The Impact of Student Expectations in Using Instructional Tools on Student Engagement: A Look through the Expectation Disconfirmation Theory Lens

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ABSTRACT

With increasing class sizes, faculty have increasingly been using online homework software (OHS) and in-person discussion groups as the classroom evolves. We sought to determine the effect of online homework software and in-person discussion groups on student engagement. Specifically, we posited that expectations influence this relationship, and we applied Expectation Disconfirmation Theory (EDT) to determine whether a student's expectations about discussion groups or OHS impacts Student Engagement. Moreover, with EDT, we assessed whether these impacts are direct. Our results indicate that if instructors facilitate the development of expectations when students work in groups in a class, the student's level of group satisfaction in addition to engagement in the course will be positively influenced. However, the findings indicate that OHS exerts differing effects. When instructors focus on developing realistic expectations about the OHS used in class they will achieve greater satisfaction with the technology. This satisfaction with the technology will then lead to student engagement in the course. This exploratory study, in spite of a few limitations, demonstrates the importance of managing expectations in the classroom, and its impact on current educational tools. The study also identifies additional research questions on expectation management relating to student engagement that would reduce the impact of these limitations.

Keywords: Expectation disconfirmation theory, Student engagement, Discussion group, Online tools

1. INTRODUCTION

1.1 Student Engagement

Student engagement has become a desired outcome of the university. As early as 1975, researchers declared that student engagement is most directly related to an individual's continuance in college (Tinto, 1975). Since then, it has been proven to impact graduation rates, classroom motivation, and course achievement (Lee, 2014; Flynn, 2014; Kuh et al., 2008). It is clear that student engagement is critical to motivate students in the learning process. The more students are motivated to learn, the more likely they are to be successful in their studies. Student engagement is widely accepted as a proxy for effective learning (Sharma, Jain, and Mittal, 2014). Moreover, the Association to Advance Collegiate Schools of Business (AACSB) has increased their focus on engagement, and universities are responding by developing strategies to increase student engagement.

Faculty has increasingly been using online homework software (OHS) and in-person discussion groups as tools and methods used as the classroom evolves. Specifically, OHS enables faculty to automate some of the homework assignment and grading processes, which can be time-consuming. We seek to determine the effect of online homework software and in-person discussion groups on student engagement. Specifically, we posit that expectations influence this relationship, and we apply Expectation Disconfirmation Theory (EDT) to determine whether a student's expectations about Groups or OHS lead to Student Engagement. Moreover, with EDT, we are assessing whether these impacts are direct or mediated by another factor (i.e. whether the relationship between OHS Disconfirmation and Student Engagement is mediated by Satisfaction with the OHS technology).

1.2 Defining Engagement

Researchers have struggled to develop a consensus view of the student engagement concept (Hazel et al., 2014; Reschly and Christenson, 2012) as the definition and measurement of Student Engagement (SENG) has evolved over the past two decades (Fredricks et al., 2011). Earlier definitions tended to focus on the perception and behavior of students, with more recent definitions incorporating emotional and cognitive processes (Wolters and Taylor, 2012; Fredricks et al., 2011).

We sought a conceptualization that incorporates emotional and cognitive processes and includes multiple dimensions of the complex concept of student engagement. Schaufeli et al. (2002b) conceptualizes student engagement as *a fulfilling and positive state of mind that is characterized by dedication, absorption, and vigor in an academic environment*. Therefore, we adopted the definition from Schaufeli et al. (2002b).

We will next discuss our theoretical lens - EDT.

2. THEORETICAL LENS: EXPECTATION DISCOMFIRMATION THEORY

Extant research demonstrates the importance of managing expectations in various contexts. In the psychology literature, it has been suggested that lowering a perspective employee's expectations by presenting realistic job previews results in desirable organizational outcomes such as reduced turnover and increased satisfaction (Buckley et al., 1998). Moreover, Expectation Disconfirmation Theory (Oliver, 1980) has been utilized by researchers to understand consumer satisfaction and repurchase intentions in marketing and psychology (i.e. Martínez-Tur et al., 2011; Diehl and Poynor, 2010; Gotlieb, Grewal, and Brown, 1994; Woodruff, Cadotte, and Jenkins, 1983). EDT has also been applied to study IT adoption, IT usage, IT outsourcing success, and user satisfaction (i.e. Schwarz, Schwarz, and Black, 2014; Brown, Venkatesh, and Goyal, 2014; Lankton, McKnight, and Thatcher, 2014; Schwarz, 2011; Premkumar and Bhattacherjee, 2008; Kettinger and Lee, 2005). We posit that EDT also influences satisfaction with factors relating to student engagement.

