
The Use of Learning Contracts to Promote Student Success in Online Doctoral Programs

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Abstract

This quantitative study provides evidence of the benefits of learning contracts in online higher education. In this study, data were gathered from doctoral students who had completed all course work and comprehensive exams, but failed to make expected progress on dissertation. The students were given the opportunity to participate in a voluntary program requiring the execution of a learning contract. This program allowed students to work directly with a dissertation chair for four hours per week over the duration of a year. Students were expected to complete their dissertation within that year or risk dismissal. The purpose of this study was to evaluate rates of milestone completion, rates of student program completion, and student perceptions of the learning contract as a factor influencing their success. Results show on average, students completed the dissertation in 316 days and at the time of publication, 62% of participants had graduated from their doctoral program. Further, students believed learning contracts were helpful to their overall success in their doctoral program. These results are encouraging for institutions wishing to increase graduation rates, improve time to completion, and provide students with strategies for doctoral program success. Recommendations for further study include an exploration of learning contracts in traditional university settings to determine if findings are generalizable.

The Use of Learning Contracts to Promote Student Success in Online Doctoral Programs

In the spring of 2013, a cohort of 212 doctoral candidates at an online university were identified as being within a year to allowable maximum time for completion of their doctoral program and at significant risk for failure. The identified students were given the opportunity to participate in a voluntary program requiring the execution of a learning contract. As part of the learning contract agreement, the student was given the opportunity to work directly with a dissertation chair for up to four hours per week over the duration of a year. This study includes an analysis of the efficacy of learning contract used under these conditions.

Research Problem

Higher education institutions employ a wide range of interventions to support student success. Learning contracts have proven effective at supporting student learning and retention (Aune & Downey, 2014;

Gaffney-Rhys & Jones, 2010), yet, little is known regarding the effectiveness of learning contracts for students engaged in dissertation writing, which often takes many years to complete. The learning contract used with students in this study only provided a year timeline for the student to complete all steps to the dissertation including an approved concept Paper, dissertation proposal, Institutional Review Board application, dissertation manuscript, and oral defense. While this intervention was needed to support student completion within an accelerated timeline, it was unknown if this intervention was supportive of student success. Without this knowledge, higher education institutions may apply ineffective strategies that hinder student success.

Research Purpose

The purpose of this quantitative study was to determine if a learning contract supported student milestone and degree completion for online doctoral degree programs. Further, students provided insights into aspects of the learning contract that were most supportive of their dissertation process. Data from this study were used to understand the benefit of using learning contracts in doctoral dissertations. Data were gathered from students who participated in the *Ombuds Pathway to Completion*. The research variables used in the study were milestone completion, degree completion, and factors predicting student success with a learning contract.

Research Questions

There were three research questions used in this study:

Research Question 1 – What is the mean time to completion of each dissertation milestone when students have a signed learning contract?

Research Question 2 – What percentage of students on learning contracts completed their doctoral degree?

Research Question 3 – What factors predict student success during doctoral degree completion with a learning contract provision?

Theoretical Framework

A study sponsored by the Council of Graduate Schools in 2010, emphasized the low graduation rates of doctoral students and the need for a set of *promising practices*, such as early and regular progress review, better financial support, and a more encouraging program environment to facilitate degree completion. An organization's value, sustainability, and success are tied to the knowledge and competencies of the organization. Therefore, one of the most significant assets of an organization is knowledge. The ability of the organization to deliver a high quality, effective, and efficient graduate experience is a result of knowledge, skills, and expertise. For higher education institutions, the creation and use of knowledge helps faculty provide a high quality and effective learning experience. As an institution focused on graduate online education, the University in the study was interested in any practice that may increase the quality and graduation rates of doctoral students. Therefore, the research effort was informed by organizational knowledge and organizational knowledge transfer theory.

