

Teaching First-Year University Students in the Second Millennium – Part 1

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The Building Construction (BC) Department at Virginia Tech is in its second year of implementing a First-Year-Student Experience as part of the University's Quality Enhancement Plan (QEP). The purpose of The University initiative is to actualize first year student's critical thinking processes by incorporating problem-solving, inquiry, and integration into their academic curriculums. The BC Department has engaged in relationships with other groups within the University to support student assignments in deliberate actualizations of their academic and career goals. This paper identifies entering first-year university student's academic characteristics and proposes a strategy to engage the students in learning academic content and also how to navigate academia with the intent to pursue lifelong learning.

Key Words: Construction Education, First Year Experience, Freshman Learning Communities

Introduction

This is a concept paper directed at presenting a teaching/learning strategy aimed at enhancing the academic experience and the opportunities for success of incoming first-year university students who have never lived without a commercial version of the World Wide Web (WWW). This teaching/learning strategy of WWW engagement is a direct outgrowth of two previous activities, 1) university funding to support one component its Quality Enhancement Plan (QEP) by providing incoming first-year students with a dedicated enhanced first year experience (FYE) aimed at academic success and life-long learning as a Pathway to Success, and 2) a continuation of the integration of the FYE within Virginia Tech's Department of Building Construction's introductory construction courses. There are three fundamental 'quests' that constitute the Pathway to Success strategy. These are Problem Solving, Inquiry, and the Integration of Learning. It is this environment of Inquiry, Problem-solving and Integration of Learning that the concept of reversing the classroom through access to the WWW as an engagement mechanism for first year students.

Context

Today's first year students were born in 1994, the same year the Internet was commercialized and became the WWW. In 1993 the NSFNET completed its Internet backbone research and development efforts by the European Organization for Nuclear Research (CERN) allowed anyone to use web protocol and web computer code royalty free. At the beginning of 1994 there were an estimated 623 web servers located and serving predominantly government installations, research centers and Universities (Stewart 2011, W3C, 2012). This generation students who are entering their first year at the university have never lived without the Internet and a commercial World Wide Web.

In 1994, just as the WWW was commercialized, most if not all university courses were taught by Professors using paper-based textbooks, chalkboards, overhead projectors and handouts. In 2012 it is unusual to find a classroom that doesn't have digital projection capability or Internet access to the World Wide Web. Thus prior to the advent of the WWW academic content was typically limited to what was captured within several hundred to a thousand pages of text, with notes presented thru overhead projection systems and chalkboard diagraming. Examining a study done at the University of Colorado Boulder (2011) one might surmise that approximately 53% of today's University students upon entering the classroom having instantaneous access, through their smartphones, to over 500 million web sites with an estimate one-trillion pages of content (Netcraft 2011, W3C, 2012).

Society has come a long way in its access to information and it has created both opportunity and risks within the classroom. Not only do students have greater and quicker access to information they appear to have achieved higher grades and are studying less. It is within this environment that a student's first-year experience becomes critical. Teaching must respond to this dynamic or student engagement will be quickly lost. Some students go so far as to say "Why do I need to learn this when I can Google it?" and thus instantaneously have access to multiple real-time information (knowledge) sources." What is becoming more apparent in 2012 is the capability of our students to manage instantaneous access to real time information and the need for the University and the faculty to teach information literacy and integrate this into the student's experience. The challenge in teaching to Second Millennium students who have never lived outside the presence of the World Wide Web is how to reverse the classroom by allowing the student the opportunity to use their skills and tools to self-discover in a guided and competent manner. From this perspective the BC Department at Virginia Tech has embarked on a revision to its FYE program to engage the Second Millennium First Year student.

Second Millennium First Year Students

Background Literature Review

Research shows that transitioning from High School to the University has a physical and mental effect on these students and their academic career. Several phenomena occur with first-year students; 1) there is a basic misalignment with perceptions of expectations and reality resulting in a high attrition rate between first and second year, appearing to hover around 30% of entering students; 2) physical inactivity due to increases in studying and staring at computers occurs, resulting in less sleep time, increased weight gain and increases in alcohol and binge drinking (Barefoot, 2008, Horn, and Nevill, 2006, Hoffman 2006, Del Boca, et al 2004). The University and its Faculty are not de-facto parents and cannot control how the first year students adjust to this major life transitions.