EDT explains the process through which users determine their level of satisfaction based upon their expectations. According to EDT, the individual forms their expectation about a product or service when they first hear about it. They then consume or use the product or service and form perceptions about its performance. Next, they compare their original expectation to the perceived performance of the product/service and determine the extent to which their expectation was confirmed. There are three possible outcomes from this disconfirmation assessment. When actual performance exceeds expectations, then positive disconfirmation occurs. When actual performance fails to meet an individual's expectations, then negative disconfirmation occurs (Bhattacherjee and Premkumar, 2004; Oliver, 1980). When actual performance is equivalent to expectations, simple confirmation occurs (Santos and Boote, 2003; Oliver, 1980). Based upon their level of confirmation, the individual forms a corresponding level of satisfaction. Positive disconfirmation leads to satisfaction, and negative disconfirmation leads to dissatisfaction. Simple confirmation, however, can lead to either satisfaction (Hunt, 1991) or a neutral state of neither satisfaction nor dissatisfaction (Erevelles and Leavitt, 1992).

In this study, we apply the EDT theoretical lens to technology expectations and group expectations in a course at a university in the southeastern United States to determine whether expectations exert an impact upon student engagement.

We will now discuss two tools which instructors commonly employ to increase student engagement – online homework software and in-person discussion groups. We selected these two factors as we were seeking to understand the impact of educational tools that are increasingly being used in the classroom. We posit that with increasing class sizes and shrinking budgets, instructors are seeking teaching tools that mitigate the negative impact of these issues while providing benefits such as increased engagement. We postulate that discussion groups and OHS meet those criteria. Moreover, researchers have been studying discussion groups and OHS (Wright and Lawson, 2005; Clarke, Flaherty, and Mottner, 2001) as tools that enhance student learning.

2.1 Online Homework Software (OHS)

The first tool is online homework software (OHS). These learning management systems provide a way to promote additional student practice of course material (Hahn, Fairchild, and Dowis, 2013) by enabling instructors to assign homework that is accessible online, provides immediate feedback to the students, and offers a greater number of potential practice problems to choose from than written homework. These systems also enable instructors to customize their homework to a greater extent than traditional homework methods. However, a study of faculty perceptions of OHS indicates that faculty who currently use OHS in their courses are concerned about whether OHS actually improves student learning, and some faculty have already discontinued using OHS due to doubt about its ability to improve student learning (Humphrey and Beard, 2014). However, the National Survey of Student Engagement (NSSE), which measures dimensions of student engagement as an indication of collegiate quality, reported that learning with technology was positively related to all four of NSSE's academic challenge engagement indicators (NSSE, 2013).

Students also have mixed thoughts about OHS, with about half of the students expressing positive perceptions relating to online homework (Fish, 2013). Extant studies have failed to reach a consensus on the value of OHSs. While some studies demonstrate that using an online homework system results in higher exam scores than students who complete written homework (Arora, Rho, and Masson, 2013), others find no learning advantage related to the use of OHSs (Hahn, Fairchild, and Dowis, 2013). Thus, we seek to determine whether OHS truly provides the benefits faculty is seeking. Moreover, we seek to determine the impact of expectations on OHS satisfaction and SENG.

2.2 In-person Discussion Groups

With the number of students in each course increasing as universities attempt to deal with budget cuts, instructors are seeking ways to make large classes seem small (Hommes et al., 2014) including dividing the class into groups (Shah and Salim, 2013; Nicholl and Lou, 2012; Glenn, 2010). Studies have demonstrated the benefits of small face-to-face discussion groups over whole-class discussions or even online discussions (Hamann, Pollock, and Wilson, 2012; Roebuck, 1998). Furthermore, research demonstrates that students enrolled in courses employing discussion groups indicated higher levels of satisfaction with the course

(Hamilton et al., 2002; Pang, Tong, and Wong, 2011) and enhanced student involvement in the learning process (Miglietti, 2002). However, little is known about the impact of expectations on discussion group satisfaction or SENG. Therefore, in this study, we seek to determine the effect of in-person discussion groups, termed Groups in the model, and Online Homework Software, termed OHS in the model, on student engagement utilizing an EDT lens (Figure 1). We will begin with a discussion of the method utilized for data collection.

