

CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

FINDING WHAT WORKS ONLINE:
ONLINE COURSE FEATURES THAT ENCOURAGE
ENGAGEMENT, COMPLETION, AND SUCCESS

A dissertation submitted in partial fulfillment of the requirements
for the Doctor of Education Degree in Educational Leadership

by

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ABSTRACT

FINDING WHAT WORKS ONLINE: ONLINE COURSE FEATURES THAT ENCOURAGE ENGAGEMENT, COMPLETION, AND SUCCESS

by

Joanna M. Miller

Doctor of Education Degree

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Based on research performed at a single California community college, this study concludes that that instructors in online classes can engage students and increase their completion and success rates by being present and visible to their students, responding quickly and robustly to student inquiries and assignments, providing ample opportunity for students to interact and work with their peers, and by presenting an organized class. The study offers suggestions for implementing online innovations to improve student engagement, completion and success. The study population was 561 students enrolled in 99 online classes at a single California community college. The study focuses on ten course features identified in literature as indicative of an engaging online class and provides descriptive statistics on those ten features as they are present in online course offerings at this community college. This study examines the impact of the features on student engagement, course completion and success. Specifically, this study examines the relationships of features in instructor presence, student interaction and course design to self-reported student engagement and institutional aggregated course completion and success rates. Additionally, this study examines the impacts of student characteristics on engagement, completion and success.

INTRODUCTION

Higher education students across the nation and state enroll in online courses at an ever-expanding rate, with the national number of courses offered through online or alternative delivery reaching 12.2 million enrollments by 2007 (NCES, 2008). In 2008, one in four higher education students nationwide enrolled in at least one online course (Allen & Seaman, 2009). In California community colleges alone during the 2009-2010 academic year, 649,518 unique individuals were enrolled in distance education classes (California Community Colleges Chancellor’s Office, 2011). In 2009, that meant that 113,207 full-time equivalent students (FTES) enrolled in Distance Education courses statewide (CCCCO, 2008-09). At Gateway College (an alias) in Southern California, alternative delivery course enrollments, which include those courses taught completely or in part online or via videoconference, accounted for almost 10% of total FTES (CCCCO, Fall 2010). With this many students taking at least a portion of their instruction through this modality, a lot of learning and resources are at stake.

Moreover, statewide online and alternative delivery enrollments have continued to expand, even as overall enrollments statewide have been forced to retract due to deep state funding cuts forecast for 2011-2012 (Scott, 2010).

Table 0-1 – California Community Colleges Headcount by Traditional and Distance Education

<i>Fiscal Year</i>	<i>Distance Education</i>	<i>Traditional Education</i>	<i>Total</i>	<i>DE % of Headcount</i>
2005-06	328,372	2,630,207	2,958,579	12.48%
2006-07	392,355	2,694,149	3,086,504	14.56%
2007-08	483,884	2,810,572	3,294,456	17.22%
2008-09	611,689	2,923,137	3,534,826	20.93%

2009-10	649,518	2,758,831	3,408,349	23.54%
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Source: Adapted from “Distance Education Report,” by the California Community Colleges Chancellor’s Office, 2011

Figures by headcount were not available for Distance Education enrollments at Gateway College, but the California Community Colleges Chancellor’s Office Data Mart provides a measure by Full Time Equivalent Students, which reflects the number of units taken at the college divided by a factor that is roughly equivalent to a fulltime load of 15 units. The annualized FTES measurement shows that Distance Education enrollments grew rapidly at Gateway College as well, expanding from its nascent program in 2005 to 1,260 Full Time Equivalent Students in the 2009-2010 academic year.

Table 0-2 – Growth in Distance Education at Gateway College

Gateway College Distance Education Enrollment by FTES

<i>Academic Year</i>	<i>DE Enrollment as FTES</i>
2005–2006	12
2006–2007	20
2007–2008	616
2008–2009	855
2009–2010	1,260

Source: California Community Colleges Chancellor’s Office Data Mart, 2011

While online education was once dismissed as second-rate or considered the easy answer for growth-hungry, brick-and-mortar-bound institutions, online education is now recognized as a legitimate and important mode of delivery. It is now integrated into most institutions and included in strategic planning at universities and community colleges throughout the nation (McCarthy & Samors, 2009). Alternative delivery education is part of Goal A, the first goal listed in the California Community Colleges Chancellor’s Office Strategic goals (CCCCO, 2009). In addition, the California Legislative Analyst’s Office

says in its report, “The Master Plan at 50: Using Distance Education to Increase College Access and Efficiency”, that distance or online education could be the means to help those who dropped out of college return to university and finally complete their bachelor’s degrees (Legislative Analyst’s Office, 2010).

Online learning’s efficacy has been established as well. In a 2010 U.S. Department of Education meta-analysis of 50 effects of online learning, one of the researchers’ key findings was that learning outcomes for engaged online learners were slightly better than those for onsite learners (Means et al, 2010).

But growth, legitimacy, and effectiveness tell only part of the story of online education at California community colleges; completion and success rates must be part of the narrative as well. That’s true for several reasons. With continuing cuts in California education budgets and the state unemployment rate stuck at 10.8% for the first three months of 2012 (Bureau of Labor Statistics, 2012), many California community colleges have now shifted their emphases from enrollment growth to enrollment management, from getting bigger to getting better (Skinner, Yatooma & Brady, 2010). Administrators are cutting course offerings across all modalities to reduce expenses while focusing new attention on student course completion and a measure called success, which means a grade of ‘C’ or higher in a graded course, a pass in a pass/fail class, or credit in a credit/no credit class. Indeed, California Community Colleges Chancellor Jack Scott set student success as a major goal for 2011-2012 in the 112 California community colleges across the state. “Access is not enough,” he said in a 2010 speech at the California Community College League Conference. “Success must be our mantra” (Scott, 2010). Dr. Peter MacDougall, a member of the California Community Colleges Board of

Governors and chair of the Student Success Task Force established in 2011, said in a press release that the task force's job is promoting student success. He also hinted at changing the college funding formula from the current model based on the early-semester headcount census to one that counts heads at course completion or success (CCCCO Student Success Task Force, 2011).

Throughout the nation, college administrators are facing shrinking budgets and increasing demands to enroll and graduate more students. The only possible way for improving graduation rates is to realign funding priorities to coincide with academic performance. Course and programs geared toward helping students walk across a stage wearing a cap and gown on graduation day must be our first priority. (CCCCO Student Success Task Force, 2011, para 4)

A look at course completion rates at California community colleges overall paints a respectable picture, revealing an 85% course completion rate in Fall 2010 (CCCCO Data Mart, 2011). That means that more than eight of every ten students complete the courses they begin. But the completion rate, or the retention rate as it is also called by the California Community Colleges Chancellor's Office, measures the percentage of students who are still enrolled at course term, including those who stopped coming weeks earlier but never dropped their courses, and those who did poor work or so little work that they earned a 'D' or an 'F'. Completion rates can also include students who never came to class at all, but simply did not drop the course.

By contrast, a look at success rates, which the state Chancellor's Office calculates based on the number of students who complete courses with a 'C' or higher, reveals a far more telling trend in how well we are doing by our students in California community

colleges, as Scott and MacDougall indicate (Scott, 2010, CCCCCO, 2011). Statewide, the rate of student success across all disciplines in Fall 2010 was 68% (CCCCO Data Mart, 2011). Setting the success rate at ‘C’ or higher is no arbitrary cutoff. Only grades of ‘C’ or higher count as credit for courses required for a major or a prerequisite at California state universities (CSU Mentor, 2012). By this measure, if we educators at California community colleges received a collective grade for our students’ success, our transcript would show a ‘D’.

Table 0-3 – California Community Colleges Completion and Success, Fall 2010

<i>Total Enrollments</i>	<i>Completion</i>	<i>% Completion</i>	<i>Success</i>	<i>% Success</i>
4,290,951	3,640,837	84.85	2,936,208	68.43

Source: Data retrieved from California Community Colleges Chancellor's Office Data Mart, 2011

When we break down the completion and success rates by mode of delivery, the picture takes on an even more ominous indicator for distance and online education. According to the California Community Colleges Chancellor’s Office, distance education at California community colleges includes nine categories. The single largest category, online asynchronous education, accounted for 84% of the total. The completion rate for all distance education courses as well as for asynchronous distance education courses is 77% statewide (CCCCO Data Mart, 2011). Again, not a bad mark, until we look at success. The statewide success rate for all distance education classes as well as for asynchronous online rounds to a dismal 57% (CCCCO Data Mart, 2011). That’s an ‘F’ by most classroom standards.

Table 0-4 – Statewide Completion and Success Totals by Mode of Delivery at California Community Colleges, Fall 2010

<i>Total Enrollments</i>	<i>Completion</i>	<i>Completion Rate</i>	<i>Success</i>	<i>Success Rate</i>
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All Classes	4,290,951	3,640,837	84.85%	2,936,208	68.43%
Non-DE Classes	3,891,596	3,323,673	85.41%	2,694,883	69.25%
All DE Classes	439,325	341,625	77.76%	250,165	56.94%
DE Asynchronous	369,811	286,119	77.37%	210,236	56.85%

Source: Data retrieved from California Community Colleges Chancellor's Office Data Mart, 2011

The picture at Gateway College mirrors the statewide trend. The completion rate for all classes in all modes of delivery in Fall 2010 looks reputable at 84%. Success rates, though, fall to 70%, just above the state average. Gateway's performance in distance education, or alternative delivery as it is called at Gateway College, is similarly disappointing. The college distance education courses maintained a 76% completion rate in Fall 2010, slightly above the state average. But distance education success rates plummet to a failing 58%, or 1% higher than the state average.

Table 1.4 – Gateway College Completion and Success by Mode of Delivery, Fall 2010

	<i>Total Enrollments</i>	<i>Completion</i>	<i>Completion Rate</i>	<i>Success</i>	<i>Success Rate</i>
All Classes	46,100	38,699	83.95%	32,235	69.92%
Non-DE Classes	41,905	35,495	84.70%	29,791	71.09%
All DE Classes	4,195	3,204	76.38%	2,444	58.26%

Source: Data retrieved from California Community Colleges Chancellor's Office Data Mart, 2011.

With every completer counting in this era of budget shortfalls, and with the academic and possibly future financial emphases shifting to success, colleges and faculty need to know what engages online students, and what encourages them to complete and succeed in their classes.

Many studies have examined student satisfaction and retention or completion in traditional onsite as well as in online settings. Seminal studies on the onsite classroom by Astin (1985, 1999) and Chickering & Gamson (1987), and Tinto (1987, 2000, 2004, 2005, 2006) assert that students need faculty and student interaction to be engaged and to persist. Much of the foundational tenets established in those works by Astin, Chickering and Gamson, and Tinto apply both to onsite and online education (Tello, 2002). The near-unanimous consensus is that students, whether seated inside classrooms or attending online, thrive on interaction with their instructors and fellow students, which encourages them to participate, engage and persist. Interaction and a sense of community are keys to completion and success (Chickering & Gamson, 1987; Chickering & Ehrmann, 1996; Dixson, 2010; Fazioli, 2009; Tello, 2002; Tinto, 2007). There are a few exceptions, which will be discussed in the next chapter. But the consensus is that, connected, engaged, collaborative students persist and complete at higher rates. Completion, of course, is the precursor to success, for without completion, there is no success or cap-and-gown conversation.

Those and other studies provide information on categories of institutional and instructor practices and student experiences. The studies tell us in general terms why students tune in or tune out, why they persist or drop. Some studies, such as Tello (2002), seek to discern whether one method of communication is better than another. Many “Best Practices” documents and studies tell faculty what quality courses should look like (Clawson, 2007; CSU Chico, 2003; North American Council for Online Learning, 2010; Sloan Consortium, 2009). Dixson (2010) studied engagement online. What is needed now to move college online education practice and pedagogy and andragogy into the realm of

enabling engagement and encouraging completion and success of the current and next generation of learners is detailed information on individual online course features and their levels of operation that are associated with, or that predict, online student engagement, completion, and success.

At present, online faculty have insufficient evidence to tell them what specific features excite and engage students and urge them to succeed in their online classes. If faculty had access to information on which specific online course features predict student engagement and completion, they might opt to alter their instruction and course design to improve student experiences. For instance, if faculty could know whether students are more engaged and therefore more likely to complete in classes in which the instructor provides photos, graphics and text complemented with instructor voice narration in orientations, homepage posts or lecture, (Fazioli, 2009; Hersh, 2009, Mandernach, 2009; Mayer & Johnson, 2008; Moreno, 2006), faculty might plan their courses accordingly. Or if faculty knew that using other multimedia made a difference in student satisfaction, (Doolittle, 2001; Mandernach, 2009), faculty could use that knowledge in their decisions on course planning and delivery. If faculty knew whether students in the online environment, just like in an onsite class, are more likely to complete when they have done group work in class, (Dixson, 2010; Thurmond & Wambach, 2004; Swan, Shea, Fredericksen, Pickett, & Pelz, 2000), faculty might add that element as a group assignment feature. And if faculty had evidence that establishing clear, strong instructor presence would more heartily engage their students (Anderson, Rourke, Garrison, & Archer, 2001; 2001, Dixson, 2010; Lowenthal, & Parscal, 2008; Shea, Pickett, & Pelz, 2003; Swan, 2004), they might make more of an effort to be “present” to their students

through various features, such as frequent home page posts, discussion contributions or email responses to student inquiries.

Many studies have examined instructor presence, which is essentially interaction among the students and instructor together with the intangible sense that the instructor is available and present in the online classroom context (Anderson, Rourke, Garrison, & Archer, 2001; Bambara, Harbour, Davies, & Athey, 2009; Dixson, 2010; Garrison, Anderson & Archer, 2000; Hoskisson & Clark, 2010; Lowenthal, & Parscal, 2008; Shea, Pickett, & Pelz, 2003; Swan, 2004; Tello, 2002). This study attempts to discover whether instructor presence through course features, including personalized voice orientation and lecture, frequent and personalized home page posts, frequent posts during discussion and other interaction, is associated with or predicts student engagement, completion and success. Instructor responsiveness, which could not be measured through an individual feature due to privacy concerns, was examined through different measures.

Many other studies have discussed the importance of student-to-student interaction in the online environment (Bambara, Harbour, Davies, & Athey, 2009; Dixson, 2010; Fazioli, 2009; Mandernach, 2009). This study examines whether student interaction through course features, including graded student discussion, student-led discussion, and collaborative work on assignments, is associated with or predicts student engagement, completion and success.

There is also a body of evidence on the importance of clarity and simplicity in course design and the need to eliminate barriers to student success in online education (Fazioli, 2009; Muilenburg & Berge, 2005, Swan, 2001; Vonderwell & Zachariah, 2005). This study examines those areas as well through the features of the use of course

modules, clarity and simplicity and overall interest and appeal.

For the purposes of this study, features examined will be categorized into three sections: instructor presence, student interaction, and course design, which are grounded in the literature and discussed in detail in Chapter 2. Informed by the literature, this study examines whether certain online course features or combinations of features engage students and encourage them to complete and succeed in online courses.

Research Instruments and Methods

The Course Feature Inventory

The Online Course Feature Inventory was developed based on the literature as a means to operationalize and measure the course features and their subcategories, as well as the levels of operation at which they are offered. Described in detail in Chapter 3 and included in Appendix A, the instrument examines each feature and its operational levels and assigns a numeric value. The instrument scale to measure presence and operational level differs depending on the type of feature being assessed. For instance, within the course feature of orientation, the Course Feature Inventory assigns a '0' if the feature is not present, a '1' if orientation is present as text only, a '2' if it's present with text and photos, a '3' if there is text and rich use of photos and graphics, and a '4' if the orientation includes text, graphics and personalized voice narration. The Course Feature Inventory (CFI) produced a numeric value for each feature, subcategory, and course as a whole, with a top possible total score of 40 for the 10 course features.

The Online Student Engagement Survey and Scale

To measure student engagement, and to collect demographical data, the researcher used a peer-reviewed survey and scale with author permission adapted from a study by

Indiana University Communications faculty and researcher Marcia Dixson (2010). The survey questions describe student behavior and ask how characteristic that particular behavior is of the respondent (See Appendix B). Questions pertain to study habits, connection to the course material, interactivity with other students and the instructor and grades, among others. For example, one question states the behavior of desiring to learn in the class, and asks students how descriptive that term is of them on a five-point scale, ranging from 0 for not characteristic of them at all, to 4 for very characteristic of them. The scale further breaks down the engagement scores into four subscales of Skills Engagement, Emotional Engagement, Participation Engagement and Performance Engagement, which will be described in detail in Chapter 3. The 19-question, 76-point scale produced a numeric value for engagement total and subscales for each student in the study. The Engagement total scores and subscales were also aggregated into mean scores per course.

Additional survey questions, which were not included in the 19-question peer-reviewed scale, included demographic queries on age, ethnicity, GPA, experience with online education, preference toward online classes, enrolled units, degree intentions, hours working outside the home, and caregiver obligations. A set of three questions was also asked on the topic of instructor responsiveness (Chickering & Gamson, 1987), since that area could not be addressed in the Course Feature Inventory due to privacy limitations, and was not addressed in the Online Student Engagement Survey and Scale.

Research Method

All instructors teaching online education during the spring and summer of 2012 were asked to participate in the study. Instructors teaching 103 classes opted in. The

Course Feature Inventory was applied to all 103 courses, yielding scores for total Course Feature Inventory, CFI subtotals, and individual features. Students from the 103 courses were sent email invitations coded by number with links to the Online Student Engagement Survey, and 561 returned completed, usable responses. The two instruments created the first two datasets.

To compare the Course Feature Inventory and the Online Student Engagement Scale values against student completion and success, the researcher obtained aggregated course completion and success results provided by Gateway College Office of Institutional Research. The data were analyzed using central tendencies, correlations, T-tests and regressions using the PASW statistical analysis program.

Research Questions

There are six research questions in this study. They are:

RQ1. What course features found in the research literature create or predict student engagement in online courses?

RQ 2. To what degree do online courses at Gateway College have those features?

RQ 3. To what degree are students in online courses at Gateway College engaged?

RQ4. What impact does the presence and level of each course feature identified in the literature have on student engagement?

RQ5. What impact does student engagement have on completion and success?

RQ6. What impact does the presence and level of each course feature identified in the literature have on student success?

CHAPTER 1: A REVIEW OF LITERATURE

This review of literature begins with a definition of the terms commonly used in online education. The review establishes online education as a legitimate, effective and in some cases, superior form of education in the college and university setting. It discusses online education's explosive growth, its current state and expected future. The review examines the current economic climate, which has forced a much-needed shift of emphasis from student headcount at enrollment to student headcount at completion in California community college education (Scott, 2010).

The second major focus of this review provides a discussion of the literature on student engagement in the physical classroom, as well as in the online classroom, pointing out the striking similarities in concept and the divergences in execution. The engagement discussion begins with a look at seminal studies on the topic in face-to-face classrooms, and progresses to more recent studies on the online classroom. Subsections on engagement online also discuss instructor presence, student interaction, and course management as factors influencing engagement.

A parallel discussion of the literature on student completion and success ensues as the third major focus of the review. The analysis again discusses similarities as well as differences in onsite and online education. Subtopics within the online completion and success section includes a discussion of demographic factors and their effects on student completion and success rates.

The literature review also discusses online instructors' legal and moral obligations to provide classes that are accessible to all, regardless of disability.

Finally, the literature review provides a brief note on the contribution this study may provide to the body of knowledge on online education.

Overview of Terms Defined

The idea of delivering education to people by instructors in remote locations has evolved over the years with the technology that enables and dominates the field today. Below is an overview of the terms used in the literature to describe various aspects and features in education in which the classroom instructor is at some physical distance from the learners, who are dispersed as well.

Alternative delivery: The term used by Gateway College to describe all types of courses in which the instructor is in a remote location from students some or all of the time.

Asynchronous online: A format of course delivery in which the instructor and students are not ‘attending’ the class simultaneously. Students individually access asynchronous class content at various non-appointed times throughout the course of the class. The instructor retrieves items submitted by students at a later time (CCCCO, 2008). Internet Asynchronous is the largest category of Distance Education in California community colleges, accounting for 84% percent of the total (CCCCO Data Mart, 2011).

Discussion: A feature in online classes in which the instructor typically posts a question or prompt to which students reply. Typically, students exchange remarks through various posted comments as the topic is explored.

Distance education: A medium of instruction delivery from an instructor to students in remote, physically separated locations at some distance

(California Community Colleges Chancellor's Office, 2008).

Subcategories of Distance Education include live televised one-way and two-way video, pre-recorded video or audio, newspaper and webpage correspondence, and the Internet. The subcategories are further divided into synchronous and asynchronous. For the purposes of this document, when 'distance education' is used, it will refer to the entire body of alternatives to onsite classroom education, remembering that by far, the largest segment of distance education is online and asynchronous.

FTES: An acronym for Full-Time Equivalent Students, which is a student or combination of students whose academic load at the institution equal 15 course credits (CCCCO, 2011).

Hybrid: A course in which some part of the instruction is delivered online and onsite.

Instructor presence: This construct is also called teaching presence, or teacher presence. As part of their Community of Inquiry framework, Garrison, Anderson, and Archer (2000) defined teaching presence as consisting of three aspects: instructional design and organization, facilitation of discourse, and direct instruction. They differentiate between teaching presence and social presence by noting that teaching presence refers to aspects of the instructor's behavior while social presence involves students as well as the instructor. For the purposes of this study, instructor presence includes the sense that an instructor is available to students, that someone is 'there' to guide the class.

Lecture: A cohesive lesson or information on a given topic provided by the instructor in onsite or online delivery. It may include text or voice only, or some combination of text, photos, graphics and voice.

Learning or Organizational Modules: An organizational tool to allow grouping of content for a particular section into a single holding area that students access. According to California State University Chico's Best Practices on Using Learning Modules (2003), delivering content and activities through learning modules provides a linear design. A learning module is hierarchical in that it provides a list of activities and documents that may include lecture notes, handouts, assignments, discussion topics, chats, quizzes, Web links, and other material associated with that section of coursework (CSU Chico, 2003).

Online course: A course in which most of the content is delivered online. Some online classes include onsite testing or even an occasional onsite meeting. Here, the term will refer to both synchronous and asynchronous education, since at Gateway College, the two delivery modes are not differentiated in its reports to the state.

Onsite, face-to-face, FTF, traditional: Interchangeable terms to mean classes taught by an instructor in a classroom with students in physical presence.

Real time: In the actual moment. A conversation in which one party speaks and the other answers immediately. The converse is a conversation in which one party makes a comment, and the other party replies at some later time through a medium such as an Internet discussion board.

Synchronous online: Same-time instruction, in which students and instructors 'attend' their virtual class at the same appointed time.

The State of Online Education

Efficacy of Online Education

The efficacy of online education has been established by several studies, with Maki and Maki (2003) finding that students in online classrooms do more work, spend more time on task and learn as well or better than students in onsite classrooms. Learning may also be enhanced online because the interaction with the course content is more sustained, as students interact more with the content by revisiting the class over the week, rather than simply thinking about it right before their class meeting (Leasure, Davis, & Thievon, 2000; Swan, 2001).

Further, a meta analysis of 125 studies and more than 20,000 students, including 11,500 traditional and 9,300 distance education students, showed conclusively that the learning outcomes for distance students were as strong or stronger than outcomes for those who studied in traditional classrooms (Shachar & Neumann, 2010). For this study, authors included all categories of education that are considered distance learning, including correspondence, video and online (CCCCO, 2011). Shachar & Neumann (2010) conclude that:

Based on these findings, providing an overall effect size 'd+' (random) of .257 $p < .01$, from 125 studies, with a statistically significant Chi Square ($df=1$) of 32.13, ($p < .0001$), the null hypothesis that there would be no difference between the Final Academic Performance grades of students enrolled in distance-learning programs than those enrolled in traditional FTF programs is rejected.

The direction of the difference between the two mediums of delivery demonstrates that the DE students outperformed their FTF counterparts across the full continuum of the study period. (Shachar & Neumann, 2010, p. 9)

Shachar and Neumann divided the study period into four sub-periods, from 1991 to 1998, 1999-2000, 2001 to 2002 and 2003 to 2009. Results showed that the difference between the levels of performance increased over the timespan of the study, indicating that the efficacy of distance learning improved as the technology and technique evolved. The study concludes with an authoritative statement that seeks to settle the debate over the quality of distance education overall.

Therefore, this study's findings completed and complemented with the previous meta-analyses of Shachar (2002), Shachar & Neumann (2003), Bernard et al. (2004) and the U.S. Department of Education report (2009), seem to finalize the ongoing debate over the quality of DE education and consequently DE should be accepted as a respectable and feasible option for education. (Shachar & Neumann, 2010, p. 10)

Background and Growth of Online Education

Distance Education as a mode of delivery exploded in California's community colleges during the recent boom years in the first decade of the 21st century. The California Community Colleges Chancellor's Office (CCCCO, 2011, Distance Education Report) reported that in the still early days of distance education in the 1995-96 academic year, those courses represented less than 1 % (0.63 %) of all course sessions offered statewide. The report discusses the courses in terms of course sessions, which it says is roughly equivalent to course sections or offerings. That percentage had increased to

4.69% by 2005-2006, and nearly doubled again to 9.06% by 2009-2010 (CCCCO, 2011, Distance Education Report).

Table 1-1 – Growth in All Distance Education Course Sessions at California Community Colleges

<i>Academic Year</i>	<i>DE Enrollment</i>
2005–2006	21,414
2006–2007	26,134
2007–2008	32,417
2008–2009	39,244
2009–2010	40,038

Source: Adapted from “Distance Education Report” by the California Community Colleges Chancellor’s Office, 2011

Economics-Driven Shift to Quality and Retention

During the boom years of distance education, the emphasis was on growth and recruiting to bring in more FTES. Now, the drive for growth has practically reversed, as the state’s economics force a new reality on the colleges. Community colleges have now changed the conversation from the number of students enrolled in courses at the four-week census count to the number of students enrolled and completing at course term (Scott, 2010).

The new institutional shift from the bigger-is-better mentality to one that rightly focuses on the quality of learning experiences in terms of completion and success, trains a new spotlight on campus and classroom experiences that engage and help students persist to completion and success. The state is taking new notice of the discrepancy between completion and success of online and onsite courses (CCCCO, 2011, Distance Education Report; LAO, 2010). The state’s Legislative Analyst’s Office, in its report on Distance Education, is recommending that all three public higher education systems in California implement a ‘technology fee’ to create a fund to pay for program improvement

in distance education (LAO, 2010). The Western States Accrediting Association has its eye on distance education as well to ensure state standards in education are met across all media of delivery (Beno, B., personal communication, May 13, 2010). The Distance Education Report from the California Community Colleges Chancellor's Office reaffirms Beno's assertions. "The passage of the Federal Higher Education Opportunity Act of 2008 places new responsibilities on regional accrediting commissions to assure that colleges are providing quality distance education instructional services for students" (CCCCO, 2011, Distance Education Report, p. 9).

Completion in Onsite Education

Among the seminal if not paradigm-shifting studies and writings on retention are those by Vincent Tinto of Syracuse University. He notes in an address at Syracuse University (Tinto, 2004) that research prior to his and that of his colleagues in the 1970s, had focused exclusively on students' shortcomings as causes for failure and drop-out. Students were less able, less prepared, less motivated, etc., all accounting for and leading to their failure to persist. But, in his work, Tinto suggests that the responsibility for student success and its antithesis, failure and drop out, is one that is shared with the faculty and the institution itself. He minimizes the great shift of thought when he wrote in 2005 that "...the secret of successful retention programs is no secret at all, but a reaffirmation of some of the important foundations of higher education. ...Successful retention is no more than, but certainly no less than, successful education" (Tinto, 2005, p 11).

Interaction with Faculty

In some of the early work on retention and interaction, fellow Syracuse University

researchers Pascarella & Terenzina found in their study that “informal contact with faculty was significantly associated with persistence at the institution” (Pascarella & Terenzina, 1976, p. 1). Tinto, like many others since, also noted the positive relationship between faculty contact and retention, asserting that the quantity and quality of contact with faculty and other students predicts retention (Tinto, 1993, p. 3). In his 1987 work, Tinto says that retention per se is a misguided goal. The emphasis, he says, should be on quality student education. “The social and intellectual growth of students, not their mere retention, is the work of effective retention efforts. Here I suggest lies the key to successful retention programs, namely that they do not focus on the goal of retention per se, but on the broader goals of educating students” (Tinto, 1987, p. 12).

Student Characteristics as a Factor in Onsite Completion

As noted earlier, some research disputes the findings of faculty and student interaction and other social aspects as primary predictors in completion and retention. In fact, another renowned researcher asserted in 1997 that retention numbers can be seriously flawed (Astin, 1997). In his multiple regression analysis on the accuracy of institutional completion rates, Alexander Astin (1997) cautioned that most of the variance in completion rates can be explained with four independent variables: high school grades, college admission test scores, gender and race. “Indeed, more than half the variance in institutional retention rates can be attributed directly to differences in the kinds of students who initially enroll, rather than to any differential institutional effect” (Astin, 1997, p. 2).

Nevertheless, Tinto proved (1987, 2000) that students must be integrated into the campus with activities, peer groups, and learning communities in order to feel connected.

He states simply that when students are connected, they persist and complete at higher rates.

Completion in Online Education

Integration and connection is not easy to facilitate at community colleges where there is no residential life and where 59% percent of students statewide attend part-time (CCCCO, Data Mart, 2010). The goal of integrating students into college life may be more challenging still when students are attending asynchronous online classes in their own homes at their own hours, in distant cities, states or countries, and where no one meets face-to-face or even speaks in real time.

Many of the concepts Tinto and his colleagues asserted in regards to completion in face-to-face instruction in the last three decades of the 20th century apply in today's 21st century online world as well. A body of work by Tello (2002), Carmel & Gold (2007), and Fazioli (2009), is showing new promise for improved persistence in online education. All cite a form of instructor presence, student/instructor interaction, and student/student interaction as important components in student engagement and completion.

Instructor Presence in Online Completion and Success

In a correlational study for his dissertation on the relationship of instructor interaction and course completion in online classes, University of Massachusetts Lowell faculty Steven Tello (2002) noted that both formal and informal interactions between faculty and students were positively related to retention. Tello found a strong correlation between instructor-to-student interaction and student-to-student interaction, suggesting that as instructor-to-student interaction increases, so does student-to-student interaction.

Tello set out to determine whether one of three methods of interaction including chat, discussion or email, was associated with higher retention rates, but was not able to establish any statistical significance. He was able to show that more than 30% of those who stayed to the end of the course were planning to take another online class and said they were doing so to complete a degree program. Tello cites Tinto's assertions about student involvement, in this case in a degree program, as a positive force in retention. While students who did not complete cited work commitments as their primary reason for withdrawal, compared to completing students who said the class they needed was not being offered online, Tello found that 11% of both course non-completers and completers cited instructor contact being beneath their expectations as a reason for either withdrawing from their current class or for not enrolling in a future online class. His study findings concluded that there is a positive association between faculty and student interaction and course completion.