Literature Review:

In the online classroom, instructors must evaluate a student's level of motivation by the amount of work they produce. There are no visual cues that can be used (Chyung, 2007) to evaluate how on-target students are to reaching educational objectives. One way to help enhance self-directed behaviors to promote learning and achievement is through the use of a learning contract (Chyung). A learning contract is a document drawn up by the student in consultation with an instructor specifying what and how the student will learn in a given period of time" (Aiken, Koplow, Lerman, Ogilvy, & Schrag, 1985, p. 1047). Learning contracts outline shared expectations for faculty, administrators, and students. Malcolm Knowles developed a model of learning contracts in the late 1980s (Fedeli, Giampaolo, & Coryell, 2013). The practice of using learning contracts has expanded over time and now, higher education institutions employ them to promote student success. Learning contracts are often used in higher education settings to manage risk, reduce complaints, and prevent litigation (Gaffney-Rhys & Jones, 2010).

Learning contracts clearly delineate learning outcomes and expectations (Goodman & Beenen, 2008). In

addition, learning contracts can serve as a diagnostic tool (Goodman & Bennen, 2008) to allow faculty to assess student academic progression. Goodman and Beenen noted that learning contract can be used to retain students, as an intervention for failing students, and as a tool to promote accountability for all users. The effective learning contract helps promote student's motivation and aligns expectations with outcomes (Klimoski, 2008). Greenwood and McCabe (2008) noted that learning contracts can be used to motivate students. These written agreements provide a mutually agreed upon set of expectations that require the student to meet learning objectives. Further, learning contracts formalize learning expectations and allow students to gradually assume full responsibility for completing the outcomes outlined in the contract. Students develop autonomy by establishing a series of milestone expectations via learning contracts (Aune & Downey, 2014).

When a learning contract is created, it should be developed around important knowledge and skills required of the student. The process for accomplishing learning contract expectations should be made explicit (MacDonald, 2012). Well-constructed learning contracts help meet the needs of students while reducing the burden of faculty to manage student learning (Rubaii-Barrett, 2006). Lemieux (2001) wrote, "students felt they had decision-making power, and reported a sense of personal responsibility for their learning experience. They also demonstrated significant improvements in performance." Learning contracts are an effective tool for responsibly sharing power and promoting better performance outcomes (p. 263). Gaffney-Rhys and Jones (2010) found that a well-constructed learning contract may positively influence student satisfaction. Chiang (1998) found that learning contracts could be used to enhance one's metacognition and achievement. Further, learning contracts can be used to empower students and build accountability (Lemieux, 2001). The learning contract provides a scaffold for learning to allow a student to develop research skills and self-regulation abilities over time (Bone, 2014).

Student perceptions of learning contracts are shaped by their views on possible gains that can be garnered through the use of learning contracts (Ismail & Yusof, 2012). In a study designed to determine if learning contracts are beneficial for supporting adult student learning, O'Halloran and Delaney (2011) noted students were more self-directed and engaged following the use of learning contracts. Learning contracts promote student commitment to and seriousness about the learning event (Aly, 2006).

Cristiano (1993) noted: Contract learning is an alternative way of structuring a learning experience. Instead of specifying how a body of content will be transmitted (content plan), it specifies how a body of content will be acquired by the learner (process plan). Students identify problems or issues that are real for them and relevant to the course at hand, state learning objectives that address attainment of knowledge and/or development of a skill, and name learning resources. Results of the learning contract demonstrate evidence of the achievement of learning objectives. (para. 1)

Methodology

In the spring of 2013, a cohort of 212 doctoral candidates at an online university were identified as being within a year to allowable maximum time for completion of their doctoral program and at significant risk for failure. The identified students were given the opportunity to participate in a voluntary program requiring the execution of a learning contract. As part of the learning contract agreement, the student was given the opportunity to work directly with a dissertation chair for up to four hours per week over the duration of a year. The 212 students enrolled in the Ombuds Pathway to Completion were tracked throughout their enrollment in the program and their milestone completion timelines and rates of completion were recorded. In addition, students were asked to participate in a voluntary survey (see Appendix A) to determine what aspects of the program and learning contract were perceived as most beneficial to their success.

