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Applying Graduate Student Perceptions of Task Engagement to Enhance Learning Conditions

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Abstract

Under what conditions are graduate students most likely to learn? How do we, as teachers, best create those conditions? The answer to these questions was the focus of this study whereby 91 masters' students identified learning tasks that were most and least engaging. A model utilizing affective, behavioral and cognitive attributes was developed to measure graduate student engagement in learning tasks. Student survey data demonstrated a direct relationship between perceived value of the learning task, perceived effort put forth in achieving the learning task and perceived student engagement in learning. Multiple regression was used to predict engagement; two attributes, value and effort, predicted 93.2% of the variance in student learning task engagement. Results derived from a repeated measures t-test indicated that students performed significantly better, as measured by grades (p = .003), on learning tasks identified as most engaging when compared to learning tasks identified as least engaging.

Keywords: Graduate Student Engagement, Learning Task Engagement, Student Engagement, Classroom Engagement & School Engagement.

Introduction

"I had a hard time finding a way to apply what was learned. The inability to make that connection lowered my interest for this assignment." "I felt that I was just skimming the surface to get the assignment done, but not really gaining deeper knowledge in a useful way." "The reading was just too difficult to understand and will be used little in my professional career." These are a few comments made by graduate students in this study regarding learning tasks they identified as enjoying the least. Under what conditions are graduate students most likely to learn? How do we, as teachers, better create those conditions? The answer to these questions was the focus of this study.

The educational literature indicates that student engagement is generally recognized as one of the better predictors of learning (Brint, Cantwell & Hannerman, 2008; Carini, Kuh & Klein, 2006; Ewell, 2002). Thus, creating classroom conditions that enhance student engagement will lead to increased student learning, which is a primary goal for both students and teachers. A number of definitions for student engagement exist in the literature; for the purpose of this study, the definition selected is one which describes engagement in the context of specific academic work. Thus, graduate student engagement is defined as involvement in initiating and carrying out learning activities specific to assigned learning tasks, such as writing assignments, discussion, and group work (Skinner & Belmont, 1993).

Because student engagement is also reported to be highly linked to motivation (Bomia et al, 1997; Brooks, Freiburger & Grotheer, 1998; Dev, 1997; Pintrich & Schunk, 1996; Skinner & Belmont, 1993), it is important to delineate the difference between these two constructs. Pintrich and Schunk define motivation as "the process whereby goal-directed activity is instigated and sustained" (p.4); they claim that it can be inferred by behaviors such as effort and persistence in achieving *any* task. Two subcomponents of motivation are described in the literature (Brooks, Freiburger & Grotheer, 1998; Dev, 1997; Pintrich & Schunk, 1996), specifically extrinsic motivation and intrinsic motivation. Extrinsic motivation refers to goal-directed activity for the primary purpose of achieving some external reward, such as a promotion or a salary increase. Intrinsic motivation is described as goal–directed activity for the primary purpose of achieving personal and professional intellectual goals. Although researchers generally agree that intrinsic and extrinsic motivation may be at work simultaneously to positively impact learning, there is evidence to support that intrinsic motivation markedly assists in the learning process; successful learning increases self-efficacy specific to a task, which then further enhances intrinsic motivation (Pintrich & Schunk, 1996). *Self-efficacy*, as defined by Bandura (1997), refers to believing in one's ability to initiate actions required to achieve a desired outcome and is task specific versus being a general measure. Too many extrinsic motivators may actually *decrease* intrinsic motivation, negatively impacting learning (Dev, 1997; Lumsden, 1994; Brooks, Freiburger & Grotheer, 1998).

Student engagement, much narrower in context, refers specifically to students' ability to achieve learning tasks associated with academic work. Nonetheless, much of what we commonly accept as true regarding student engagement is derived from the abundant literature on motivation. For example, a number of studies indicate that higher levels of motivation are linked to lower student attrition rates (Blank, 1997; Dev, 1997; Kushman, Sieber & Heariold-Kinney, 2000; Woods, 1995). Because of the direct link between motivation and student engagement, the learning engagement model described in the following section was developed from the existing literature on student engagement and motivation.

Although much has been published on undergraduate measures of student engagement (Brint, Cantwell & Hannerman, 2008; Zhao & Kuh, 2004; Ewell, 2002), little has been published on graduate student measures of engagement, especially as related to learning tasks assigned for a particular course. In the United States, the National Survey of Student Engagement (NSSE) is notably the most common survey cited for measuring and evaluating undergraduate student engagement factors. However, many of the NSSE survey statements tend to measure engagement as related to campus activities and events that are indirectly associated with academic work. There is not a similar well known instrument that specifically measures graduate student engagement. It is unlikely that graduate student engagement is equally affected by participation in campus activities and events as more than 75% of graduate students work full time (United States Census Bureau, n.d.); in addition, 50% of graduate students are married (Brooks, 1988), many with children, which leaves them with less time to take advantage of extracurricular activities.