Several studies indicate that students are entering the University at levels of mixed preparedness. According to Prancer (2004) first year students can be placed in one of four clusters, 1) optimistic, 2) prepared, 3) fearful or 4) complacent with those students that enter prepared enjoying the greatest levels of continued success. Other studies indicate that students are not only entering the University with little understanding of what preparations are needed but they also have not developed the reading and analytic skills that are demanded of them in the university (Erickson and Strommer 1991, Jolliffe, and Harl 2008).

Results from a recent survey by Arum and Roska (2011) of over 2300 university students at 26 institutions reveals a discouraging deficiency in how we prepare and ultimately graduate our students, many without critical thinking skills.

- During their first 2 years of college 45% of students demonstrate no significant improvement in a range of skills including critical thinking, complex reasoning and writing.
- With over four years of college 36 % of students did not demonstrate any significant improvement in learning.

The above seems to be an indictment of how university courses (or professors) are unable to engage students or of how these students lack preparedness directed at attaining critical thinking skills. The evidence that entering students are underprepared, lack critical thinking skills on entry and make little improvement as they exit the university is of high concern when recent research within individual construction management programs reveals that commonly needed personal competencies mentioned in by alumni were time management, conflict management and initiating change (Lee et al 2011). Bernhold (2007) has documented with incoming freshman that over 60% of students surveyed lacked the necessary learning and studying strategies of attitude, time management, and study aids to make a successful transition from High School to University. Research by Hauck (1996) confirmed the importance of problem solving and decision making as the key "duty" which is vital to professional constructors. Additionally, the ACCE states that: "Construction is concerned with people and their relationships. Thus, their ability to communicate, both orally and in writing, and the understanding of human behavior are essential assets to the constructor." (ACCE eff. 2012)

A critical insight into the above concerns can only lead to the conclusion that the transition from high school to the university is critical in securing a solid foundation to build a successful academic career and a subsequent professional career. Virginia Tech describes the University's initiative as directed at enhancing student experiences. From this basis the BC First Year Experience (FYE) at Virginia Tech is continuing its development with the intent to further engage the student to read, reflect and act in accordance with the higher University goal of developing student engagement toward lifelong learning. This effort within the BC FYE is focused on causing the students to 1) think about doing, 2) do what they are thinking about, and 3) reflect upon their thinking and doing. Feedback from the first year of the FYE learning experience is being used in the second year to redirect certain activities and rework the FYE strategies.

Who are These New Millennium First Year Students?

The new engagement strategy was precipitated by first gathering and reviewing the academic backgrounds of incoming first year students. Table 1 was compiled to provide a snapshot of the first-year US university student using a selective sample of student achievement, preparations and expectations. The dataset quickly reveals that nationally only 4% of the incoming 2012 student class has less than a B average. A sample taken from the incoming first year class of the BC Department at Virginia Tech reveals that 70% of the incoming class is entering with an A average and an overall class grade point average of 3.6 out of a 4.0 and an SAT of 1250. On the surface this leads one to believe that the entering first year students are high achievers and should succeed at the University.

A further look at Table 1 reveals several concerns that could lead to student failure if not addressed early on either by a student's self-directed guidance or through the primary first year faculty's intervention. One critical area is homework or study time and another being frequently bored in class. Commonly the University proposes and at Virginia Tech states that a student should expect as a rule of thumb to allow for one to two hours preparation time for every one hour spent in class. Using this average a full-time student taking 15 credit hours should be devoting between 15-30 hours per week to preparing for class, studying, reading, writing and doing homework. However, one can see from entering student's practices that 61% are spending less than 6 hours/week studying, doing homework or preparing for class. Follow that up with a 2005 study taken by about 130,000 first-year students and a similar number of seniors from 523 colleges and universities, 66 percent of first-year students and 64 percent of seniors at all participating colleges and universities reported spending fewer than sixteen hours during a typical seven-day week preparing for class and the chance of success can become dimmer (Jolliffe, and Harl (2008). Couple this with the data that over one-third (36%) of the entering class is probably bored and thus disengaged during any given class session puts a serious burden on the faculty to engage the student both in and out of the classroom.