Students' work commitments in Tello's (2002) study also influenced decisions to withdraw from classes, with 66% of non-completers working more than 40 hours per week compared to 52% of completers. Tello suggests that strategies to improve completion should include instructional techniques, faculty development, student orientation, technology development and program development (2002).

Time Management and Support in Online Completion and Success

Robert Nash, the supervisor of instructional design at Coastline Community College in Fountain Valley, Calif., studied his college's distance learners in an effort to improve completion and success (2005). Nash began with a population of more than 10,000 unique students enrolled in online classes over three sessions. He randomly chose

a population of 3,261 online students to survey and received 478 returns.

To determine why students enrolled in online classes, Nash asked whether it was a matter of time or physical constraints, whether they preferred to learn at their own pace or whether they thought an online class would be easier. The answers were similar across all three student categories examined: successful students, not successful students and those who dropped. Time or physical constraint were the most common reasons cited for enrolling in online classes, followed by learning at one's own pace, with fewer than 10 percent in all categories saying they thought online would be easier.

Tutoring in Online Completion and Success

More than 20% of students in the Nash study (2005) in all three groups, successful, not successful and those who dropped, said they would use tutoring services specific to assignments, especially if the services were offered on weeknights and online, but all preferred that an instructor offer the tutoring as opposed to student workers or peers.

After Nash completed his study, Coastline College implemented a grant-funded program to offer supplemental tutoring to students online. Although 73 % of students who used the service completed their online courses that semester, which is a higher-than-average course completion rate, only 13% of all distance learners enrolled in the program. The college now limits its online tutoring to math and English (Nash, 2005).

Orientation as a Factor in Online Completion and Success

A question in Nash's study (2005) on whether students would benefit from a pre-course orientation prompted the strongest response across the three groups. An average of 46 percent overall said they would benefit from a pre-course orientation, with 47 percent

of successful students agreeing, 35 percent of those who dropped saying they would benefit, and unsuccessful students who wanted orientation spiking to 57 percent. The results suggesting that online students need and want orientation are not surprising. As Anderson and his colleagues put it a decade ago, students need to know the “grand design” of a course, including the learning activities that will lead them to the learning goals of the course (Anderson, Rourke, Garrison, & Archer, 2001).

Technology and Support as Factors in Online Course Completion and Success

While open communication between student and instructor is critical, computer literacy and familiarity with the particular technology of the course delivery system have been shown in previous studies to positively impact persistence in online classes. Several studies and articles note that student frustrations with technology also contribute to attrition and that stronger support is a factor influencing increased retention. At New York University, administrators reported a completion rate of 99.2% among 600 online non-credit students (Moore, 2002).

We micro-manage course development and presentation and monitor the courses constantly. We contract with a local provider for help desk support. This company works with faculty and students until 11 p.m. 7 days a week. (Moore, 2002, p 44)

Faculty Focus, an online magazine for online instructors, suggests that students need not only the guidance and emotional support provided by institutions like New York University, but they also need technological support. Every program should have a fulltime program manager to respond to student problems and frustrations created when students are “kicked off” tests or experience other issues (Hill, 2010).

Instructor Use of Audio and Video as Factors in Completion and Success

Although use of video and voice narration is discussed in detail in the section below on engagement, audio and video also influence retention online, the California Community Colleges Chancellor's Office said in its Distance Education Report (2011). Citing a study by Santa Barbara City College Dean Dr. Doug Hersh (2009), the Distance Education Report notes that Hersh's model of using video and audio of the instructor in an online course increases and enhances engagement and retention. "His research demonstrates that when students are able to see the face of the instructor who is guiding them through a course, they are more likely to trust that professor, and they feel more invested in the course, which translates into improved retention rates" (CCCCO Distance Education Report, 2011, p. 31). In her article in the TechEdge online journal about Hersh, Gednalske (2010) notes that Hersh worked with the online course management system Moodle through its partner Remote-Learner.net to establish the Human Presence Learning Environment at Santa Barbara City College. The Human Presence Learning Environment, which helped instructors use video of themselves in their online classes through a relatively simple process, improved retention rates by 10% (Hersh, 2009).

Barriers to Online Learning

In their large-scale (N=1,056) factor analysis study of barriers to success in online learning, University of Maryland researchers Muilenburg and Berge found that students rated the lack of "social interaction" as the single most important barrier to learning in an online course (Muilenburg & Berge, 2005). The researchers began looking at 47 possible barriers, but findings revealed that eight factors accounted for 62% of the variance in student responses. Researchers narrowed the eight barriers down to four critical barriers

in online education, including social interaction, administrative/instructor issues, learner motivation, and time/support for studies. The researchers found that the five independent variables with the most impact on the four barrier areas were ability and confidence with online learning technology, effectiveness of the online learning class, online learning enjoyment, whether online classes had been completed before, and the student's likelihood of taking a future online course.

The single most important barrier to students learning online was a lack of social interaction ($M = 2.36$). Administrative/instructor issues, time and support for studies, and learner motivation clustered very closely as the next most severe barriers ($M = 2.05, 1.91, \text{ and } 1.91$). Less important barriers were technical problems and cost/access to the Internet ($M = 1.70 \text{ and } 1.60$). Respondents rated a lack of technical skills and academic skills as very low obstacles to learning online ($M = 1.30 \text{ and } 1.22$). (Muilenburg & Berge, 2005, p.9)

In contrast, students at Coastline Community College responded differently to a similar question in the Nash study (2005) regarding the issues that caused them to struggle with their online classes. In that study, 27% of students cited time management issues as major reasons for dropping distance education classes.

Muilenburg and Berge (2005) also reported that technology presents barriers. Their study showed that students perceive fewer barriers to online learning when they are comfortable with the technology and when their concerns are addressed.

Student Characteristics and Online Course Completion

In addition to instructor and class characteristics, and whether support is available to students, other factors, including age, GPA and educational goal, preference for and

experience with online classes, work and family obligations influence online retention as well.

Online Course Completion by Age at California Community Colleges

In California community colleges in the 2009-2010 academic year (CCCCO, 2011, Distance Education Report), the highest completion rates in online classes are among the oldest students, with the categories of students aged 40 and up completing at 64%. That group is followed by those under 18 completing at 63%, and those 35 to 39 completing at 62%. Those aged 30-34 completed at the rate of 60%. However, all of those groups together, under 18 and 30 and up, amounted to only 31% of the total 1.2 million student enrollments in Distance Education classes in California. Students age 18-24, who make up 52% of the total, completed below the state average at 54%.

Table 1-2 – California Community Colleges Online Course Completion by Age 2009-2010

<i>Age</i>	<i>Completed</i>	<i>Not-Completed</i>	<i>Total</i>	<i>Percent Completed</i>
Under 18	15,574	9,000	24,574	63%
18–19	112,148	95,819	207,967	54%
20–24	230,314	197,920	428,234	54%
25–29	117,689	87,134	204,823	57%
30–34	69,952	47,479	117,431	60%
35–39	48,839	30,199	79,038	62%
40–49	66,539	37,395	103,934	64%
50 +	34,942	19,697	54,639	64%
Unknown	86	73	159	54%
Total	696,083	524,716	1,220,799	

Source: Adapted from “Distance Education Report” by the California Community Colleges Chancellor’s Office, 2011.

Online Course Completion by Ethnicity at California Community Colleges

Whites make up the largest share of those enrolling in California Community

colleges distance education courses, accounting for 38% of total distance education enrollments in 2009-2010 (CCCCO, 2011, Distance Education Report). The next largest group is Hispanic, accounting for 23%, with Asians accounting for 11% and blacks accounting for 9%. Native Americans, who make up less than 1%, people who declined to state, or who identify with more than one ethnicity, make up the remaining 20%. Course completion reveals that Asians complete at the highest rates, followed by whites, Filipinos, Hispanics and blacks.

Table 1-3 – California Community Colleges Online Course Completion by Ethnicity in 2000-2010

<i>Ethnicity</i>	<i>Completed</i>	<i>Not Completed</i>	<i>Total</i>	<i>Percent Completed</i>
Asian/ Pacific Islander	84,400	51,799	136,199	62%
Black	46,608	63,116	109,724	42%
Filipino	21,694	16,335	38,029	57%
Hispanic	141,384	140,938	282,322	50%
Native American	5,369	5,065	10,434	51%
Two or more races	9,861	9,873	19,734	50%
Unknown/decline to state	90,381	68,778	159,159	57%
White	279,140	186,070	465,210	60%

Source: Adapted from “Distance Education Report” by the California Community Colleges Chancellor’s Office, 2011

Online Course Completion by Gender at California Community Colleges

More women than men enroll in online classes statewide, with women accounting for 61% of total distance education enrollments statewide and men accounting for only 38%. When it comes to completion, women completed in the 2009-2010 academic year at a slightly higher rate of 56%, while men completed at 54%, according to the Chancellor’s Office’s Distance Education Report (2011).

GPA as a Factor in Completion

In her exploratory study among 293 students in online classes at four colleges in Kentucky, Hammond (2006) sought to discover what demographics predict completion in online classes. She examined gender, age and experience in online classes, but found through regression analysis that only GPA was a statistically significant predictor of persistence in online education.

Experience in Online Classes as a Factor in Completion

In the Muilenburg and Berge study (2005), students who were taking their first online class consistently predicted higher barriers in online learning than those who had taken online classes in the past at the statistically significant level. Along the same lines, students who said or predicted that they did not or would not enjoy online learning, or who said or predicted that they did not or would not learn as effectively online, had higher barrier ratings than those who enjoyed online learning and who believed they learned as well in online classes.

In their 2010 study, Diemann and Bastiaens sought to understand the difference between the effects of motivation, which prompts a person to enroll in an online class, and volition, which they said provides the impetus needed to continue to completion. While no solid conclusions came directly from this study, researchers were able to recommend that it is important for Distance Education students to be informed about strategies to combat discouragement before it happens. Further, institutions or DE instructors should equip students with some self-encouraging skills.

Engagement in the Onsite Classroom

In a 1984 article on his theory of student involvement that began with his

longitudinal study nine years earlier, Astin was among the researchers who established the foundational thinking for today's discussions on student engagement.

Student Involvement

In a reprint of his 1984 article on student involvement theory, Astin asserts the bottom-line definition as follows: "Quite simply, student involvement refers to the amount of physical and psychological energy that the student devotes to the academic experience" (Astin, 1999, p. 518). Astin distinguishes involvement from motivation, saying that having motivation to pay attention is important, but cannot stand by itself. "It is not so much what the individual thinks or feels, but what the individual does, how he or she behaves that defines and identifies involvement (Astin, 1999, p. 520). In his discussion, Astin dismisses with apparent disdain the notion of subject or content theory, which suggests that students passively learn from knowledgeable professors who cover or deliver information. Astin says that instructors who think that "students learn by attending lectures, doing the reading assignments and working in the library" are misguided (p. 520). He criticizes this model as assigning students a passive role, which would hinder learning for any who are not highly motivated, fast readers, and strong listeners. In short, this style of instruction would fail to engage many learners. Astin also discusses and dismisses models that place value on star or high-profile faculty or students, suggesting that this practice merely reduces the available pool of resources for other institutional goals. Astin praises a theory that focuses on learning approaches designed for individual learning styles, but notes that it is impractical in application due to resources available, as well as a lack of proof of effectiveness.

Instead, in his theory of student involvement, Astin (1999) asserts that no learning

model can be effective if the student is not an involved, engaged learner. Any effective curriculum “must elicit sufficient student effort and investment of energy to bring about the desired learning and development. Simply exposing the student to a particular set of sources may not work” (p. 522).

Student Characteristics and Engagement

But, Astin says (1999), there are many other factors outside the classroom that help and hinder student engagement at community colleges, including living and working arrangements, being part of a fraternity or sorority, participating in campus sports, and other activities that involve the student with the campus (Astin, 1997). Ominously for community colleges, Astin, citing himself from his work in 1974 and 1975, contends that students who are not living in a dorm or fraternity house, working on campus or joining campus clubs, face a greater risk of failing. “Thus, the most consistent finding – reported in almost every longitudinal study of student development – is that the students’ chances of dropping out are substantially greater at a 2-year college than at a 4-year college. The negative effects of attending a community college are observed even after the variables of entering student characteristics and lack of residence and work are considered” (Astin, 1999, p. 524). He suggests that the combination of a commuter student population who attends part-time, and a large percentage of part-time faculty further contribute to the effect.

“Community colleges are places where the involvement of both faculty and students seems to be minimal,” he concludes (Astin, 1999, p. 524).

Instructor and Student Interaction as Factors in Engagement Onsite

Chickering and Gamson (1987) assert in their widely cited “Seven Principles for

Good Practice in Undergraduate Education” (1987) that strong faculty interaction with students is the single most important factor in motivating students and getting them involved. “Knowing a few faculty members well enhances students’ intellectual commitment and encourages them to think about their own values and future plans” the authors said (1987, p.1). Right behind interaction with faculty is student-to-student interaction. “Good learning, like good work, is collaborative and social, not competitive and isolated. Working with others often increases involvement in learning” (Chickering & Gamson, 1987. p. 2). Third on their list is student participation. If instructors want to engage their learners, they must entice them to participate. Declaring that “Learning is not a spectator sport” (1987, p. 1), Chickering and Gamson say that active learning, whether inside or outside the classroom, is key to keeping students involved in their education. “Students must talk about what they are learning, write about it, relate it to past experiences and apply it to their daily lives. They must make what they learn part of themselves” (Chickering & Gamson, 1987, p.1). Practices four through seven emphasize prompt feedback so students know how well they are doing, time on task since it takes an investment of time to learn, a communication of high expectations so that students strive for a high level of learning, and respect for students’ different attributes and learning styles. The implications for application to online learning are clear.

Engagement in the Online Classroom

Building on Chickering and Gamson’s early work (1987), Chickering and Ehrmann revisited the Seven Principles with technology in mind (1996). Their essay does not refer explicitly to online education, and seems more geared toward enhancing onsite education with new technologies, but could also describe practices for online courses.

Their first through fourth principles, which emphasize frequent student-faculty contact, student collaboration, active learning and prompt feedback, apply directly to online education. Authors highlight advantages of online exchanges in their discussion on asynchronous or time-delayed exchanges that are intrinsic in the online model of education. The standard equation in a face-to-face classroom includes the instructor's assignment, the students' response with homework and eventually the instructor's response with comments and grades (Chickering & Ehrmann, 1996). With the advent of email and electronic communication came opportunities for faster, more private communication, the authors say. "Total communication increases and for many students, the result seems more intimate, protected and convenient than the more intimidating demands of face-to-face communication with faculty" (p. 2).

Communication and Active Learning Online

Dixson's results on her online student engagement study (2010) and recommendations indicate that instructors should use many channels of communication. She suggests announcements on the home page, emails, discussion forums with interactions, online lectures or chat sessions. She also reminds instructors that active learning is crucial, much like her predecessors in onsite studies (Astin, 1999; Chickering & Ehrmann, 1996; Tinto, 1987). In the Dixson study, students reported that they were engaged in activities that required them to apply concepts in case studies or problem solving, discussion forums, group projects, research papers and current events (2010).

In Mary Lou Kata's 2010 mixed methods comparative study at a Michigan community college, the researcher surveyed and interviewed cohorts in onsite and online classes to determine whether the online cohort had as satisfactory faculty-student and

student-student interactions. She found that the onsite group had higher satisfaction, but through qualitative interviews revealed that online students didn't think of their format as a barrier to communication. She notes that not every student believed they had adequate and appropriate interaction, but that overall, the types of interaction that promote persistence did exist online.

Instructor as Facilitator

Another theme common in the literature on instruction is the idea that in the online classroom, the instructor's role shifts substantially from teacher or dispenser of knowledge to facilitator of student learning (Knowlton, 2000). In his study, University of Southern Illinois Assistant Professor and Researcher Dave Knowlton suggests that the teacher-centered classroom provides little opportunity for interaction and engagement in online discussion. Instead, he says, to make learning deeper and to move it beyond knowledge and into synthesis and application, the instructor could consider using a Socratic or questioning method. Knowlton says that would help students work to construct their own knowledge and guide them through the learning process. Astin, studying the onsite classroom more than 20 years ago, asserted the same concept: that students who sit passively listening to an instructor impart knowledge, are certainly not engaged and not necessarily learning (1999, reprinted from 1984).

Instructor Interaction and Presence Online

Those principles of the teaching and learning process as applied to online education appear in various forms throughout the literature. In a compilation of articles on distance education from the online magazine Faculty Focus (Kelly et al, 2010), authors provided best practices to engage students. Interaction with faculty and among

students as well as student application of learned concepts helped engage students in the learning process. To produce real student learning, the authors contend, online courses need more than simple presentation of information followed by assessment. “Aside from the fact that this would be unengaging for learners, this approach is not instruction. Activities and feedback are needed for instruction” (Shank, 2006, p 4)

Additionally, online course instructors should be aware of how the online environment is perceived by students, which provides a picture that many faculty may not expect. In a phenomenological qualitative case study at a community college in the southeastern United States (Bambara et al, 2009), researchers interviewed 13 online students. All 13 were enrolled in one of four online courses with the school’s highest attrition and fail rate of 40-60 percent, designated as high-risk courses, or HRC. In order to understand the student experiences, researchers examined their feelings of isolation, academic challenge, ownership and acquiescence. All reported isolation and academic challenge (Bambara et al, 2009). In touching testimony, students spoke at length about their feelings of social isolation, even bordering on abandonment.

“I thought that it was a lot of teaching myself ... I was by myself a lot. I remember feeling left out.” Samantha added, "I don't feel like [the HRC] is a real class." Tom echoed, "What class? What professor? What assignments? ... The online courses seem almost surreal." The experience of isolation tempted HRC participants to believe there was no class at all. (Isolation section, para 2)

The students on the whole felt as though they were on their own and had no connection with the instructor, Bambara and her colleagues reported (2009).

David explained, “I don't feel like there was an instructor presence ... I don't

feel like there was anything that I was learning from the instructor. The instructor was simply there as a Web administrator or as a grader. When our participants tried to contact their instructors, some received very limited and unhelpful replies.” Geraldine explained that whenever anyone would ask a question, the instructor would respond monosyllabically: "It was so 'yes, no.' ... It was a two word answer ... you sort of felt slapped." In some cases participants received no reply at all. In many instances, the only feedback they received on class assignments was a score in the electronic course grade book. Participants reported that the interaction between the instructors and participants decreased as the semester progressed, leaving the students with a greater sense of isolation. (Bambara et al, 2009, Isolation section, para 3)

Similarly, Bambara and colleagues found that student-to-student communication was lacking as well, as the four courses provided no means for interaction.

What our participants found was aptly described by Samantha as follows: "No interaction between the students, student interaction is nonexistent! I know nothing about these people!" They had no sense of community within the HRCs, no peer interaction. Geraldine remarked, "I was just sort of on this island, all by myself." David echoed her sentiments when he said, "I felt like, specifically in that [HRC] class, I was alone and adrift." For some participants, the need to have a student community was in David's words "ultimate", and for others like Julie "a huge obstacle to try to overcome." The void in student-to-student interaction intensified the sense of isolation felt by our participants. (Bambara et al, 2009, Isolation section, para 5)

The authors recommend monitoring and mentoring students and examining institutional practices to help students in high-risk online classes persist.

Making the Online Instructor Real

Instructor presence, teacher presence, teaching presence or social presence are all discussed in the literature with varying definitions that are best described as a sense that there is a real instructor who is teaching the class and interacting with students (Dixson, 2010). Anderson, Rourke, Garrison, and Archer (2001) define teaching presence as the following:

We define *teaching presence* as the design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes. Teaching presence begins before the course commences as the teacher, acting as instructional designer, plans and prepares the course of studies, and it continues during the course, as the instructor facilitates the discourse and provides direct instruction when required. (p. 5)

Teaching presence promotes the sense among students that their instructor is real. Several participants in Fazioli (2009) commented that they liked seeing a picture of the instructor, and would even like to see a video of the instructor to further personalize the instructor in their eyes (Fazioli, 2009).

Another way to look at teaching presence and contact with students is simply human interaction. Fazioli (2009) found that for online students, the most important quality in a class was human interaction. Fazioli's examination of the effect of eight independent variables on student perceptions of their online learning experience revealed

that students value interaction the highest. However, instructor or administrative issues were also perceived as significant barriers to student learning.

Instructor Participation in Student Discussion

Instructor presence can also be evident in online discussion as a graded item in class. Many researchers emphasize the importance of the instructor's interaction in discussion, acting as facilitator or guiding the discussion to ensure that it stays on track. But others caution that too much instructor presence in student discussion can stifle the flow and actually serve to hinder student interaction (Rourke & Anderson, 2002).

Orientation in Courses Online

In their 2010 presentation at the Sloan-C Consortium International Conference in Online Learning, Holtzman, Ciocco, and Fotia found that an orientation module was critical to student success. The orientation must set clear expectations for what is expected of the student, as well as what skillsets are needed, they said. Tello (2002) and Nash (2005) also found student course completion rates improved with online course orientations.

Providing Emotional Support for Online Students

A little care and a little coddling can go a long way the online environment. In an Editorial for a 2000 issue of the American Journal of Distance Education, Pennsylvania State University distance educator and publication founder Michael G. Moore reminds instructors in a parenthetical aside of the need to nurture in the online environment.

I should add here that, in my own online teaching, I have been reminded yet again, as I have discovered over a lifetime of involvement in distance education, that the distant learner, adult and highly competent in life though he/she may be,

does have a much greater need for the instructor's emotional support - i.e. for reassurance that everything is "going okay"-than most educators in the classroom will find believable. It is a phenomenon not to be underestimated as one attends to the need to balance the cost of "time and effort" with the desire to provide a quality experience. (p. 3)

Voice/Audio in Instructor Presence and Online Engagement

Voice narration serves multiple functions, including as a means to enhance the notion of instructor presence. It provides social or teacher presence (Dringus, Snyder & Terrell, 2010; Fazioli 2009) and personalizes instruction (Mandernach, 2009, Mayer & Moreno, 2003) and enhances learning (Doolittle, 2001; Fazioli, 2009; Mandernach, 2009). Participants in Mandernach's 2009 quantitative study that was supplemented with interviews gushed over the instructor's use of video of herself each week explaining new psychology concepts. "This is the first online class I have taken where I actually feel like I KNOW the instructor" (p. 13), Mandernach reported one student as saying. Although the study found no significant differences in student engagement as a result of the instructor's multimedia use, the author suggested that it might have been due to the sample size or that the class was an introductory course and perhaps was not of interest to some non-majors.

In the absence of the visual cues such a facial expression or eye contact, which create intimacy in an onsite classroom, and reduce psychological distance between the instructor and learner online (Fazioli, 2009), voice narration can help bridge the gap over the Internet. Using personalized narration is one method of creating immediacy for the online learner" (Fazioli, 2009, p. 7).

In their peer-reviewed journal article on “Absolutely riveting online courses,” instructors at the public academic- and research-based University of Lethbridge in Alberta, Canada suggest that brief audio clips in the form of notes to students helped create a social presence as well as established the friendliness of the instructor (Henry & Meadows, 2008).

In his evaluation of best practices at the Air Command and Staff for military education in the the US Air Force, Donald MacCuish (2004) said that the use of voice narration with the image of the faculty over PowerPoint helped mediate the distance between faculty and men and women stationed around the world who were enrolled in the courses.

In our case it also serves as a means of bringing our distance learning students into contact with our resident program faculty. With a student body of over 11,000 students who are dispersed all around the globe, anything that helps them feel closer to the institution adds to the learning experience. (p. 3)

Not only did they feel better, they learned more. As Doolittle (2001) put it, “Students learn better from words and pictures than from words alone” (para 6).

In his 2009 study, Fazioli notes the power of voice to enhance learning. “... across a broad range of domains and outcomes, students who learn with instructional materials that include graphics and spoken text outperform those who learn from identical graphics and written text, regardless of the media used to deliver the graphics and words.

Voice narration also helps enhance learning by decreasing cognitive load in that ‘off-loading’ the spoken part of the information onto the brain’s otherwise unused audio channel, frees up more space for the visual information (Moreno, 2006).

Fazioli (2009) and Mayer and Moreno (2003) also found that the combined use of voice, sound and visuals was helpful to enhance student understanding. One participant described the visuals as “helping me to see exactly what she was talking about—I liked the pictures because they focused me” (Fazioli, 2009, p. 73). Others commented that the “combination of audio and visual was realistic” and “the whole thing, pictures, sounds etc. helped it all make sense to me and kept me paying attention” (Fazioli, 2009, p. 73).

Student-To-Student Interaction in Online Classes

As Bambara and colleagues noted in the 2009 study, online students crave not only an instructor’s presence, but also want the company and collaboration of fellow students. A quantitative study in 2010 that set out with a different goal returned with results that also bolster the argument for strong interaction with and among students in online classrooms. In her correlational study, Dixson (2010) sought to find whether there was one particular activity that would automatically engage online learners. In her peer-reviewed article in the *Journal of the Scholarship of Teaching and Learning* (2010), Dixson says that instead, the findings of her study primarily corroborate the theories on the importance of interaction, as found in Astin (1999), Pascarella and Terenzini (1976), Tello (2002), and Tinto (1987), and all skewing in favor of the necessity of faculty/student interaction and student/student interaction. Dixson found that students who report that they are highly engaged used multiple means of communication with other students in the class, suggesting that it may be important to offer more than one channel for students to communicate with each other (Dixson, 2010). She also found that the level of instructor presence was significantly correlated with student engagement, as was the level of student participation. “

... instructors should consider learning assignments that engage students with the content and with each other. Across many types of online courses, when students readily identified multiple ways of interacting with other students as well as of communicating with instructors, they reported higher engagement in the course. (Dixon, 2010, p. 8)

Use of the Discussion Feature in Engagement Online

An abundance of studies suggest that the use of a discussion feature in some form is essential in online education (Anderson, 2001; Dixon, 2010; MacCuish, 2004; Swan, Shea, Fredericksen, Pickett, & Pelz, 2000; Vonderwell & Zachariah, 2005).

“Facilitating discourse during the course is critical to maintaining the interest, motivation and engagement of students in active learning” (Anderson, 2001 p. 7).

But the course must do more than facilitate the discussions, it must require them as part of a grade or in some other way create incentives to interact in order to ensure that students take them seriously and participate fully (Dixon, 2010). Some faculty and others have been skeptical about discussion in asynchronous online classes since it does not occur in real time or simultaneously, but many others point out its distinct advantages. In her case study examining influences on online learning, Ohio educational researchers Vonderwell and Zachariah (2005) suggest in their review of literature that discussion in an online class may draw out shy or reluctant students and encourage them to ask questions of each other or the instructor, when they might otherwise sit silent during an in-person classroom discussion. They note that online discussion can also accommodate “lurkers,” those who watch and read comments, but do not post comments themselves. They suggest that these students might also be learning through a ‘vicarious’

experience and that they could be drawn out by the instructor through individual journals or thought papers.

Regardless of whether they are actively participating or merely observing, Astin (1999) and others assert that students must participate to learn. Anderson agreed: “Facilitating discourse during the course is critical to maintaining the interest, motivation and engagement of students in active learning” (Anderson, 2001. p. 7).

Researchers Swan et al (2000) make the case definitively for the importance of discussion in online courses when they conclude:

The greater the percentage of the course grade that was based on discussion, the more satisfied the students were, the more they thought they learned from the course, and the more interaction they thought they had with their instructor and with their peers. (Swan et al, 2000, p. 5)

Student-Led Discussion Online

Students may also achieve deeper learning and more social interaction by leading their own discussions with their peers. Discussions led by students themselves can go even further to enhance learning, researches have found. Assigning various leadership roles to students can enhance their understanding and learning, Vonderwell and Zachariah found in their study at a Midwestern university (2005). In his evaluation of best practices for the US Air Force, MacCuish (2004) notes that with 11,000 students and few faculty, it’s impossible to have faculty lead threaded discussions. However, after providing a forum for students to ask questions of faculty, MacCuish observed that a type of student-led discussion developed on its own, with students responding to each other. He concludes that students can and do often get more learning from discussions led by

their peers.

In their study on peer-led discussion among graduate students, Rourke and Anderson (2002) found that students believed they learned at a deeper level in discussions led by other students. Their groups also developed a sense of competitiveness in an effort to lead strong discussions. Students dismissed the idea that they would gain less knowledge without the instructor leading the discussion, and several found advantages in that the students felt they could speak more freely. Another student in the Anderson (2002) study added:

I don't miss having the instructor leading the discussion because sometimes they're too authoritative and that kind of thing can shut down discussion. The reading material can provide subject matter. (Anderson, 2002, p. 14)

As Chickering and Gamson stressed more than two decades ago, "working with others often increases involvement in learning" (1987, p. 2). That concept holds true in online learning as well. Anderson and Rourke (2002) discussed in their findings that students working as a group to lead discussions achieved their learning outcomes and preferred peer-led discussions to those led by the instructor.

Student Collaboration or Group Work Online

When it comes to student collaborative work, the implications were evident, even in 1996. "A clear advantage of email for today's busy commuting students is that it opens up communication among classmates, even when they are not physically together" (Chickering & Ehrmann, 1996, p. 2). Many opportunities to apply concepts in active learning were already outside the walls of a classroom, including internships and information gathering to develop insight, Chickering and Ehrmann noted (1996). Dixon

(2010) found that in a remote learning environment, working with other students toward a group goal connects them more than simply working in the same class. The kind of collaboration required for group work online helps students feel connected and decreases a sense of isolation, Dixson found (2010).

However, Swan and her colleagues (2000) offer a cautionary note when it comes to the amount of group work a course should apply toward a grade. “The greater the percentage of the course grade that was based on cooperative or group work, the less the students thought they learned from the course” (Swan et al, 2000, p. 5).

Student Interaction with Social Media

Those kinds of student interactions can and should be facilitated through social media, according to authors Mercedes Fisher of National College of Ireland and Derek Baird of Yahoo (2005) writing in the refereed online Journal of Educational Technology Systems. In their research published a year before Twitter was created and Facebook became public, Baird and Fisher assert that students in online classes need interactions and relationships with other students to be successful. Various social media can help students construct their own learning and social communities, providing needed opportunities for students to make emotional connections with other students. Their article primarily suggests the use of weblogs, now called blogs, to promote interaction among students and between students and faculty.

Pairing up again for another peer-reviewed article on their study at Pepperdine University in Malibu, Calif., Fisher and Baird (2005) found that that social media could provide a platform to “strengthen bonds” among students in an education master’s program. Through their evaluation of three online graduate-level Pepperdine courses,

each with a one-week onsite orientation, Fisher and Baird also found that the social media were the right tool to facilitate student work groups and to foster peer-to-peer mentoring, support and assistance. In some cases, the students helped each other with technical problems through social media. They also found that social media helped students create a community of learners and helped them become motivated to learn as well as develop accountability to their group. Fisher & Baird (2005) found:

By recognizing and supporting the importance that students are placing on peer-to-peer support or the cadre/cohort/community, university educators can support more self-determined learning opportunities for students. (p. 96)

Course Management and Design

Swan et al (2000) found in their study that clarity, consistency and simplicity in course design enhance student perceptions of learning online. Aspects of clarity and simplicity include the use of modules in organization, spelling out clearly course goals and expectations and providing an orientation before the course begins to help students from the beginning. Vonderwell (2002) found that students' technology skills and the discussion board design influenced the level of student participation and their focus in the course.