The purpose of this study was threefold. The first purpose was to investigate whether affective, behavioral and cognitive factors as identified in the literature that reportedly influence the level of learning task engagement influenced graduate student engagement. The second purpose of the study was to determine, through the use of a regression model, whether specific affective and cognitive factors were good predictors of graduate student learning task engagement. Behavioral factors could not be included in the regression model as behavioral attributes evaluated were represented by categorical values. A separate

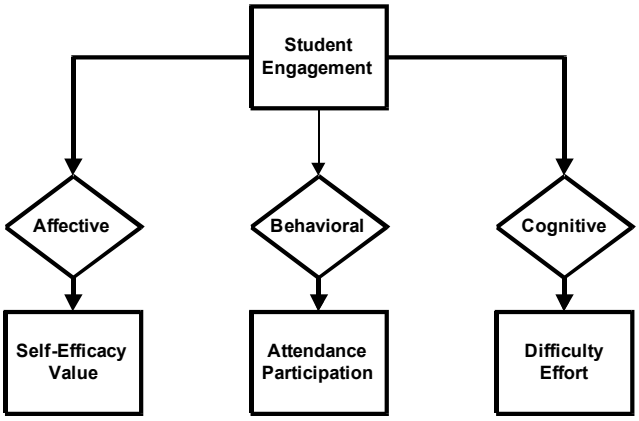
analysis of the behavioral domain was performed. The third purpose of the study was to determine whether there was a significant difference between the level of perceived engagement and the level of achievement, as measured by grades earned, for those learning tasks that students identified as most engaging and least engaging.

Learning Task Engagement Model

According to Chapman (2003), the interrelatedness of three domains may be used to assess the degree of student engagement; specifically affective, behavioral and cognitive. Zengaro & Iran-Nejad (2007) state that models of learning that encourage integration of multiple domains, which is described as multiple-source learning, better demonstrate how effective learning actually occurs. Thus, the model developed to assess graduate student engagement in this study includes attributes from the affective, behavioral and cognitive domains. Specifically, affective attributes included self-perceptions of the *value* of the learning task and self-perceptions of the degree of *self-efficacy* when completing the learning task. The literature links these two affective attributes to motivation. Expectancy theory of motivation states that when individuals *value* an outcome, they will assess the difficulty in achieving it; provided they determine that the outcome is achievable, they will put forth a significant amount of effort to achieve it (Caulfield, 2007; Vroom, 1964). In the specific context of student engagement, the learning task becomes the outcome; thus, if students see the value in learning tasks, they will be motivated to put forth significant effort to achieve the learning task provided they believe it is achievable. Factors that influence the level of self-efficacy as related to a task include previous success in completing same or similar tasks, perceived difficulty of the task and observing role models that have successfully completed same or similar tasks (Bandura, 1997). When students who understand that poor performance on a task is related to lack of skills that may be attained versus some innate deficiency, they are far more likely to remain engaged in learning a task (Brewster & Fager, 2000). These motivational theories imply that teachers serving as role models may positively affect student engagement by reinforcing to students that the skills necessary to complete a learning task are achievable. In fact, the teacher's own demonstrated competence in having achieved mastery of the subject matter, in theory, should also positively impact student engagement. In relating expectancy theory and self-efficacy theory to student engagement, if students see the *value* of the learning task and if they possess sufficient *self-efficacy*, they are more likely to put forth the necessary effort to learn it well. More will be said about *effort* and *difficulty* when the cognitive domain is addressed.

Behavioral domain attributes consist of observable behaviors. Active participation in the classroom demonstrated by regularly attending class, participating in online and in-class discussions, asking questions, actively contributing to group work and comprehensively completing assignments are behaviors demonstrated by students who are reportedly engaged (Chapman, 2003; Skinner & Belmont, 1993). Two of these attributes, attendance and participation in group work and online work, were included in the model. Cognitive strategies are those mental processes we utilize to learn, including an assessment of the *difficulty* of the task and the degree of cognitive *effort* put forward to accomplish a task (Caulfield, 2007; Vroom, 1964; Skinner & Belmont, 1993). Note that *effort* and *difficulty* are also constructs in expectancy theory, once again demonstrating the interrelatedness of motivational theory and student engagement. In integrating the three domains, which according to Chapman (2003) may be used to assess student engagement, a multisource learning model was developed comprised of attributes from each of these domains. This model is represented in Figure 1 to follow.