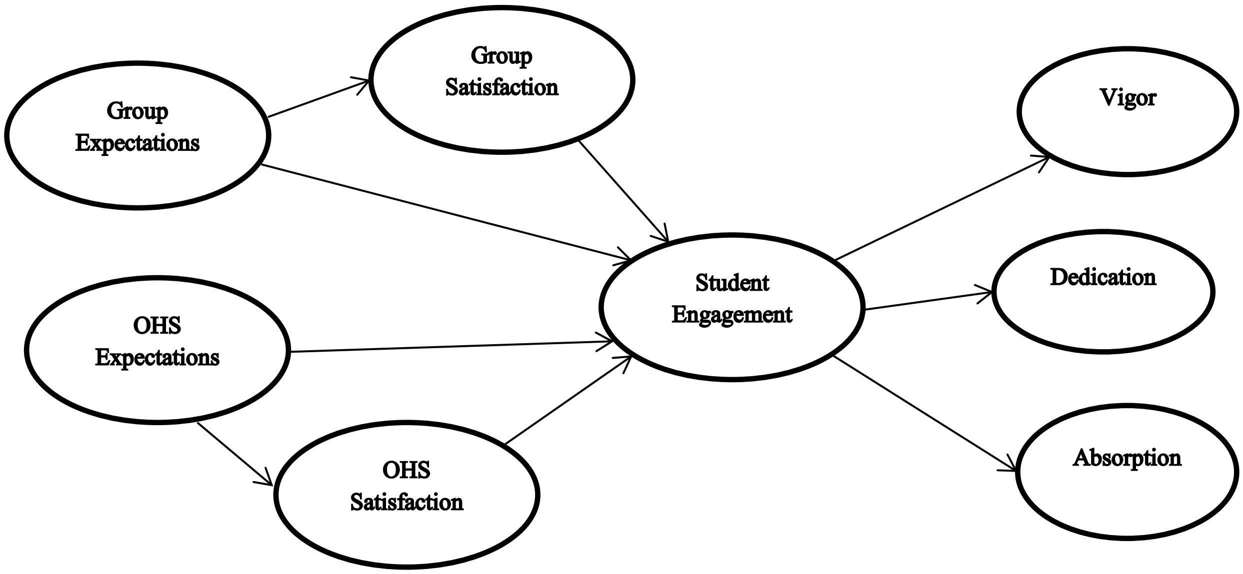

Figure 1. Proposed Research Model

3. METHOD

3.1 Construct Measures

Some studies measure SENG in a general manner, using items such as “are you engaged in the classroom?” (i.e., Roodt, 2013). Other studies employ a multi-dimensional view of SENG (Thien and Razak, 2013). We adopt the view of SENG as a second-order construct including the dimensions of behavioral-, emotional-, and cognitive engagement (Thien and Razak, 2013). We employed the Utrecht Work Engagement Scale for Students (UWES-S; Schaufeli et al., 2002b), which has been employed in previous studies to measure SENG (e.g., Alarcon, Edwards, and Menke, 2011; Schaufeli et al., 2002a). It consists of three subscales: dedication, absorption, and vigor.

- Dedication, the cognitive dimension, is characterized by a sense of pride, inspiration, significance, challenge, and enthusiasm in an academic setting.
- Absorption, the behavioral dimension, is characterized by fully concentrating in an academic environment whereby time passes quickly.
- Vigor, the emotional dimension, is characterized by a high level of energy when in an academic environment which facilitates an individual’s willingness to exert effort in their academic pursuits (Schaufeli et al., 2002b).

The items utilized to measure expectations and satisfaction were adapted from existing measures (Premkumar and Bhattacherjee, 2008) which had been developed, tested, and validated in extant studies (Table 1).

Consensus has not been reached about the best method to employ when measuring a respondent’s level of expectation confirmation. While some researchers may argue for the superiority of the differential approach (Lankton, McKnight, and Thatcher, 2014), we posit that direct perception has been widely used in the IS discipline (e.g., (Hong et al., 2011; Bhattacherjee and Premkumar, 2004; Susarla, Barua, and Whinston, 2003) and has been demonstrated to provide better predictive validity than the differential approach (Kettinger and Lee, 2005; Dabholkar, Shepherd, and Thorpe, 2000; Babakus and Boller, 1992; Parasuraman, Berry, and Zeithaml, 1991). We have therefore selected to implement the direct perception measurement of expectations.