In a study on 76 graduate students, at University of Georgia, (Song, Singleton, Hill, & Koh, 2003), students ranked course design as the most important factor of success in an online class. That ranking was followed by their comfort with technology, their motivation and time management. The students rated a lack of understanding of course goals as a primary barrier, followed by a lack of sense of community and technical problems.

Use of Modules for Course Organization Online

Using organizational modules is one way to simplify course design and provide easy access to course materials. The use of modules was important to ensure students could easily navigate the course in Swan's 2001 study. She found that when modules were consistent within the course in terms of structure and appearance, students believed they learned more and were more satisfied. Where simplicity was concerned, the researcher found that the fewer the number of course modules, the higher the level of perceived learning.

The greater the consistency among course modules, the more satisfied students were, the more they thought they learned, and the more interaction they thought they had with their instructors. The lower the number of modules in a course, the more students believed they learned from it. (Swan, 2001. p. 13)

Swan explained that, lacking the face-to-face explanations, it can be easy for students to get confused or lost online if the course is not easily navigated. Using correlation analysis, the researchers concluded that students are most satisfied and perceive the most learning when there are few, consistent modules to deliver content. "The strength and persistence of these correlations demonstrate the superiority of straightforward course designs with relatively few, similarly structured modules" (Swan, 2001, p. 13). In his study at the U.S. Air Force college (2004), MacCuish found similar results with fewer modules or locations students had to visit, the more they thought they learned.

Faculty Resistance and Skepticism to Online Education

It is both common sense and borne out by literature that faculty who have not

selected the online medium by choice are less likely to offer an engaging online class. In her presentation to the MidSouth Instructional Technology Conference, Thomas (2005) listed several sources of apprehension faculty cited for reluctance to teach online, including a lack of belief in the online teaching concept itself. Thomas notes that faculty resist being forced into teaching online for a variety of other reasons, including a fear of or lack of familiarity with the technology or lack confidence in the institution's technological framework (Thomas, 2005). They may believe the instruction would be inferior, or they may simply value the face-to-face interaction with students (Bower, 2001). Many of those objections can be overcome, Thomas (2005) says, by working proactively with faculty to find out whether they were forced into teaching online. In that case, the faculty's objections can be addressed through pre-course training, providing ample support and establishing an email account for troubleshooting problems.

In J. Moore's work from the Sloan Consortium, a network of institutions working to improve quality in online education, the author observes that faculty may resist online education because they believe it takes more time, provides fewer opportunities for interaction with students and provides little incentive and recognition (Moore, 2002).

The Sloan Consortium (2009) found that faculty teaching online want to do well by their students and that many online faculty have strong motivation, even though it takes more time to teach online. The study found that when they had the choice, faculty's primary motivation for moving their classes online was to meet student needs for flexible scheduling followed by a desire to reach particular students. That is even as 64% of faculty said in the same study that it takes somewhat more effort (34%) and a lot more effort (31%) to teach online.

Quality in Online Classes

In her 2007 dissertational research, Stacy Clawson sought to discover whether quality matters to students in online learning. Clawson's study (2007) as well as Moore's work with the Sloan Consortium (2002), the California Community Colleges Chancellor's Office's Distance Education Report (CCCPO, 2011), and a report from the Legislative Analyst's Office of California (2010), among others, suggest that quality is indeed important in online classes.

Clawson contends that new standards for online course quality should be developed at all institutions (2007). "The standards that exist as a result of the first-generation models for evaluating online courses need to be examined and revised to reflect the depth and breadth in instructional design principles," she wrote (p 3). She concluded that:

Further, a lack of understanding about how to apply instructional strategies in the design of an online course is also common within the field of higher education; and it becomes more complex when the instruction is designed for the online environment. Instructional designers and faculty need awareness of and access to more instructional strategies as well as training in specific techniques for implementation within the course design process. Only then will there be an increase in the presence of instructional strategies in online courses. (p 96)

Clawson developed a taxonomy for quality in online courses and isolated 18 constructs with additional subsections identified in the literature as indications of quality courses. She applied the taxonomy to online courses at Capella University in Minneapolis, Minnesota, producing a numbered index against which to measure student satisfaction, as measured by survey. Her results showed that there was no significant

difference in student satisfaction when 17 of the 18 constructs were missing. Only the area called Instructional Strategies yielded a measurement that was statistically significant. The section included strategies for gaining and retaining student attention, creating activities that required critical thinking, applying previous learning, eliciting an emotional response and considering multiple perspectives. Despite the findings of no significant difference in 17 of her 18 areas, Clawson notes that her taxonomy provides a framework for assessing quality is a strong contribution to the literature.

CSU Chico (2003) developed an extensive rubric for quality online courses that is intended to help faculty self-assess and improve their courses as well as to serve as a guide for those developing new online courses. Using Chickering and Gamson's Seven Principles (1987) as a guide along with other resources, a committee of faculty, staff and technologists developed the rubric that includes six core constructs, each with three to five elements. The rubric provides a framework to assess those constructs at three levels, baseline, effective, and exemplary. The construct categories include learner support and resources, online organization and design, instructional design and delivery, assessment and evaluation of student learning, innovative teaching with technology, and faculty use of student feedback.

Accessibility in Online Education, Legal Requirements and Ramifications

Completion rates for hearing, speech and visually impaired students in online education at 55%, 52% and 53% respectively are slightly lower than the statewide online completion rate of 57% (CCCCO, 2011, Distance Education Report). By law, however, these students have rights to the same quality of education, and indeed the same education, as able-bodied students.

Table 1-4 – California Community Colleges Online Course Completion by Disability

	<i>Completed</i>	<i>Not Completed</i>	<i>Total</i>	<i>Percent Completed</i>
Hearing Impaired	674	548	1222	55%
Speech Impaired	110	103	213	52%
Visually Impaired	478	428	906	53%

Source: Adapted from “Distance Education Report” by the California Community Colleges Chancellor’s Office, 2011.

Accessibility Regulations

Two major federal regulations establish disability access policy in the United States for federal agencies and those receiving federal funds, including institutions of higher education and community colleges in California. The federal Rehabilitation Act of 1973, Section 504, amended Section 508, required for the first time that education be accessible to all people, including those with disabilities.

The Americans with Disabilities Act (ADA, 2010), signed into law in 1990, established standards for accessibility for people with disabilities. Title II and Title III of the law prohibit discrimination in schools, among other areas. In 2004, the Department of Justice issued an Advance Notice of Proposed Rule Making to begin updating guidelines for implementing the law. At that time, the Department of Justice did not intend to include rules on the accessibility of Internet sites, but received numerous comments from the public on the issue (U.S. Department of Justice, 2010). The next round of revisions, in 2010, specifically addressed the issue (U.S. Department of Justice, 2010). New Guidelines were issued and are enforceable in March, 2012 (U.S. Department of Justice, 2011).

Section 508 of the ADA requires that “individuals with disabilities, who are members of the public seeking information or services from a Federal agency, have

access to and use of information and data that is comparable to that provided to the public who are not individuals with disabilities, unless an undue burden would be imposed on the agency” (ADA, 1990, Section 508). But California’s Distance Education Accessibility Guidelines remove the caveat on “undue burden,” stating that it is not a reliable defense to legal challenges since the law should have been taken into account when software was purchased (2011).

When a public institution selects software programs and/or hardware equipment that are not adaptable for access by persons with disabilities, the subsequent substantial expense of providing access is not generally regarded as an undue burden when such cost could have been significantly reduced by considering the issue of accessibility at the time of the initial selection (CCCCO Distance Education Accessibility Task Force, 2011. p. 12).

The new Guidelines set requirements for both the quality and timeliness of communication and access. Prior to the new Guidelines, it was acceptable for educational institutions to post information telling those with disabilities to telephone or email for more accessible content (Waddell, 2007). Now, people with disabilities have a recognized federal civil right to equal access to education when they arrive to take their courses. The laws also require that students with disabilities receive the same access and communication, not just an accommodation that provides an approximation of what other students can access. “Thus, the issue is not whether the student with the disability is merely provided access, but the issue is rather the extent to which the communication is actually as effective as that provided to others” (Shelton, 1996).

California State Regulations

Within the state of California, the California Code of Regulations, Title V, sets disability access policy in California. California Community Colleges issued new guidelines for implementation of the policy in January 2011 (CCCCO Distance Education Accessibility Task Force, 2011.). In the California Guidelines' general statement, the reasoning is explained. "In architecture, we have seen the acceptance of new standards that allow for broader usage and thus avoid unintentionally designed barriers. In education, we see the same unintentionally designed barriers in online courses that need to be redesigned based on individual students' requirements for access" (CCCCO Distance Education Accessibility Task Force, 2011, p. 7).

The new Guidelines are specific and direct, leaving no wiggle room for misunderstanding. "The regulation requires that a public entity, such as a community college, take appropriate steps to ensure that communications with persons with disabilities are as effective as communications with others" (CCCCO Distance Education Accessibility Task Force, 2011, p. 7).

The California Guidelines document is explicit in several areas that had received little attention in prior years, requiring not just a similar type of educational experience for the disabled, but the same educational experience. "Distance education courses, resources and materials must be designed and delivered in such a way that the level of communication and course-taking experience is the same for students with or without disabilities" (CCCCO Distance Education Accessibility Task Force, 2011).

Proactive, not Reactive

The new rules, whether at the federal or state level, also require that institutions and faculty prepare their courses before the disabled student arrives. "This is a proactive

approach to building broad usability for many and alleviates the need for numerous individual accommodations” (CCCCO Distance Education Accessibility Task Force, 2011, p. 7). Those accommodations should be built into design (Waddell, 2007; CCCCCO Distance Education Accessibility Task Force, 2011).

Implementing the Laws

The U.S. Department of Justice includes direction to achieve “effective communication” required in the law, its subsequent rules and through complaint resolution. It spells out several ways in which people with hearing or sight disabilities for online communications must be served to provide them equal access to education.

Alternate text

This electronic insertion of data detectable to screen reader software is virtually invisible to the sighted reader and would not impact the look of the course (U.S. DOJ, 2010). Using alternate text or tags allows the course designer to describe photos used in the course, which the screen reader detects and reads to the blind or sight-impaired.

Captioning

The Distance Education Captioning Grant at College of the Canyons currently provides captioning or voice-to-text services for community colleges for voice lecture and video. The institutions must send their lectures to College of the Canyons and will receive the captioned material in about eight months (Chelonis, A., personal communication, March 24, 2011).

Video Remote Interpreting

The rule includes video remote interpreting (VRI) services that can provide interpretation services through video-conferencing technology. Presumably, this would

be useful more in synchronous (real time) online courses than asynchronous online courses, in which communication is delayed (U.S. DOJ, 2011).

Current State of Online Education in ADA Compliance

According to the Managing Online Education Survey (Campus Computing Project, 2010) few colleges comply with requirements for online course review for ADA compliance. The report, sponsored by the Campus Computing Project, said 20% of the 183 institutions of higher education surveyed that were offering online classes had no policy on ADA compliance, while another 34% of the institutions left compliance up to the faculty teaching the courses. With faculty in charge of deciding whether their courses are compliant, the college districts leave themselves vulnerable to legal action (Parry, 2010).

Case Law

In the first case to hold that institutions must have accessible websites, a Georgia federal district court in 2001 in *Martin v. Metropolitan Atlanta Transportation Authority* held that disabled plaintiffs had a right to ADA accessible websites (Waddell, 2007). It was the first case to hold that ADA Title II requires institutions to have ADA accessible websites and online services (Waddell, 2007).

In the case of *National Federation Of The Blind, American Council of the Blind & Darrell Shandrow v the Arizona Board Of Regents; Arizona State University* (No. CV-09-1359-PHX-GMS, 2009), plaintiffs challenged the piloted use of the electronic reader Kindle at Arizona State University. The plaintiffs alleged that the Kindle denied them access to the same education as sighted students. Although the hand-held electronic reader was equipped with standard text-to-speech software, its menu did not have a

similarly accessible feature. Without access to a menu, students could not reach the material they needed for their classes. In a 2010 agreement between the plaintiffs and the university, the university agreed to discontinue the pilot program until the menu accessibility issue was fixed (U.S. DOJ, 2010). A similar agreement ensued when the U.S. Department of Justice entered an agreement on Jan. 13, 2010 with six colleges in Ohio, New York and Oregon, stating that the universities would refrain from the recommended use or institutional purchase of the Kindle reader until the menu issue was resolved (U.S. DOJ, 2010).

Easier to Make Some Classes Compliant Than Others

Those online classes that rely strictly on text without photos, voice, or multimedia will be more easily converted to accessible formats, as long as they use formats that screen readers can interpret. But many distance education instructors, including this author, provide personalized voice narration over PowerPoint, as well as live audio orientations and occasional video in their classes. Studies have shown that providing voice narration increases student interest and learning and decreases cognitive load (Mayer & Johnson, 2008). In fact, Mayer and Johnson (2008) found that displaying text and concurrent audio word-for-word actually hinders learning by causing a type of overload in the brain as students essentially distract their brains by trying to both read and listen simultaneously. That may create an unintended consequence for the able-bodied learner.

Learning outcomes aside, the law now requires that instructors provide text to match images and spoken words in order to produce education that is both equal in experience and fully accessible to all.

CHAPTER 2: METHODOLOGY

This chapter describes the research setting, the study population, the instruments and method of data collection, as well as the research questions and methods of analysis. It describes the instruments employed to measure the variables, including the research-based reasoning for the inclusion of each question and variable. It will also discuss sampling, validity, variables, analysis, delimitations, and limitations.

Research Setting

The study was conducted at a suburban, publicly funded two-year institution in a 36,000-student three-college district in Southern California. According to the census for Fall 2010, with 15,027 total students, (CCCCO, 2011) nearly three quarters of the campus population is under age 25, with only 16% age 30 and up.

Table 2-1 – Gateway College by Age Fall 2010

<i>Age group</i>	<i>Headcount</i>	<i>Percentage</i>
19 or under	5,743	38
20 - 24	5,520	36
25 - 29	1,483	10
30 – and above	2,281	16

Source: Data retrieved from California Community Colleges Chancellor's Office, Data Mart 2011

Ethnically, this college is predominantly made up of Caucasian students, with 59% white, followed by 23 % Hispanic and 9% Asian/Pacific Islander/Filipino. Blacks make up 2% of the population. Another 7% were unknown or declined to state (CCCCO Data Mart, 2011). Of the total 15,027 students attending Gateway College in Fall 2010, 2,049 or 13% attend fulltime with 15 units or more. Another 4,213 or 28% enroll in 12 to 14.9 units. The largest share of students by headcount takes fewer than 9 units per

semester.

Table 2-2 – Gateway College Academic Load by Headcount and Percentage, Fall 2010

<i>Academic Load</i>	<i>Headcount</i>	<i>Percentage</i>
Up to 8.9 Units	6,288	42
9 – 11.9 Units	2,477	16
12 –14.9 Units	4,213	28
15 + Units	2,049	14

Source: Data retrieved from California Community Colleges Chancellor's Office, Data Mart 2011

There were 5,720 full-time equivalent students at Gateway College in Fall 2010, including 461 in distance education (CCCCO, 2011), which was 8% of the total. The average aggregated course completion rate, also called retention rate, for all traditional credit courses in Fall 2010 was almost 85%, compared to a 76% completion rate for distance education courses. Success rates, however, show a marked difference, with students in traditional classes succeeding at the rate of 71%, compared to a dismal 58% succeeding online.

Table 2-3 – Gateway College Completion and Success Rates by Mode of Delivery, Fall 2010

	<i>Completion Rate</i>	<i>Success Rate</i>
Non-DE Classes	84.70%	71.09%
All DE Classes	76.38%	58.26%

Source: Data retrieved from California Community Colleges Chancellor's Office Data Mart, 2011.

The Study Population

The study population is framed in two ways: the population of online classes and the population of students taking online classes.

Population of Classes

This study examined all available online courses at Gateway College during the Spring and Summer sessions of 2011. Classes were established as available when the faculty members teaching the courses opted into the study, or granted their permission to the researcher to include their classes in this study. The courses examined include 75 of the total 141 courses offered in spring and 28 of the total 42 classes offered in summer. The courses examined represent a broad spectrum of disciplines, with 30 of the 40 disciplines offered online represented in the study sample. Of the 103 courses whose instructors opted into the study, four courses were omitted from the study as no students from those classes responded to research survey.

This project focuses on the Internet Asynchronous category as defined by the California Community Colleges Chancellor's Office. However, some asynchronous online classes included in this study may have some synchronous elements, including real time online discussions, chats, or office hours, onsite testing, or some onsite meetings, as these categories are not differentiated at Gateway College.

Population of Students

From the original 103 courses, 9,477 students were sent email invitations to the survey of Online Student Engagement. The anonymous surveys were linked to the individual student's status in one of three student outcome categories: successful completers, who completed the course successfully with a 'C' or higher; completers, who completed the course unsuccessfully with a grade lower than a 'C'; and withdrawers, who dropped or withdrew after the fourth week of the course when the course census was taken for state reporting. Of the 9,477, 570 students reached the end of the survey and submitted them. Another 117 students started but did not complete surveys. Their

responses were not included. Of the 570, nine student responses were missing data, and their surveys were discarded. One additional student completed all but one question on estimated GPA. That single GPA score was inserted using the mean GPA score for that course. The remaining 561 became the study population. Of the 561 students, 461 (82%) successfully completed their online courses with a grade of a ‘C’ or higher. Another 58 completed their courses with a grade less than a ‘C’. The remaining 42 withdrew from their courses. Total completers versus non-completers then were 519/42 and successful completers versus non-successful were 461/100. That very small variance in the population reduced the predictive power of the study, as will be discussed in Chapter 4.

Table 2-4 – Study Population

<i>Individual Student Outcome</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Percent</i>
Withdrawal	42	7.5	7.5
Non-successful Completer	58	10.3	17.8
Successful Completer	461	82.2	100.0
Total	561	100.0	

Source: Survey of Online Student Engagement Extracted from Aggregated Institutional Data, Gateway College 2011.

Demographic information from student engagement surveys revealed that the study population very roughly mirrors that of the college as a whole, with whites dominating with 68% of the study population compared to 60% in the college as a whole. Hispanics, the next largest group at Gateway College, made up 19.1% of the study population, compared to 23% in the college as a whole. Asians, the third largest group at the college, made up 6.4% of the study and the college population overall.

Table 2-5 – Study Population by Ethnicity

<i>Ethnicity</i>	<i>Frequency</i>	<i>Percent</i>	<i>Overall College Population</i>
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Asian/Pacific Islander	36	6.4	6.4
Black	13	2.3	1.8
Filipino	18	3.2	2.1
Latino/Chicano/Hispanic	107	19.1	23.8
Native American	5	0.9	0.4
White	382	68.1	59.7
Total	561	100.0	

Source: Author's research

However, when the study population is examined by course completion and success, Hispanics' successful completion rate is disproportionately lower in the study population, comprising only 17% of the successful completers compared to their 19% representation in the study population. However, all of the 13 students who identified themselves as black successfully completed their online course, leaving no variance in that ethnic group for analysis.

Table 2-6 – Completion by Ethnicity

<i>Ethnicity</i>		<i>Individual Student Outcome</i>			<i>Total</i>
		<i>Withdrawal</i>	<i>Non-successful Completer</i>	<i>Successful Completer</i>	
Asian/Pacific Islander	Count	3.0	1.0	32.0	36.0
	Percent	7.1	1.7	6.9	6.4
Black	Count	0.0	0.0	13.0	13.0
	Percent	0.0	0.0	2.8	2.3
Filipino	Count	1.0	2.0	15.0	18.0
	Percent	2.4	3.4	3.3	3.2
Latino/Chicano/Hispanic	Count	12.0	17.0	78.0	107.0
	Percent	28.6	29.3	16.9	19.1
Native American	Count	1.0	0.0	4.0	5.0
	Percent	2.4	0.0	0.9	0.9
White	Count	25.0	38.0	319.0	382.0
	Percent	59.5	65.5	69.2	68.1

Total	Count	42.0	58.0	461.0	561.0
	Percent	100.0	100.0	100.0	100.0

Source: Author's research

By age, the study population skewed older than the general college population, in which 74% of students are age 24 or under. Only 55% of the study population were in that age group, while 34% were age 30 and up, compared to 16% in the general college population.

Table 2-7– Study Population by Age

<i>Age</i>	<i>Frequency</i>	<i>Percent</i>
Under 18	6	1.1
18–24	304	54.2
25–29	60	10.7
30–39	97	17.3
40 and up	94	16.8
Total	561	100.0

Source: Author's research

In the study population, 21.6% of students take 13 or more units. Because the cut points were different with state-collected data, it was difficult to cast a direct comparison. But state-collected data (CCCCO Data Mart, 2012) reveals that almost 15% of Gateway College students took 15 or more units in the Fall of 2010. Clearly, both populations are predominantly part-time students.

Study Purpose

This study will examine whether ten individual course features identified in the literature as hallmarks of quality, engaging online instruction are associated with or predict student engagement, completion, and success in the study population of online

students at a California community college.

Research Questions

- RQ1. What course features found in the research literature create or predict student engagement in online courses?
- RQ 2. To what degree do online courses at Gateway College have the course features found in the research literature to create or predict student engagement?
- RQ 3. To what degree are students in online courses at Gateway College engaged?
- RQ4. What impact does the presence and level of each course feature identified in the literature have on student engagement?
- RQ5. What impact does student engagement have on completion and success?
- RQ6. What impact does the presence and level of each course feature identified in the literature have on student success?

Study Framework

The identified course features, which will be discussed in detail below, were divided into three broad categories: instructor presence, student interaction and course design. The literature suggests several frameworks for subdividing the features of online learning, but this study draws on the framework established by the seminal work in distance education of Michael G. Moore (1989), and on a correlational study by Kent State researcher Karen Swan and colleagues (Swan et al, 2000) and Swan again in her updated review of literature in 2004.

Moore (1989) established that students have three types of interaction with online

courses: learner-content, learner-instructor and learner-learner. Swan and colleagues (2000) noted that their research findings were consistent in identifying three of what they call course design factors that contribute significantly to the success of online learning: “These are a transparent interface, an instructor who interacts frequently and constructively with students and a valued and dynamic discussion” (Swan et al, 2000, p 517). Later, in her review of literature, Swan (2004) refined Moore’s learner-content model to account for varieties in technology as well as course design, since technology and course design have been shown to influence student engagement and persistence.

Some elements in each of the three categories have overlap with other categories since elements of teaching and learning are interconnected. That is certainly the case within the first category of teaching presence. As stated in Ch. 2, Anderson, Rourke, Garrison, and Archer (2001) define teaching presence as design, facilitation, and direction of cognitive and social processes. Within the category of instructor presence, for the purposes of this study, features examined included the existence, level and modality of delivery for course orientation, lecture, posts to a central or home page, and instructor participation in discussion (Anderson et al, 2001; Ciocco & Fotia, 2010; Fazioli, 2009; Genden, 2005; Mayer & Moreno, 2003; Muilenburg & Berge, 2005; Nash, 2005; Swan et al, 2000). Within the category of student interaction, features examined include discussion, student-led discussion, and group or collaborative work (Bambara et al, 2009; Dixson, 2010; Fazioli, 2009; Mandernach, 2009). Within the category of course design, features examined include the use and number of modules, simplicity of navigation, as well as appearance and appeal (Fazioli, 2009; Muilenburg & Berge, 2005, Swan, 2001; Swan et al, 2000; Vonderwell, 2002).

Independent and demographic factors examined include age, ethnicity, GPA, educational goal, experience with online classes (Muilenburg & Berge, 2005, Nash, 2005, CCCCCO, 2011, Distance Education Report), enjoyment of online classes (Muilenburg & Berge, 2005) choice or desire in taking the online class (Muilenburg & Berge, 2005; Yatrakis & Simon, 2002), promptness of feedback (Thurmond & Wambach, 2004) and feelings of engagement (Dixson, 2010).

Research Method and Instruments

This study employs three merged datasets evaluated at two units of analysis. The datasets include the Online Course Feature Inventory scores, the student responses from the Online Student Engagement survey, and institutional aggregated student completion and success data.

The two units of analysis are the course level and the student level. At the course level unit of analysis, each course was examined by the researcher using the Course Feature Inventory (CFI) described below to determine what features are present and at what operational levels. Each of those features was assigned a value in the instrument, producing a total score for each course, scores for the subcategories described above, and scores for individual course features.

The second unit of analysis is individual students. Students from each course that was inventoried received a survey of Online Student Engagement. That engagement survey, which also included demographic questions, measured student engagement based on the peer-reviewed Online Student Engagement Scale, used with permission of author and researcher Marcia Dixson (2010). Each student's individual Engagement score was aggregated and averaged by course to provide a mean course Engagement score for the

Course Level of Analysis. Similarly, each course CFI score was articulated to individual student data at the student-level of analysis.

The Course Feature Inventory

The first instrument, the online Course Feature Inventory, was arranged into three categories composed of ten total features. Each of the ten features is supported by the literature that describes quality online instruction for maximum student engagement and completion. This researcher applied the instrument to score classes and describe which features are employed in each individual course and at what operational level.

Table 2-8 – Course Feature Inventory with References

Instructor presence

Course Feature: Orientation

- Not present = 0
- Text only = 1
- Text + 3 or fewer photos/graphics = 2
- Text + 4 or more photos/graphics = 3
- Text + any photos/graphics and personalized voice or video = 4
(Anderson, Rourke, Garrison, & Archer, 2001; Bambara, Harbour, Davies, & Athey, 2009; Dixon, 2010; Garrison, Anderson & Archer, 2000; Hoskisson & Clark, 2010; Lowenthal, & Parscal, 2008; Shea, Pickett, & Pelz, 2003; Swan, 2004; Tello, 2002; Terenzini and Pascarella, 1980).

Course Feature: Home page

- Not present = 0
- Text only = 1
- Text + 3 or fewer photos/graphics = 2
- Text + 4 or more photos/graphics = 3
- Text + any photos/graphics and personalized voice or video = 4
(Fazioli, 2009; Muilenburg & Berge, 2005; Swan, 2001; Vonderwell, 2002).

Course Feature: Frequency of home page posts

- Not present = 0

One post in an 8-week class, 1 or 2 posts in a full-term class = 1

Two or three posts in an 8-week class, 3-7 posts in a full-term class = 2

At least semi-weekly, 4 or more in an 8-week class; 8 or more in a full-term class = 3

At least weekly, 8 or more in an 8-week class, 18 or more in full-term class = 4

(Fazioli, 2009; Muilenburg & Berge, 2005; Swan, 2001; Vonderwell, 2002).

Text + any photos/graphics and personalized voice or video = 4
(Doolittle, 2001; Fazioli, 2009; Hersh, 2009; Mandernach, 2009; Mayer & Johnson, 2008; Mayer & Moreno, 2003; Moreno, 2006).

Note: To eliminate over-emphasis on the use of the Home Page, a mean score for the two Home Page features was used in the subcategories and the course total scores.

Course feature: Lecture

Not present = 0

Text only = 1

Text + 3 or fewer photos/graphics = 2

Text + 4 or more photos/graphics = 3

Text + any photos/graphics and personalized voice or video = 4

(Fazioli, 2009; Hersh, 2009, Mandernach, 2009; Mayer & Johnson, 2008; Moreno, 2006)

Course Feature: Instructor participation in Discussion

No instructor posts in 5 discussions examined = 0

One instructor post in at least 3 of 5 discussion examined = 1

Two or 3 instructor posts in at least 3 of 5 discussions examined = 2

Four instructor posts in at least 3 of 5 discussions examined = 3

Five or more instructor posts in at least 3 of 5 discussions examined = 4

Student Interaction

Course Feature: Discussion (Opportunities for Student interaction)

Not present = 0

Present 2 or fewer times in course first half = 1

Present 3 or 4 times in course first half = 2

Present 5 or 6 times in course first half = 3

Present 7 or more times in course first half = 4

(Dixon, 2010; Swan et al, 2000; Thurmond & Wambach, 2004, Tinto, 1987, 1997, 2004, 2007).

Course feature: Student-led discussion

Not present = 0

One student-led discussions in course first half = 1

Two or 3 student-led discussions in course first half = 2

Four or 5 student-led discussions in course first half = 3

Six or more student-led discussions in course first half = 4

(MacCuish, 2004; Rourke & Anderson, 2002).

Course feature: Collaborative student work

Not present = 0

No group assignment, but option allows work with partner or group on one assignment = 1

No group assignment, but option exists to work with partner or group on two or more assignments = 2

Group work is required for at least one assignment = 3

Group work is required for two or more assignments = 4

(Dixon, 2010; Swan et al, 2000; Thurmond & Wambach, 2004, Tinto, 1987, 1997, 2004, 2007).

Course design

Course feature: Modules

Not present, requiring students to visit 5 or more locations to retrieve course materials in a given time period = 0

No or some modules are present, requiring students to visit 3 or 4 locations to retrieve materials in a given time period = 1

No or some modules are present, requiring students to visit 3 or 4 locations to retrieve materials in a given time period = 2

No or some modules are present, requiring students to visit only 2 locations to retrieve materials in a given time period, but modules are not consistent in appearance or structure = 3

Consistent organization modules, requiring students to visit only one location to retrieve materials in a given time period = 4

(CSU Chico, 2003; Fazioli, 2009; Muilenburg & Berge, 2005; Nash, 2005; Song, 2003; Swan, 2001; Thurmond, 2001; Thurmond & Wambach, 2004; Vonderwell, 2002).

Course feature: Overall clarity and simplicity

Course navigation is confusing, not intuitive, requires outside guidance
= 0

Course navigation is complex, but understandable with effort = 1

Course navigation is complex but clear = 2

Course navigation is clear and easily navigated = 3

Course navigation is clear, easy to navigate and intuitive = 4

(CSU Chico, 2003; Fazioli, 2009; Muilenburg & Berge, 2005;
Nash, 2005; Swan, 2001; Vonderwell, 2002).

Course feature: Overall interest and appeal

Course overall appearance is dull (unenhanced), text only, no items of
interest = 0

Course overall appearance may be interesting but confusing or chaotic =
1

Course overall appearance is dull (unenhanced) but clear = 2

Course overall appearance is interesting and clear = 3

Course overall appearance is interesting, inviting and clear = 4

(CSU Chico, 2003; Fazioli, 2009; Muilenburg & Berge, 2005;
Nash, 2005; Swan, 2001; Vonderwell, 2002).

Online Student Engagement Survey and Scale

With adaptations and author permission, this study uses the Online Student Engagement Scale developed by researcher Indiana University researcher Marcia Dixon (2010). Her peer-reviewed study and scale measured student engagement to determine whether specific course activities were more engaging than others. Dixon began with 30 questions and narrowed them to 19 after her pilot study. The scale includes questions on four areas or subscales of engagement, which Dixon names Skills, Emotional, Participation, and Performance. Skills subscale questions pertain to the number of times

and ways in which students study and interact with the course. Those questions are relevant to this study since they are in line with measures of student involvement (Astin, 1985, 1999; Chickering & Gamson, 1987; Tinto, 1993).