Figure 1. Learning Task Engagement Model



Research Questions and Hypotheses

Aligned with the threefold purpose of the study are the three research questions and their respective hypotheses:

Do affective, behavioral and cognitive factors commonly identified in the literature as influencing the level of engagement specific to a learning task influence graduate student level of engagement?

Are affective, behavioral and cognitive factors commonly identified in the literature as influencing engagement specific to learning task good predictors of engagement?

Is there a difference in level of achievement for those learning tasks identified as most engaging and least engaging?

Based on a review of the literature and aligned with the research questions, the hypotheses ($p<.05$) are:

H_{O1}: There is no relationship or a negative relationship between affective, behavioral and cognitive attributes and engagement in learning tasks (one-tailed).

H_{A1}: There is a positive relationship between affective, behavioral and cognitive attributes and engagement in learning tasks (one-tailed).

H_{O2}: Identified affective, behavioral and cognitive factors are not good predictors of learning task engagement (two-tailed).

H_{A2}: Identified affective, behavioral and cognitive factors are good predictors of learning task engagement (two-tailed).

H_{O3}: There is no relationship or a negative relationship between self-reported engagement and achievement (one-tailed).

H_{A3}: There is a positive relationship between self-reported engagement and achievement (one-tailed).

Methods

A purposive convenience sampling methodology was employed to effectively recruit 91 of 110 potential voluntary participants (82.7% participation), all professional master's students, 66 females, enrolled in one of nine hybrid courses being taught in two colleges within a private university located in the Midwest. Nearly all students were employed full time. Ages ranged from mid 20's to mid 50's, with a median age of 31. Students were mostly Caucasian (87%) with the remainder of students reporting ethnicity as African American (8%), Asian (3%) and Hispanic (2%).

Hybrid courses had reduced face time that was replaced by online learning. For these courses, approximately 30% of the class time was replaced with online learning activities. As an example, a traditional class may have met weekly for three hours. Instead, that same class taught in a hybrid format met for two weeks in succession, and the third week it did not meet, but a number of online learning tasks such as asynchronous discussion, simulations and quizzes were assigned routinely. This rotation schedule of face-to-face classes and online work was repeated for the duration of the semester. Subject matter being taught in the courses was applied theory, organizational behavior, ethics, research methods and statistics for the social sciences. Three of the nine courses were taught during the summer with an abbreviated duration of either six (2) or seven weeks. The summer classes met at least weekly. All courses were taught by the same professor over a one year period. Prior to this study, the professor had taught over 50 professional master's courses in a hybrid format. Students were oriented to the hybrid method of teaching and learning prior to start of class.

A self-report survey applying the multisource learning model depicted in Figure 1 was developed to assess the level of student engagement for each assigned and graded learning task in every course. The construct validity of the survey instrument was evaluated by piloting the instrument on several classes of professional master's students from within the same university prior to the start of the study. From the pilot, it was determined that "interest" as compared with "engagement" was a more familiar term that conveyed a similar meaning to students; student engagement literature commonly identifies interest as a synonym of engagement. Secondly, the pilot indicated that "confidence" was a more familiar term than "self-efficacy" and in the context of the survey usage, it conveyed a similar meaning. Although the term "confidence" generally refers to an overall state of being while efficacy is task specific, in the case of the survey instrument, each learning task was being evaluated individually, so the term "confidence" was task specific.

For all classes, learning tasks included in the survey were graded using percentage points and the same scale. Rubrics were used to evaluate student work. The number of learning tasks per class ranged from 14 to 26. Very few, if any, learning tasks were not graded. During the last class, a broad overview of the study was explained to the participants**.** After requesting their written consent, participants who had consented were asked to complete a confidential survey; they self-reported the level of engagement (interest), as measured by a 5-point Likert scale, in each of the learning tasks assigned during the course. Using the

same scale, for each specific learning task, they were asked to self-report the level of self-efficacy (confidence) they had when completing the task, the value that the task had as related to their personal and professional growth, the difficulty of the task and the effort they put forth when completing the task. Means with standard deviations in parentheses for each variable are as follows: engagement (interest) 3.8 (0.60); effort 4.0 (0.55); difficulty 3.4 (0.62); self-efficacy (confidence) 3.8 (0.61) and value 3.8 (0.60). For all variables, a "5" on the scale indicated the highest degree of an attribute. There were no significant differences between the means of the predictor and outcome variables for the summer classes when compared with the means of the fall and spring classes. Two examples of learning tasks originating from two different classes with the accompanying scales follow.