Data were collected via two processes for this study. First, student milestone completion and degree completion were tracked for all 212 students from April 2013 until February 25, 2015. These data were used to provide information to answer the first two research questions. In addition, a questionnaire was created (see Appendix A) and sent to all students in the Ombuds Pathway to Completion. A total of 135 students completed the questionnaire and their responses were used to answer the third research question. In this questionnaire, analyses were done to examine possible associations between finishing the program. Data were collected on demographic factors, satisfaction, and learning contract items. The demographic variables were age, race/ethnicity, and gender. Responses to the demographic variables were available as categorical variables. Age data were available in 10-year increments (e.g., 20 to 29 years of age). Race/ethnicity was available as one variable, and respondents selected one of the race or

ethnicity responses. Gender was collected as male or female.

Descriptive statistics were used to answer the first two research questions. For research question three, the dependent variable was a 1-item dichotomous measure that indicated whether or not a student finished the program. Finishing the program indicated that a student completed the dissertation and graduated; not finishing the program meant that the student migrated to another degree program, completed a master's or other professional degree, or left the program.

There were six questionnaire items regarding satisfaction with key aspects of the Ombuds Pathways to Completion program: (1) the learning contract, (2) the review process, (3) leadership support, (4) the Dissertation Chair, (5) the Subject Matter Expert, and (6) the expedited review process. These items were based on a four-point scale that ranged from not satisfied at all to very satisfied and included an option of not applicable as not all items would necessarily pertain to all respondents. There were eight items regarding the importance of key aspects of the learning contract: (1) easy to understand, (2) easy to understand, (3) a motivational tool, (4) scheduling tool, (5) organizational tool, (6) reduction in stress, (7) increase in stress, and (8) provided structure. There was a five point scale that ranged from strongly disagree to strongly agree. This set of items included an option of neutral that the satisfaction items did not include as a possible valid response. Because of the central nature of the learning contract to retention efforts, each item was included as a predictor in the logistic regression model to better understand the relationship of each item with student success. Finally, there were six items regarding various aspects of the Ombuds Pathway process and procedures. The six aspects were the importance of the Learning Contract, the overall review process, the leadership support, the Dissertation Chair, the Subject Matter Expert, and the expedited review process. Respondents were asked to rate each item on a four-point scale (1 = not important at all to 4 = very important). There was also a not applicable option as not all aspects of the program applied to all students. Frequencies were computed for the demographic variables.

Because there were very few students in the 20 to 30 year old and 30 to 39 year old age groups, those categories were combined for the chi-square analyses in order to have enough responses to analyze in each cell. Based in the frequencies, the race/ethnicity variable was recoded for the chi-square analyses

into White, African American, and Other. The [21]Other[21] category was comprised of American Indian, Alaskan Native, Asian, and Hispanic/Latino. Gender was categorized as male or female for the chi-square analyses.

Frequencies were computed for all six of the satisfaction items. Because of the substantial number of [21]not applicable[21] responses for some of the items, a satisfaction scale was not created. For example, 26 (19%) respondents indicated that the item regarding satisfaction with the Subject Matter Expert was not applicable while 12 respondents (9%) indicated that leadership support was not applicable to their situation. Chi-squares could not be run with the existing categories due to the number of cells with zero responses; therefore, the [21]not-applicable[21] responses were removed, and the responses were dichotomized to combine the two [21]not important[21] levels of responses and the two [21]important[21] levels of responses. Chi-squares were computed to determine if there were significant associations between any of the dichotomized satisfaction items and whether or not students finished their programs. For the learning contract items, frequencies were computed. Because all items pertained to all respondents, these items were entered as individual predictors in the logistic regression model. Frequencies were computed for each item of the questionnaire to determine the percentage of students who found a particular aspect of the program important. The researchers also wanted to learn more about those who did not utilize that aspect of the program. Because not all items pertained to all respondents, these items could not be included in the logistic regression model.