Dixson's Emotional subscale questions pertain to notions of making the course interesting and useful to the student, and desiring to learn, which are relevant to my study's section on use of the course home page and overall course appearance as well as student engagement (Chickering & Gamson, 1987; Garrison, & Archer, 2001; Muilenberg & Berge, 2005, Nash, 2005 CSU Chico, 2003; Fazioli, 2009; Jones, Naugle & Kolloff, 2008; Nash, 2005; Quality Matters, 2006; Song, 2003; Swan, 2001; Thurmond, 2001; Thurmond & Wambach, 2004; Vonderwell, 2002).

Dixson's participation category questions pertain to students getting to know and work with other students, which is relevant to this study's student interaction section (Bambara et al, 2009; Dixson, 2010; Fazioli, 2009; Mandernach, 2009; Rourke & Anderson, 2002; Shea et al, 2000; Swan, 2004; Tello, 2009; Tinto, 1993).

Dixson's performance category includes questions on whether students want to do well on quizzes and in the class, which are also measures of student involvement and engagement, and so is applicable to this study (Astin, 1985, 1999; Chickering & Gamson, 1987; Tinto, 1993).

Dixson's scale does not include a question on whether students received prompt feedback (Chickering & Gamson, 1987; Thurmond & Wambach, 2004), whether students felt there was adequate interaction with the instructor and whether students felt a sense of instructor presence (Anderson et al, 2001; 2001, Shea, Pickett, & Pelz, 2003; Swan, 2004; Lowenthal, & Parscal, 2008, Dixson, 2010; Lowenthal, & Parscal, 2008; Tello,

2002; Shea, Pickett, & Pelz, 2003; Swan, 2004; Terenzini and Pascarella (1975); Vonderwell, 2002). Three questions were added to the research survey asking about promptness of instructor replies to email, quantity of feedback on assigned work and promptness of feedback on assigned work.

Dixson opted to include very few questions on demographic information in her study as she did not want respondents to fear that they were losing their anonymity (Dixson, 2010). This survey included demographic questions on age, and ethnicity (CCCCO, 2011, Distance Education Study), reasons for taking an online class and experience with online classes (Muilenburg & Berge, 2005), unit load, work or family obligations, preference for online classes (Hammond, 2006), and educational goal (Astin, 1985, 1999; Chickering & Gamson, 1987; Tinto, 1993). Respondents were also asked about work or family situations (Fazioli, 2009; Muilenburg & Berge, 2005; Nash, 2005). Additional survey questions not included in the Online Student Engagement Scale, but included in the study are those pertaining to ethnicity, age, work outside the home, caregiver responsibilities, educational goal, enrolled units at time of study, online classes taken, preference for or against online classes and the level of instructor responsiveness to questions and on assignment feedback.

Institutional Completion Data

Institutional data on aggregated course completion and success rates, by course, were provided by the office of Institutional Research at Gateway College. The data provided information on completion and success rates by course, which was used in analysis measuring the effects of engagement and of the Course Feature Inventory on student completion and success.

Data Collection Procedures

Opt-in Element

After this researcher received approval from the Office of the President at Gateway College in the summer of 2011, all Distance Education faculty were approached via email that described the study and asked for their cooperation and opt in. Faculty were asked to return an email, allowing this researcher to examine their course shells in Spring 2011 and Summer 2011 using the Course Feature Inventory instrument described above.

Applying the Instrument

Using the course shells of those instructors who opted into the study, the researcher applied the Course Feature Inventory to produce both discrete scores for each feature as well as subtotal scores for each subcategory, and an overall total score for the course. The Inventory rater was the researcher, working under the direction of the study Dissertation Chair at California State University, Northridge, and within the parameters of the Institutional Research Board at the university.

Online Student Engagement Surveys

The online survey company, SurveyGizmo, provided the structure and site for the survey, as well as an Enterprise-level account to provide high levels of functionality, service and security. Through SurveyGizmo and using this researcher's college-issued email address, survey links were emailed to each student who was enrolled at census at the fourth week of class in each class for which the instructor has opted in. Student surveys were coded to connect the anonymous student responses to the course as well as

to that student's individual outcome as a successful completer, completer or withdrawer.

Data Analysis

Cleaning Data

Once data were collected from the Course Feature Inventory instrument and the Online Student Engagement surveys, both datasets were uploaded into the PASW statistical analysis program. The institutional aggregated persistence and success data Excel files were uploaded as well, and matched by course in the Course-level dataset, and then transferred to the Student-level dataset as well. Using PASW's 'sort cases' function to place the scores in ascending order, the researcher examined the data for any errors, such as invalid responses or missing data. Missing or erroneous data was not detected beyond those cases mentioned earlier in this chapter.

Descriptive Statistics of Variables and Demographics

Frequencies and crosstabs were run to determine measures of central tendency and identify trends and skews in the data and student demographics. It provided a snapshot of the number of courses with identified features at various operational levels, including how common specific course features are among the courses, how many of the courses included specific features, or whether one feature is mostly absent. Analyses were run to identify demographic trends as well. They also identified the variance among the dependent variable groups, as well as standard deviation and range.

Univariate Analysis

Each individual course feature from the CFI was analyzed to examine its single effect, relationship or correlation with each of the three dependent variables of engagement, completion and success. Further, the univariate analysis explored the

relationship between student demographic characteristics and the dependent measures to inform later regression modeling.

Bivariate Correlational Analysis

Correlations were run to determine the strength of associations among the independent and dependent variables. These matrices identified associations independently, as subgroups and totals of all components of the Course Feature Inventory, the Online Student Engagement Scale, and the student outcomes. The correlations also informed the creation of regression modeling.

T-Tests to Compare Means

T-tests comparing the mean CFI and Engagement scores of those who completed and succeeded to those who did not were also employed as an additional measure or indication of the effects of CFI and engagement on completion and success.

Multiple Regression Analysis

Both linear and logistic regressions measured the effect of individual course features and combinations of course features on engagement, completion and success, controlling for demographic variables. The multiple regressions determine the impact, effect, and relationship multiple independent variables have on the dependent variables of student engagement, completion and success.

To produce data that tell the most precise story of the effect of the course features on the dependent variables, the researcher attempted a hierarchical linear regression that would explain variance that can be accounted for by independent demographic variables that theory and literature suggest are relevant. However, because the size of the study population at both the student level ($N = 561$) and the course level ($N = 99$) were

relatively small, the hierarchical regression was not successful.

Threats to Validity

Threats to validity in this study include the size of the sample at the course level ($N = 99$), the size of the sample at the student level ($N = 561$), the small amount of variance in the dependent variables of completion (completion $n = 519$ or 92.5%) and success (success $n = 461$, or 82%), possible response bias in the self-selection process of online course faculty who opted in to the study or in the self-selection of students who responded to the engagement survey.

Instructors who offer very few of the features on the Inventory may have been unwilling to open their courses to a researcher. That could result in the self-selection of instructors who offer more robust online courses with more of the features included in the inventory instrument. That would substantially narrow the variance in results. In addition, students who return the engagement surveys may be self-selected for students who are either very disappointed, or very excited by a course, with those thinking the course to be adequate, slightly engaging or slightly un-engaging not responding. Moreover, when students answered engagement data, students may not differentiate among the features they liked. Unless there is a feature that substantially stood out, and unless the student had taken other distance education courses and could compare the existing course to a previous course, the student may not have known whether or not the feature being measured, such as course modules or other course design features, were exceptional. Conversely, a course may seem very exciting the first time a student took an online course, and as he or she became more experienced with online courses, the student may have raised a personal standard. All of these factors separately or together could produce

survey data with little variance and might affect the ability to draw meaningful conclusions.

This study's main limitation is the size of the sample. The researcher initially hoped to gain access to all 210 course shells that were issued to faculty at Gateway College. However, access to courses without instructor permission was not possible. Requests were sent to all online faculty, and were followed with second email requests, as well as, in some cases, a follow-up phone call. But some instructors were not interested. In addition, some fell away when a second round of requests required by the college were sent out to confirm participation.

Additionally, the student population was not as large as had been hoped. The student surveys were mailed in mid July, nearly eight weeks after the end of spring classes. That may have reduced the number of student responses to the survey. Additionally, relying on email responses means that the data are not random, and may skew favorably or unfavorably. Students who experienced either an outstanding class or an extremely poor quality class may be more apt to return surveys than those who simply found the class adequate, or within the range of their expectations. Another limitation was student privacy. The researcher did not have access to instructor email correspondence with students or to instructor feedback on assignments. Therefore, instructors who respond to student discussion through email would not have been recorded in the Course Feature Inventory. This limitation was compensated for in part by asking additional questions on Instructor Responsiveness on the survey of Online Student Engagement.

Finally, responses from students per course ranged from 2 students to 12. When engagement scores were compiled from the student-level database and articulated to the

course-level database, they became a course score, but may not have been representative of that course.

Delimitations

The Study Subject

This study was designed as action research that might be implemented to inform online teaching faculty on how they might encourage student engagement online and improve their online course completion and success rates. The study subject offered multiple opportunities for a deeper examination of various course attributes that might influence completion or success. For instance, literature suggests that instructors who are asked or forced to teach online against their desires, have, as would be expected, negative attitudes toward teaching online (Moore, 2002; Thomas, 2005). The researcher could have added instructor attitude as a variable. However, that would have required a fourth dataset in addition to the Course Feature Inventory, student responses from the survey of Online Student Engagement, and the institutional aggregated success and completion data. Although that would have been an interesting field to explore, and although it was considered, instructor attitude was excluded from this study in an effort to focus research on the empirical, verifiable data on the existence and operational level of course features used in online classes, and their effects on engagement, completion and success.

The researcher also considered whether to add the element of a help line or outside student support to the Course Feature Inventory, as the literature indicates positive influence on completion when outside help is available to students during hours when they are working (Hill, 2010; Nash, 2005). But any student at Gateway College would be offered the same level of institutional help, so there would be little or no

variance in this answer.

The literature also described learner-content as one of three constructs in student engagement (Moore, 1989). This study, however, was designed to examine course features that improve engagement, rather than to improve student learning per se. Although the types of content that engage students is fertile ground for study, the delivery of content in terms of method or inquiry versus information could be a separate study. Moreover, the guest access granted to the researcher to examine the online courses did not include access to instructor assignments. After consideration, it was decided that content would not be considered in this study.

The Study Location

The study location was a single college in a three-college district. The researcher discussed at length whether to include the two smaller sister colleges in the study in order to try to increase the 'n' of the study. One of those colleges offered 90 online classes in spring of 2011 and 28 in summer, while the other offered 42 in spring and 5 in summer. The inclusion would have increased the possible pool of classes to inventory by 165. This researcher had relationships with only a few of the instructors at the other campus. Without the trust that comes from knowing and working with faculty over the years, the likelihood that a large number of faculty would opt in to the study appeared remote. In addition, the process to earn approval from the home campus human subjects review was extensive, and required two rounds of approvals. The process also required a close working relationship with the Institutional Researcher at the home campus, after the human subjects review approval was received. With each of the sister campuses sitting at a 45-minute drive from the home campus, it was decided that the amount and extent of

background work to obtain permission to conduct the study was not feasible. The researcher, in consultation with the chair, decided to omit the other two campuses from the study.

Summary

As both an instructor of online education at Gateway College and principal researcher of this study, the researcher brings a set of biases to the study. Many of those biases have already been either dispelled or borne out through the review of relevant literature.

In addition, although there are many limitations that the researcher had hoped to avoid with greater access to course shells and student data, the overall outcome of the study should provide valuable information to online faculty, course designers, distance education coordinators, curriculum committees and others interested in online education courses designed to engage students and encourage them to complete and succeed in their courses at Gateway College, and at other institutions of higher learning in California and the nation.

CHAPTER 3: A REVIEW OF FINDINGS

This chapter will present the findings of research on whether course features identified in the literature as hallmarks of high-quality online classes encourage student engagement, completion and success at the study site. Specifically, the research is designed to show whether certain course features that are indicative of a present and involved instructor, an involved and interactive student body, and a clear and organized online classroom environment, can impact the levels of student engagement, completion and success.

The Research Setting

The research was conducted at a suburban mid-sized community college that draws from a predominantly middle-class Caucasian population. The majority of the students are under 25, and like most community college populations, the majority of students attend college part-time.

The Study Population

In order to answer the research questions posed, the study employed three merged datasets examined in two units of analysis. The three datasets consist of: scores from the Course Feature Inventory that was applied to 99 online courses at the college; survey responses on student engagement and demographics from 561 individual students enrolled in those 99 courses, and institutional data with aggregated completion and success rates from the 99 courses examined. The 99 courses examined were offered during spring 2011 and summer 2011 by instructors who opted into this researcher's study. The courses examined represent a broad spectrum of disciplines, with 30 of the 40 disciplines offered online represented in the sample. The courses examined include 75 of the total 141

courses offered in spring and 28 of the total 42 classes offered in summer.

Within the Survey of Online Student Engagement, 561 students completed all of the 19 questions used in the analysis and all of the demographic questions included in the survey, with the exception of one student who omitted his or her estimated GPA. That single GPA score was inserted using the mean GPA score for that course. All 561 responders were then included in the study. Of the 561 students who completed all questions used in the survey scale, it is important to note that, by far, the large majority of them successfully completed their online courses with a grade of a ‘C’ or higher. That fact significantly reduced the variance in the study, with 92.5% of students completing their courses and 82% successfully completing their online courses with a ‘C’ or better.

Table 3-1 – Study Population by Student Outcome

<i>Individual Student Outcome</i>	<i>Headcount</i>	<i>Percent</i>	<i>Cumulative Percent</i>
Withdrawal	42	7.5	7.5
Non-successful Completer	58	10.3	17.8
Successful Completer	461	82.2	100.0
Total	561	100.0	

Source: Survey of Online Student Engagement Extracted from Aggregated Institutional Data, Gateway College 2011.

Student Characteristics in the Study Population

Study Population Ethnicity

Self-reported demographic information from student engagement surveys revealed that the study population very roughly mirrors that of the college as a whole, with whites dominating with 68% of the study population compared to 60% in the college as a whole. Hispanics, the next largest group at Gateway College, made up 19.1% of the study population, compared to 23% in the college as a whole. Asians, the third largest

group in both the study population and the college, made up 6.4% of both groups.

Table 3-2 – Study Population by Ethnicity by Headcount and Percent

<i>Ethnicity</i>	<i>Headcount</i>	<i>Percent</i>	<i>Overall College Population</i>
Asian/Pacific Islander	36	6.4	6.4
Black	13	2.3	1.8
Filipino	18	3.2	2.1
Latino/Chicano/Hispanic	107	19.1	23.8
Native American	5	.9	0.4
White	382	68.1	59.7
Total	561	100.0	

Source: Author's research

However, when the study population is examined by course completion and success, Hispanics' successful completion rate is slightly disproportionately lower in the study population, comprising only 17 % of the successful completers compared to their 19% representation in the study population.

Table 3-3 – Completion and Success by Ethnicity by Headcount and Percent

<i>Ethnicity</i>		<i>Individual Student Outcome</i>			<i>Total</i>
		<i>Withdrawal</i>	<i>Non-successful Completer</i>	<i>Successful Completer</i>	
Asian/Pacific Islander	Count	3	1	32	36
	Percent	7.1	1.7	6.9	6.4
Black	Count	0	0	13	13
	Percent	0.0	0.0	2.8	2.3
Filipino	Count	1	2	15	18
	Percent	2.4	3.4	3.3	3.2
Latino/ Chicano/Hispanic	Count	12	17	78	107
	Percent	28.6	29.3	16.9	19.1
Native American	Count	1	0	4	5
	Percent	2.4	0.0	0.9	0.9

White	Count	25	38	319	382
	Percent	59.5	65.5	69.2	68.1
Total	Count	42	58	461	561
	Percent	100.0	100.0	100.0	100.0

Source: Author's research

Study Population Age

By age, the study population skewed older than the general college population, in which 74% of students are age 24 or under. The study population contained 34% age 30 and up, compared to 16 % in the general college population.

Table 3-4 – Study Population by Age

<i>Age</i>	<i>Percent</i>	<i>Cumulative Percent</i>
Under 18	1.1	1.1
18–24	54.2	55.3
25–29	10.7	66.0
30–39	17.3	83.2
40 and up	16.8	100.0
Total	100.0	

Source: Author's research

N = 561; Mean = 2.94; Std. Deviation = 1.195; Range = 0–4

Study Population by Primary Caregiver Responsibilities

Most students in the study had no primary caregiver responsibilities, whether for children or adults. While only 177 of 561 students (31.6%) had primary care responsibilities, they completed at very close to the same rate as those who did not have any caregiver responsibilities.

Table 3-5 – Study Population by Primary Caregiver Responsibilities and Student Outcome by Percent

<i>Primary Caregiver</i>	<i>Individual Student Outcome</i>		
	<i>Withdrawal n=42</i>	<i>Non-successful Completer n=58</i>	<i>Successful Completer n=461</i>
No			
Count	26	40	318
Percent	6.8	10.4	82.8
Yes			
Count	16	18	143
Percent	9.0	10.2	80.8
Total			
Count	42	58	461
Percent	7.5	10.3	82.2

Source: Author's research
N = 561

Study Population Educational Goal

As for educational goals, the study population was ambitious, with fewer than 10% saying they were shooting for less than a bachelor's degree. Another 34% sought a master's degree with 15% expecting to earn a doctoral degree one day.

Table 3-6 – Study Population by Educational Goal

<i>What is Your Highest Educational Goal?</i>	<i>Percent</i>	<i>Cumulative Percent</i>
To complete some classes	.5	.5
To complete a certificate	.9	1.4
To complete an A.A. or A.S. degree	7.8	9.3
To complete a B.A. or B.S. degree	41.0	50.3
To complete a master's degree	34.8	85.0
To complete a doctoral degree	15.0	100.0
Total	100.0	

Source: Author's research
N = 561; Mean = 4.53; Std. Deviation = .908; Range = 0–5

Study Population by Unit Load During Study Period

By the unit load, the study population was similar to the campus at large, with just more than 20% taking what is considered a full-time load of 13 or more units. Because the cut points were different with state-collected data, it was difficult to cast a direct comparison. But state-collected data (CCCCO Datamart, 2012) reveals that almost 15% of Gateway College students took 15 or more units in the Fall of 2010. The largest group of students was those in the 9-12 unit range, accounting for 32 % of the study population.

Table 3-7 – Study Population by Units Taking During Study Period

<i>Units Taking During Study Period</i>	<i>Percent</i>	<i>Cumulative Percent</i>
3 units (this was my only class)	17.1	17.1
4–8 units	29.1	46.2
9–12 units	32.3	78.4
13–15 units	13.7	92.2
16 or more units	7.8	100.0
Total	100.0	

Source: Author’s research

N = 561; Mean = 2.66; Std. Deviation = 1.146; Range = 0–4

Study Population by Self-Reported GPA

According to students’ self-reported GPA, the study population were high-achieving students. Only one-third of the students in the study population had GPAs of less than 3.0.

Table 3-8 – Study Population by Self-Reported GPA

<i>GPA</i>	<i>Percent</i>	<i>Cumulative Percent</i>
Less than 2.0	3.2	3.2

2.1–2.9	21.7	25.0
3.0–3.5	34.4	59.4
3.6–3.9	24.2	83.6
4.0	16.4	100.0
Total	100.0	

Source: Author’s research

N = 561; Mean = 2.29; Std. Deviation = 1.078; Range = 0–4

Study Population By Experience with Online Classes

Most students in the study population were experienced with online classes, with only 16% saying the current course was their first. The largest group of 37% said they had taken five or more online classes including the current class.

Table 3-9 – Study Population By Experience with Online Classes

<i>Total Online Classes Taken Including Current</i>	<i>Percent</i>	<i>Cumulative Percent</i>
One online class (this is my first one)	15.9	15.9
Two online classes	13.2	29.1
Three online classes	17.3	46.3
Four online classes	15.3	61.7
Five or more online classes	38.3	100.0
Total	100.0	

Source: Author’s research

N = 561; Mean = 3.47; Std. Deviation = 1.495; Range = 0–4

Study Population by Preferences in Online Classes

Most students in the study population either preferred online classes or took them when it was convenient. Only 10% said they either actively disliked them or would avoid them if they could.

Table 3-10 – Study Population by Preferences in Online Classes

<i>Preference in Online Classes</i>	<i>Percent</i>	<i>Cumulative Percent</i>
I hate them and avoid them whenever possible	2.0	2.0
I wouldn't choose them if I had a choice	8.0	10.0
I neither avoid nor seek them	5.5	15.5
I take them when they work best for my schedule	46.7	62.2
I prefer them and choose them first when possible	37.8	100.0
Total	100.0	

Source: Author's research

N = 561; Mean = 3.10; Std. Deviation = .960; Range = 0–4

The Study Instruments

This study included two research instruments and three merged datasets that were analyzed at two units of analysis.

The Course Feature Inventory

The Course Feature Inventory measures 10 features in three subcategories that are described in the literature as those that encourage engagement in online classes, leading to increased student completion and success rates. As discussed in Chapter 3 where the Course Feature Inventory was introduced, the literature generally divides online course features into three categories, which were used in this study's analysis: Instructor Presence, Student Interaction and Course Design.

Each feature was assessed on a scale of 0 to 4, with 0 indicating the feature wasn't present, and 4 indicating the feature was present at the highest level of operation described in the literature, with a total possible of 40 on the CFI. For instance, in the orientation feature, the lowest levels earning a 0 or 1 had no orientation at all or simple text instructions imbedded in a syllabus. The highest levels earning a 3 or 4, had a

separate orientation that was either enhanced with multiple images, or a presentation with images and voice, or the orientation was onsite. Homepage posts and lecture were similarly structured. Measures such as instructor participation in discussion, as well as student discussions and opportunities to collaborate were measured by counting occurrences. In the Course Design subcategory, the organizational module score was assessed by observing whether modules were used and counting the number of separate locations students had to navigate to find assigned work. Clarity and Interest were both subjective measures based on the ease of navigation and the look of the course. Total CFI scores ranged from 8 to 36.

The Survey of Online Student Engagement and the Online Student Engagement Scale

The researcher used the peer-reviewed survey of Online Student Engagement with permission of author and researcher Marcia Dixson (2010). Dixson began with 30 questions but reduced the number of questions used in her survey analysis to 19, based on her pilot study. This study uses those 19 questions (See Appendix B). Dixson divided the questions into four subscales, including: a) Skills Engagement; b) Emotional Engagement; c) Participation Engagement; and d) Performance Engagement, which were used in this study. Skills Engagement questions pertain to the ways in which students interact with the course content, whether they study and read materials, etc.; Emotional Engagement questions pertain to whether students find ways or make the course relevant, interesting and useful, whether they apply the content to their lives, etc.; Participation Engagement questions pertain to students getting to know and working with other students, such as whether they help other students or talk with other students; and the Performance Engagement questions pertain to whether students want to do well in the

class and check their grades or believe they will do well on tests. Dixson's survey and measurement scale does not include questions on whether students received prompt and adequate feedback (Chickering & Gamson, 1987; Thurmond & Wambach, 2004). Neither does her survey or scale include demographic questions. These questions were added to the Online Student Engagement Survey (See Appendix C), but are not part of Dixson's Online Student Engagement Scale, which is used in this study as a validated peer-reviewed measure of student engagement as a total score and as scores in four subscales described above.

The survey was emailed to 9,477 students from the 99 opt-in courses using email addresses provided by the Office of Institutional Research at Gateway College. A total of 561 complete survey responses were received and are included in this study. The responses per course ranged from 1 to 19 students, with mean total engagement scores ranging from 36 to 72 out of a total possible of 76. Responses to each of the 19 questions carried a value of 0 (not at all characteristic of me) to 4 (very characteristic of me).

The Data Sets

Each of the 99 course shells belonging to the instructors who opted into the study were examined to determine total, subcategory and individual feature scores on the Course Feature Inventory. Those scores were entered into the Course-level database by course registration number. Next, each of the students who were enrolled in those classes received a link to the Survey of Online Student Engagement.

The 561 complete student responses became the Student-level database used in this analysis. The returned surveys were tracked by whether students had completed their courses with a 'C' or better (successful completers), completed with less than a 'C'

(unsuccessful completer) or withdrew. A student responder's status in one of those three categories became part of the Student-level database.

Student Engagement scores were calculated based on a 19-question peer-reviewed Online Student Engagement Scale used with permission from the author (Dixson, 2010). Scores from the Course Feature Inventory were applied to the student-level database, based on the course identification number of the course in which the student was enrolled. Then, individual student Engagement score totals and subscales from the survey were averaged by course and entered into the Course-level database so that each course that was examined with the Course Feature Inventory now also had mean student Engagement scores. Finally, institutional aggregated completion and success rates were added by course registration number to the Course-level database. Those aggregated completion and success rates were also transferred to the Student-level database by course registration number.

The findings in this chapter will answer the six research questions posed in this study and discussed at length in Chapter 3. In answer to Research Question 1, this chapter reviews briefly the course features identified in the literature as indicative of a quality, engaging class. Next, in answer to Research Question 2, the chapter will provide descriptive statistics that explain the features and their operational levels offered in the 99 online classes at Gateway College that were included in the study. Then, in answer to Research Question 3, the chapter will display descriptive statistics and findings on the level of engagement of the 561 students in the 99 classes, as measured by the Survey of Online Student Engagement. The findings of RQ 4, 5 and 6 discuss the inferential statistics and correlational analyses of the associations among the independent variables,

and the dependent variables of engagement, completion and success. These three questions also consider the influence that demographic factors have on findings through multiple linear and logistic regressions.

Research Question 1: What course features found in the research literature create or predict student engagement in online courses?

The body of literature that describes an engaging online classroom nearly mirrors that describing an engaging onsite classroom. The key concepts are few and simple. Students need multiple opportunities for faculty-student interaction and for student-student interaction (Anderson, 2001; Chickering and Ehrmann, 1996; Dixson, 2010; MacCuish, 2004; Swan et al, 2000; Vonderwell, 2002). Additionally, multiple media such as text, photos and voice, to reach different kinds of learners increases engagement (Fazioli, 2009; Mandernach, 2009; Mayer & Johnson, 2008; Mayer and Moreno, 2003; Moreno, 2006), as does an organized, accessible and intuitive course design, with limited technological or other access barriers (Muilenburg & Berge, 2005; Nash, 2005; Swan, 2001, Swan et al, 2000; Vonderwell, 2002). Students who get frustrated with glitchy technology or confusing course design and turn away before they ever contribute to their first discussion are not learning at all. Students also need prompt feedback on their work to stay focused on their classes (Chickering & Gamson, 1987), along with course orientations that outline course goals and prevent them from falling behind at the class onset (Holtzman, Ciocco & Fotia, 2010; Nash, 2005; Tello, 2002).

Subcategory: Instructor Presence

Instructor Presence, also called Teaching Presence (Anderson, Rourke, Garrison, & Archer 2001), includes features that facilitate student interaction with their instructors or evidence that a live instructor is present to guide students through their learning

experience (Holtzman, Ciocco & Fotia, 2010; Nash, 2005; Tello, 2002). The features that are considered part of Instructor Presence include orientations, home page posts, instructor participation in discussion and instructor lecture. Feedback on assignments, instructor responses to email, chat or other exchanges would also be considered aspects of Instructor Presence. These kinds of interaction with instructors increased students' sense that an instructor was 'there' and increased their feelings of satisfaction and increased completion in the course (Hersh, 2009; Swan, 2001, P. 9). However, because feedback, email, chat and other exchanges between faculty and students are private and not accessible to a researcher, they were not considered a Course Feature for the purposes of this study. Instead, students were asked about feedback and instructor contact through anonymous engagement surveys. Those results are reported separately, as part of the discussion on the Student Engagement Survey. Below, the findings are considered by each course feature included in the Course Feature Inventory.

Feature: Orientation

An orientation that sets clear expectations and requirements for student success improves student engagement as well as retention (Holtzman, Ciocco & Fotia, 2010; Nash, 2005; Tello, 2002). Holtzman, Ciocco, and Fotia called inclusion of the orientation feature a critical component in online success. The orientation must tell students what is expected. Tello (2002) and Nash (2005) also found student course completion rates improved with online course orientations.

Feature: Home page

Instructor posts to a course home page can be an effective tool in establishing instructor presence in an online course (Dixson, 2010). Enhancing those posts with

photos or video or adding to them frequently to increase currency could add to students' sense of the instructor as present and involved, which leads to student engagement (Fazioli, 2009; Muilenburg & Berge, 2005; Swan, 2001; Vonderwell, 2002).

Feature: Lecture

Personalized voice lecture over slide shows, such as PowerPoint, enhanced with multiple photos or graphics to hold the students' interest also increases the instructor's presence, leading to greater student engagement (Doolittle, 2001; Fazioli, 2009; Hersh, 2009; Mandernach, 2009; Mayer & Johnson, 2008; Mayer & Moreno, 2003; Moreno, 2006). In Hersh's unpublished 2009 dissertation study of online lecture through personalized voice and video at Santa Barbara City College, he found that the instructor video improved engagement as well as increased retention by 10% (Hersh, 2009).

Feature: Instructor Participation in Discussion

The literature is authoritative on the importance of discussion in online classes to facilitate instructor-student interaction and student-student interaction and engagement (Anderson, 2001; Dixson, 2010; MacCuish, 2004; Swan, Shea, Fredericksen, Pickett, & Pelz, 2000; Vonderwell, 2002). Anderson (2001) summarized the importance of discussion in online classes, calling the discussion feature "essential" (P.7) to facilitate student interaction.

When considered as a measure of Instructor Presence, it's important to know that in many courses, instructors do not participate in the discussions in their online classes after posing the initial question. That can be beneficial in some ways, as an instructor who is too authoritative can actually dampen the student interaction (Rourke & Anderson, 2002). But many other researchers find that instructor contribution and

guidance in the discussion forum enhances learning (Anderson, 2001) and can enhance student perceptions of instructor presence and therefore help students feel more engaged in the course (Swan, Shea, Fredericksen, Pickett, & Pelz, 2000). Vonderwell (2002) notes the advantage of discussion in online learning over face-to-face classroom discussions in that everyone participates online. That compares to the classroom experience in which a handful of the most gregarious students often dominate discussion. Dixson (2010) emphasizes that the discussions must be graded in order to engage, since discussion will falter if left as a voluntary activity.

Email Responses, Instructor Feedback on assignment, Chat, and other Unverifiable Instructor Interaction

Because these types of instructor interaction could not be measured by the researcher due to the nature of online course shells as well as student privacy, they were not included on the Course Feature Inventory in this study. However, the literature is clear that instructor interaction with students through these channels and any others available are important to student engagement (Chickering & Gamson, 1987; Thurmond & Wambach, 2004). These factors were measured in separate questions that were included on the student survey, although the questions are not part of the peer-reviewed Online Student Engagement Scale, to be discussed in detail later.

Sub-Category: Student Interaction

The Student Interaction Subcategory includes the opportunities students have for graded discourse through the Discussion Feature, as well as the opportunities students have through peer-led or student-led discussions, and the opportunities students have to work together through group assignments.