Drafting Your Research Question

Interest	Effort	Difficulty	Value	Confidence
5 4 3 2 1	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1

Interviewing Leadership Panel of Experts

Interest	Effort	Difficulty	Value	Confidence
5 4 3 2 1	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1	5 4 3 2 1

During student discussions of the pilot study for the survey instrument, students identified that the terms "enjoyed most" and "enjoyed least" were more familiar and conveyed a similar meaning as "most engaged and "least engaged." Thus, the more familiar terms of "enjoyed most" and "enjoyed least" were used to elicit level of engagement responses to the following two statements:

> Please identify the three (3) assignments that ***you enjoyed most*** and in a few sentences, ***explain why***.
>
> Please identify the three (3) assignments that ***you enjoyed least*** and in a few sentences, ***explain why***.

The primary purpose of including these two statements was to validate the Likert responses received.

All Likert scale data was entered into SPSS. Per participant, an index score was created for each attribute assessed; learning tasks were equally weighted. As an example, if a student circled "5" for the attribute "value" for six of the learning tasks and "4" for the remaining five learning tasks included in the survey, the value index score for that student was 50 {(5*6) + (4 *5)}. Pearson correlation, scatter plot matrices, two-factor multiple regression and a repeated measures t-test were used to analyze the data. Student responses to the two previously identified statements were word processed and categorized according to themes presented. Behavioral variables measuring participation, specifically attendance, peer participation and completion of online work, were recorded and reported aggregately per class.

Participants were evaluated by the professor for their online participation. In six of the nine classes, small group work was significant; thus, peer evaluation member participation occurring within small groups comprised 10% – 15% of each student's grade. Peer

participation scores were based on ground rules established by the group members during the first class and were posted in the course management system by a group member. For all classes, the professor recorded completion of online work and attendance.

Results

The results are presented in five parts. The first part discusses the results of the Likert scaled data for the affective (value, confidence) and cognitive attributes (difficulty, effort). The second part of the results section explains the rationale for selecting the predictor variables included in the regression model, diagnostic testing of the model and the regression findings. Flowing from the first section, this section precedes the behavioral attributes section because the regression model only involves Likert scaled predictor variables from the affective and cognitive domain. The third part of the results section discusses findings from the categorically scored behavioral attributes. The fourth part of the results section discusses the student responses to the semi-structured statements included in the survey. The fifth and final part of the results section discusses the findings from the repeated measures t-test.

Likert Scaled Survey Data

A scatter plot matrix illustrates the relationship between several variables taken two at a time. For this sample, the scatter plot matrix illustrates that all predictor variables had a positive linear relationship with the outcome variable, student engagement (interest). The last row of the scatter plot matrix (Figure 2), indicates a linear relationship between the dependent variable, engagement as measured by interest, and each of the following independent variables; effort, difficulty, value and self-efficacy as measured by confidence. Zero order Pearson correlations (Table 1) indicate a statistically significant positive relationship between all independent variables, $p < .05$, one-tailed, suggesting that multicollinearity may be an issue when building a multiple regression model. Third-order partial correlations (Table 2) indicate two statistically significant independent variables correlated with the dependent variable, interest (engagement), specifically value ($r = .656$; $p < .0005$, one-tailed) and effort ($r = .362$; $p < .0005$, one-tailed). The third-order partial correlations for the two remaining independent variables, confidence and difficulty, approached zero, indicating that there was no *direct* link between the original two variables and the outcome variable, possibly because these variables either share common anteceding causes or they are intervening variables (Garson, 2008).

Figure 2: Scatter Plot Matrix of Variables

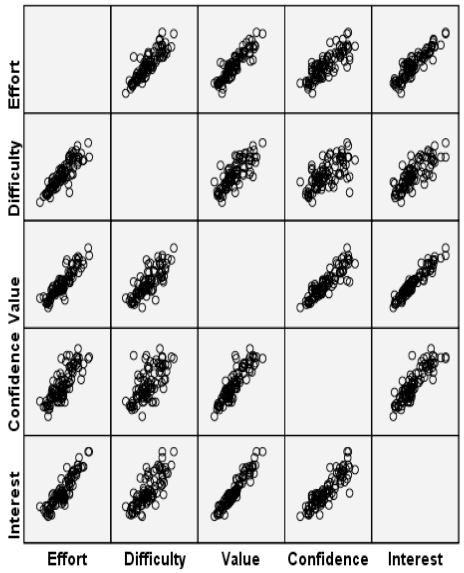


Table 1. Results of Pearson Zero-Order Correlation
(n = 91; p < .0005, one-tailed)