Logistic Regression

A logistic regression model was fit to determine what factors predicted finishing the program. Logistic regression was used because of the dichotomous outcome variable. The initial analytic plan was to include the demographic variables as well as a satisfaction scale, individual items regarding key aspects of the learning contract, and six items regarding the Ombuds Pathway process and procedures. The six items regarding the Ombuds Pathway process and the six satisfaction items were not included in the logistic regression model because they did not pertain to all of the respondents who completed the survey. The logistic regression for this study contained the demographic variables and the eight learning contract items. The race/ethnicity variable with three categories (white, African American, and Other)

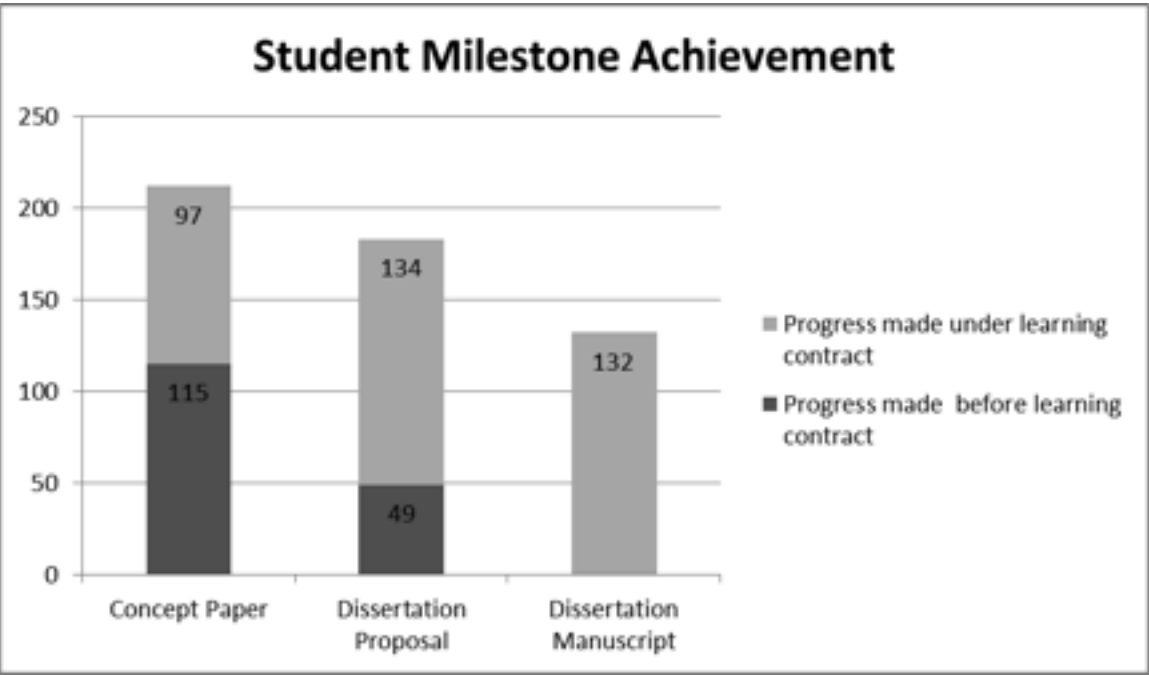
was recoded to create dummy variables with white as the reference group.

Results

Data were gathered from 212 students to determine how learning contracts supported their progress in the dissertation phase of their doctoral program. In addition, a questionnaire was distributed to all students in the *Ombuds Pathway to Completion* to determine what facets of the program best supported their doctoral progress. Three research questions were answered as part of this study. For research question 1, not all students completed all milestones. Some students entered the program having completed one or more milestone, while others withdrew or were dismissed from the program. Because the *Ombuds Pathway to Completion* is still an ongoing initiative, there remain active students enrolled in the program, so not all data were complete at the time this research study was undertaken.