Feature: Discussion

As mentioned above, there is abundant literature on the importance of discussion in online classes to facilitate and encourage student-student interaction (Anderson, 2001; Dixson, 2010; MacCuish, 2004; Swan, Shea, Fredericksen, Pickett, & Pelz, 2000; Vonderwell, 2002). Dixson (2010) further notes the importance that discussion be a graded feature, rather than one that is simply available to students.

Feature: Student-Led Discussion

Not only can student-led discussion save the overworked instructor from the time-consuming individual response to each student discussion post, they can also lead to deeper student learning and engagement (MacCuish, 2004; Swan, Shea, Fredericksen, Pickett, and Pelz 2000). Students often respond more fully to peers than to instructors in asynchronous online class discussion (Anderson, 2002).

Feature: Student Collaboration

Students become more engaged with their courses and their content when they interact with each other through assigned group work (Dixson, 2010; Swan, Shea, Fredericksen, Pickett, & Pelz, 2000; Thurmond & Wambach, 2004, Tinto, 1987, 1997, 2004, 2007). Although group work can be difficult to facilitate online, it facilitates student interaction at a level that would not otherwise occur in an online class (Dixson, 2010).

Sub-Category: Course Design

This subcategory generally includes the presentation of the course, its organization and navigability. The literature assigns course design a high degree of importance in online learning, with a University of Georgia study on graduate students

(Song, Singleton, Hill, & Koh, 2003) ranking course design as the most important factor of success in an online class. While the first two items in this subcategory, the use of Modules, and Clarity and Simplicity, were easily quantified, the third, Overall Interest and Appeal, was far more subjective. Although the researcher who inventoried each of these courses is an online instructor with more than five years experience, the last item was nevertheless more subjectively evaluated than others in the Inventory.

Feature: Organizational Modules

A course that uses similarly structured modules to simplify and clarify the necessary action and sequence of actions that students need to take to succeed substantially decreases student frustration and learning barriers (Swan, 2001), which leads to increased student engagement. Modules simplify the online environment by reducing the locations that students must go to in order to find the tasks for any given section, whether delineated by time or content. The fewer the number of locations, the better for students and their perceived learning (Swan, 2001).

Feature: Overall Clarity and Simplicity

The fewer the number of modules or locations within the course that students had to visit to accomplish the tasks for a given period, the higher the degree of perceived learning and satisfaction (Swan, Shea, Frederickson, Pickett, and Peltz, 2000). Clarity, consistency and simplicity also increased student perceived learning. In addition, clarity and simplicity are identified in CSU Chico's (2003) rubric for quality online courses.

Feature: Overall Interest and Appeal

The interest and appeal an online course holds for its users was identified in the literature as important to student involvement and therefore engagement. CSU Chico's

2003 rubric for quality online courses drew on Chickering and Gamson's Seven Principles (1987), among other literature, when it outlined six constructs of a quality online course. They include learner support and resources, online organization and design, instructional design and delivery, assessment and evaluation of student learning, innovative teaching with technology, and faculty use of student feedback.

Research Question 1 Conclusion

Research literature on Engagement in the onsite classroom is rich, while it is broadening and gaining depth on the online classroom. Because it is clear that engaged students are more successful than unengaged students, it is critical for instructors to be knowledgeable on what types of activities entice students to tune in or tune out.

Literature reveals that engaging online classes include evidence that an instructor is present and guiding the course with frequent homepage and discussion posts, with lectures or other contact enhanced with images and video, and has provided a grand design for the course through an orientation. Literature is abundant and clear that students are more engaged when they have multiple, graded opportunities to interact with each other through discussion, and especially when the discussion is led by students themselves. Further, working together in groups engages students because they interact on deeper levels and feel more connections to other students. Finally, research indicates that courses must not put up barriers to learning through design and must instead group course material into modules. In addition, they must make the course clear and simple to navigate, yet interesting and appealing overall.

Research Question 2: To What Degree do Online Courses at Gateway College Have The Course Features Found in the Research Literature to Create or Predict Student Engagement?

Course features and the level or degree to which they are offered within online courses at Gateway College vary as much as the instructors who teach them. The 99 courses described above were examined through the lens of the Online Course Feature Inventory, which was developed to include the features identified in the literature as harbingers of high-quality, engaging online courses. The online Course Feature Inventory (CFI) awarded 0-4 points for each feature, depending on its level of operation, with a total possible of 40 points for courses with all 10 features present and all at the highest operational levels as described in detail in Chapter 3. As measured by the Course Feature Inventory, total scores ranged from those that offer a richly enhanced online learning environment with a score of 90% or 36 out of the total 40 possible, to courses that offer few of the quality features, earning a mere 20% or 8 out of the 40 possible, with a 28-point range. The mean score was 21.26 with a standard deviation of 5.70.

Table 3-11 – Course Feature Inventory Total Mean Score

<i>CFI Total Mean Course Score</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>Range</i>	<i>N</i>
Descriptive Statistics	21.3	5.7	8-36	99

Source: Author’s research

Table 3-12 – Course Feature Inventory Total Score Frequency

<i>CFI Total Score</i>	<i>Frequency</i>	<i>Cumulative Percent</i>	<i>CFI Total Score</i>	<i>Frequency</i>	<i>Cumulative Percent</i>
8.00	1	1.0	22.00	3	57.6
9.00	4	5.1	22.50	7	64.6
9.50	1	6.1	23.00	1	65.7

11.50	1	7.1	23.50	2	67.7
12.50	1	8.1	24.50	7	74.7
14.50	2	10.1	25.00	2	76.8
15.00	4	14.1	25.50	1	77.8
15.50	3	17.2	26.00	2	79.8
16.50	1	18.2	26.50	1	80.8
17.00	3	21.2	27.00	7	87.9
17.50	3	24.2	28.00	1	88.9
18.00	2	26.3	29.00	4	92.9
18.50	3	29.3	29.50	1	93.9
19.00	2	31.3	30.00	3	97.0
19.50	6	37.4	31.50	1	98.0
20.00	7	44.4	35.00	1	99.0
20.50	3	47.5	36.00	1	100.0
21.00	2	49.5			
21.50	5	54.5	Total	99	

Source: Author's research

When expressed as a mean score on a 4-point scale to normalize scores across all three subcategories as well as the total CFI score, the courses at Gateway College score fair to poor, with the CFI total mean score showing only 2.13 on a 4-point scale, or just over the 50th percentile. Only the Course Design subcategory, which measured the use of organizational modules, as well as the course's overall look and feel moved into the 75 percentile range with 3.02.

Table 3-13 – Course Feature Inventory Subcategories and Total Expressed as a

Mean on a 4-Point Scale

	<i>Course Feature Inventory</i>			<i>CFI Total</i>
	<i>Instructor Presence Subcategory</i>	<i>Student Interaction Subcategory</i>	<i>Course Design Subcategory</i>	
Mean	2.15	1.21	3.02	2.13
Std. Deviation	.76	.78	.87	.57

Source: Author's research
N = 99

This analysis did not seek to identify whether any trend existed across course disciplines, departments or divisions as a deliberate means to avoid any breach of the promise of anonymity and confidentiality. But the spread of courses across disciplines was rich, as described above, with 30 of the total of 40 disciplines offered online represented in the study.

Subcategory: Instructor Presence

Results show that many online courses at Gateway College as measured by the Online Course Feature Inventory do not carry a strong sense that an instructor is present. The Instructor Presence subcategory, which includes the features of orientation, homepage posts, lecture, and instructor participation in discussion, revealed that the courses overall appear to offer few identified opportunities for interaction between the instructor and student. The mean score was 8.6 (SD = 3.02) with nearly one-third of courses clustered between 9.5 and 11, displaying a wide range of 12.5 in a subcategory with a total possible 16, and a standard deviation of 3.03. When reduced to a 4-point mean scale, the courses hovered around 2.0 for all features, with only lecture ranging near 3.0 as a mean.

Table 3-14 – Instructor Presence Subcategory

	<i>Instructor Presence</i>			
	<i>Orientation</i>	<i>Homepage</i>	<i>Lecture</i>	<i>Discussion</i>
<i>N</i>	99	99	99	99
Mean	2.00	1.88	2.95	1.75
Std. Deviation	1.421	.936	1.128	1.593
Range	0-4	0-4	0-4	0-4

Source: Author's research

Table 3-15 – Instructor Presence Subcategory Mean by Course

<i>Subtotal Score</i>	<i>Frequency</i>	<i>Percent</i>	<i>Cumulative Percent</i>
2.50	1	1.0	1.0
3.00	2	2.0	3.0
3.50	3	3.0	6.1
4.00	5	5.1	11.1
5.00	1	1.0	12.1
5.50	8	8.1	20.2
6.00	5	5.1	25.3
6.50	5	5.1	30.3
7.00	4	4.0	34.3
7.50	7	7.1	41.4
8.00	4	4.0	45.5
8.50	6	6.1	51.5
9.00	3	3.0	54.5
9.50	6	6.1	60.6
10.00	7	7.1	67.7
10.50	9	9.1	76.8
11.00	9	9.1	85.9
11.50	1	1.0	86.9
12.00	3	3.0	89.9
13.00	3	3.0	92.9
14.00	2	2.0	94.9
14.50	3	3.0	98.0
15.00	2	2.0	100.0

Total	99	100.0
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Source: Author's research

However, an important caveat here, as mentioned earlier, is that instructor communication with students through feedback on assignments and email, chat or telephone was not considered in these totals. For instance, a primary means of one-on-one contact between instructor and individual student is email in the researcher's experience and through anecdotal evidence. Yet email was considered private correspondence and was off-limits to the researcher and therefore was not measured in the Course Feature Inventory. Further, in discussions with other instructors, it is clear that some instructors do not comment in discussion forums, believing that students who have completed their required posts and interactions do not return to the forum. Instead, those instructors may email students to recap or comment on the discussion. In addition, some instructors may use feedback on assignments as a primary means of individual communication with students, but researcher was not privy to private instructor feedback on assignments.

To compensate for the inability of the Course Feature Inventory to capture information on instructor feedback, three questions on instructor responsiveness were included in the Survey of Online Student Engagement and will be discussed later in this chapter.

Course Feature: Orientation

Nearly two-thirds of courses at Gateway College either provide no orientation, or provide it through printed instructions on the syllabus. At the other end of the spectrum 30% of instructors take the time to orient their students with either enriched presentations

online or with onsite presentations. The mean score out of 4 was 2.00 with a standard deviation of .142. Courses whose syllabi included detailed information on the course workings were considered to be part of the “Text only” level and were awarded a 1. A small number of instructors included a specified orientation that they provide with photos. But 30% of the college’s instructors either require their students to come to an onsite orientation, or offered video or personalized voice over photos or PowerPoint slides, indicating they are doing all they can to prepare students for the coming class by providing the course grand design as well as other instruction or information on succeeding in the course.

Table 3-16 – Orientation Feature

<i>Orientation Feature</i>	<i>Frequency</i>	<i>Percent</i>
Not present	3	3.0
Text only	60	60.6
Text + up to 3 photos/graphics	0	0
Text + 4 or more photos/graphics	6	6.1
Text + photos/graphics and personalized video	30	30.3
Total	99	100.0

Source: Author’s research
Range = 0-4

Course Feature: Homepage

The homepage was originally scored as two separate features, one to measure the presence and appearance of posts, and another to measure the incidence of posts. However, two measurements of the same feature would have allotted too much weight to a single feature. To bring the Homepage feature in balance with the other three indicators of Instructor Presence in the Course Feature Inventory, a mean score of the two measures was calculated. Throughout the study analysis, the mean of the two measures is the

Homepage Feature score. The adjustment was reflected in the Instructor Presence Subcategory scores and in the Course Total scores.

Table 3-17 – Homepage Feature Original Measure of Appearance

<i>Homepage Feature (Appearance)</i>	<i>Frequency</i>	<i>Percent</i>
Not present	8	8.1
Text only	58	58.6
Text + up to 3 photos/graphics	21	21.2
Text + 4 or more photos/graphics	7	7.1
Text + photos/graphics and personalized video	5	5.1
Total	99	100.0

Source: Author's research
Range = 0-4

Table 3-18 – Homepage Feature Original Measure of Incidence of posts

<i>Homepage Feature (Incidence)</i>	<i>Frequency</i>	<i>Percent</i>
No posts in semester	10	10.1
One post	17	17.2
Two to seven posts	30	30.3
Eight to 15 posts	13	13.1
16 or more posts	29	29.3
Total	99	100.0

Source: Author's research
Range = 0-4

Results show that not quite one-third of instructors post to their Homepages only once or not at all during their courses. However, another large group of almost one-third of instructors posts regularly, amounting to weekly or semi-weekly posts. Nearly two-thirds of instructors post only text to their Homepages, with only a small group of 11% of instructors posting multiple photos, video, voice recordings or other multimedia enhancements. The mean score on this 4-point scale was 1.88, with a large standard deviation of 9.36 based on the range from 0 to 4.

Table 3-19 – New Homepage Feature as Mean of Appearance and Frequency

<i>Homepage Feature Mean</i>	<i>Frequency</i>	<i>Percent</i>
.00	8	8.1
.50	2	2.0
1.00	11	11.1
1.50	23	23.2
2.00	19	19.2
2.50	22	22.2
3.00	8	8.1
3.50	2	2.0
4.00	4	4.0
Total	99	100.0

Source: Author's research

Range = 0-4

Course Feature: Lecture

Lecture was present in at least some form in almost all classes. Content qualified as lecture for the purposes of the research if it provided content material for the course, ranging from instructor notes to PowerPoint to recorded audio and video. Regardless of whether the lecture was content that appeared to have been provided by the course textbook publisher or content that appeared to have been generated by the instructor, it was scored in the same manner according to the scale, except for the 4-point award. For that category, only instructor personalized voice or video received 4 points. The results showed that while almost 20% of instructors offer lecture posted as text only, the great majority of instructors enhance their lectures with some form of media, predominantly in the form of photos or graphics, resulting in a mean score of 2.95 with a standard deviation of only 1.13. Addition of media helps with understanding and engagement, but instructors could further enhance their lectures by adding personalized voice narration or video (Hersh, 2009; Mandernach, 2009; Mayer Moreno, 2003). Although some

instructors offered enhanced videos through publisher content or from other sources, those were not marked at the highest operational level in this category since the measure was for instructor presence in personalized lecture. However, as discussed further in Chapter 4, this may have been a limitation of this measure.

Table 3-20 – Lecture Course Feature

<i>Lecture Course Feature</i>	<i>Frequency</i>	<i>Percent</i>
Not present	1	1.0
Text only	19	19.2
Text + up to 3 photos/graphics	2	2.0
Text + 4 or more photos/graphics	39	39.4
Text + photos/graphics and personalized video	38	38.4
Total	99	100.0

Source: Author's research
Range = 0-4

Course Feature: Instructor Participation in Discussion

While almost one-third of instructors do not participate in discussions at all, the majority of instructors have some presence in their course discussions and about 25% posted frequently throughout the first half of the course that was examined for instructor presence in discussion. This bimodal distribution produced a mean score of 1.75 with a standard deviation of 1.59. As noted earlier, some instructors may use email or other means to interact with their students.

Table 3-21 – Instructor Participation in Discussion Course Feature

<i>Instructor Participation in Discussion Course Feature</i>	<i>Frequency</i>	<i>Percent</i>
Discussion: No instructor posts in 5 discussions examined	29	29.3
One instructor post in at least 3 of 5 discussions examined	28	28.3

Two or 3 instructor posts in at least 3 of 5 discussions examined	6	6.1
Four instructor posts in at least 3 of 5 discussions examined	11	11.1
Five or more instructor posts in at least 3 of 5 discussions examined	25	25.3
Total	99	100.0

Source: Author's research
Range = 0-4

Subcategory: Student Interaction

This subcategory included student discussion, student-led discussion and student collaborative or group work. Scores in this subcategory ranged from 0-12 with a total of 12 points possible for the three course features, with three courses scoring 0 and fully a third of all courses scoring 4 or less out of 12. With a mean score for this category at 3.62 with a standard deviation of 2.35, it was the lowest scoring subcategory of the three.

The findings indicate that instructors recognize the value of student interaction through discussion. But the relative rarity of the latter two features skewed the subcategory negatively since they are seldom used at Gateway College. The literature shows that opportunities for student collaboration and interaction significantly enhance student engagement (Dixson, 2010; Swan et al, 2000; Thurmond & Wambach, 2004, Tinto, 1987, 1997, 2004, 2007), yet student-led discussion as a feature was used in only 10% of courses while collaborative group work was assigned in only 16% of courses.

When expressed as a mean score on a 4-point scale to normalize across all subcategories, it becomes even clearer that instructors are offering discussion fairly abundantly, but very little student-led discussion or group work is offered.

Table 3-22 – Student Interaction Subcategory Expressed as Mean on 4-Point Scale

	<i>Student Interaction</i>		
	<i>Discussion</i>	<i>Student-led Discussion</i>	<i>Collaborative Work</i>
Mean	2.73	.29	.60
Std. Deviation	1.24	.98	1.38
Range	0-4	0-4	0-4

Source: Author's research
N = 99

Table 3-23 – Student Interaction Subcategory by Frequency

<i>Student Interaction Subcategory Total</i>	<i>Frequency</i>	<i>Percent</i>
0	3	3.0
1	11	11.1
2	25	25.3
3	9	9.1
4	34	34.3
5	1	1.0
6	2	2.0
7	3	3.0
8	7	7.1
9	2	2.0
10	1	1.0
12	1	1.0
Total	99	100.0

Source: Author's research
Range = 0-12

Course Feature: Discussion

This category was scored by counting the opportunities for student discussion offered in the first half of the course. If instructors increased or decreased the number of discussions in the second half of the course, that was not recorded. If a course was

semester-length, the first nine weeks were examined. If the course was a six-week course, the first three were examined, etc. Nearly 80% of courses provided discussion at least three times during the first half of the course, with 41% offering discussion more than seven times, which amounted to an approximately weekly opportunity for discussion. The mean score for this course feature was 2.73, with a standard deviation of 1.24.

Table 3-24 – Discussion Course Feature

<i>Discussion Course Feature</i>	<i>Frequency</i>	<i>Percent</i>
Discussion is not present in course first half	3	3.0
Discussion is present 2 or fewer times in course first half	16	16.2
Discussion is present 3 or 4 times in course first half	27	27.3
Discussion is present 5 or 6 times in course first half	12	12.1
Discussion is present 7 or more times in course first half	41	41.4
Total	99	100.0

Source: Author's research

Range = 0-4

Course Feature: Student-Led Discussion

Only 10 % of courses offered this course feature at any frequency, which allows students to take over teaching for a while. That resulted in a mean score of .29 with a standard deviation of .98.

Table 3-25 – Student-led Discussion Course Feature

<i>Student-led Discussion Course Feature</i>	<i>Frequency</i>	<i>Percent</i>
No student-led discussions in course first half	89	89.9
One student-led discussions in course first half	3	3.0
Two or three student-led discussions in course first half	1	1.0

Four or five student-led discussions in course first half	0	0.0
Six or more student-led discussions in course first half	6	6.1
Total	99	100.0

Source: Author's research
Range = 0-4

Course Feature: Student Collaboration

This feature had a similar distribution to the Student-led discussion feature, with nearly 84% providing no opportunities for group work. However, 12% of instructors require two or more group assignments or activities. That resulted in a mean score of only .60 with a standard deviation of 1.39. Despite the abundance of literature on the engaging qualities of group work, instructors may avoid these activities due to time constraints. Through personal experience, private conversations and anecdotal evidence, it is clear that these two features require extensive and intensive time and monitoring, possibly making inclusion of the features difficult or impossible.

Table 3-26 – Student Collaboration Course Feature

<i>Student Collaboration Course Feature</i>	<i>Frequency</i>	<i>Percent</i>
No group assignments	83	83.8
No group assignment, but option to work with partner/group on one assignment	0	0.0
No group assignment, but option to work with partner/group on two or more assignments	1	1.0
Group work is required for at least one assignment	3	3.0
Group work is required for two or more assignments	12	12.1
Total	99	100.0

Source: Author's research
Range = 0-4

Subcategory: Course Design

The Course Design Subcategory was the only one of the three subcategories that skewed with a preponderance of scores at the high end of the scale. Two-thirds of the courses scored 10 or above on the 12-point scale, with a mean score at 9.06 and a standard deviation of 2.61. Most instructors used organizational modules to some degree and most provided courses that were considered clear with just over half scored as having interest and appeal.

When expressed as a mean score on a 4-point scale to normalize across all subcategories, it courses scored above the 75 percentile for organizational modules and clarity.

Table 3-27 – Course Design Subcategory Expressed as Mean on 4-Point Scale

	<i>Course Design</i>		
	<i>Org Modules</i>	<i>Clarity</i>	<i>Interest</i>
Mean	3.15	3.33	2.58
Std. Deviation	1.15	1.03	.95
Range	0-4	0-4	0-4

Source: Author’s research
N = 99

Table 3-28 – Course Design Subcategory Total

<i>Course Design Subcategory Total</i>	<i>Frequency</i>	<i>Percent</i>
2	1	1.0
3	1	1.0
4	5	5.1
5	8	8.1
6	8	8.1
7	1	1.0
8	9	9.1

9	4	4.0
10	32	32.3
12	11	11.1
Total	19	19.2

Source: Author's research
Range = 2-12

Course Feature: Organizational Modules

On this 4-point scale, all courses earned at least a 1 or higher, resulting in a mean score of 3.15 (sd = 1.15) as every course was considered to have some form of organizational module. Nearly two-thirds of courses examined required students to visit two or fewer modules to find the assigned course content. Nearly 60 % offered streamlined courses that pointed students to one location to find the needed content for a given section of the course. Swan (2001) noted that the use of modules to ease navigation helped increase perceived student learning. Further, she said, simplicity and clarity were key as well.

Table 3-29 – Module Course Feature

<i>Module Course Feature</i>	<i>Frequency</i>	<i>Percent</i>
No organizational modules	0	0.0
No or some organizational modules, requiring students to visit 3-4 locations for materials	14	14.1
No or some organizational modules, requiring students to visit 2 locations; modules not consistent in appearance	16	16.2
Consistent organizational modules, requiring students to visit only two locations for materials	10	10.1
Organizational modules, requiring students to visit only 1 course location	59	59.6
Total	99	100.0

Source: Author's research
Range = 1-4

Course feature: Clarity and Simplicity in Design

This feature that was subjectively assessed based on a value judgment of the researcher revealed that only 7% of courses examined seemed unclear or difficult to navigate. This feature may have been more suited to be considered as construct that conveyed concepts rather than a feature that contained measurable variables. However, the researcher attempted to apply the same criteria in all determinations. The findings show that navigation in the majority of courses is clear and simple to navigate. The mean score was 3.03 (SD = 1.03).

Table 3-30 – Clarity and Simplicity Course Feature

<i>Clarity and Simplicity Course Feature</i>	<i>Frequency</i>	<i>Percent</i>
Course navigation is confusing, not intuitive, requires outside guidance	1	1.0
Course navigation is complex, but understandable with effort	6	6.1
Course navigation is complex but clear	17	17.2
Course navigation is clear and easily navigated	10	10.1
Course navigation is clear, easy to navigate and intuitive	65	65.7
Total	99	100.0

Source: Author's research
Range = 0-4

Course feature: Overall Interest and Appeal

On this 4-point scale, the mean score was 2.58 with a standard deviation of less than a point at .949, matching it fairly closely with the Clarity and Simplicity feature. However, clarity did not always equate to interest or appeal, as nearly two-thirds of courses were awarded a clear but dull rating. For the purposes of this course feature, only online organization and design, instructional design and delivery, and innovative teaching

with technology were considered. The researcher did not examine assignments or other content for interest and appeal. Like the Clarity and Simplicity feature, this subjectively measured feature may have been more suited to be considered as construct that conveyed concepts rather than a feature that contained measurable variables.

Table 3-31 – Overall Interest and Appeal Course Feature

<i>Overall Interest and Appeal Course Feature</i>	<i>Frequency</i>	<i>Percent</i>
Course overall appearance is dull (unenhanced), text only, no items of interest	1	1.0
Course overall appearance may be interesting but confusing or chaotic	4	4.0
Course overall appearance is dull (unenhanced) but clear	56	56
Course overall appearance is interesting and clear	13	11
Course overall appearance is interesting, inviting and clear	25	23
Total	9	1

Source: Author’s research
Range = 0-4

Research Question 2 Conclusion

The 99 online classes examined offer a wide range of online course features and operational levels of the features. In most subcategories, a top 10 to 25 percent offered the course features at the top level of operation. In the Instructor Presence subcategory, the mean score was 8.6 (SD = 3.02) on a 16-point scale. Because of privacy limitations, the Inventory did not measure instructor feedback on assignments, email, chat or other outside communication with the student. However, this data was captured through student-reported measures of Instructor Responsiveness, as will be discussed in the next Research Question. The Student Interaction subcategory revealed that instructors understand the value of student discussion, but are largely unaware of the value of

student-led discussion or group work, with the mean score for this 12-point scale at a low mean of 3.62 (SD = 2.35). The Course Design subcategory, on the other hand, indicated the abundant use of some organizational tools and attention to clarity and appeal with a mean score of 9.06 (SD = 2.61) on a 12-point scale.

Individual course scores reveal that, like instructors themselves, some courses are stronger in some areas than they are in others. But across the spectrum, most of the courses examined carried strong organizational aspects, allowing students to negotiate the courses easily, if not always with great enthusiasm or engagement.

Research Question 3: To What Degree Are Students in Online Courses at Gateway College Engaged?

Students are most engaged in online classes in which they have multiple opportunities to interact with each other, in which the course is simple to navigate and in which the instructor is ‘visible’ and responds quickly to student emails and submissions. Those facts are borne out by the literature discussed in Question 1 above, as well as by the findings of the Survey of Online Student Engagement, as Research Question 4 will show.

This question will briefly review the instrument and its measurements, and present and summarize findings, using both descriptive and inferential statistics.

A Review of the Online Student Engagement Survey and Scale Instrument

To determine the level of engagement and answer this research question, the researcher used Dixson’s (2010) peer-reviewed survey of Online Student Engagement and the Online Student Engagement Scale for measurement. Dixson’s 19-question scale had a total possible of 76 as measured on a 0-4 scale per question. This study uses those 19 questions, which are listed in Chapter 3 and again in Appendix B.

Table 3-32 – Online Student Engagement Scale Subscales and Questions

<i>Skills Engagement</i>	<i>Emotional Engagement</i>	<i>Participation Engagement</i>	<i>Performance Engagement</i>
Studying regularly	Putting forth effort	Having fun online	Getting good grade
Staying up on readings	Making course relevant	Participating in discussions	Doing well on tests
Reviewing notes	Applying to life	Helping students	
Being organized	Making course interesting	Conversing online	
Listening/Reading carefully	Desiring to learn	Knowing other students	
Taking notes		Posting to discussions	

Instrument Subscales

Dixson divided the questions into four subcategories, including a) Skills Engagement, b) Emotional Engagement, c) Participation Engagement, and d) Performance Engagement. Skills Engagement questions pertain to the ways in which students interact with the course; Emotional Engagement questions pertain to whether students find or make the course interesting and useful; Participation Engagement questions pertain to students getting to know and working with other students; and the Performance Engagement questions pertain to whether students want to do well in the class.

Additional Questions in the Instrument

Dixson's scale does not include questions on whether students received prompt and adequate feedback (Chickering & Gamson, 1987; Thurmond & Wambach, 2004). This study asked three questions on the timeliness of instructor response to questions, the amount of feedback received from assigned work, and the timeliness of feedback on

assigned work. To eliminate multicollinearity among the three questions that resulted when the questions measure activities that very closely related, the three questions were recomputed into a single new variable called Instructor Responsiveness. This question was not included in the Online Student Engagement Scale, but became a consistently highly significant variable in correlational and regression analyses. Instructor Responsiveness, a variable which measured an instructor's perceived behavior as opposed to individual students' self-reported characteristics, was also computed as a mean score by course and added to the Course Level database.

Dixson's survey and scale also intentionally did not include demographic questions in order not to discourage potential respondents (Dixson, 2010). Informed by the literature as discussed in detail in Chapter 3, this study's Survey of Online Student Engagement asked questions on age, ethnicity, unit load, GPA, educational goal, online preferences, online experience, work and caregiver responsibilities. Although women complete at higher rates in California community colleges according to the Chancellor's Office's Distance Education Report (2011), Hammond found in her 2006 study that gender was not a factor in online education completion. Gender information was not collected in this survey. For the purposes of this survey, each of the demographic factors, with the exception of ethnicity, was assigned a value on a scale of 0-4. These questions were added to the Online Student Engagement survey and are considered in this analysis, but are not part of Dixson's 19-question Online Student Engagement Scale, which is used in this study as a validated peer-reviewed measure of student engagement.

Responses to the Survey of Online Student Engagement

The survey was emailed to 9,477 students from the 99 opt-in courses described

earlier in this chapter using email addresses provided by the Office of Institutional Research at Gateway College. A total of 561 complete survey responses were received and are included in this study. Of the 561 students who completed surveys, 519 (92.5%) students completed the course through the end of term. Of those, 461 (82.2%) successfully completed their courses, meaning they received a ‘C’ or better, or a pass in a pass/fail class or a credit in a credit/no credit class. A total of 42 (7.5%) students in the study population withdrew from their online class before term. The responses per course ranged from 1 to 19 students.

Distribution of Scores

The 19 questions on the Online Student Engagement Scale had a total possible of 76 points, with each question carrying a value of 0 (not at all characteristic of me) to 4 (very characteristic of me). Scores on the Online Student Engagement Scale total show the scores had a 59-point range.

Table 3-33 – Student Engagement Total Mean Scores by Course

<i>Total Student Engagement Scores</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>Range</i>	<i>N</i>
Descriptive Statistics	53.7	12.6	17-76	561

Source: Author’s research

Table 3-34 – Frequency of Student Engagement Total Scores by Course

<i>Score</i>	<i>Freq.</i>	<i>Cum. Pct.</i>	<i>Score</i>	<i>Freq.</i>	<i>Cum. Pct.</i>	<i>Score</i>	<i>Freq.</i>	<i>Cum. Pct.</i>
17	1	0.18	39	8	13.01	59	14	67.02
19	1	0.36	40	5	13.90	60	10	68.81
20	1	0.53	41	9	15.51	61	13	71.12
22	2	0.89	42	14	18.00	62	16	73.98
23	2	1.25	43	12	20.14	63	12	76.11
24	1	1.43	44	18	23.35	64	18	79.32

25	3	1.96	45	11	25.31	65	7	80.57
26	2	2.32	46	23	29.41	66	14	83.07
27	2	2.67	47	10	31.19	67	5	83.96
28	3	3.21	48	10	32.98	68	11	85.92
29	3	3.74	49	13	35.29	69	4	86.63
30	1	3.92	50	23	39.39	70	10	88.41
31	1	4.10	51	20	42.96	71	12	90.55
32	7	5.35	52	25	47.42	72	11	92.51
33	5	6.24	53	15	50.09	73	3	93.05
34	12	8.38	54	15	52.76	74	15	95.72
35	3	8.91	55	12	54.90	75	2	96.08
36	3	9.45	56	15	57.58	76	22	100.00
37	5	10.34	57	19	60.96			
38	7	11.59	58	20	64.53	Total	561	

Source: Author's research

Mean = 53.709; Standard Deviation = 12.625; Range = 17-76

When the total mean score is expressed on a 4-point scale, the mean is negatively skewed (skewness = -.227) at 2.87, indicating that students are in general more engaged than not engaged. Students showed the highest engagement in the Performance Subscale at 3.40, indicating this group's confidence of earning good grades. Student engagement in the Skills Subscale was also high at 3.09, indicating their perceptions of how regularly they read, take notes and study. Student engagement in the Emotional Subscale at 2.96 indicated their desire to learn, their perception of their effort and how much they work to make the class feel relevant and useful to them. The mean was lowest in the student Participation Subscale at 2.41, but this Subscale also had the largest standard deviation indicating a greater range of scores.