Variable	Difficulty	Value	Confidence	Interest
Effort	r = .876 *p* < .0005	r = .903 *p* < .0005	r = .822 *p* < .0005	r = .914 *p* < .0005
Difficulty		r = .800 *p* < .0005	r = .665 *p* < .0005	r = .792 *p* < .0005
Value			r = .896 *p* < .0005	r = .960 *p* < .0005
Confidence				r = .879 *p* < .0005

Table 2. Results of Pearson Third-Order Partial Correlation Controlling for Confidence, Difficulty, Value & Effort (n = 91; *p* < .0005, one-tailed)

Variable	Interest
Value	r = .656 *p* < .0005
Effort	r = .362 *p* < .0005

As a result of the preceding analysis, a multiple regression model was built with just two predictor variables, value and effort. Results indicate that these attributes are very good predictors of student engagement for this student sample. The mean and standard deviation for the predictor variables are displayed in Table 3. The summary multiple regression

statistics displayed in Table 4 indicate that these two predictor variables, value and effort, accounted for 93.2% of the variance in engagement for the sample in this study. Finally, this regression analysis resulted in an F-test statistic of $F_{(2, 88)} = 620.72$, $p < .0005$.

The Dubin-Watson statistic is reported as 1.76, indicating that autocorrelation is unlikely. Although the tolerance statistic is reported as .19 and the VIF statistic as 5.3 indicating possible existence of multicollinearity, conducting t-tests for each of the two predictor variables indicated that both had a statistically significant relationship with engagement; further, theory supports leaving both predictor variables in the model. Finally, the coefficient signs were in agreement with the relationships of the theoretical constructs as reported in the literature.

Table 3. Mean & Standard Deviation for Effort & Value (n =91)

Variables	Mean	Std. Dev.
Effort	70.77	21.23
Value	66.14	21.52

Table 4. Summary of Regression Analysis for Variables Predicting Engagement (n = 91)

Variable	*B*	*SE B*	β
Effort	.25	.06	.26***
Value	.69	.06	.72***

Note. $R^2 = .932$ ($p < .0005$) ***$p < .0005$

To examine normality, a stem and leaf plot of studentized deleted residuals indicated a fairly normal distribution (Figure 3) and a boxplot of the residuals (Figure 4) indicated a fairly symmetric distribution. The Q-Q plot of residuals also indicated that the distribution was normal. Thus, the assumption of normality does not appear to have been violated.

Figure 3. Stem & Leaf Plot of Studentized Deleted Residuals (n = 91)

```
Frequency    Stem &  Leaf

   1.00 Extremes    (=<-3.1)
   3.00       -2 .  125
   9.00       -1 .  000011223
  31.00       -0 .  0000112222233455566677777777888
  32.00        0 .  00000001112222223333444667788899
  12.00        1 .  000013444567
   2.00        2 .  22
   1.00 Extremes    (>=2.7)

Stem width:   1.00000
Each leaf:       1 case(s)
```

Figure 4. Boxplot of Studentized Deleted Residuals (n = 91)

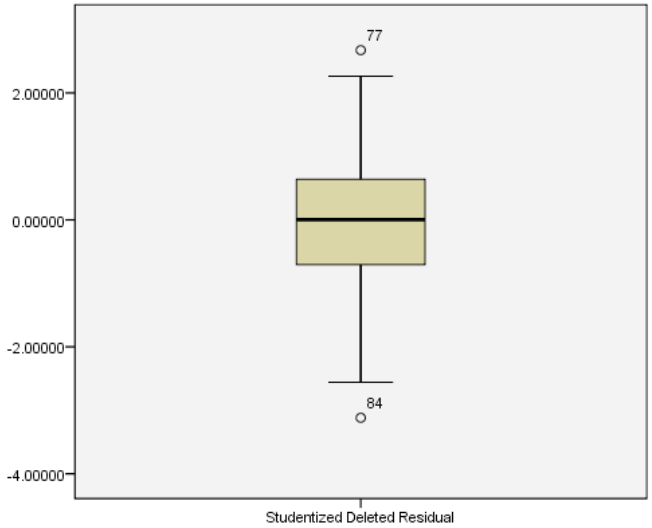
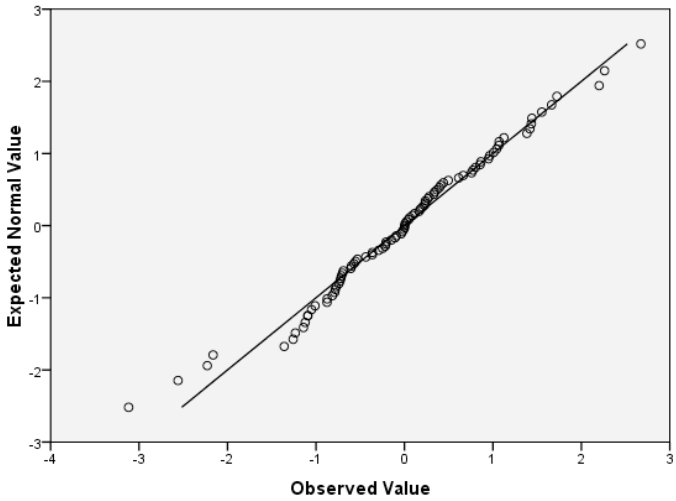