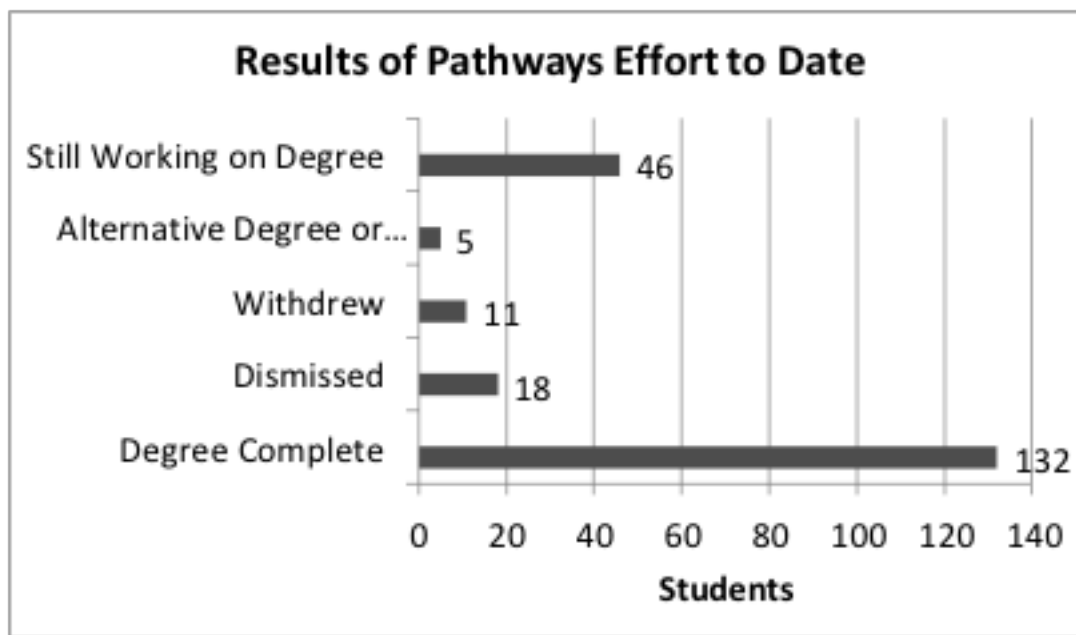
Research question 1 was: What is the mean time to completion of each dissertation milestone when students have a signed learning contract? A total of 97 students completed the concept paper milestone. The mean completion time was 67 days with a standard deviation of 65 days. A total of 134 students completed a dissertation proposal milestone. The mean completion time was 91 days with a standard deviation of 68 days. Finally, as of February, 25 2015, 132 students had completed their dissertation manuscript. The mean completion time was 182 days with a standard deviation of 69 days. Total mean time to completion for students who completed all milestones in the *Ombuds Pathway* was 316 days with a standard deviation of 76 days. Table 1 includes results of milestone completers.

Table 1: Student Milestone Achievement



Research Question 2 was: What percentage of students on learning contracts completed their doctoral degree? Table 2 includes the total population of students.

Table 2. Total *Ombuds Pathway* Student Population Outcomes



As of the date of research completion, 62% of students on learning contracts completed their doctoral degree. Should all remaining 46 active students complete, that percentage will be 84% completion rate.

Research Question 3 was: What factors predict student success during doctoral degree completion with a learning contract provision? The sample size for the voluntary survey was 135 respondents. Of those, 135 respondents, 90 (67%) reported finishing the program while 45 (33%) did not finish. One person did not provide demographic data (but did indicate that she or he finished the program), which resulted in an analytic sample of 134 respondents.

Findings for the relationship between age and finishing were not found to be significant for the chi-square test, $\chi^2(3) = 5.56, p = .14$ but approached significance for the likelihood ratio, $\chi^2(3) = 6.56, p = .08$, which is preferred over the chi-square for small samples (Field, 2005). Upon inspection of the findings, 12/13 (92%) of those 20 to 40 years of age completed the program. This is much higher than the other age groups (which showed a decrease across the other age groups down to a low of 55% for the oldest group). This negative association between age and completion was further supported by the negative gamma (gamma = $-.30, p = .03$). Although it could be argued that finishing is not an ordinal variable, the

finding is consistent with the observed data and the likelihood ratio.