Table 3-35 – Student Engagement Subscales and Total Expressed as Means on a 4-Point Scale

	<i>Skills</i>	<i>Emotional</i>	<i>Participation</i>	<i>Performance</i>	<i>Total</i>
Mean	3.09	2.96	2.41	3.40	2.87
Std. Deviation	.34	.47	.55	.39	.36

Source: Author's research
N = 99

Each of the four Engagement subscales had varying numbers of questions, resulting in varying means and ranges. Two of the subscales had six questions each, as described earlier, one had five questions and one had two questions.

Table 3-36 – Student Engagement Mean Scores

<i>Engagement Subscales</i>	<i>Mean</i>	<i>Range</i>	<i>Std. Deviation</i>	<i>Skewness</i>
Skills Subscale	18.3	6-24	4.191	-.548
Emotional Subscale	14.6	2-20	3.938	-.567
Participation Subscale	14.0	0-24	5.866	-.077
Performance Subscale	6.8	0-8	1.469	-1.227
Total Individual Engagement	53.7	17-76	12.625	-.227

Source: Author's research
N = 561

When the subscales are expressed as a mean on a 0-4-point scale, the highest of the mean scores was in the Engagement Performance subcategory, which pertained to students' feelings of confidence that they were doing well in the class.

Table 3-37 – Engagement Subcategories

<i>Engagement Subcategories</i>	<i>Mean</i>	<i>Std. Deviation</i>
Skills Subcategory	3.0	.699
Emotional Subcategory	2.9	.788
Participation Subcategory	2.3	.978
Performance Subcategory	3.4	.734

Total Individual Engagement	53.7	12.625
Source: Author's research		
N = 561		

Subscale: Skills Engagement

With a mean score for the Skills Engagement subscale of 3 on the scale that ranged from 0-4 (SD = .70), this distribution was skewed high. Fewer than 10% (56) of the 561 responders had mean scores of less than 2 on the Skills Engagement subscale, with just over half of the responders scoring a 3.0 or above on the scale. A full 13% of responders reached the total possible of 24 for this subscale of six variables, including studying regularly, staying current on readings, taking notes, reviewing notes, being organized, and listening/reading carefully.

Table 3-38 – Skills Engagement Subscale: Student Responses by Percent

	<i>Regular Study</i>	<i>Current on Readings</i>	<i>Review Notes</i>	<i>Being Organized</i>	<i>Good Notes</i>	<i>Listen Carefully</i>
Not at all characteristic of me	0.4	1.1	1.4	0.0	2.3	0.0
Not really characteristic of me	7.3	5.9	8.4	2.0	7.7	3.6
Moderately characteristic of me	24.6	23.9	20.9	16.2	20.1	12.5
Characteristic of me	38.5	34.6	34.0	31.2	32.8	39.8
Very characteristic of me	29.2	34.6	35.3	50.6	37.1	44.2
Total	100	100	100	100	100	100

Source: Author's research.
N = 561

Subscale: Emotional Engagement

The Emotional Engagement subscale also skewed high with a mean score of 2.92 with a standard deviation of .788. It includes five variables on making an effort, making the course material relevant, applying the course material to one's life, making the course material interesting, and really desiring to learn. Only 15 % of the total responders had mean scores of 2.0 or less, with top third scoring 3.2 on the scale or above. More than 13% of responders earned a perfect mean of 4.0 on the scale, which ranged from 0-4.

Table 3-39 – Emotional Engagement Subscale: Student Responses by Percent

	<i>Effort</i>	<i>Relevant</i>	<i>Apply to Life</i>	<i>Make Interesting</i>	<i>Desire to Learn</i>
Not at all characteristic of me	0.0	3.0	3.0	1.1	1.4
Not really characteristic of me	1.6	9.8	12.1	7.5	7.5
Moderately characteristic of me	9.3	25.7	29.4	22.8	20.1
Characteristic of me	40.5	30.7	31.4	36.7	35.1
Very characteristic of me	48.7	30.8	24.1	31.9	35.8
Total	100	100	100	100	100

Source: Author's research
N = 561

Subscale: Participation Engagement

This subscale included six variables that measured whether students felt they had fun in online discussions or chats, participated actively in online discussions, helped other students, engaged in conversations online, posted to discussion forums regularly, and felt

they knew other students.

This subscale produced the most normal distribution of all the subscales, with a mean score of 2.34 and a large standard deviation of nearly a full point (.978) on a scale with a range of 0-4. In this subscale, more than one third of the responders scored less than 2 on the 1-4 scale, indicating that students were less engaged or had less opportunity for participation and interaction with other students. Only one-quarter of responders scored 3 or above on the 4-point scale.

Table 3-40 – Participation Engagement Subscale: Student Responses by Percent

	<i>Fun</i>	<i>Active</i>	<i>Helping Others</i>	<i>Engaging Online</i>	<i>Regular Posts</i>	<i>Knowing Others</i>
Not at all characteristic of me	8.9	7.8	3.7	5.3	2.7	13.2
Not really characteristic of me	28	21.2	13.5	17.6	15	29.6
Moderately characteristic of me	24.6	25.7	29.9	23.5	20.7	28.7
Characteristic of me	19.3	24.6	28.5	29.1	29.1	16.6
Very characteristic of me	19.3	20.7	24.2	24.4	32.6	11.9
Total	100	100	100	100	100	100

Source: Author's research.

N = 561

Performance Engagement Subcategory

This subscale skewed highest of all the subscales, with a mean of 3.38 on a 4-point scale and standard deviation of .734. With only two variables, including students' sense that they were doing well on tests and that they were getting a good grade in the

class, the subscale revealed a high degree of confidence among online course participants, with more than 50% of the responders scoring more than 3.5 on this 4-point scale. This subscale was positively and significantly correlated with student success, as one would expect.

Table 3-41 – Performance Engagement Subscale: Student Responses by Percent

	<i>Getting Good Grades</i>	<i>Doing Well on Tests</i>
Not at all characteristic of me	0.5	0.2
Not really characteristic of me	1.1	3.6
Moderately characteristic of me	9.6	13.4
Characteristic of me	27.1	33.3
Very characteristic of me	61.7	49.6
Total	100	100

Source: Author’s research.

N = 561

Research Question 3 Conclusion

Students enrolled in online classes at Gateway College are at least moderately and often highly engaged in their online classes overall, with all subscales skewing toward the top end of the scales. However, the mean score on the 76-point Online Student Engagement Scale was 53.71, with a standard deviation of 12, indicating there is a lot of room for improvement in overall engagement among students taking online classes at Gateway College.

Research Question 4: What Impact Does the Presence and Level of each Course Feature Included in the CFI Have on Student Engagement?

To answer this research question, the researcher ran Student-level and Course-level correlations to measure associations with the Course Feature Inventory and Online Student Engagement, as well as to assist in creating a model for regression analysis.

Additionally, student responses on instructor responsiveness were added to the analysis,

since they provided a measure of that variable that the Course Feature Inventory could not. Finally, the researcher ran linear regressions at the student level to control for student characteristics and instructor responsiveness.

The correlational analysis revealed that students enrolled in online courses that have more of the features identified in the literature as indicative of high-quality courses have significantly higher engagement scores than other students. Overall, online students whose instructors are ‘present,’ who offer more opportunities for graded student interaction, and who provide easily navigable online courses are more engaged than students in other courses. Those statements are borne out by the findings to be examined in detail in the discussion that follows.

To be sure, some course features and subcategories were more strongly associated with engagement than others, and some of the associations, although significant, were weak. In the linear regression analysis, after accounting for the variance of demographic and other influential variables, fewer of the course features retained their significance. Nevertheless, the Student Engagement total score and some of the Engagement subscales were significantly correlated with the total Course Feature Inventory score as well as with some of its subcategories, indicating a strong relationship between the features measured and online student engagement.

For the following discussion, each Subcategory and each of their component individual course Features was considered first at the Student-level of analysis and then at the Course-level of analysis. The Student-level analysis (N=561) examines individual student Engagement scores and their association with the Course Feature Inventory score that the individual student’s course received. The student-level regression analysis

controls for individual student characteristics, including age, ethnicity, GPA, educational goal, units taking at the time of the study, work and caregiver responsibilities.

To analyze the data, the researcher employed both research instruments used in this study: the Course Feature Inventory, which measured the presence and operational level of each of 10 course features on a 0-40 point total scale; the Online Student Engagement Scale, a peer-reviewed 19-question 0-76-point scale with four subscales created by researcher Marcia Dixson (2010).

Although the Online Student Engagement Scale, its four subscales and component questions were discussed in detail in Chapter 3 and referenced in Research Question 3, they bear repeating here as the analyses refer to subscales rather than individual questions.

Table 3-42 – Engagement Subscales

<i>Skills Engagement</i>	<i>Emotional Engagement</i>	<i>Participation Engagement</i>	<i>Performance Engagement</i>
Studying regularly	Putting forth effort	Having fun online	Getting good grade
Staying up on readings	Making course relevant	Active in discussions	Doing well on tests
Reviewing notes	Applying to life	Helping students	
Being organized	Making course interesting	Conversing online	
Listening/Reading carefully	Desiring to learn	Knowing other students	

Associations at Student-level and Course-level of Analysis

Bivariate correlational matrices of the Online Student Engagement Scale and its four subscales with the Course Feature Inventory, its three subcategories, and individual features, reveals strong relationships among and between the Course Features and

Engagement in both the Student-level and the Course-level units of analysis. At both levels of analysis, Student Engagement is significantly or very nearly significantly correlated with the total Course Feature Inventory score, as well as some Engagement subscales, indicating that the more features at higher operational levels that courses have (especially and in particular a few features), the higher the student engagement in those courses.

Table 3-43 – Student-level Bivariate Correlation of Course Feature Inventory and Engagement

	<i>Skills Engagement</i>	<i>Emotional Engagement</i>	<i>Participation Engagement</i>	<i>Performance Engagement</i>	<i>Total Engagement</i>
Orientation	.039	-.004	.081*	.062	.057
Homepage	.097**	.065	.101**	.041	.104**
Lecture	-.051	-.031	-.045	-.044	-.053
Instructor in Discussion	.064	-.035	.126***	-.010	.068
Ins Presence Subcategory	.065	-.011	.121***	.021	.077*
Discussion	.074*	.026	.221***	.062	.143***
Student-led Discussion	-.005	.043	.069	.070*	.052
Collaborative Work	.045	.145***	.198***	.076*	.161***
Student Interaction Subcategory	.057	.103**	.238***	.098**	.173***
Org Modules	-.053	-.071*	-.021	.011	-.049
Clarity	-.032	-.075*	.045	-.029	-.017
Interest	-.029	-.095**	-.003	-.012	-.042
Design Subcategory	-.047	-.096**	.007	-.011	-.044
Total CFI	.037	-.001	.166***	.049	.095**

Source: Author's research

*** Correlation is significant at the 0.01 level (2-tailed).

** Correlation is significant at the 0.05 level (2-tailed).

* Correlation is significant at the 0.1 level (2-tailed).

N = 561

Table 3-44 – Course-level Bivariate Correlation of Course Feature Inventory and Engagement

	<i>Skills Engagement</i>	<i>Emotional Engagement</i>	<i>Participation Engagement</i>	<i>Performance Engagement</i>	<i>Total Engagement</i>
Orientation	.061	-.033	.137	.071	.078
Homepage	.220**	.190*	.231**	.164	.258***
Lecture	-.055	-.029	-.114	-.057	-.084
Instructor in Discussion	.046	-.116	.126	-.074	.030
Ins Presence Subcategory	.100	-.029	.160	.024	.101
Discussion	.132	-.005	.281***	.062	.177*
Student-led Discussion	.071	.122	.120	.165	.138
Collaborative Work	.164	.298***	.384***	.208**	.354***
Student Interaction Subcategory	.196*	.219**	.426***	.225**	.361***
Org Modules	-.180*	-.173*	-.064	-.084	-.151
Clarity	-.079	-.118	.051	-.070	-.045
Interest	-.027	-.071	.057	-.005	-.007
Design Subcategory	-.120	-.148	.013	-.066	-.087
Total CFI	.079	.007	.266***	.075	.162
Instructor Responsiveness	.159	.332***	.439***	.323***	.408***
Completion	-.019	.160	.169*	.167*	.152
Success	.069	.251**	.151	.322***	.217**

Source: Author's research

*** Correlation is significant at the 0.01 level (2-tailed).

** Correlation is significant at the 0.05 level (2-tailed).

* Correlation is significant at the 0.1 level (2-tailed).

$N = 99$

Instructor Presence Subcategory and Course Features with Engagement

At the Student-level of analysis, the Instructor Presence subcategory, which includes orientation, homepage posts, instructor participation in discussion, and instructor lecture, was correlated with total Student Engagement at the weaker .10 level of significance, and with the Participation Engagement subscale at the more powerful .01 level of significance, indicating a strong association of student and instructor interaction with student engagement. The association also emphasizes the importance of a present or 'visible' instructor in the virtual world in engaging students.

At the Course-level of analysis, the Instructor Presence subcategory was not statistically significant in the bivariate correlation, however coefficients trended in the same directions as they did at Student-level and one of the subcategory features, Homepage, was significant.

Course Feature: Orientation

In the Student-level of analysis, Orientation was significantly correlated at the .10 level with the Participation Subscale, which again describes student interaction through talking with and getting to know other students. The Inventory measured Orientation in a range from a score of zero if orientation was not present at all, to text only, text and a photo or two, text and several photos, and video, voice or onsite orientation topping the scale at 4. Most instructors earned a '1' on the scale for having text only, even if it was comprised of instructions on a syllabus. The more engaging the orientation, the higher the Inventory score. The results indicate that orientations are an important introduction not just to the course and requirements, but also to students as a means to interact with each other.

At the Course-level of analysis, Orientation was not significantly associated with Engagement.

Course Feature: Homepage Posts

At the Student-level of analysis, the number and richness of posts an instructor makes to the course homepage is important in helping students to feel engaged overall, as well as in getting them to study, read and take notes, and again, in helping them feel more connected to each other through interaction, the correlations show. The Homepage post feature assessed both the quantity and quality of the posts by measuring each aspect separately and then using the mean score of the two measures to create a single Homepage Feature in the Course Feature Inventory. The scores ranged from no posts to more than one per week, which earned the top score. In terms of richness, the scores ranged from '0' for no posts or those with text only, up to posts with multiple photos, voice or video that earned the '4' at the top of the scale.

At the Student-level of analysis, Homepage posts that were enriched and frequent were positively correlated with the student Engagement total, the Skills Engagement subscale and the Participation subscale, all at the .05 level of significance.

At the Course-level of analysis, however, Homepage posts were significantly associated with Engagement total as well as with three of the four subscales, and with the Instructor Responsiveness variable.

The findings indicate that seeing frequent and lively homepages helps students feel more engaged on multiple levels.

Course Feature: Lecture

This feature's results at both levels of analysis were among the most surprising to

this researcher in that they trended negatively with engagement, though not significantly so, across the total and subscales at both levels of analysis. Anecdotal evidence in comments from students as well as literature (Fazioli, 2009; Hersh, 2009, Mandernach, 2009; Mayer & Johnson, 2008; Moreno, 2006) that showed that personalized audio and/or video lecture increased engagement and completion in online classes, suggested that instructor lecture with those media aspects would be engaging. But that was not the case in this study. Due to a promise of anonymity, this researcher did not investigate whether a single discipline used more recorded lectures than others or whether that discipline had poor overall engagement rates. In addition, the study did not measure the length of the lectures, which may have been too long for students to consider engaging. The Hersh (2009) study also based its research on video in which students could see the instructor. For this study, instructor video received the same top mark as personalized voice over PowerPoint slides, which could have presented an issue for students as well. In an effort to find any confounding factors, Lecture was recoded into a variable that isolated the presence of lecture with voice or video, or without. A T-Test was run to compare means, but no significance was found. As measured, lecture is not engaging students at Gateway College, and in fact, appears to turn them off, though not significantly so.

Course Feature: Instructor Posts to Discussion

Instructor participation in student discussion forums can be another venue for students to ‘see’ their instructor and get valued interaction and feedback. Students in this study found instructor posts in discussion to be engaging only in the Participation subscale, which includes student interaction with each other and with the instructor.

In this measurement, instructors' participation was only measured for the first half of the class, with the scale ranging from zero for no posts, to the top rating for having posted multiple times in most discussions that were available or assigned to students.

At the Student-level of analysis, instructor posts to Discussion was significantly correlated with the Participation Engagement subscale at the .01 level, indicating instructor posts to discussions could help engage students in interaction. It was interesting to see weak, though not significant negative associations as well, for Rourke and Anderson (2002) point out, a too authoritative instructor participating in discussion posts can also dampen student interaction in discussion.

At the Course-level of analysis, instructor posts to Discussion had no significant associations.

Subcategory: Student Interaction

At both levels of analysis, students were engaged by interacting with each other. The Student Interaction subcategory, which measures the use of graded discussion, opportunities for students to lead each other in discussion, and the opportunities for students to work together in collaborative groups, was strongly and positively correlated with the total Engagement score and the Participation subscale, at or stronger than the .01 level of significance, again at both levels of analysis. This subcategory also correlated with Emotional Engagement and Performance Engagement, both with a significance level of .05 at both units of analysis. The Skills Engagement subscale was not significant at the Student-level, but was significant at the .10 level in the course-level analysis, indicating that student interaction may not be needed for students who are most focused on organization, reading and studying.

Course Feature: Discussion

As would be expected, students found discussion to be engaging at both levels of analysis in the Participation subscale, which also measures student interaction.

Discussion provides opportunities for students to meet each other in the virtual world so that they are not simply turning in work in an isolated bubble. For this category, scores ranged from zero for no student discussion forums at all, up to the top level awarded to courses with at least one discussion forum for each week of class during the first half of the. However, only assigned and graded discussions were counted (Dixson, 2010), as those discussion that were available for students to use or not as they wished had sparse participation with only a few students, and even that traffic trailed off very quickly during the period the discussion was open.

Discussion was significantly correlated with the total Student Engagement score at the .01 level at the Student-level unit of analysis and at the .10 level at the Course-level. As mentioned, discussion was also strongly correlated with Participation Engagement as well, at both levels of analysis. Opportunities to discuss content with other students is clearly engaging to students, based on the correlational analysis.

Course Feature: Student-Led Discussion

But discussion by itself can also be enhanced by having students lead the discussion with their peers, according to both the Student-level and the Course-level of analysis.

At the Student-level of analysis, students found that level of this course feature to be engaging as well, though not as strongly or as significantly as discussion overall. Student-led discussion was correlated with the Participation subscale at the .10 level of

significance, and with the Performance subscale at the .10 level. At the Course-level of analysis, this feature had no significant associations.

Course Feature: Collaborative Student Work

Students may complain about group work, and they definitely do based on the researcher's experience as an onsite and online instructor. But working in groups engages students, according to both the Student-level and the Course-level correlational analyses, and helps them get to know each other in a way that would otherwise not occur in the classroom setting, whether online or onsite. In total Engagement as well as in three out of the four subscales, collaborative student work was significantly, and extremely significantly in some cases, associated with student engagement. Few courses offered group work, but when they did, their students' level of engagement increased. Collaborative work was strongly correlated with total Engagement as well as with the Emotional Engagement and Participation subscales, indicating a clear and strong connection between collaborative student work and engaged students.

Subcategory: Course Design

This subcategory included one objectively measured and two more subjectively measured features. The use of modules was simple to quantify through counting the number of locations students had to visit to find assigned work. The task was more difficult when it came to overall clarity and simplicity, or interest and appeal. Those items were awarded points on the scale based on this researcher's knowledge of online courses.

At the Student-level of analysis, Course design was not positively correlated with total or any Engagement subscales, but was significantly and negatively correlated with

the Emotional Engagement subscale at the .05 level. There were no significant Course-level associations. The findings indicate that whether or not a course is difficult to navigate is less important to student engagement than student interaction opportunities, or that students simply don't notice when there are no problems in this area. The findings could also indicate that what appears clear and interesting to this researcher is not so for students.

Course Feature: Organizational Modules

The use of modules and the number of locations a student would need to navigate to complete a task or assignments was measured through a count. The use of modules was documented by counting the number of various locations students needed to hit to access all of the required course content for a given period. This scale ranged from '0' for those courses that had no modules or required students to go to five or more locations in the course to find required work, to the top score of 4 for courses in which students needed only to go to one location to find links to complete necessary tasks.

At the Student-level of analysis, the use of modules was negatively associated with Emotional engagement ($p = .071$) at the .05 level. At the Course-level, it was also negatively associated with Skills at the .05 level. The possible indication again may be that either navigation is less important than Interaction, or that students simply don't remark it when it's not a problem for them.

Course Feature: Clarity and Simplicity

This feature was assessed subjectively based on whether the course navigation and instructors were clear and intuitive on a 0-4 scale. Again, there may have been room for differences of opinion in the rating here as this feature had negative associations with

engagement, though none except for the Emotional Engagement subscale were significant at the Student- or Course-levels of analyses. There were no significant associations at the Course-level.

Course Feature: Interest and Appeal

This feature was also a subjective measurement. Scores were assessed on whether the course was dull and unenhanced in design for a '0' score, up to whether the course was deemed interesting and appealing with images, color, design or other enhancements for a '4' rating.

At the Student-level of analysis, this feature was negatively associated with engagement through all of the subscales, with significance in the Emotional subscale. There were no significant associations at the Course-level, though the coefficients all trended negative as well. The findings indicate that either the researcher had a different assessment of interest from most students, or that the look and feel of the course is not as important to engagement as student interaction and instructor behavior.

Multiple Regression Analysis

To further test the associations and control for student characteristics and other variables that can account for much of the variance in correlational analyses, the researcher ran regression analyses. The results show that even after controlling for student characteristics through multiple linear regression, two of the Course Feature Inventory subcategories significantly and positively predict student engagement. The results imply that no matter who a student is when he or she signs on to the class, regardless of the student's GPA, work, home or educational responsibilities, or whether they even like online classes at all, the way an instructor presents the course can have a

significant effect on student engagement, which in turn leads to greater completion and success, according to literature and as will be discussed in Research Question 5.

Throughout this regression analysis, three independent variables emerged above the others as consistently and powerfully significant and predictive of student engagement in online classes. They are a student's preference for online courses, self-reported GPA, and instructor responsiveness, as discussed at the beginning of this chapter. All three of the variables are consistent with the literature as predictors of engagement. Students who prefer online classes perform better in them (Muilenburg & Berge, 2005), and students with higher GPA's generally perform at higher levels and are more engaged in all classes (Astin, 1997; Hammond, 2006). Course instructor responsiveness has been a known factor in student engagement for 25 years (Chickering & Gamson, 1987). In addition, whether a student has primary caregiver responsibilities was frequently significantly important, as well, though not as powerfully or as consistently.

Age was not a significant indicator of online engagement in almost all of the analyses. Neither usually was experience with online classes, the unit load, or how much the student worked outside the home significant in most of the results. In most cases, students' ethnicity did not affect their engagement in a course. The exception to that rule was among the black student population, which was very small at only 2.3% of the study population.

The Regression Model

Based on the literature as explained in detail in Chapter 3, students responding to the Online Student Engagement Survey were asked the 19 questions that made up the

Online Student Engagement Scale, as well as questions on age and ethnicity, work and family obligations, unit load, experience with and preference for online classes, GPA and educational goal (See Appendix C). A diagnostic for collinearity was run to determine whether any of the variables collected measured the same characteristic. The two questions that asked about online class experience, with one asking about overall experience at all colleges, and the second asking about online course experience at Moorpark College only, were collinear based on their tolerance statistics (Allison, 1999). The variable describing online course experience at Moorpark College was dropped from the model.

Additionally, the original survey contained three separate questions on instructor responsiveness. The first asked students to assess how quickly instructors responded to their email questions; the second asked students to describe the amount of feedback instructors provided on assigned work; and the third asked students to assess the timeliness of instructor feedback on assigned work. The three were collinear, based on their tolerance statistics (Allison, 1999). However, rather than discard one or two of the variables, since they each measured a slightly different aspect of instructor responsiveness, the three were combined into a single scale variable called Instructor Responsiveness.

The final model included 10 variables: Age, Preference for on-line classes, Total online classes, Unit load, GPA, Educational goal, Primary caregiver, Work outside the home, Instructor responsiveness, and Ethnicity. Throughout the regression analysis, additional alternating variables were added to the models to measure the effects of the Course Feature Inventory (CFI), its subcategories and its individual course features.

The linear regression is based on the Student-level unit of analysis as it provided a meaningful means to control for student characteristics. A linear regression was attempted at the Course-level as well, but it provided no significant findings. The following discussion pertains to the Student-level unit of analysis.

Effect of Course Feature Inventory, Subcategories, and Course Features on total Student Engagement

The regression analysis of student Engagement totals indicates that the higher the score on the Course Feature Inventory subcategories of Instructor Presence and Student Interaction, the greater the student engagement, regardless of other influential variables, including online preference, GPA, instructor responsiveness, age, educational goal, work or family obligations.

Effect of Course Feature Inventory Total on Student Engagement Total, Controlling for Independent Variables

A multiple linear regression of Student Engagement total, controlling for age, ethnicity, work and family obligations, GPA, online preferences, and educational goal, accounted for 22% of the variance. The three most powerful predictors of student engagement mentioned above emerged here and repeated throughout the analysis. They include online course preference, GPA, and instructor responsiveness. The total Course Feature Inventory score was not a significant predictor of total Student Engagement, but the score was indicative of a positive association. The findings reinforce the strength of GPA, student preference, and prompt and complete instructor response and feedback as predictors of student engagement. They also suggest that a larger 'n' in the study might have yielded significance for the Course Feature Inventory total score as well, as its trend was positive, even after controlling for the most powerful predictors.

Effect of Total Course Feature Inventory on Engagement Subscales

The researcher reran the model with each of the four Student Engagement subscales as dependent measures. The subscales were created as part of a peer-reviewed study (Dixson, 2010) to measure the specific aspects of student engagement.

Table 3-45 – Student-level Linear Regression: Effect of Course Feature Inventory Total on Engagement Total and Subscales as Dependent Variables Controlling for Student Characteristics and Instructor Responsiveness

	<i>Skills Engagement</i>	<i>Emotional Engagement</i>	<i>Participation Engagement</i>	<i>Performance Engagement</i>	<i>Total Engagement</i>
Age	.148	.078	-.026	-.119*	.082
Preference	.662***	.520***	.681**	.316***	2.180***
Total Online Classes	.056	.065	.123	-.086**	.158
Units Taking	-.074	-.274*	-.277	-.025	-.649
GPA	.614***	.483***	.550**	.562***	2.209***
Educational Goal	.110	.107	.529**	.058	.803
Primary Caregiver	.869**	1.048**	.519	.073	2.508**
Work Outside	-.004	-.009	-.053	-.014	-.080
Instructor Responsive- ness	.341***	.360***	.583***	.087***	1.371***
Hispanic	.518	.291	.313	-.090	1.032
Asian	-.697	-.026	1.854*	.089	1.220
Filipino	-.445	.191	.180	.070	-.004
Native American	1.017	1.536	3.211	.470	6.234
Black	-.469	-1.559	-3.319**	.147	-5.201
CFI Total	.007	-.021	.117***	.003	.106
Constant	10.511	8.703	1.021	4.169	24.404
R ²	.167***	.175***	.178***	.259***	.238***

Source: Author's research

* $p < .10$; ** $p < .05$; *** $p < .01$
N = 561

Effect of Course Feature Inventory Total on the Skills Subscale

When the dependent variable is the Skills Engagement subscale of the Online Student Engagement Scale, which pertained to studying, reading and taking notes, only the three consistently predictive variables of student preference for online classes, GPA and instructor responsiveness were significant predictors of engagement, all three at the strongest .01 level of significance. Being a primary caregiver was also a significant predictor of engagement at the .05 level. This could seem counter intuitive and counter to the literature that states that caregiver along with other obligations that compete for time could have a negative impact on engagement. But the results could also suggest that caregivers, who may not be able to attend class during regular hours or away from home might be more engaged in the course due to personal motivation.

Effect of Total Course Feature Inventory on the Engagement Subscale

When the dependent variable is the Emotional Engagement subscale, which included making an effort, desiring to learn, making the course relevant and interesting, the results varied in numbers but were the same in variance and significant variables. The model accounted for 15% of the variance based on the adjusted R square. The three strongest predictors of GPA, online preference, and instructor responsiveness were all predictive of engagement at the .01 level, while caregiving obligations also proved significant at the .10 level. The Course Feature Inventory total was not significant.

Effect of Total Course Feature Inventory on the Participation Subscale

However, when the dependent variable is the Participation Engagement subscale, which pertained to student interaction and interaction with the instructor, the Course

Feature Inventory total score was a highly significant predictor at the .01 level in a model that accounted for 15.6 % of variance. On the 40-point Course Feature Inventory scale, Student interaction was measured in three course variables, including the number of opportunities for discussion, student-led discussion and group work. This outcome again emphasizes the high impact of student connections and interaction on Participation engagement.

Effect of Total Course Feature Inventory on the Performance Subscale

Running the same regression on Performance Engagement as the dependent variable, the total Course Feature Inventory was no longer significant, but the model accounted for almost 24% of the variance. This subscale pertained to whether getting good grades and doing well on quizzes were characteristic of students. In addition to the consistent three variables of GPA, student preference for online classes, and instructor responsiveness that are all highly significant at the .01 level, age was for the first time a significant predictor of engagement. In this case, being older is a predictor for doing well in the class, according to students' self-assessments as measured by the Survey of Online Student Engagement. The number of online classes taken was a negative predictor at the .10 level, perhaps indicating that students become less engaged over time, or less impressed by their online classes as they have more classes against which to compare them.

Effect of the CFI Subcategories and Individual Course Features on Student Engagement Total, Controlling for Independent Variables.

When the Course Feature Inventory subcategories and the individual features variables were substituted for the Course Feature Inventory total, two Course Feature Inventory subcategories and four of the individual course features were significant

positive predictors of student engagement overall, after controlling for all independent variables. However, one of the subcategories, Course Design, was a negative predictor at the .10 level of significance. Throughout the subcategories and the individual course features regressions, the three previously identified variables of student preference for online classes, GPA and instructor responsiveness were consistently, positively and powerfully predictive of student engagement. That suggests that even when students arrived for their online classes already preferring online classes over onsite classes, already having higher self-reported GPA's, and landed in classes with instructors who were highly responsive in terms of answering questions and providing feedback on assignments, two of the subcategories and four of the features were still significant predictive of higher student engagement.