Construct	Items	Citation
Technology Satisfaction	I am _ with MyOMLab. 1. Extremely displeased . . . Extremely pleased. 2. Extremely frustrated . . . Extremely contented. 3. Extremely disappointed . . . Extremely delighted. 4. Extremely dissatisfied . . . Extremely satisfied.	Adapted from Premkumar and Bhattacherjee (2008)
Technology Expectations (Disconfirmation)	Compared to my initial expectations, the ability of MyOMLab 1. To help me learn new knowledge was (much worse than expected . . . much better than expected). 2. To help me learn new material was (much worse than expected . . . much better than expected). 3. To help me get better grades in this class was (much worse than expected . . . much better than expected). 4. To provide me flexibility to learn on my own time was (much worse than expected . . . much better than expected). 5. To give me the ability to learn at my own pace was (much worse than expected . . . much better than expected).	Adapted from Premkumar and Bhattacherjee (2008)
Student Engagement (Utrechtwork Engagement Scale for Students)	**Vigor** 1. When I'm studying for this class, I feel mentally strong. 2. I can continue for a very long time when I am studying for this class. 3. When I study for this class, I feel like I am bursting with energy. 4. When studying for this class I feel strong and vigorous. 5. When I get up in the morning, I feel like going to this class. **Dedication** 1. I find this course to be full of meaning and purpose. 2. This course inspires me. 3. I am enthusiastic about this course. 4. I am proud of my studies in this course. 5. I find the course challenging. **Absorption** 1. Time flies when I'm studying for this class. 2. When I am studying for this class, I forget everything else around me. 3. I feel happy when I am studying intensively for this class. 4. I can get carried away by my studies for this class.	Adapted from Schaufeli et al. (2002b)
Group Expectations (Disconfirmation)	Compared to my initial expectations, the ability of my group… 1. To help me better understand new knowledge was (much worse than expected . . . much better than expected). 2. To help me learn new material was (much worse than expected . . . much better than expected). 3. To increase my interest in the course material was (much worse than expected . . . much better than expected). 4. To provide me with insight into the course material (much worse than expected . . . much better than expected). 5. To facilitate interesting discussions was (much worse than expected . . . much better than expected).	Adapted from Premkumar and Bhattacherjee (2008)
Group Satisfaction	I am _ with my group. 1. Extremely displeased . . . Extremely pleased. 2. Extremely frustrated . . . Extremely contented. 3. Extremely disappointed . . . Extremely delighted. 4. Extremely dissatisfied . . . Extremely satisfied.	Adapted from Premkumar and Bhattacherjee (2008)

Table 1. List of Items

In the Fall of 2013, we conducted an online survey with 139 undergraduate students who were taking an Operations Management course at a university in the southeastern United States. We selected this course because the students were required to use online homework software to complete their homework assignments. In addition, the students participated in in-person discussion groups. The course is required for all business majors and usually students take it at their junior or senior year.

As completion of the survey was part of their grade, we received 118 responses out of 139 enrolled students, resulting in an 85% response rate which is a very high response rate (Porter and Umbach, 2006). The survey participants were all business majors, with 60 female students and 58 male students. A majority were seniors, with 70 seniors and 46 juniors. The average age of the students was 22.8 years with a standard deviation of 3.6 years.

4. ANALYSIS AND RESULTS

4.1 Data Analysis

We analyzed the data using structural equation modeling. Given our small sample size (n=118) and the corresponding lack of statistical power in utilizing a covariance-based approach (Westland, 2010), we selected the partial least squares (PLS) approach, specifically Smart PLS (Ringle et al., 2014) software. We will begin with a discussion of our measurement model.

4.2 Measurement Model

The first step in a PLS analysis is the analysis of the measurement (or outer) model. Following the procedures outlined by Wright et al. (2012), our first step was the creation of a first-order measurement model. We began by analyzing the loadings and cross-loadings of all items to ensure that they each loaded on their respective constructs (see Table 2). All loadings were greater on the intended construct than on any other constructs. Consequently, upon determining that none of the items loaded higher on any construct other than the intended construct, we included all the items. We next evaluated the reliability, discriminant, and convergent validity of the first-order measurement model. Utilizing the item loadings, we calculated the internal composite reliability (ICR) to evaluate the measure's reliability, finding that all the dimensions exceeded the .70 threshold and were all above 0.88 (bottom of Table 2). Moreover, to estimate convergent validity, we evaluated each dimension's average variance extracted (AVE). Utilizing the threshold value of 0.50 for AVE (Barclay, Higgins, and Thompson, 1995), our findings support convergent validity (Barclay, Higgins, and Thompson, 1995).

