impacts of faculty personality factors on student retention were the same.

A short fall of this current survey is that not many full-time faculty responded to the survey. However, when we added the dummy variable faculty status, whether full-time or part-time, to the regressions on short-term and long-term retention, it showed that faculty status is not a decisive factor. Comparing Regression Analysis 7 (Figure 13) with Regression Analysis 4, it showed that faculty status almost contributed nothing to the regression, R-squared barely increased at all and significance of the coefficients stayed pretty much the same. The coefficient for faculty status was definitely insignificant.

Regression Analysis 7

R²	0.730		
Adjusted R²	0.697	n	57
R	0.854	k	6
Std. Error	0.025	Dep. Var.	**Student Overall Completion Rate**

ANOVA table

Source	SS	df	MS	F	p-value
Regression	0.0871	6	0.0145	22.49	1.21E-12
Residual	0.0323	50	0.0006		
Total	0.1194	56			

Regression output

						confidence interval	
variables	coefficients	std. error	t (df=50)	p-value	95% lower	95% upper
Intercept	0.6072	0.0284	21.380	0.00%	0.5502	0.6643
Student Grade	0.0659	0.0065	10.115	0.00%	0.0528	0.0790
Extraversion: Raw11/Privateness (-)	0.0016	0.0009	1.805	7.70%	-0.0002	0.0033
Extraversion: Raw14/Self-Reliance (-)	-0.0022	0.0008	-2.645	1.09%	-0.0039	-0.0005
Self-Control: Raw15/Perfectionism	-0.0018	0.0007	-2.379	2.12%	-0.0033	-0.0003
Entrepreneurial: Sten29	-0.0107	0.0028	-3.861	0.03%	-0.0162	-0.0051
Faculty Status	-0.0082	0.0100	-0.824	41.40%	-0.0282	0.0118

Figure 13. Regression Analysis 7 of long-term retention rate with faculty status.

Regression Analysis 8

R²	0.628			
Adjusted R²	0.567	n	57	57
R	0.793	k	8	8
Std. Error	0.017	Dep. Var.	**Student Single Course Completion Rate**	

ANOVA table

Source	SS	df	MS	F	p-value
Regression	0.0227	8	0.0028	10.15	3.74E-08
Residual	0.0134	48	0.0003		
Total	0.0361	56			

Regression output

					confidence interval	
variables	coefficients	std. error	t (df=48)	p-value	95% lower	95% upper
Intercept	0.7872	0.0267	29.523	0.00%	0.7336	0.8408
Grade	0.0282	0.0044	6.394	0.00%	0.0193	0.0371
Cognitive: Raw2/Reasoning	0.0025	0.0009	2.776	0.78%	0.0007	0.0043
Anxiety: Raw3/Emotional Stability (-)	0.0008	0.0008	1.010	31.77%	-0.0008	0.0025
Extraversion: Raw11/Privateness (-)	-0.0010	0.0005	-2.056	4.53%	-0.0020	-0.0000
Self-Control: Sten6/Rule-Consciousness	-0.0028	0.0019	-1.488	14.32%	-0.0066	0.0010
Self-Control: Sten15/Perfectionism	0.0053	0.0018	2.952	0.49%	0.0017	0.0089
Independence: Sten18/Infrequency (-)	0.0006	0.0001	3.869	0.03%	0.0003	0.0009
Faculty Status	0.0059	0.0064	0.914	36.55%	-0.0070	0.0187

Figure 14. Regression Analysis 7 of short-term retention rate with faculty status.

For the short-term impact, comparing Regression Analysis 8 (Figure 14) with Regression Analysis 6, it showed that adding faculty status actually reduced the R-square, which clearly indicated that Regression Analysis 6 was the better model to fit the data. The coefficient for faculty status in this short-term regression was highly insignificant as well.

Conclusion

Due to the lack of research regarding the recruitment of successful online faculty, the purpose of this study was to determine the relationship between student retention and online faculty personality as it was hypothesized that faculty personality had an effect on student retention. From an administrative perspective, Patrick and Yick (2005) argued that with the increasing prevalence of online education, institutions of higher education might encounter challenges as these institutions seek to hire faculty who have the skills, knowledge, and competencies that best fit the unique characteristics and personality associated with online teaching.

The methodology adopted for this study was quantitative and in two parts including 1) using linear regression models to examine the impact or causality of faculty personality types on student retention; and 2) using the 16PF® Questionnaire survey study of faculty personality. Further, this study identified non-personality related factors that had a significant impact on student retention; these factors acted as controlled factors in the regression study on faculty personality. This study attempted to provide information regarding the relationship between student retention and faculty personality.

The results of this study indicated that student retention largely depended on student GPA. Students who possess a high GPA tended to be more successful at completing their courses in the short and long term. Students possessing a high GPA was a dominate factor; however, faculty personality factors also had a significant contribution to students completing their degree program.

The study also identified four factors that statistically significantly affected the long-term student retention measured by the Student Overall Completion Rate. These factors included Entrepreneurship, Self-Reliance, Perfectionism, and Privateness in the decreasing order of magnitude and significance. Factors that were statistically significant for the short-term student retention also measured by the Student Overall Completion Rate were Infrequency/Inconsistence, Perfectionism, Reasoning, Rule-Consciousness, Privateness, and Emotional Stability, in the order of decreasing significance and magnitude.

Examining the personalities of instructors and the possible impact on student short and long-term retention was very important since this information allows higher education institutions to determine if the correct faculty member is being assigned to the proper level course. A faculty member not interested in mentoring and coaching may not be the best-placed faculty member in a 100 or 200 hundred level course. An online faculty member must also embrace the needs of the students while remaining flexible, adaptable to various teaching modalities, and willing to learn new teaching tools and learning management systems.

Future research will be important to allow higher education administrators to determine the best fit for faculty; thereby having a possible impact on increased retention and persistence rates. The literature needs updated information to reflect today's online faculty personality types as they influence student retention; and this information will provide support to faculty, curricula, students, and the public interested in online faculty.

Students are changing; more people are turning to the idea of earning a degree online. Some are successful while others are not. This research offered knowledge as to which faculty personality types affected student retention.

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