Table 3-46 – Student-level Linear Regression: Effect of CFI Total and Subcategories on Engagement Total as Dependent Variable Controlling for Student Characteristics and Instructor Responsiveness

	<i>Instructor Presence Subcategory</i>	<i>Student Interaction Subcategory</i>	<i>Course Design Subcategory</i>	<i>CFI Total</i>
Age	.078	-.032	.150	.082
Preference	2.166***	2.173***	2.138***	2.180***
Total Online Classes	.167	.125	.141	.158
Units Taking	-.651	-.670	-.672	-.649
GPA	2.271***	2.084***	2.215***	2.209***
Educational Goal	.839	.752	.982	.803
Primary Caregiver	2.591**	2.713**	2.402	2.508**
Work Outside	-.073	-.071	-.112	-.080
Instructor Responsiveness	1.364***	1.364***	1.418***	1.371***
Hispanic	1.037	1.121	1.062	1.032
Asian	1.227	.926	1.392	1.220

Filipino	.122	-.924	-.058	-.004
Native American	6.179	6.054	5.347	6.234
Black	-5.359*	-4.964	-5.626*	-5.201
Instructor Presence Subcategory	.266*			
Student Interaction Subcategory		.577***		
Course Design Subcategory			-.365*	
CFI Total				.106
Constant	24.121	25.677	29.264	24.404
R ²	.240***	.250***	.241***	.238***

Source: Author's research

* $p < .10$; ** $p < .05$; *** $p < .01$

$N = 561$

Effect of the Instructor Presence CFI Subcategory on Engagement Total, Controlling for Independent Variables.

Even when controlling for all influential independent variables, Instructor Presence positively and significantly affects student engagement. These results, with significance at the .10 level accounting for 22% of the variance according to the adjusted R Square value, suggest that even when an instructor is extremely responsive to students, that at least one Feature in the Instructor Presence subcategory still makes a positive difference in student engagement. Course features in this subcategory included orientation, homepage posts, lecture, and instructor presence in discussion.

Table 3-47 – Student-level Linear Regression: Effect of CFI Instructor Presence Subcategory and Component Features on Engagement Total as Dependent Variable, Controlling for Student Characteristics and Instructor Responsiveness

	<i>Orientation Feature</i>	<i>Homepage Feature</i>	<i>Lecture Feature</i>	<i>Instructor Discussion Feature</i>	<i>Instructor Presence Subcategory</i>
Age	.111	.100	.163	.109	.078

Preference	2.176***	2.159***	2.198***	2.187***	2.166***
Total Online Classes	.168	.140	.119	.129	.167
Units Taking	-.629	-.745*	-.686	-.678	-.651
GPA	2.209***	2.240***	2.173***	2.269***	2.271***
Educational Goal	.844	.855	.828	.814	.839
Primary Caregiver	2.450**	2.430*	2.241*	2.496**	2.591**
Work Outside	-.084	-.119	-.112	-.078	-.073
Instructor Responsiveness	1.385***	1.364***	1.399***	1.370***	1.364***
Hispanic	.913	1.057	.993	1.155	1.037
Asian	1.264	1.302	1.370	1.290	1.227
Filipino	.000	.369	.048	.112	.122
Native American	6.152	6.045	5.845	5.931	6.179
Black	-5.568**	-5.474*	-5.414*	-5.080	-5.359*
Orientation	.343				
Homepage		1.149**			
Lecture			-.462		
Instructor Discussion				.473	
Instructor Presence Subtotal					.266*
Constant	25.558	24.687	27.912	25.759	24.121
R2	.237***	.243***	.237***	.239***	.240***

Source: Author's research

* $p < .10$; ** $p < .05$; *** $p < .01$

$N = 561$

Effect of Course Feature Orientation on Total Student Engagement, Controlling for Independent Variables

The same three consistent variables emerge here as important predictors of engagement when the individual feature of Orientation is added to the list of independent

variables. In addition, being a primary caregiver also becomes a predictor of engagement at the .05 level of significance. The implications are that parents or students providing care to their parents working from home are more engaged when an instructor provides an orientation. Being black, however, is negatively associated with finding engagement when this variable was added. However, it is problematic to attach a great deal of importance to findings where black students are concerned as they made up only 2.2 % of the total. Orientation itself was not a significant predictor of engagement, but its trend was positive.

Effect of the Course Feature Homepage on Total Student Engagement, Controlling for Independent Variables

Even after controlling for the three consistently powerful variables of preference for online classes, GPA and instructor responsiveness, the instructor's frequent and enriched posts to a course homepage had significant effects on student engagement at the .05 level. That implies that instructors can boost engagement by posting frequently and including posts enhanced with photos and videos, as the scale awarded the top grade for frequent, enhanced posts. Additionally, being a primary caregiver was a significant and positive predictor of engagement in this model. But as the number of units a student was taking at the time of the course increased, his or her engagement decreased at the weaker .10 level of significance, indicating that taking too many units can hinder a student's engagement. Being black also negatively affected engagement at the weaker .10 level of significance, indicating possibly that homepage posts are not as engaging to students of this ethnicity. However, it is problematic to attach a great deal of importance to findings where black students are concerned as they made up only 2.2% of the total.

Effect of Course Feature Lecture on Total Student Engagement Total, Controlling for Independent Variables

Although all three of the most powerful predictors of student engagement were still present, positive and significant at the .001 level, instructor lecture with personalized voice or video had a negative though not significant effect on student engagement. This feature was ranked on a scale that awarded the highest mark for personalized voice lectures enhanced with photos or videos. Black students were less engaged by the lecture, with a negative effect at the .10 level of significance. Being a primary caregivers though, was a positive predictor of engagement, indicating that lecture for them was an engaging feature at the .10 level of significance. The implications are that lecture is more engaging to caregivers who may be at home and possibly more interested in lecture than other students.

Effect of Instructor Participation in Student Discussion on Student Engagement Total, Controlling for Independent Variables

Students were overall not impressed the more their instructors participated in student discussion forums. The variable was not significant, nor were any of the other independent variables beyond the three consistently significant variables, indicating that instructors' voices are not engaging to students in the context of student discussions.

Effect of the Student Interaction CFI Subcategory on Engagement Total, Controlling for Independent Variables

Even when controlling for all significant variables, Instructor Presence positively and significantly affects student engagement. These results, with significance at the .10 level accounting for 22% of the variance according to the adjusted R Square value, suggest that even when an instructor is extremely responsive to students, that course features in the Instructor Presence subcategory still make a positive difference in student

engagement. Course features in this subcategory included orientation, homepage posts, lecture, and instructor presence in discussion.

Table 3-48 – Student-level Linear Regression: Effect of CFI Student Interaction Subcategory and Component Features on Engagement Total as Dependent Variable, Controlling for Student Characteristics and Instructor Responsiveness

	<i>Discussion Feature</i>	<i>Student-led Discussion Feature</i>	<i>Collaborative Work Feature</i>	<i>Student Interaction Subcategory</i>
Age	.044	.120	.060	-.032
Preference	2.197***	2.165***	2.186***	2.173***
Total Online Classes	.129	.153	.137	.125
Units Taking	-.687	-.659	-.582	-.670
GPA	2.189***	2.193***	2.074***	2.084***
Educational Goal	.805	.834	.808	.752
Primary Caregiver	2.514**	2.399*	2.663***	2.713**
Work Outside	-.073	-.095	-.113	-.071
Instructor Responsiveness	1.344***	1.397***	1.396***	1.364***
Hispanic	1.133	1.023	1.031	1.121
Asian	1.188	1.320	.968	.926
Filipino	.175	.078	-1.964	-.924
Native American	6.731	5.864	5.522	6.054
Black	-4.987	-5.320*	-5.277*	-4.964
Discussion	.802**			
Student-led Discussion		.172		
Collaborative Work			1.385***	
Student Interaction Subcategory				.577***
Constant	25.037	26.335	26.113	25.677
R2	.243***	.236***	.255***	.250***

Source: Author's research
* $p < .10$; ** $p < .05$; *** $p < .01$
 $N = 561$

Effect of Course Feature Discussion on Total Engagement, Controlling for Independent Variables

The opportunity for students to interact through the discussion course feature is a positive predictor of student engagement at the .05 level, even after controlling for the three most important variables for student preference, GPA and instructor responsiveness as well as the other independent variables. The implications are that interacting with each other is still significantly important to their engagement, regardless of other influential factors.

Effect of the Course Feature Student-Led Discussion on Engagement Total, Controlling for Independent Variables

After controlling for the three consistently significant variables, student-led discussion was not a significant predictor of student engagement. Very few (10%) of the online courses examined in the study offered this feature, which could have reduced the power of this feature as a predictor.

Effect of the Course Feature Collaborative Student Work on Total Engagement, Controlling for Independent Variables

Working collaboratively in groups was a strong and significant predictor of engagement, even after controlling for the three consistently significant independent variables or preference, GPA and instructor responsiveness. Few online instructors (16%) offered this feature, but those who did require group work for two or more assignments strongly affected student engagement at the .01 level of significance. Black students, however, were negatively affected by group work at the .01 level of significance. But

overall, the implications are clear that students are engaged when they work in groups, even controlling for other influential variables.

Effect of the CFI Course Design Subcategory on Student Engagement Total, Controlling for Demographics and Instructor Response and Feedback

Course design was not a positive predictor of student engagement, and was negatively associated with student engagement at the weaker .10 level of significance after controlling for other independent variables. These results suggest that Course Design features including the use of organizational modules, clear course navigation and overall interest are not as important to students, and in fact negatively affect student engagement, compared to the powerful positive predictors of student preference, GPA and instructor responsiveness. However, the results could also imply organizational and design features are not something students notice or remember, and that they are simply blending into the course overall. Further, as discussed in the Limitations section, this subcategory of the Course Feature Inventory may need to be revisited and adjusted.

In this analysis, educational goal and primary caregiver role emerge as significant predictors of engagement at the .10 level, perhaps implying that these two variables are more important than the way the course is presented in predicting student engagement. Being black was again a predictor for a lack of student engagement at the .10 level of significance.

Table 3-49 – Student-level Linear Regression: Effect of CFI Course Design Subcategory and Component Features on Engagement Total as Dependent Variable Controlling for Student Characteristics and Instructor Responsiveness

	<i>Organizational Modules Feature</i>	<i>Clarity Feature</i>	<i>Interest Feature</i>	<i>Course Design Subcategory</i>
Age	.136	.177	.134	.150

Preference	2.166***	2.163***	2.140***	2.138***
Total Online Classes	.166	.149	.137	.141
Units Taking	-.670	-.661	-.663	-.672
GPA	2.286***	2.208***	2.183***	2.215***
Educational Goal	.921*	.924*	.868	.982
Primary Caregiver	2.384*	2.378*	2.393*	2.402
Work Outside	-.105	-.110	-.106	-.112
Instructor Responsiveness	1.410***	1.416***	1.405***	1.418***
Hispanic	1.042	1.028	1.054	1.062
Asian	1.402	1.419	1.350	1.392
Filipino	.139	.177	-.076	-.058
Native American	4.819	5.590	5.929	5.347
Black	-5.703*	-5.607*	-5.377*	-5.626*
Org. Modules	-.984**			
Clarity & Simplicity		-.783		
Interest & Appeal			-.424	
Course Design Subcategory				-.365*
Constant	28.850	28.353	27.479	29.264
R ²	.243***	.239***	.237***	.241***

Source: Author's research

* $p < .10$; ** $p < .05$; *** $p < .01$

$N = 561$

Effect of the Course Feature Organizational Modules on Total Student Engagement, Controlling for Independent Variables.

The use of organizational modules was unimpressive to students in terms of engagement, and in fact was a negative predictor at the .05 level of significance. The results may imply that organizational features are not something students notice or

remember, and that they are simply blending into the course overall.

Effect of the Course Feature Clarity and Simplicity on Total Student Engagement, Controlling for Independent Variables.

The clarity and simplicity of course navigation was a negative, though not a significant factor in predicting student engagement, after controlling for the three previously identified consistently significant variables.

Effect of the Course Feature Overall Interest and Appeal on Total Student Engagement, Controlling for Independent Variables

This feature also showed a negative though not significant influence on student engagement, indicating again that course design features may have receded to the background of student awareness and may not have been adequately recorded by the questionnaire. It could also suggest that the instrument was not an adequate measurement of this feature, as the Limitations section will discuss.

Research Question 4 Conclusion

The Course Feature Inventory total score as an indicator of an engaging learning environment was highly correlated with student engagement in many of the correlational analyses. In regression analyses, it predicted student engagement after controlling for other influential variables when the dependent variable was Engagement Participation, which was highly significant. In addition, Instructor Responsiveness was highly predictive of Engagement throughout the analysis. The findings suggest that courses with instructors who respond quickly and amply to student questions and assignments, and that require students to interact through graded discussion, will engage their students at higher levels, which leads to higher course completion and success rates overall.

Research Question 5. What Impact Does Student Engagement Have on Course

Completion and Success?

The literature is abundant and authoritative on the importance of engagement to student satisfaction and persistence in traditional education (Chickering & Ehrmann, 1996; Chickering & Gamson, 1987; Tinto, 1993). Literature is emerging on the importance of engagement in the online classroom as well (Dixson, 2010; Fazioli, 2009; Tello, 2002). The findings in this research question reaffirm the literature with results that show engagement is a significant and powerful predictor for success at the student-level of analysis, and positively correlated to success at the course level of analysis.

To answer this question, the researcher ran an Independent Samples T-Test at the Student Level of analysis to compare the mean engagement total scores of students who completed to the mean engagement scores of those who did not. The same test was run to compare the mean engagement scores of those who succeeded to the scores of those who did not. The comparison revealed that students who complete and who succeed have significantly higher mean engagement scores than students who do not. In the Completion group (N = 519), which has very small variance with 92.5 % completing, students had significantly higher mean scores at the .05 level of significance. In the Success group (N = 461), which had a slightly larger variance with 82.2 % succeeding, students had significantly higher engagement scores at the powerful .01 level of significance. The implications are that the more engaged students are, the more likely they are to complete and succeed.

Table 3-50 – Independent Samples T-Test Comparing Engagement Total Score to Student Outcomes of Complete/Non-Complete

<i>Student Outcomes</i>	<i>t</i>
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	<i>Non-Complete n = 42</i>	<i>Complete n = 519</i>	<i>Equal variances assumed</i>
Skills Engagement Subcategory	17.2	18.4	-1.752*
Emotional Engagement Subcategory	13.7	14.7	-1.540
Participation Engagement Subcategory	13.5	14.1	-.631
Performance Engagement Subcategory	5.4	6.9	-6.480***
Engagement Total	49.8	54.0	-2.088**

Source: Author's research

*p < .10; ** p < .05; *** p < .01

Table 3-51 – Independent Samples T-Test Comparing Engagement Total Scores to Student Outcomes of Success/Non-Success

	<i>Student Outcomes</i>		<i>t Equal variances assumed</i>
	<i>Non-Success n = 100</i>	<i>Success n = 461</i>	
Skills Engagement Subcategory	17.0	18.6	-3.531***
Emotional Engagement Subcategory	13.4	14.9	-3.374***
Participation Engagement Subcategory	13.0	14.3	-1.885**
Performance Engagement Subcategory	5.6	7.0	-9.914***
Engagement Total	49.0	54.7	-4.202***

Source: Author's research

*p < .10; ** p < .05; *** p < .01

Student-Level Regression Analysis

After controlling for all independent variables included in the rigorous model described in Research Question 4, as well as for all Engagement subscales, the Performance Engagement subscale appears as a strong and significant predictor of student success at the strong .01 level of significance. The finding is expected as the

Performance Subscale pertained to students who felt confident that they were doing well in the class. It is also consistent with literature on engagement, which overwhelmingly supports the notion that engaged students perform better.

A correlation was run first to check for collinearity in the primary model that included the 9 student characteristics (Age, Educational Goal, Online experience, GPA, Unit load, Preference for online, caregiver status, working hours, and ethnicity) and the Instructor Responsiveness variable that measured how quickly and completely instructors answered questions and provided feedback. The model was sound (Allison, 1999). A second correlation checked for collinearity of Engagement total and any of the Engagement subscales, with any of student characteristics or Instructor Responsiveness. Collinearity was found between the Engagement total and its subscales, but no other collinearity was found. Logistic regressions were run on one model with Engagement subscales and a second on Engagement total to avoid collinearity of the Engagement total scores with Engagement subscales. Model 1 below depicted the regression of success as a dependent variable controlling for all independent variables and all four Engagement subscales, and Model 2 substituted the Engagement total for the subscales. As they have in previous analyses, the three strongest independent variables emerge again here in both regression models as significant at the .01 level. The variables include those for GPA, preference for online classes, and instructor responsiveness. The findings suggest that engagement among students who want to perform well in the class is a strong predictor for actual success.

Table 3-52 – Student-level Logistic Regression: The Effect of Engagement on Success as Dependent Variable, Controlling for Student Characteristics and Instructor Responsiveness

	<i>B</i>	<i>B</i>
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	<i>Model 1</i> <i>Engagement</i> <i>Subscales</i>	<i>Model 2</i> <i>Engagement</i> <i>Total</i>
Age	.068	-.006
Preference	.424***	.536***
Total Online Classes	-.179	-.236**
Units Taking	-.073	-.076
GPA	.601***	.819***
Educational Goal	.133	.088
Primary Caregiver	-.618*	-.552*
Work Outside	-.124	-.121
Instructor Responsiveness	.174***	.160***
Hispanic	-.736	-.783***
Asian	.238	-.027
Filipino	-.078	-.125
Native American	.017	.007
Black	20.001+	20.535+
Skills Engagement Subscale	.011	
Emotional Engagement Subscale	.004	
Participation Engagement Subscale	-.082**	
Performance Engagement Subscale	.502***	
Engagement Total		.009
Constant	-3.942	-2.136**
Cox & Snell R Square	.214	.171
Nagelkerke R Square	.351	.281
Sig.	.000	.000

Source: Author's research

* $p < .10$; ** $p < .05$; *** $p < .01$

N = 561

⁺ Error in this category is due to lack of variance (Var. = 0) as all students in this category succeeded.

Course-Level Analysis

At the course level of analysis, a bivariate correlation was run to determine the associations among engagement, completion and success. Again, the instructor

responsiveness variable dominates as the strongest variable correlated across three of the four Engagement subscales. That is not a surprising finding, since Research Question 4 demonstrated the association of Instructor Responsiveness with Engagement.

In the Course-level correlational analysis, Participation and Performance Engagement subscales were both associated with Completion, at the .10 level of significance. Performance Engagement was strongly associated with success at the powerful .001 level of significance. Both Emotional and Total Engagement were associated with Success at the .05 level of significance. Although the course-level analysis has a smaller N at only 99 courses, it is a telling and important analysis as it represents all students in each of the classes. Every student received the same treatment or level of operation as it pertains to the Course Feature Inventory and Instructor Responsiveness. Additionally, the dependent measurements are the aggregated course completion and success rates, which also represents every student in the course, well beyond the 561 who responded to the Engagement survey instrument. Therefore, the strength of significance and the power of the coefficient in the correlation show that engagement is highly predictive of success among students in online classes at Gateway College.

Table 3-53 – Course-level Bivariate Correlation of Engagement, Aggregated Course Completion Rate and Aggregated Course Success Rate

	<i>Skills Engagement</i>	<i>Emotional Engagement</i>	<i>Participation Engagement</i>	<i>Performance Engagement</i>	<i>Total Engagement</i>
Completion Rate	-.019	.160	.169*	.167*	.152
Success Rate	.069	.251**	.151	.322***	.217**

Source: Author's research

N = 99

***. Correlation is significant at the 0.01 level (2-tailed).

**. Correlation is significant at the 0.05 level (2-tailed).

* Correlation is significant at the 0.1 level (2-tailed).

Research Question 5 Conclusion

The T-Test at the Student level showing significantly higher Engagement scores between the group of students who completed compared to those who did not, and between the group who succeeded than those who did not, along with the student-level indicators in the regression analysis of engagement as a predictor of success, reinforced by the Course-level correlations, validate the literature-supported convention of engagement as an important predictor of student achievement.

Research Question 6. What Impact does the Presence and Level of Each Course Feature Identified in the Literature Have on Completion and Success?

As demonstrated in Research Question 4, online courses that employ more of the features at higher operational levels as measured by the Course Feature Inventory had higher rates of student engagement, as measured by the Online Student Engagement Scale. As demonstrated in Research Question 5, students who completed their courses had higher mean scores of engagement than those who withdrew, and likewise for students who succeeded versus those who did not, though not significantly so in most cases. Logistic regression at the Student-level also predicted successful outcomes for engaged students. The course-level analysis also revealed strong relationships among engagement and success through correlational analysis. Therefore, we know the Course Feature Inventory predicts Engagement, and that Engagement predicts Success. Research Question 6 will determine whether the Course Feature Inventory directly predicts success at the Student and Course levels of analysis, controlling for student characteristics, engagement and other individual course features. This research question discussion describes the two units of analysis employed to answer the question as well. It will

discuss a T-Test and logistic regression at the Student level of analysis, and a correlation and linear regression at the Course level of analysis.

Student-Level Analysis

The Student-level of analysis (N = 561) includes data collected from 561 students enrolled in 99 classes whose instructors opted into this study for Spring 2011 and Summer 2011. The data include responses to the 19-question survey of Online Student Engagement, as well responses to nine questions that describe self-reported student characteristics. In addition, the data in the student-level database include an aggregated total of three questions on instructor responsiveness.

The Student-level database also includes scores for the Course Feature Inventory total, subcategories and individual features collected on each of the 99 courses that were examined. Those scores were articulated from the Course-level database to the Student-level database by course registration number or CRN, as it is called at Gateway College. Because the number of students responding from each course ranged from 2 to 19, the Student-level of analysis results are weighted by the number of responders per course.

To answer this question, the researcher ran an Independent Samples T-Test to compare the mean scores of the Course Feature Inventory total, its subcategories and each of its individual features, by student outcomes of Completion and Success. The results show that for almost every CFI Feature, CFI Subcategory, and CFI Total, scores were higher, though not significantly so, among the students who completed and succeeded versus those who did not. In the Non-Success/Success comparison, Student-led Discussion scores were significantly higher at the .10 level of significance. Overall, again, the results indicate that students whose courses offer the features in the Course

Feature Inventory at the higher levels of operation complete and succeed at higher rates.

Table 3-54 – Student-level Independent Samples T-Test Comparing Course Feature Inventory Mean Scores by Student Outcomes

	<i>Student Outcomes</i>		<i>t</i> <i>Equal variances assumed</i>
	<i>Non-Success</i> <i>n = 100</i>	<i>Success</i> <i>n = 461</i>	
Orientation	2.0	2.1	-.411
Homepage	1.9	1.9	-.633
Lecture	3.1	3.0	.358
Instructor in Discussion	1.8	1.6	.878
Ins Presence Subcategory	8.7	8.6	.207
Discussion	2.6	2.7	-.209
Student-led Discussion	0.2	0.4	-1.660*
Collaborative Work	0.4	0.5	-1.124
Student Interaction Subcategory	3.2	3.6	-1.366
Org Modules	3.2	3.3	-.482
Clarity	3.4	3.4	.408
Interest	2.7	2.7	-.152
Design Subcategory	9.3	9.3	-.116
Total CFI	21.2	21.6	-.536

Source: Author's research

*p < .10; ** p < .05; *** p < .01

Student-level Logistic Regression Analysis

Because Completion has a smaller variance and has therefore resulted in consistently less significant findings, regressions were not performed on that variable, concentrating instead on success.

A correlation was run to check for collinearity in the primary model that included the nine student characteristics identified in Research Question 4, including age,

educational goal, online experience, GPA, unit load, preference for online classes, caregiver status, working hours, and ethnicity. The tenth independent variable, Instructor Responsiveness that measured how quickly and completely instructors answered questions and provided feedback, was added to the model as well. Finally, Engagement Total, Course Feature Inventory individual features, Subcategories and Total were added. Collinearity was found between the Course Feature Inventory total and its subscales, as well as between the total and some features, but no other collinearity was found (Allison, 1999). Model 1 includes all student characteristics, instructor responsiveness, Engagement Total and all Course Features. In Model 2, features were exchanged for Subcategories. In Model 3, Subcategories were exchanged for CFI Total. A fourth model was run, but not displayed, that excluded both the Engagement and the Instructor Responsiveness variables, but the Course Feature Inventory total, subcategories and features were not significant predictors of completion or success.

Using the student-level database as the level of analysis, a binary logistic regression with student Success as the dependent dichotomous variable was run to control for independent variables included in the model. The Non-success/Success dependent variable was chosen for this regression because, although its variance was relatively small with 82% of the study population succeeding, variance in the Non-completion/Completion variable was even smaller, with 92.5% of the study population completing. A stepwise regression was attempted, but due to the reduced power resulting from the small amount of variance in the dependent variable, a hierarchical regression produced no significant results and had little predictive power. The Course Feature Inventory total score was not significant in this model, after controlling for the identified

variables.

Subsequent bivariate logistic regressions produced significance for six variables, a positive relationship with online preference, GPA, and instructor responsiveness, and a negative relationship with being a primary caregiver, experience in online classes and being Hispanic. Results with all but one of these variables are as expected based on literature indicating that students who prefer online classes perform better in them (Muilenburg & Berge, 2005), that students with higher GPA generally perform at higher levels in all classes (Astin, 1997; Hammond, 2006), and that being a primary caregiver or having other significant obligations can decrease success (Fazioli, 2009; Muilenburg & Berge, 2005; Nash, 2005). Statewide, according to the Distance Education Report (CCCCO, 2011), only 50% of Hispanics complete online classes. Of note is the error in the ethnicity category of Black. This category had no variance, with the entire study population of 13 black students (2.3%) successfully completing their classes, causing SPSS to produce an error statement when the assumed dichotomous variable had no members in one of its groups.

As for the sixth variable, experience with the online environment, literature suggested that these students would perform better in online classes as perceived barriers to online learning decreased with each online course (Muilenburg & Berge, 2005). However, in this study, students who took the most courses were least associated with success. A possible explanation could be that some of these students attempted the same class more than once, as Gateway College's policy of repeatability had allowed students to repeat a class three times to try to earn a better grade.

Table 3-55 – Student-level Logistical Regression: Effect of Course Feature Inventory on Success as Dependent Variable Controlling for Student

Characteristics, Instructor Responsiveness and Engagement

	<i>Model 1</i> <i>CFI Features</i> <i>B</i>	<i>Model 2</i> <i>CFI</i> <i>Subcategories</i> <i>B</i>	<i>Model 3</i> <i>CFI Total</i> <i>B</i>
Age	.013	.001	.000
Preference	.563***	.540***	.538***
Total Online Classes	-.245**	-.237**	-.238**
Units Taking	-.087	-.077	-.077
GPA	.835***	.812***	.820***
Educational Goal	.092	.091	.094
Primary Caregiver	-.638	-.582*	-.575*
Work Outside	-.135*	-.125	-.123
Instructor Responsiveness	.177***	.162***	.162***
Hispanic	-.866***	-.788***	-.784***
Asian	.010	.005	.003
Filipino	-.052	-.097	-.095
Native American	-.1261	-.055	-.051
Black	20.550+	20.472+	20.496+
Engagement Total	.008	.010	.010
Orientation	-.078		
Homepage	.131		
Lecture	-.087		
Instructor in Discussion	-.063		
Instructor Presence Subcategory		-.033	
Discussion	-.113		
Student-led Discussion	.117		
Collaborative work	.024		
Student Interaction Subcategory		-.007	
Organizational Modules	.043		
Clarity	-.274		
Interest	.243		

Course Design Subcategory		.003	
Course Feature Inventory Total			-.015
Constant	-1.565	-1.945*	-1.919*
Cox & Snell R Square	.182	.172	.172
Nagelkerke R Square	.299	.283	.282
Sig.	.000	.000	.000

Source: Author's research

* $p < .10$; ** $p < .05$; *** $p < .01$

N = 561

⁺ Error in this category is due to lack of variance (Var. = 0), as all students in this category succeeded.

Course-Level Unit of Analysis

The course-level database includes the 99 courses whose instructors opted into the study. Course Feature Inventory total, subcategory and individual Feature scores were entered for each course, and later articulated to the Student-level database by course number. Similarly, mean scores for Student Engagement total and Subscales were articulated to the course-level database, as was the mean course score for Instructor Responsiveness.

Course-Level Correlation

Results of the Course-level bivariate correlational analysis of the Course Feature Inventory with aggregated course success rates show that even when considering the reduced power with the small sample size (N = 99), the Course Feature Inventory total was significantly and positively correlated with aggregated course success rates at the .10 level of significance. Student-led discussion and the Student Interaction subcategory were positively correlated with higher success rates as well. There was a positive association with the aggregated course Completion rate as well, though this relationship was not significant. The findings indicate that overall, courses with more of the features at higher

levels of operation as identified in the literature as indicative of a high-quality engaging class are associated with a higher completion and success rates.

Table 3-56 – Course-level Bivariate Correlation of Course Feature Inventory, Completion and Success

<i>Course Features</i>	<i>Aggregated Course Completion Rate</i>	<i>Aggregated Course Success Rate</i>
Orientation	-.022	.139
Homepage	-.031	.095
Lecture	-.166*	-.067
Instructor in Discussion	.093	.007
Subtotal Ins Presence	-.033	.073
Discussion	.070	.090
Student-led Discussion	.242**	.249**
Collaborative Work	.118	.086
Subtotal Stu Interaction	.208**	.203**
Org Modules	.192*	.148
Clarity	.061	.103
Interest	.048	.106
Subtotal Design	.126	.144
Total CFI	.126	.188*

Source: Author's research

*** Correlation is significant at the 0.01 level (2-tailed)

** Correlation is significant at the 0.05 level (2-tailed)

* Correlation is significant at the 0.1 level (2-tailed)

N = 99

Course-level Regression

Because Completion has a smaller variance and has therefore resulted in consistently less significant findings, regressions were not performed on that variable, concentrating instead on success.

A correlation was run to check for collinearity among the dependent variables of Engagement Total, Course Feature Inventory individual features, CFI Subcategories and CFI Total. Because the Instructor Responsiveness variable, whose data were collected from students responding to the Online Student Engagement, described a course-level characteristic, it too was added to the correlation. As before, collinearity was found in multiple areas among the Course Feature Inventory total, its subscales and individual features. No other collinearity was found as Allison (1999) would define it, but the Instructor Responsiveness variable was highly significantly correlated with Engagement Total mean score as well as with Emotional Engagement, Participation Engagement and Performance Engagement subscales, all at the .01 level of significance. Because it was a borderline call on whether to include the Instructor Responsiveness variable in the model, two sets of models were run, both with and without the variable, but both sets were established as follows: Model 1 includes the all individual Course Features. In Model 2, features were exchanged for Subcategories. In Model 3, Subcategories were exchanged for CFI Total. Yet a third set of regressions was created omitting both Engagement and Instructor Responsiveness, simply regressing to find individual course features that would predict success.

Excluding the Instructor Responsiveness variable, the Course-level database linear regression revealed that even when the 'N' is small at 99 courses, and even controlling for differences in student engagement levels, the Course Feature Inventory trends positive for predicting success, though not at a significant level. The student-led discussion feature was highly predictive of success at the .01 level, as was the Engagement Total mean score. The use of modules, and providing orientation also

trended high in favor of predicting success, though not at the significant level.