	Absorption	Vigor	Dedication	Tech Expect	Group Exp	Group Sat	Tech Sat
ABSORP1	**0.836**	0.556	0.659	0.020	0.206	0.119	0.293
ABSORP2	**0.900**	0.563	0.519	-0.135	0.216	0.135	0.088
ABSORP3	**0.876**	0.618	0.549	-0.098	0.257	0.074	0.078
ABSORP4	**0.906**	0.664	0.537	-0.149	0.222	0.106	0.101
VIGOR1	0.696	**0.949**	0.430	-0.022	0.276	0.199	0.193
VIGOR2	0.621	**0.968**	0.480	0.092	0.300	0.209	0.309
DEDIC1	0.527	0.392	**0.939**	0.127	0.275	0.216	0.406
DEDIC2	0.586	0.403	**0.943**	0.057	0.223	0.169	0.342
DEDIC3	0.715	0.549	**0.911**	0.058	0.255	0.120	0.354
TECEXP1	-0.129	0.070	0.079	**0.839**	0.058	0.163	0.306
TECEXP2	-0.119	-0.014	0.030	**0.805**	-0.031	0.089	0.315
TECEXP3	-0.020	0.052	0.052	**0.836**	0.177	0.139	0.302
TECEXP4	-0.043	0.033	0.149	**0.817**	0.208	0.112	0.230
GRPEXP1	0.181	0.223	0.233	0.062	**0.910**	0.581	0.312
GRPEXP2	0.310	0.320	0.348	0.142	**0.908**	0.543	0.301
GRPEXP3	0.226	0.293	0.239	0.119	**0.943**	0.580	0.297
GRPEXP4	0.212	0.264	0.160	0.098	**0.918**	0.509	0.177
GRPSAT1	0.101	0.219	0.167	0.168	0.596	**0.973**	0.304
GRPSAT2	0.097	0.194	0.143	0.116	0.578	**0.950**	0.287
GRPSAT3	0.159	0.200	0.219	0.155	0.554	**0.945**	0.303
TECSAT1	0.229	0.263	0.453	0.369	0.298	0.316	**0.951**
TECSAT2	0.095	0.275	0.304	0.278	0.291	0.308	**0.906**
TECSAT3	0.119	0.217	0.335	0.332	0.250	0.249	**0.953**

First Order Reliability and AVE							
AVE	0.774	0.918	0.867	0.68	0.846	0.914	0.877
ICR	0.932	0.957	0.951	0.895	0.956	0.97	0.956
Cronbach's Alpha	0.903	0.912	0.923	0.844	0.939	0.953	0.931

Table 2. Loadings and Cross Loadings

	Absorption	Dedication	Vigor	Group Exp	Group Sat	Tech Expect	Tech Sat
Absorption	0.880						
Dedication	0.648	0.931					
Vigor	0.682	0.477	0.958				
Group Exp	0.256	0.272	0.301	0.956			
Group Sat	0.124	0.184	0.214	0.602	0.956		
Tech Expect	-0.099	0.09	0.043	0.116	0.153	0.824	
Tech Sat	0.166	0.397	0.269	0.299	0.312	0.353	0.937

Table 3. First Order Correlation of Constructs

We then evaluated the construct's convergent and discriminant validity (Table 3). We examined the correlations between the dimensions as well as the items. As the square root of the AVE exceeded the correlation between each dimension for all of the other dimensions, we concluded that there was adequate discriminant validity among the measures.