Figure 5. Normal Q-Q Plot of Studentized Deleted Residuals (n = 91)



In summary, for this sample all four predictor variables were positively correlated with the outcome variable, engagement. Because the predictor variables were also highly correlated with one another, multicollinearity was a problem, making it difficult to ascertain the impact each individual predictor variable had on the outcome variable. To decrease the likelihood of multicollinearity negatively impacting the multiple regression model results, two of the four predictor variables that were not directly related to the outcome variable as indicated when performing a third-order partial correlation, were not included in the regression model. The

remaining two predictor variables resulted in a statistically significant multiple regression model, accounting for 93.2% of the variance in the outcome variable, indicating a large effect size (Gravetter & Wallnau, 2007). Although the tolerance and VIF statistics suggested that multicollinearity may still be problematic, both predictor variables have theoretical support; thus both were left in the regression model. The assumption of independence was met in that observations were independent. Results of diagnostic testing indicate that the assumptions of normality and of linearity were not violated, and plots indicate that the predictor variables were normally distributed.

Behavioral Attributes

As mentioned previously, the mean Likert score for student engagement (n = 91) on a 5-point scale was 3.8, indicating a fairly high level of student engagement. The summarized behavioral findings in Table 5 support the high level of reported engagement, indicating that for this study, attendance, peer evaluated participation in small group work and completion of online work as a measure of participation were good overall predictors of student engagement, demonstrating consistency in findings between the three domains. Summarized findings for attendance, peer evaluated participation in small group work, percentage of grade determined by online work and online completion of assignments are indicated in Table 5. The second column titled "n = 110" indicates the number of students enrolled in each class. Data for the behavioral attributes of attendance, peer evaluation and online work included all students enrolled in the class versus those that consented to participate in the survey, where n = 91. Classes have been assigned numbers versus identifying them by course title; this was done to protect student anonymity, and is in agreement with the consent obtained.

Six of the nine classes employed the use of small groups to complete academic work. Thus, to measure group participation, peer evaluation was a component of each student's grade in the course. Adding peer evaluation as a component of the course grade tends to minimize social loafing by increasing peer accountability and peer participation when completing group learning tasks (Birmingham & McCord, 2004; Johnson & Johnson, 2003; Revere, Elden & Bartsch, 2008). As mentioned earlier, each group established ground rules during the first week of class to serve as guidelines for assessing peers at the conclusion of the course. Ground rules typically included statements that pertained to timely and thorough participation in group work.

Table 5. Summary of Behavioral Variables per Class (n = 110)

Class	n = 110*	Number of Times Class Met	Number of Absences per Term	Mean Peer Evaluation Score (Scale of 1 to 10)	Percentage of Grade Determined by Online Work	Number of Online Assignments Partially or Not Completed
1	21	9	4	9.5	25	2
2	18	9	8	9.5	40	0
3	13	9	5	9.7	25	2
4	12	6	3	N/A**	25	0
5	11	9	8	N/A**	50	0
6	9	8	2	9.4	40	0
7	9	9	3	9.7	25	4
8	9	6	2	N/A**	25	0
9	8	6	1	9.7	25	1

*Behavioral variables are being reported on all enrolled students who completed the course versus only those who completed surveys, where n = 91.

** Peer evaluation was not a factor for this class.

Semi-Structured Responses

Student responses to the two statements asking them to identify the three assignments they found to be most enjoyable and the three assignments that they found to be least enjoyable are summarized by theme in Table 6. Out of 546 possible responses to the two statements, 455 (83.3%) were usable in that the student responded to each statement either fully or partially. Students' statements for the assignments identified as most and least enjoyable were consistent with the Likert scale scoring, indicating that they understood the use of the scale and that the data was reliable. It is interesting to note that responses relating to why students liked a specific learning task (n = 267) far exceeded responses as to why students disliked a specific learning task (n = 188)**.** This result is in agreement with what has been termed the "Polyanna Principle" in the field of psychology, indicating that individuals tend to recall positive and successful experiences more than neutral or negative ones (Matlin & Stang, 1978; Wagenaar, 1986).