There was a significant association between race/ethnicity and whether or not a student would finish the program, $\chi^2(2) = 9.42, p = .01$. Of interest, 74% of the White students in the sample completed the program, 63% of the African American students completed the program, but only 31% of those categorized in the analysis as “other” completed the program. Implications of this finding for retention efforts are in the discussion section.

There was not a significant association between gender and whether or not a student finished the program, $\chi^2(1) = .03, p = .86$. This non-significant finding indicates that in this sample the *Ombuds Pathway* program obtained the same results for both men and women.

Satisfaction

All six of the satisfaction items were found to be significantly associated with finishing the degree program. Table 3 with the item, chi-square value, degrees of freedom, and *p*-value are provided below:

Table 3. Satisfaction

Item	df	Chi-square value	p-value	Sample size for each Analysis ("not applicable" responses removed from analyses)
Learning Contract	1	8.08	.01	130
Review Process	1	10.20	.001	135
Leadership Support	1	13.49	<.001	123
Dissertation Chair	1	5.42	.02	132
Subject Matter Expert	1	5.10	.03	109
Expedited Review Process	1	12.30	<.001	132

Ombuds Pathway Process and Procedures

Frequencies were computed for each of the six items ($n = 135$ for each item). Percentages are reported for those who reported that an aspect was “very important” or “somewhat important” on each of the six aspects. The “very important” and “somewhat important” categories were combined for these analyses and presented here as “important” aspects of the program along with information regarding the non-applicability of each aspect of the program.

Only two respondents indicated they did not have a learning contract. The learning contract was rated to be important by 87.4% of the sample. The findings were even higher for the importance of the review process, an aspect of the program in which all students participated. Fully 95.5% indicated that the review process was either very important or somewhat important. There were nine ($n = 6.75$) respondents who reported not using the leadership support aspect of the program. Of the 126 who used this aspect, 84.5% of the sample found this aspect to be important. Only one person reported not having a dissertation chair (0.7%), and 97% of the sample reported that this aspect was important. There were 7 people (5.2%) who reported the Subject Matter Expert was not applicable to their experience; and 68.9% of the sample reported this aspect to be important. The last item, the importance of the expedited review, was not applicable to 3 respondents (2.2%), and this item was considered to be important by 95.6% of the sample.

Logistic Regression

A logistic regression model was fit to determine the association between variables and finishing the degree program. A logistic regression model was fit due to the dichotomous outcome variable. The $-2LL = 133.34$, which is less than the initial value ($-2LL = 167.23$), indicating the final model with the demographic and learning contract variables predicts the outcome better than the initial model with just the constant. The Hosmer and Lemeshow test was not significant, $\chi^2(8) = 13.17$, $p = .11$, which is a test to see if the observed data is significantly different from the predicted estimates in the model. This nonsignificant finding indicates that the predicted model is not significantly different from the observed data, which further supports the utility of this model.

Table 4. Logistic Regression: Factors Predicting Student Success

			95% Confidence Interval of expb	
	B (SE)	Exp (B)	Lower 95% CI	Upper95% CI
Included				
Constant	-2.709 (1.386)	.067		
AGETO39	1.739 (1.139)	5.691	.610	53.077
BLACK	-.431 (.532)	.650	.229	1.844
OTHERRACE	-1.607 (.789)	.201*	.043	.941
FEMALE	.194 (.466)	1.215	.488	3.025
LC1	.290 (.466)	1.336	.536	3.329
LC2	.963 (.437)	2.619*	1.113	6.161
LC3	.450 (.384)	1.568	.739	3.327
LC4	-.380 (.431)	.684	.294	1.591
LC5	-.655 (.405)	.519	.235	1.149
LC6	.048 (.193)	1.049	.719	1.531
LC7	-.078 (.170)	.925	.662	1.291
LC8	.184 (.223)	1.203	.777	1.861

Note: R2 = .23 (Cox and Snell), R2 = .31 (Nagekerke).