After establishing discriminant validity in our measurement model, we next estimated our second-order model. We employed the repeated indicators approach for each of the dimensions as indicators of the second-order construct outlined by Wright et al. (2012) and then re-specified the model. We first analyzed the second-order loadings and cross-loadings for all of the items (Table 4). All loadings were greater on the intended construct than on any other construct. Consequently, on determining that none of the items loaded higher on any construct other than the intended construct, we included all the items. We then evaluated the reliability, discriminant, and convergent validity of the second-order measurement model, with each dimension being modeled as a reflective construct. Using the item loadings, we calculated the internal composite reliability (ICR) to evaluate the measure's reliability, finding that all dimensions exceeded the .70 threshold, with the second-order construct being 0.854 (bottom of Table 4). Moreover, to estimate convergent validity, we evaluated each dimension's average variance extracted (AVE). Utilizing the threshold value of 0.50 for AVE (Barclay, Higgins, and Thompson, 1995), our analysis indicates that our findings support convergent validity (Barclay, Higgins, and Thompson, 1995).

	Absorb	Vigor	Dedicate	Engage	Tech Expect	Group Exp	Group Sat	Tech Sat
ENG11	**0.822**	0.561	0.670	**0.816**	0.021	0.204	0.118	0.293
ENG12	**0.902**	0.568	0.529	**0.801**	-0.132	0.214	0.135	0.089
ENG13	**0.882**	0.624	0.559	**0.818**	-0.099	0.256	0.073	0.078
ENG14	**0.911**	0.666	0.549	**0.840**	-0.148	0.221	0.106	0.101
ENG3	0.697	**0.960**	0.441	**0.774**	-0.021	0.274	0.199	0.192
ENG4	0.622	**0.958**	0.488	**0.756**	0.090	0.299	0.209	0.309
ENG6	0.522	0.388	**0.922**	**0.721**	0.125	0.274	0.216	0.406
ENG7	0.582	0.400	**0.944**	**0.761**	0.055	0.221	0.169	0.342
ENG8	0.710	0.548	**0.926**	**0.856**	0.055	0.253	0.120	0.355
Expect2	-0.131	0.061	0.074	-0.018	**0.832**	0.058	0.162	0.306
Expect3	-0.122	-0.021	0.027	-0.055	**0.810**	-0.031	0.089	0.315
Expect4	-0.025	0.050	0.046	0.020	**0.842**	0.176	0.139	0.302

Expect5	-0.047	0.027	0.146	0.042	**0.812**	0.207	0.112	0.230
GRPEXP2	0.182	0.220	0.230	0.239	0.060	**0.911**	0.581	0.312
GRPEXP3	0.309	0.320	0.347	0.374	0.140	**0.905**	0.542	0.301
GRPEXP4	0.227	0.291	0.236	0.283	0.119	**0.943**	0.580	0.297
GRPEXP5	0.213	0.264	0.158	0.238	0.097	**0.919**	0.509	0.176
GRPSAT1	0.101	0.219	0.162	0.172	0.167	0.596	**0.973**	0.304
GRPSAT2	0.096	0.194	0.136	0.153	0.116	0.579	**0.951**	0.286
GRPSAT4	0.156	0.198	0.213	0.213	0.155	0.553	**0.944**	0.303
SAT1	0.222	0.254	0.449	0.354	0.371	0.297	0.316	**0.952**
SAT2	0.088	0.269	0.300	0.234	0.279	0.291	0.308	**0.903**
SAT4	0.113	0.211	0.332	0.243	0.334	0.249	0.249	**0.954**
AVE	0.775	0.919	0.867	0.632	0.679	0.846	0.914	0.877
ICR	0.932	0.958	0.951	0.939	0.894	0.957	0.97	0.955
Cronbach Alpha	0.903	0.912	0.923	0.927	0.844	0.939	0.953	0.931

Table 4. Loadings and Cross-Loadings

	Absorb	Dedicate	SENG	Group Exp	Group Sat	Tech Expect	Tech Sat	Vigor
Absorption	0.88							
Dedication	0.656	0.959						
SENG	0.931	0.842	0.931					
Group Exp	0.254	0.268	0.31	0.795				
Group Sat	0.123	0.178	0.188	0.603	0.824			
Tech Expect	-0.102	0.082	-0.007	0.114	0.153	0.92		
Tech Sat	0.159	0.394	0.303	0.298	0.311	0.355	0.956	
Vigor	0.688	0.484	0.798	0.299	0.213	0.035	0.261	0.936

Table 5. Second Order Correlation of Constructs

We then conducted a convergent and discriminant analysis of the constructs (Table 5). To evaluate discriminant validity we examined the correlations between the dimensions as well as the items. As the square root of the AVE exceeded the correlation between each dimension and all other dimensions, we concluded that we had established discriminant validity of the measures.