Table 3-57 – Course-level Linear Regression: Effect of Course Feature Inventory on Aggregated Success as Dependent Variable Controlling for Engagement Total Mean Score

	<i>Model 1 CFI Features</i>	<i>Model 2 CFI Subcategories</i>	<i>Model 3 CFI Total</i>
Orientation	2.166		
Homepage	-.800		
Lecture	-2.850*		
Instructor in Discussion	.854		
Instructor Presence Subcategory		-.092	
Discussion	-.911		
Student-led Discussion	4.508**		
Collaborative work	-.920		
Student Interaction Subcategory		.768	
Organizational Modules	3.611		
Clarity	-1.802		
Interest	.812		
Design Subcategory		.886	
Course Feature Inventory Total			.449
Engagement Total Mean Course Score	.547**	.453*	.454*
Constant	35.652**	32.454**	32.880**
R ²	.172	.083*	.071**

Source: Author's research

N = 99

* $p < .10$; ** $p < .05$; *** $p < .01$

Coefficients expressed as Unstandardized B

Running the same three regression models including the Instructor Responsiveness variable produced significance in Model 1 at the .05 level for only the student-led discussion variable, showing again the power of this predictor on student

success. Engagement was significant at the .10 level, as was lecture, which was a negative predictor for success. Model 2 produced no significant results, with the overall model not significant as well. However, the model itself was not significant.

In the only significant model of the three regressions in this set, all three of the variables trended positive for predicting success, but none at the significant level. The Engagement mean variable and the Course Feature Inventory approached significance at the .10 level.

Table 3-58 – Course-level Linear Regression: Effect of Course Feature Inventory on Aggregated Success as Dependent Variable Controlling for Engagement and Instructor Responsiveness

	<i>Model 1 CFI Features</i>	<i>Model 2 CFI Subcategories</i>	<i>Model 3 CFI Total</i>
Orientation	2.115		
Homepage	-.856		
Lecture	-2.849*		
Instructor in Discussion	.821		
Instructor Presence Subcategory		-.131	
Discussion	-.889		
Student-led Discussion	4.557**		
Collaborative work	-.844		
Student Interaction Subcategory		.818	
Organizational Modules	3.559		
Clarity	-1.922		
Interest	.760		
Design Subcategory		.802	
Course Feature Inventory Total			.419
Instructor Responsiveness Course Mean	.484	.503	.483
Engagement Total Course Mean	.488*	.391	.405
Constant	35.598**	32.475	32.055

R2	.174	.086	.073**
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Source: Author's research
N = 99
* $p < .10$; ** $p < .05$; *** $p < .01$
Coefficients expressed as Unstandardized B

Finally, a third set of regressions to determine the effect of the Course Feature Inventory individual Features, Subcategories, and Total was run. The analysis showed that both Orientation and Organizational Modules were strong, though not significant, predictors of success, while Student-led Discussion was both a powerful and significant predictor of success at the .01 level of significance, leading to a significant finding for the Student Interaction Subcategory as well. Additionally, the Course Feature Inventory Total was a significantly and positive predictor for Success at the .10 level of significance.

Table 3-59 – Course-level Linear Regression: Effect of Course Feature Inventory on Aggregated Success as Dependent Variable

	<i>Model 1 CFI Features</i>	<i>Model 2 CFI Subcategories</i>	<i>Model 3 CFI Total</i>
Orientation	1.984		
Homepage	-.013		
Lecture	-3.126*		
Instructor in Discussion	.766		
Instructor Presence Subcategory		-.070	
Discussion	-.407		
Student-led Discussion	4.693**		
Collaborative work	-.069		
Student Interaction Subcategory		1.281*	
Organizational Modules	2.969		
Clarity	-1.967		

Interest	.974		
Design Subcategory		.685	
Course Feature Inventory Total			.537*
Constant	65.591***	56.952***	55.762***
R ²	.131	.052	.035*

Source: Author's research

*p < .10; ** p < .05; *** p < .01

Coefficients expressed as Unstandardized B

N = 99

Research Question 6 Conclusion

The final regression showed that Course Feature Inventory total predicts student success. In addition, the correlational analysis was conclusive. Further, the power of engagement to predict success was affirmed through regression analysis and T-Test comparisons, and a positive relationship was established through correlation between the Total Course Feature Inventory and success. As importantly, the Instructor Responsiveness variable proved its power repeatedly in driving both engagement and success, providing clear implications for instructors who are hoping to improve completion and success rates in their online classes. Although individual feature and subcategory regression results were limited due to the small amount of variance in the population (92.5% completed, 82.2% succeeded) and the small population at the Course-level database (N = 99), the significance of the CFI total shows the instrument overall has predictive power.

Clearly, course features that make the instructor visible to students, that provide ample opportunities for student interaction, and that allow a course to be easily navigated are correlated with course completion and success. In short, the course features that create engaging classrooms, are the same ones that encourage students to complete their

courses and succeed. The implications for application in online classes to immediately more effectively engage students and improve completion and success rates are myriad. It takes time and effort to produce the courses described here, but the payoff appears to be profound.

CHAPTER 4: RESULTS CONCLUSIONS AND RECOMMENDATIONS

Chapter 5 reviews the study purpose and design, and presents the results from the data analysis performed to answer six research questions, as described in Chapter 4. This study's purpose was to identify and describe the types of features employed in online classes that engage students and encourage them to complete and succeed in their classes, and to explore the relationships and influences the course features might have with and on engagement, completion and success.

Specifically, the study sought to identify any relationships between the course features and engagement, and between the course features and completion and success. Because engagement can also be considered an intervening variable as well as a predictor in its own right, the study also examined the relationships among course features and their effect on, or relationship with, engagement, and engagement's effect on or relationship with completion and success. The nature of the study necessitated two units of analysis, one at the student level ($N = 561$), and a second at the course level ($N = 99$). Both were useful in measuring relationships among course features, engagement and student outcomes of completion, or completion with success.

Student completion was defined as those who are enrolled at the conclusion of the course. That category was divided into completers ($n = 519$), and non-completers who withdrew during the course ($n = 42$). Success was defined as completing the course with a 'C' or higher, or a pass in a pass/fail class or credit in a credit/no credit course ($n = 461$). Success was also divided into two groups. The non-successful group included both non-successful completers and those who withdrew ($n = 100$), creating a variable with slightly better variance than the complete-non-complete variable.

The study results show that overall, instructors can create engaging online classroom environments that inspire more students to complete and succeed in their courses at higher rates by including some of the features at higher operational levels as they were identified in the literature and measured by the Course Feature Inventory (CFI), and by responding thoroughly and promptly to student questions and assignments. Within that broad assessment, there are specific course features and instructor practices that could, based on this analysis as well as the review of existing literature, be implemented to immediately improve student engagement, completion and success.

The analysis revealed that some of the course features measured in the Course Feature Inventory (CFI) are more powerfully associated with engagement, completion and success than others, and that some of the Features selected were poorly measured. Nevertheless, the analysis was definitive by several measures showing that specific CFI Features, Subcategories and the CFI total, as well as Instructor Responsiveness, are predictive of success.

Additionally, the analysis was conclusive in showing that Engagement, as measured using the Online Student Engagement Scale, predicts completion and success, and that the CFI predicts engagement. It follows then, that courses with higher scores on the CFI predict engagement and engagement predicts success.

Summary of Findings at the Student-Level of Analysis

T-Test means comparisons showed that Student Engagement total scores were significantly higher in the groups that completed and succeeded compared to the groups that did not, and that Course Feature Inventory mean total scores were higher, though not significantly so, among those students who completed and succeeded and those who did

not.

Specifically, in correlational analysis, the strongest relationships between course features, engagement, completion, and success were orientation and homepage posts in the Instructor Presence subcategory, discussion, student-led discussion and group work in the Student Interaction subcategory, and the use of modules in the Course Design subcategory. The trends and relationships were closely matched for both completion and success, and were very similar when examined against totals from the Online Student Engagement Scale.

However, the Course Feature Inventory and its subcategories and component features were not significantly predictive in regression analysis of whether individual students completed or succeeded at the Student-level unit of analysis.

Summary of Findings at the Course-Level of Analysis

At the powerful Course-level of analysis, which pertains to all students in all 99 courses in this population, Engagement was positively and significantly associated with the Course Feature Inventory total, as well as with aggregated student Success rates.

In regression analysis, the Course Feature Inventory total and some of its subcategories and component features were significant predictors of success. In regression analysis the Online Student Engagement Scale predicted student completion and success at the Student-level and at the Course-level unit of analysis, indicating that student engagement is a strong predictor of completion and success. The Online Student Engagement Scale was also significantly correlated with student completion and success when compared to aggregated course success rates at the Course-levels unit of analysis. In fact, five Course Feature Inventory features, one Subcategory and the CFI Total were

significantly correlated with at least one or more of the Engagement subscales. That indicates that the CFI features help involve students in various ways and contribute to overall student engagement.

The promptness and quantity of instructor responses and feedback on assignments proved to be an area that is highly important to student engagement and highly predictive of completion and success. Three questions on the promptness of instructor response to questions, the amount of feedback on assigned work, and the promptness of feedback on assigned work, were asked as part of the Online Student Engagement Survey, but were not part of the Online Student Engagement peer-reviewed scale. The three responses were recomputed into a single variable called Instructor Responsiveness and proved highly significant in all regression analyses, emerging as one of three consistently significant variables in predicting online student success. Others were GPA and preference for online classes, factors that students arrive with when they log into the class for the first time.

Significant Findings and Implications for Application by Course Feature

The implications for instructors who want immediate high-impact results in their existing online courses at no financial cost and with moderate time expenditure, are many. This study did not seek to measure the amount of time faculty would need to invest to implement the features associated with increased student engagement, completion and success, but the researcher is mindful that the time investment can be substantial. Still, the payoff in student experiences and in improved completion and success rates in an educational environment that is cash-strapped and seeking to maximize student graduation rates (CCCCO, 2011) may be well worth the cost in

instructor time and energy.

Instructor Presence Subcategory

Course Feature: Orientation

Moving from simple text instructions embedded in syllabi to a separate activity online with photos and voice or video, or onsite, could improve engagement and success rates. Although this feature was not a significant predictor, its effect was consistently positive and sometimes with a large effect. Instructors are already including text instructions for the most part, so much of the work is done. The time investment to alter the format, enhance the existing orientation with some illustrations and voice or video, offer a live orientation with voice and images through a real-time interactive platform, such as Wimba, or to bring the orientation onsite, could balance out if students have a better idea of what is expected of them throughout the rest of the course.

Course Feature: Homepage Posts

Frequent and enhanced homepage posts enliven the appearance of an online course and help positively and significantly engage students, which in turn leads to improved completion and success. Homepage posts are not time-consuming using the feature provided in the online course shells used at Gateway College. Instructors can post reminders about work due or other announcements, uploading a photo or a video link to enhance the look and feel of the homepage. Since homepage posts were significantly correlated with most aspects of Engagement, as well as positively though not significantly predictive of engagement in regression at the Student-level and Course-level of analysis, it could be inferred that frequent, enhanced homepage posts could encourage students to become more involved and participate more in the class, leading to greater

completion and success.

Course Feature: Lecture

Although the literature is clear that personalized video or voice added to lecture enhances student interest, engagement and learning (Donkor, 2010; Fazioli, 2009; Hersh, 2009, Mandernach, 2009; Mayer & Johnson, 2008; Moreno, 2006), and even increased completion rates at one community college (Hersh, 2010), it definitely did not have that effect at Gateway College, at least not as measured. In fact, the lecture feature, which was inventoried on a scale that placed the highest value on lecture with multiple images and personalized voice or video, was consistently negatively correlated with student engagement and success. In regression analysis, it was even a significant predictor of not succeeding. This finding baffled the researcher, since it runs counter to the literature described above and to anecdotal personal experience in online courses. Some explanations may be in the measurement instrument itself, as the Course Feature Inventory did not take into account the length of time that the enhanced lectures required. Perhaps some were too long. If so, that was not measured. In addition the emphasis was on the instructor's presence in the lecture and so awarded the highest points in the scale to instructor personalized voice or video, when perhaps publisher-provided video may have been as or more engaging as well. The negative associations between lecture and engagement, completion and success could indicate that lectures were too long, that personalized voice lecture was not as important, or that students at Gateway College prefer means of learning other than lecture, even when lecture was enhanced with video or voice. This is a definite area for future study. It could also be that some disciplines use this kind of feature more than others, and that those disciplines may have lower success

rates on the whole. If that were so, it was not measured here as this analysis did not examine trends across disciplines in order to preserve anonymity in a mid-sized college.

Course Feature: Instructor Participation in Discussion

This feature was not engaging to students, nor was it associated with completion or success. It found only one area of significance, in its correlation with aggregated completion rates at the Course level of analysis at the .10 level. It was associated with only one area of Engagement, the participation subscale. However, many instructors have alternate means of interacting with students that were not measured here. Those might include interaction through email, text or instructor feedback on assignments. None of those was examined as part of the Course Feature Inventory due to privacy and access constraints. This area could benefit from future study to see whether, as Rourke and Anderson (2002) posited, it might be better to limit instructor presence in discussions, as long as they are guided by instructor prompts and graded.

Course Feature: Instructor Response to Questions and Assignments

As noted earlier, Instructor Response was not part of the Course Feature Inventory, again, due to privacy and access constraints. Instead, this concept, which became the variable of Instructor Responsiveness, was derived from responses to three questions on the student Engagement survey. Those responses and the ensuing analysis reveal that this area produces significant results and certainly warrants instructor attention.

The analysis revealed that instructor response time to questions, as well as the quantity and timeliness of instructor feedback on assignments, was strongly and consistently correlated with engagement, completion and success. Instructors who want

to encourage more students to stay in their courses until the end and earn successful grades could make responses to student inquiries and feedback on assignments a more urgent priority. That's not necessarily easily to accomplish in an instructor's busy and multidimensional schedule, but the analysis showed that time invested to respond more quickly pays off directly and significantly in engagement, completion and success.

Student Interaction Subcategory

Instructors can enhance and increase student engagement, completion and success with multiple graded student discussions, as well as by having students lead discussions and requiring students to work in groups once or twice during the semester.

Course Feature: Discussion

Posting items for discussion is not a time-consuming task, but grading them can be. The literature noted (Dixson, 2010) and this researcher's observations confirmed that students do not participate in discussions in large numbers if they are not urged to do so by a grade. The Discussion feature, which earned the highest score on the Course Feature Inventory when it was offered the equivalent of weekly or more, was positively and significantly predictive of student Engagement total as well as the Participation subscale, though curiously not of student Success in the analysis. However, a comparison through a T-Test showed that the courses with higher scores on this CFI feature had significantly higher success rates.

Course Feature: Student-Led Discussion

Having students lead the discussion can enhance their understanding while at the same time reducing some demands on instructor time (MacCuish, 2004; Swan, Shea, Fredericksen, Pickett, and Pelz 2000). This feature was positively associated with

enhanced student engagement and success, though not significantly so, throughout the analysis. It was also highly predictive of success at the course-level of analysis in regressions. Additionally, a comparison through a T-Test showed that the student success rates were higher in courses whose instructors used this feature.

Course Feature: Student Collaboration

Group work can be difficult to implement and time-consuming to manage in an online class, but the payoff can be big. This category was strongly correlated with student engagement in three of the four subscales as well as with Engagement total, indicating that group work is highly engaging to students. Additionally, a comparison through a T-Test showed that the student success rates were significantly higher in courses that used this feature. It was also positive in the regression analysis, but not at significant levels. Instructors who want to engage their students could experiment with group work through the 'groups' feature in a course management system. This study did not explore whether students were most engaged when they chose their own groups or when they were randomly assigned, but that could definitely be part of an area for future study. In the meantime, a random group assignment with the option to transfer into or out of groups by a certain date allows for student input without much time on the instructor's part.

Course Design Subcategory

Instructors can moderately enhance engagement, completion and success by tweaking course shells to make them simple to navigate and understand. The subcategory was correlated with completion and success, but didn't have much traction with engagement. The results could indicate that students don't notice much when a course works well, or that the mechanics of course operation fade into the background if they

don't present a problem.

Course Feature: Organizational Modules

Using modules to reduce the number of locations students must visit to find assigned content moderately but significantly enhanced student completion levels, but was negatively associated with engagement and success. Still, converting to modules to present the assigned work together could require little instructor time expenditure since the content already exists. For example, instructors could use a tool in the course management system to organize course content by week, requiring students to visit only one location to find links for all quizzes, assignments, discussion and lecture for the week. The literature and results of this study suggest that the simpler and more streamlined it is for students to find assigned work, the better.

Course Feature: Overall Clarity

This subjectively measured feature that was based on the researcher's experience and estimate of what might be a student experience navigating the course had little association with engagement. It was sometimes positively, but not often negatively associated with success. This measure needs significant reworking before it would be an apt measure of course appeal. The ambiguous results may also indicate that this type of a measure is not appropriate for inclusion in the Course Feature Inventory.

Course Feature: Overall Interest and Appeal

This category was also subjective and produced no significant results in terms of engagement or as a predictor for success. However, a T-Test comparison showed that the student success rate was significantly higher in courses with higher scores on this CFI feature. In future studies, this category might be deleted from the Course Feature

Inventory, or revised to become a more meaningful measure.

Recommendations for Future Research

The Course Feature Inventory instrument, which measured the presence and operational level of 10 course features in three subcategories, should be adjusted to create a stronger and more accurate measure of Instructor Presence and Course Design, with a refinement in the Student Interaction subcategory as well.

Instructor presence is an important indicator of student engagement according to prevailing literature. But that indicator was not sufficiently captured in either of the two instruments used in this study. Instructor lecture should be reexamined in the literature to determine whether length of lecture is an important component and whether publisher video content that is not personalized is just as, or possibly more, valuable to the student. It could also be reexamined in a future study when evaluation by discipline is available. That could help determine whether certain disciplines that use this method of lecture might have pre-existing trends in success rates, perhaps accounting for the consistently negative results in this study. Also, a separate study on the instructor as facilitator in online classes might be the preferred method of instructor for online students.

In addition, the Course Feature Inventory was not able to assess instructor responses and feedback. If a future study were to have access to instructor emails by count and frequency or to feedback on assignments by date and quantity, the CFI analysis could be more meaningful and powerful. In this study, instructor replies and feedback were measured through questions added to the Online Student Engagement survey. Responses to three questions on Engagement survey became the instructor responsiveness variable in the analyses. If the Course Feature Inventory could not be

amended to include this area due to student privacy and access limits, the questions could be added to the Online Student Engagement scale.

In the Student Interaction subcategory, the measurement on group work could be fine-tuned to further explore the size of groups and whether they were assigned or formed by choice.

The Course Feature Inventory's Course Design subcategory should be addressed as well to create a more meaningful assessment or scale for measuring course overall clarity and appeal. Although the researcher applied more than five years of online teaching experience as she rated these features, the lack of objective criteria may have contributed to the unimpressive and inconclusive results.

There are implications for further study within the demographic arena as well. Since the study revealed that Hispanic students struggle with online classes more than others according to correlational and regression analyses, and that black students experience some difficulty in some scenarios, a future study could look at strategies to improve their success. Caregiver responsibilities are also negatively correlated with success in parts of the analysis, though the study indicated they were engaged. A future study might look at how instructors lay out their classes to see if there are ways to allow students with these responsibilities to better plan or manage their time before failure or withdrawal. A future study should ask a gender question as well.

The area of online preference suggested topics for study as well. Students who want online classes perform better in them. If students have negative associations with online courses, or are taking them against their will, it would be interesting to study whether there is any activity or process that could change that attitude and examine

whether the shift resulted in greater success. Also, perhaps students who do not like online classes should be advised against taking them. A study might examine whether certain students should be dissuaded from taking, or even locked out of, online classes before they begin.

It would also be interesting to examine results by discipline to see whether certain features work better in certain disciplines. Controlling for discipline aggregated success rates could also change regression analyses and their findings.

Finally, it would be interesting to undertake a similar study with a larger student and course population by expanding to other colleges in the district or in the state. The larger 'N' would give the study and its results more power in more areas.

Limitations

Study limitations include the size of the study population as well as its configuration. Of the 183 classes offered online at Gateway College during Spring and Summer 2011, instructors teaching 103 of the courses opted in to the study. The courses examined include 75 from spring and 28 from summer. Of those 103, four courses were omitted from the study as no students from those classes responded to the student engagement survey. That left the total 'N' for the course-level analysis at 99, limiting the power of that unit of analysis.

The student-level database was further limited due to a lack of variance in course outcomes. Of the 561 students who were included in the study, 82% or 461 students successfully completed their online courses with a grade of a 'C' or higher. That variance might be expected since successful students might be more apt to read college email where the request was sent, or to complete a survey, than unsuccessful students. The

reduced variance in the study population limited the power of the variables to predict student outcome. The study population also had no variance in completion or success in its population of black students as all 12 of those students successfully completed their online courses.

In addition, because the institution and instructors were promised anonymity, the data could not be examined for trends across disciplines, which could have been regressed to control for the overall completion rates on various disciplines.

The consideration of student privacy as well as limits in the guest access provided to the courses did not allow for examination of instructor feedback to assignments. In addition, emails between students and instructors could not be and were not examined for similar reasons. That information, which might have yielded more information about the relationship of instructor presence and student interaction to student outcomes, was provided in part through student questionnaires, but could have been more fully examined with unfettered access.

Conclusion

Overall, the findings suggest that instructors have the means, and now at least a little more of the needed knowledge, to present their courses in a way that is likely to increase their students' level of engagement in their online courses, which will lead indirectly or directly to more student completions and greater student success. Instructors can choose to be more present in their classes with a more visible orientation and additional posts with images, voice or video to their homepages. Those who want students to feel connected and engaged with their courses can offer multiple means for students to interact with each other, letting students take over the teaching for a while

through student-led discussion or group work. Further, a little housekeeping in the course presentation by grouping content into modules could help slightly to boost completion rates with very little effort.

Finally, as responses to the Instructor Responsiveness survey questions and their strongly correlated relationships with engagement, completion and success remind us all, prompt responses to student questions and feedback on assigned work are extremely important to student outcomes. As Chickering and Gamson (1987) found 25 years ago, attention to that detail will pay off in engaged, successful students, which should be after all, the goal for every instructor in every classroom, whether the class meets within walls or without them.

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APPENDICES

APPENDIX A

Course Feature Inventory

Instructor presence

Course Feature: Orientation

Not present = 0

Text only = 1

Text + 3 or fewer photos/graphics = 2

Text + 4 or more photos/graphics = 3

Text + any photos/graphics and personalized voice or video = 4

Course Feature: Home page

Not present = 0

Text only = 1

Text + 3 or fewer photos/graphics = 2

Text + 4 or more photos/graphics = 3

Text + any photos/graphics and personalized voice or video = 4

Course Feature: Frequency of home page posts

Not present = 0

One post in an 8-week class, 1 or 2 posts in a full-term class = 1

Two or three posts in an 8-week class, 3-7 posts in a full-term class = 2

At least semi-weekly, 4 or more in an 8-week class; 8 or more in a full-term class = 3

At least weekly, 8 or more in an 8-week class, 18 or more in full-term class = 4

(Fazioli, 2009; Muilenburg & Berge, 2005; Swan, 2001; Vonderwell & Zachariah, 2005).

Text + any photos/graphics and personalized voice or video = 4

Note: To eliminate over-emphasis on the use of the Home Page, a mean score for the two Home Page features was used in the subcategories and the course total scores.

Course feature: Lecture

Not present = 0

Text only = 1

Text + 3 or fewer photos/graphics = 2

Text + 4 or more photos/graphics = 3

Course Feature: Instructor participation in Discussion

No instructor posts in 5 discussions examined = 0

One instructor post in at least 3 of 5 discussion examined = 1

Two or 3 instructor posts in at least 3 of 5 discussions examined = 2

Four instructor posts in at least 3 of 5 discussions examined = 3

Five or more instructor posts in at least 3 of 5 discussions examined = 4

Student Interaction

Course Feature: Discussion (Opportunities for Student interaction)

Discussion feature is not present = 0

Discussion feature is present 2 or fewer times in course first half = 1

Discussion feature is present 3 or 4 times in course first half = 2

Discussion feature is present 5 or 6 times in course first half = 3

Discussion feature is present 7 or more times in course first half = 4

Course feature: Discussion (Actual student interaction)

Discussion feature is not present = 0

Majority of students post original comment only = 1

Majority of students post original comment plus 1 reply = 2

Majority of students post original comment plus 2 - 4 replies = 3

Majority of students post original comment plus 5 or more replies = 4

Course feature: Student-led discussion

- No student-led discussions are present = 0
 - One student-led discussions in course first half = 1
 - Two or three student-led discussions in course first half = 2
 - Four or five student-led discussions in course first half = 3
 - Six or more student-led discussions in course first half = 4
-

Course feature: Collaborative student work

- No student group or collaborative assignments are present = 0
 - No group assignment, but option allows work with partner or group on one assignment = 1
 - No group assignment, but option exists to work with partner or group on two or more assignments = 2
 - Group work is required for at least assignment = 3
-

Course feature: Social media

- No social media present (course chat, Twitter, Facebook, Tumble, Instant Messaging) = 0
 - One aspect of social media is present = 1
 - Two aspects of social media are present = 2
-

Course design

Course feature: Modules

- No modules are present = 0
 - No modules are present, but alternative course design makes navigation simple = 1
 - Structure requires students to go to three or more modules in a given time period = 2
 - Structure require students to go to 2 or fewer modules in a given time period = 3
-

Course feature: Overall clarity and simplicity

- Course navigation is confusing, not intuitive, requires outside guidance = 0
- Course navigation is complex, but understandable with effort = 1

Course navigation is complex but clear = 2

Course navigation is clear and easily navigated = 3

Course navigation is clear, easy to navigate and intuitive = 4

Course feature: Overall interest and appeal

Course overall appearance is dull (unenhanced), text only, no items of interest = 0

Course overall appearance may be interesting but confusing or chaotic = 1

Course overall appearance is dull (unenhanced) but clear = 2

Course overall appearance is interesting and clear = 3

Course overall appearance is interesting, inviting and clear = 4

APPENDIX B

Online Student Engagement Survey and Scale

1. Making sure to study on a regular basis (Skills subscale)
2. Putting forth effort (Emotional subscale)
3. Staying up on the readings (Skills subscale)
4. Looking over class notes between getting online to make sure I understand the material (Skills subscale)
5. Being organized (Skills subscale)
6. Taking good notes over readings, PowerPoints, or video lectures (Skills subscale)
7. Listening/reading carefully (Skills subscale)
8. Finding ways to make the course material relevant to my life (Emotional subscale)
9. Applying course material to my life (Emotional subscale)
10. Finding ways to make the course interesting to me (Emotional subscale)
11. Really desiring to learn the material (Emotional subscale)
12. Having fun in online chats, discussions or via email with the instructor or other students (Participation subscale)
13. Participating actively in small-group discussion forums (Participation subscale)
14. Helping fellow students (Participation subscale)
15. Getting a good grade (Performance subscale)
16. Doing well on the tests/quizzes (Performance subscale)
17. Engaging in conversations online (chat, discussions, email) (Participation subscale)
18. Posting in the discussion forum regularly (Participation subscale)
19. Getting to know other students in the class (Participation Subscale)

APPENDIX C

Questions on Student Characteristics and Instructor Responsiveness included with the Survey of Online Student Engagement

Counting this class, and ALL online classes I've taken ANYWHERE, I have taken

- 1 = one online class (this was my first one)
- 2 = two online classes
- 3 = three online classes
- 4 = four online classes
- 5 = five or more online classes

(Muilenburg & Berge, 2005),

Counting this class, I have taken _____ online classes at (THIS)
COLLEGE.

- 1 = one online class (this was my first one)
- 2 = two online classes
- 3 = three online classes
- 4 = four or more online classes

(Muilenburg & Berge, 2005),

Please choose the answer that BEST describes how you feel about online
classes.

- 0 = I hate them and avoid them whenever possible
- 1 = I wouldn't choose them if I had a choice
- 2 = I neither avoid nor seek them
- 3 = I take them when they work best for my schedule
- 4 = I prefer them and choose them first when possible

(Hammond, 2006)

How old are you?

- 1 = under 18
- 2 = 18-24
- 3 = 25-29
- 4 = 30-39
- 5 = 40 and up

(CCCCO, 2011, Distance Education Study),

With which ethnicity do you most closely identify?

Although responses were initially assigned a numeric value, each variable was recoded into its own category, with a 1 indicating membership and a 0 indicating not.

Asian/Pacific Islander

Black

Filipino

Latino/Chicano/Hispanic

Native American

White

(CCCCO, 2011, Distance Education Study),

While you were taking this online class, what would you estimate was your GPA?

0 = Less than 2.0

1 = 2.1 - 2.9

2 = 3.0 - 3.5

3 = 3.6 - 3.9

4 = 4.0

While you were taking this online class, how many units were you taking?

1 = 3 units (this was my only class)

2 = 4-8 units

3 = 9-12 units

4 = 13-15 units

5 = 16 or more units

(Fazioli, 2009; Muilenburg & Berge, 2005; Nash, 2005)

While you were taking this online class, about how many hours did you work outside the home?

0 = 0 hours per week

1 = less than 10 hours per week

2 = 10-20 hours per week

3 = 21-30 hours per week

4 = 31-40 hours per week

5 = more than 40 hours per week

(Fazioli, 2009; Muilenburg & Berge, 2005; Nash, 2005)

While you were taking this online class, what, if any, were your responsibilities as a primary caregiver?

0 = No caregiver responsibilities

1 = Primary caregiver for a child/children under 5 years old

2 = Primary caregiver for a child/children 6 - 12 years old

3 = Primary caregiver for a teenaged child/children

4 = Primary caregiver for ill or elderly parents or others

(Fazioli, 2009; Muilenburg & Berge, 2005; Nash, 2005).

What is your highest educational goal?

1 = To complete some classes

2 = To complete a certificate

3 = To complete an A.A. or A.S. degree

4 = To complete a B.A. or B.S. degree

5 = To complete a master's degree

6 = To complete a doctoral degree

(Astin, 1985, 1999; Chickering & Gamson, 1987; Tinto, 2007)

In addition, survey respondents answered questions on the promptness and depth of instructor responses (Chickering & Gamson, 1987; Thurmond & Wambach, 2004). These questions could not be answered with the Course Feature Inventory due to privacy and access limitations.

On average, the instructor's response time to QUESTIONS was

0 = I don't know as I never asked any questions or never received an answer

1 = Slow, more than a week

2 = Fairly slow, about 3-7 days

3 = Fairly quick, within 48 hours

4 = Quick, within 24 hours

On average, the AMOUNT of feedback from the instructor on assigned work was

0 = none, just grades

1 = just a few words

2 = brief, but some substance or detail

3 = pretty substantive and detailed

4 = extensive, substantive and detailed

On average, instructor response time for feedback on ASSIGNED WORK

was

0 = there was no feedback

1 = slow

2 = average

3 = pretty prompt

4 = prompt