*=significant at .05 level

There are two significant predictors in the logistic regression model, one demographic variable and one learning contract variable. The significant beta for one of the dummy-coded race variables (“other”—American Indian, Alaska Native, Hispanic/Latino or Asian) indicates that being neither white nor African American indicates a negative relationship between being a member of one of those racial/ethnic

groups in this sample and finishing the program. The other significant predictor was an item on whether or not the learning contract was easy to understand. Given that, it is expected that this would be a significant predictor in the model, that respondents who stated that they “somewhat or strongly agreed” that the learning contract was easy to understand would be more likely to finish.

Discussion

For this study, three research questions provided insights into the effectiveness of learning contracts for use with doctoral dissertation students. The findings support the use of learning contracts to increase the rate of milestone progression and overall graduation rates for at-risk students. Both the chi-square results and the logistic regression model support the consideration of multiple aspects in a successful retention and completion program. For age, all but one of the students in the 20 to 39 years of age combined categories who responded to the questionnaire completed their degree programs and graduated. This is a much higher percentage of students than in the other age groups and in fact, the percentage within each age group declines as the age group increases. One aspect to consider is how to make this program work more successfully for the older students. The *Ombuds Pathway* program also worked well for the African American and white students in the survey sample. This is important because having successful retention programs for African American students helps further diversify the fields of study and ultimately, may help the senior leadership of professional organizations and academic departments be more reflective of the diversity of our wider population. Having a doctoral degree allows one entrance into these types of senior leadership positions, and one clear strength of these retention and graduation efforts is this important work to make these types of senior leadership opportunities available. Higher rates of completion could potentially lead to future opportunities for mentorships, especially with non-majority students. One challenge for the program is that it did not work as well for students who were not either white or African American, although it is important to be cautious here with that interpretation due to the small sample of students. Many different racial categories and the “Hispanic/Latino” category were combined together for analytic purposes due to the very small numbers in each group. Further work should be done to learn more about the similarities and differences across these groups. Further research should be conducted to determine what aspects of the program were successful or could become successful with modifications.

There were no significant differences for gender, indicating that the program worked equally well for men and women. This non-significant finding is actually a very important finding since it is important to create leadership opportunities for women across all racial/ethnic groups, and having a doctoral degree provides access to additional career opportunities.

The high percentages of importance for all six main aspects of the *Ombuds Pathway* program indicates that students found each part useful. The lowest of the items, Importance of the Subject Matter Expert, was still 68.9%, which suggests that, although important, this aspect could use some modification in the future. Interestingly, once students became a part of the *Ombuds Pathway*, they were no longer required to work with a Subject Matter Expert. The chair and a reviewer were the only committee members. Clearly, having an established review process, especially having an expedited review process, and a dissertation chair to guide them through their dissertations and this process, were very highly rated by the students in this survey.

It was surprising that there were only two significant predictors in the logistic regression model. In addition to the findings on race/ethnicity discussed above with the other demographic variables, the only significant predictor in the model was the item indicating that those who stated the learning contract was easy to understand were more likely to finish the program. Further research needs to be done in this area to better understand how the learning contract was viewed by the students. Based on the responses regarding the learning contract as a key aspect of the program (87.4% reported the learning contract was very important or important), future research could be done to learn more about how and why the learning contract was important to students. A qualitative study to more fully explore this area could be a useful place to start as it would provide a way to explore themes across a wide range of students and provide an opportunity to ask students about additional aspects or modifications they would like to see included for the *Ombuds Pathway* program. Further research should also be conducted to determine if findings are similar in other online and traditional educational contexts. Finally, additional research should be conducted across a longer period of time to ensure these successful results persist.

Conclusion

This research study included information about the use of learning contracts for doctoral candidates in the final dissertation stages of their online degree program. The result showed an overall increase in the success of these students. The study included data outlining the benefits of this intervention. Based on the findings, online higher education leaders should consider implementing learning contracts for at-risk doctoral students. Not only were the overall numbers of dissertation completions higher than the average student population, but also the rate of completion was higher. Because of the success of this intervention, students were much more likely to graduate.

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