4.3 Structural Model

Our results indicate that group expectations predict group satisfaction ($\beta = 0.603$, t=8.727, $p < 0.001$) and that technology expectations drive satisfaction with the technology ($\beta = 0.355$, t=2.783, $p < 0.001$). However, while satisfaction with the technology drives engagement ($\beta = 0.283$, t=2.504, $p < 0.01$), satisfaction with a group does not ($\beta = -0.040$, t=0.337, ns). In contrast, positive group expectations predict engagement ($\beta = 0.265$, t=2.603, $p < 0.001$), while positive expectations towards the technology is not an antecedent to engagement ($\beta = -0.132$, t=0.9294, ns). Finally, all three of the first order constructs were components of the second order construct of engagement: vigor ($\beta = 0.798$, t=17.249, $p < 0.001$); dedication ($\beta = 0.842$, t=32.184, $p < 0.001$); and absorption ($\beta = 0.931$, t=60.021, $p < 0.001$).

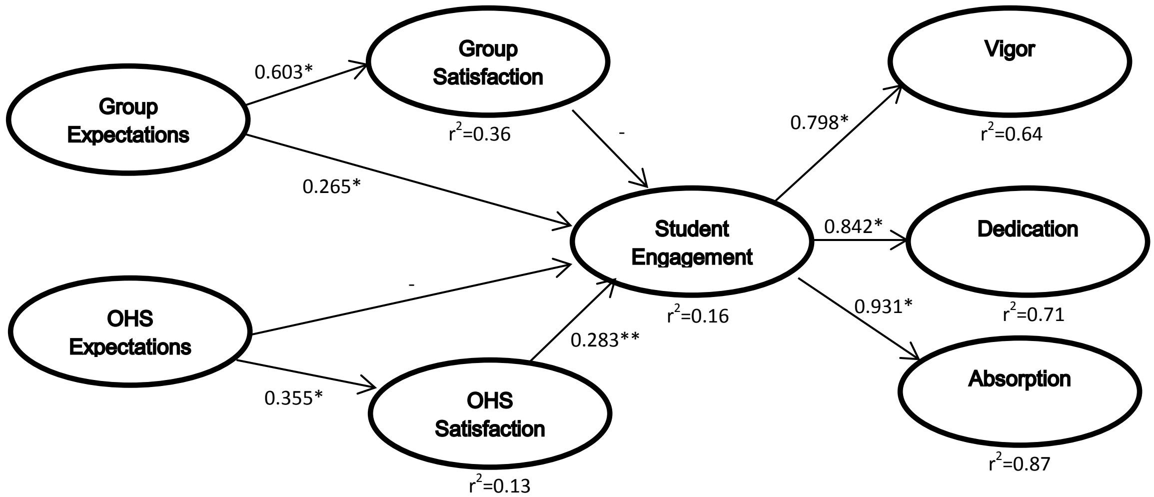

Figure 2. Results of the Structural Model

5. DISCUSSION

Our study extends the EDT research stream by demonstrating the effect of expectations on satisfaction with factors leading to engagement in the classroom. Our findings indicate that group expectations impact group satisfaction and engagement. Therefore, if group expectations are exceeded, then positive disconfirmation would occur, and one would be more satisfied with their group in addition to being more engaged. However, group satisfaction was not found to influence student engagement.

These results indicate that if instructors facilitate the development of expectations when students work in groups in a class, then the student's level of group satisfaction in addition to engagement in the course will be positively influenced. However, merely focusing on increasing a student's level of satisfaction with their group will not lead them to be more engaged.

The relationship between expectations and engagement is different when we are dealing with technology. Our findings indicate that a student's expectations about a technology do not directly influence their level of engagement. However, the student's level of satisfaction with the technology mediates the relationship between expectations and engagement. Therefore, when instructors focus on developing realistic expectations about the technology used in class they will achieve greater satisfaction with the technology. This satisfaction with the technology will then lead to student engagement in the course.