Table 6. Summarized Responses to Statements by Theme in Descending Order of Frequency

Frequency of Response n = 267	**Responses relating to why student *liked* a specific learning task.**	**Frequency of Response n = 188**	**Responses relating to why student *disliked* a specific learning task.**
67	Useful, applicable to current professional or personal life.	52	Could have been valuable, but very difficult for me.
50	Learned something novel and interesting.	31	Inapplicable to me at this point in my life; couldn't relate to the material.
43	Strengthened my skills in a particular area (presenting, analyzing, understanding research, or conducting a literature review).	29	Took too much time for me to complete the work.
33	Valuable discussion with peers and/or teacher.	19	All or part of the assignment was ambiguous.
30	Helped me retain an important concept.	16	Did not understand the application to the subject area.
13	Thought about something from an entirely different perspective.	14	Did not help me learn the course content.
22	Challenging, but a valuable part of the course.	11	Seemed superficial versus gaining a more in-depth learning experience.
9	Really impacted my life.	9	Would have preferred more in-depth discussion following written assignment.
		7	Presenting in front of a group is difficult for me.

Repeated Measures

Students received higher grades for those assignments that they identified as "enjoying the most." A repeated measures t-test was used to determine whether there was a difference in means as measured by the grade earned for those learning tasks that students identified as most enjoyable as compared to those learning tasks that students identified as least enjoyable. In reviewing 107 assignments, findings indicated that students achieved a

significantly higher grade on the assignments that they identified as "enjoying the most" (*M = 92.44, SD = 5.70*) as compared to those assignments identified as "enjoying the least" (*M = 88.13, SD 9.31*), *t(106) = 4.73, p = .003* (one-tailed), *d = .46,* indicating a moderate effect size *(Gravetter & Wallnau, 2007).* It is noted that the sample size (n = 107) was achieved by eliminating all assignments that were assigned a group grade versus being assigned an individual grade. As mentioned earlier, rubrics were consistently used to assess graded work, and grading was completed by one professor who taught all nine courses over the period of one year. In a few instances, responses were either partial or unusable, causing further reduction of the sample. As an example, a student may have responded that she really enjoyed the in-class discussion of a particular topic; however, that discussion was an aftermath of completing a written assignment and was not, in itself, included as part of the grade for that assignment.

Discussion

What has been learned from this study directly related to the research questions and hypotheses is the following. For this sample of students, the multiple-source learning model employed in the study demonstrated that the three domains identified in Chapman's (2003) earlier research could be integrated, as evidenced by consistent findings from the attributes tested in each domain. Attributes evaluated in each domain were positively related to student engagement. For this sample, *value* and *effort* were highly predictive of student engagement. The summarized behavioral attributes, specifically attendance, peer participation and consistent completion of online work (evaluated as an indicator of online participation), were excellent for all classes, and were aligned with the students' reported engagement (mean = 3.8). The semi-structured responses as compared to the regression findings showed consistency in the data, with the idea of value being highly related to engagement. Finally, students performed more favorably as measured by grades on those assignments that they identified as enjoying the most.

As mentioned earlier, extrinsic motivating factors may play a role in influencing student engagement. In this study, extrinsically motivating factors could be attributed to an attendance policy stating that no more than two classes could be missed for semester courses and no more than one class could be missed for summer classes; attendance was recorded for each class. To further clarify, the grade earned is the extrinsic motivation, which could have positively influenced student engagement. As related to incomplete work, it is noted that in all but one case of partially completed or not completed online assignments, the assignment involved was a personal journal. As personal journals were mentioned only three times as being one of the most disliked assignments, it is likely that lack of engagement may *not* have been the primary factor for incomplete journals. Instead, an influencing factor could have been that each journal assigned accounted for less than 1% of the overall grade for the course. Due to the small impact that journals had on the students' overall course grades, low extrinsic motivation was *likely* a factor that explained why the journals were the one assignment that consistently had not been completed.

The semi-structured responses as compared to the regression findings show consistency in the data, with the idea of value being highly related to engagement. The most frequently identified reasons reported for liking an assignment were usefulness and applicability to the students' professional careers and personal lives. The second most frequently identified reason reported for liking an assignment was learning something novel and interesting followed by strengthening a specific skill. All three of these reasons indirectly imply that the student saw value in the assignment. Finally, in agreement with the literature, students

performed more favorably as measured by grades on those assignments that they identified as enjoying the most.