Extant research surely demonstrates the importance of maximizing the opportunity for positive disconfirmation (Schwarz, 2011; Brown et al., 2008; Buckley et al., 1998). However, one may conclude that this positive disconfirmation can best be achieved by setting low expectations in order to achieve higher satisfaction or student engagement. We are hesitant to make this conclusion as we posit that setting realistic expectations is a more pragmatic option, which is supported by previous research. EDT research in the area of job previews (Harvey, Buckley, Novicevic, 2007; Phillips, 1998; Wanous et al., 1992) demonstrates that lowering a perspective employee's expectations by presenting realistic job previews results in desirable organizational outcomes such as increased satisfaction and reduced turnover (Buckley et al., 1998). We therefore suggest that setting realistic expectations, rather than merely setting low expectations, about a technology or working in a group will lead to increased satisfaction and engagement in the classroom. We encourage other researchers to empirically test this proposition inside the classroom.

6. IMPLICATION FOR PRACTICE

Although instructors may reason that striving to make a student satisfied in their group would cause them to be more engaged, our findings indicate that this is not the case. Instead of focusing on making a student satisfied in their group, engagement arises from focusing more on expectations. As group expectations directly impact both satisfaction and engagement, providing examples of positive and negative group experiences both within the classroom and in business can better prepare a student for the experience and facilitate the development of realistic expectations. When there is purposeful focus on expectations in the classroom, then a student learns to adjust their expectations to better deal with their group experiences, both positive and negative. They will then become more satisfied as they are better prepared to handle various situations that arise. Moreover, our findings indicate that they will be more engaged.

Our findings also demonstrate the impact of expectations on satisfaction with OHS. However, in the context of OHS, managing expectations will impact a student's level of satisfaction with the OHS. Therefore, instructors who have previous experience with a particular OHS can prepare their students for working with the software by presenting a realistic depiction of the system, including positive and negative experiences. Specific examples of previous student's experiences with the system can provide a richer data set when the students are forming their expectations. When a student experiences positive disconfirmation, then they will be satisfied with the OHS, and then they will become engaged. Therefore, managing expectations in addition to other methods to increase satisfaction can lead to engagement.

Our findings also have implications for designers of online learning platforms. As the current study demonstrates the impact of expectations on technology satisfaction, the OHS companies are cautioned against setting high expectations that cannot be met. While the OHS companies must present the benefits of the technology in order to achieve a sale, they must balance this information by simultaneously presenting realistic expectations in order to achieve satisfaction. If expectations are set too high and satisfaction is not achieved, it is unlikely that the instructor will continue to use the technology.

7. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Our study has four limitations that should be noted. First, we surveyed a limited pool of students at a single university. Replication of this study at another university would provide an additional setting and support for the generalizability of our findings.

Second, the study design included compulsory completion of the survey. Specifically, a compulsory survey has the potential to inflate assessments of pedagogical tools by the subjects, as the student could feel that a negative assessment might impact their grade (thus influencing the validity of the responses). However, while completion of the survey was a part of the student's grade, it accounted for only 1.5% of their grade. As 15% of the students selected to not complete the survey, we postulate that the students may not have viewed the survey as strictly mandatory. Moreover, the responses were blinded prior to the analysis, and no students' responses were associated with their name. Once again, replication of this study at another university where completion of the survey was non-compulsory would alleviate these concerns about the research.

Third, as we had a small sample size (n=118) and were using an exploratory approach, we were unable to utilize a covariance-based approach to analyze the data. However, the partial least squares (PLS) approach has been utilized in many IS studies (e.g., Schwarz and Schwarz, 2014; Kamis and Kahn, 2009; Chin, Marcolin, and Newsted, 2003) and is a key multivariate analysis method in the discipline (Ringle, Sarstedt, and Straub, 2012; Gefen, Rigdon, and Straub, 2011). Future research could examine these relationships utilizing a confirmatory method such as covariance-based approach.

We encourage researchers to further examine the impact of setting various levels of expectation standards on satisfaction and engagement in a classroom setting (see Schwarz, 2011 and Santos and Boote, 2003 for a discussion of the levels of expectations). These studies would enable us to determine the impact of the development of worst imaginable expectations or ideal expectations on satisfaction and engagement.

Finally, we chose to collect data to study the impact of just two factors - OHS and in-person discussion groups – on student engagement. While we posit that these two educational tools are increasingly being used in the classroom, other educational tools could also impact student engagement. Therefore, we encourage other researchers to study the impact of additional educational tools on student engagement.

8. CONCLUSION

As universities continue to seek methods increase student engagement, our findings demonstrate the importance of expectations in student engagement in addition to satisfaction. By engaging in expectations management to facilitate the development of realistic expectations, instructors can provide a better learning environment for today's student.

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