On the other hand, the most frequently reported reason for disliking assignments was that the assignment *could* have been valuable, but was very difficult, indicating ambiguity regarding its value. The second most frequently stated response for disliking an assignment was its inapplicability to the students' lives, again indicating that it had questionable value to the students. Notable is that one of the more frequent responses from students for those assignments reported as most engaging was that the assignment was *both* valuable and challenging, indicating that if an assignment was perceived as valuable, it was engaging despite its being challenging. On the contrary, if an assignment was reported as being very difficult with questionable value, it was often reported as disengaging. These results indicate that it is very important for teachers to explain the value of their assignments as related to the students' professional careers and/or personal lives. If students can see the value of the work, they will put forth the effort in completing the learning task (applied expectancy theory). Results of the repeated measures are aligned with the literature indicating that students who report being engaged with a learning task are likely to perform better on that task (Brint, Cantwell & Hannerman, 2008; Carini, Kuh & Klein, 2006; Ewell, 2002), emphasizing the importance of assigning engaging work.

Other points not specifically researched for this study, but worth noting, are the following. Of the 35 students enrolled in the three summer classes, five (14.3%) stated that the summer abbreviated format made it very difficult to learn the course content in general, indicating the challenge that arises when trying to condense a full semester's graduate work into an abbreviated course format. A number of findings report that work overload is one of the major factors that increase student stress levels and decrease effective learning (Garrison & Vaughan, 2008; Kaleta, Aycock & Caulfield, 2004; Ramsden, 2003). Thus it would seem that to maintain an effective learning experience, the workload for abbreviated courses may need to be reduced from that of a full semester course offering. For those students interested in learning more than what may be reasonably taught during an abbreviated course, providing a relevant supplemental media list that could be accessed when the class concludes may be helpful. It is emphasized, however, that in this study, there was not a statistically significant difference in the mean engagement factor when comparing summer classes to fall and spring classes.

Another point worth mentioning is that students made no negative comments regarding the use of a course management system or the amount of online work assigned for each course. This could be due to the fact that they were aware that the course would be taught in a hybrid format prior to enrolling. Furthermore, it could be related to the fact that the technology used was relatively simple; there were no significant technology issues reported for any of the classes and over 50% of the students had previously completed a hybrid class. It is noted that for six out of nine classes involving 70 students, small group work was a significant portion of the class; yet only four students mentioned problems with group members or group work in general. One student complained of social loafing by one group member, another student complained of a personality clash with a member of her group and two individuals stated that coordinating the group work made it too time consuming.

Finally, it is emphasized that results from the study pertain to professional master's students enrolled in professional master's courses taught in a hybrid format. Because traditional undergraduate students have less professional experience to draw upon, this particular model may not be a good assessment model for undergraduate student engagement. Secondly, the hybrid format may not be as effective of a model for traditional

undergraduate students, who may benefit from a more structured learning environment. Thirdly, the small class sizes could have influenced the level of student engagement. However, as enrollments in all nine classes were relatively constant, this criterion could not be evaluated for this study.

Limitations

As a purposive convenience sampling technique was used in this study and all classes were taught in one university in the Midwest, generalizing findings to professional graduate students located in other geographic areas may not be applicable. Internal threats to validity are inherent with any non-experimental research design such as this. Without random assignment to treatment and use of a control group, probabilistic equivalence of groups cannot be assumed. Courses were taught in a hybrid format, which could influence the results obtained. Three of the nine courses were taught during a summer session, which also could have influenced the results obtained. As with any categorization of qualitative responses, interpreter bias is a factor that is present. Finally, as with any self-reported survey responses, there exists speculation as to the assumptions on which those responses are based.

Future Research

To date, there are few studies investigating levels of engagement specific to the graduate student population. Therefore future research investigating graduate student engagement is valuable in further advancing the scholarship of teaching and learning as related to what makes graduate students learn more effectively. Areas for future research include replicating similar studies to this one with graduate students in other settings and/or developing and applying other multiple-source learning models that further investigate graduate student levels of engagement. Finally, this model could be applied to other student groups to evaluate its applicability in assessing student engagement; specifically, it may apply to non-traditional undergraduate students who many times have had extensive professional experience.

In conclusion, findings from the sample in this study indicate a statistically significant positive relationship between the outcome variable, student engagement, and the predictor variables; effort, difficulty, value and self-efficacy. A two factor multiple regression model demonstrated that value and effort were very good predictors of student engagement (R^2 = 93.2%). Behavioral variables such as group participation, completion of online work and attendance were good overall predictors of graduate student engagement in the classroom and online. Qualitative student responses supported regression model results. Aligned with the literature that links achievement with student engagement, findings from this study indicated that student achievement as measured by grades was higher for those assignments that students reported as most engaging when compared to those assignments that students reported as least engaging (p = .003). Thus, in general, the integrated multi-source model applied to assess levels of graduate student engagement worked well for the professional master's students who participated in this study.

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