Table 1 – Select statistical data of first year students in US Universities (Pryor, et al, 2011)

National Average SAT	1010
A Average in high school	49%
C Average in high school	4%
< 6 hours/week of homework study	61%
< 1 hour of homework yesterday	68%
< 10 page of school reading daily	53%
< 2 hours/week reading for pleasure	76%
> 3 hours/week watch TV/Video	50%
> 3 hours/week engaged with social media	53%
Frequently bored in class	36%
Believe in a very good chance they will make at least a "B" average	68%

A quick assessment of the entering first year student population is a group of students that have demonstrated high achievements (grades) in high school by reading less 10 pages daily, is frequently bored in class and believes at least a B average can be earned by studying less than six hours/week for all their courses combined. The moment the first C comes along the student becomes devastated and is at a loss in figuring out how to rectify the situation. This may be after a mid-term examination and now the chances of success darken and a sense of loss and bewilderment take over. Thus issues such as time management and study skills become important and the discipline needed to pursue

these adjustments can be lacking and this is where a proactive First Year Experience can be supportive and act as an intervention to right the student's ship.

Course Developmental Strategy

FYE Revisited

In 2011 the BC FYE program at Virginia Tech proceeded to incorporate the FYE exercises as part of the Introduction Construction course with the intent to integrate the teaching of information literacy and critical thinking to first year undergraduate students by incorporating learning within the context of the students' daily lives. The intent was to use a reflective learning approach in the FYE program that draws from a number of learning theories, including constructivism, action learning, experiential learning and practice (Mills. 2012). The 2012 FYE used the previous year's approach as the fundamental basis but started fresh with the intent to fix the weaknesses and improve on the basic strategy of problem solving, inquiry and the integration of learning. Fundamentally the new strategy is to institutionalize the FYE by 1) balancing the FYE and academic content among two semesters, 2) create a refined student experience, and 3) enhance the academic program and individual student growth.

New Millennium FYE Approach

To kick-off a successful First-Year Experience the University conducted a 4-day intensive workshop know as Camp QEP to assist faculty aimed at developing unique strategies to achieve a quality FYE. This workshop featured multiple presentations on pedagogy and instructional strategies for teaching and learning through University's Center for Instructional Development and Educational Research (CIDER). During the workshop various strategies, including 3-minute Standing Conversations, Think-Pair-Share-(Square), 25-Word Summaries and others were introduced and woven into the workshop. From these live interactive demonstrations new insights into engaging students was generated. Planning was done during the workshop to approach course development from a three 'P's' (3P) perspective, that being a 'Precursor', 'Purpose' and 'Process' basis, with one of the purposes being alignment with the University Quality Enhancement Plan (QEP). These three categories can also be characterized as Assessments (need, learner, context, and content), Outcomes (Student learning, QEP and Assessment) and Processes (social, cognitive, behavioral and instructional).

A qualitative strategy guide for course development was initiated using the 3P template. There was initial pushback in working through the Need Assessment. This resulted in an articulation of the fundamental question regarding the need for academic instruction with a FYE course component. Is it academic content first and FYE second or the other way around? To answer this question of balance required backing away from the traditional reliance on the perceived need for students to learn basic academic content to a position of stressing the gap between what is and what should be. Once this initial hurdle was cleared the development of the final 3P strategy proceeded reasonably well. Thus the resultant Need Assessment yielded four priorities to be furthered in Assessments, Outcomes and Processes. These four priority needs for the BC FYE are 1) Mastery of construction industry fundamentals, 2) Self-awareness, 3) Academic success and 4) Lifelong success. As the FYE is a two-semester long journey there is ample time to inquire and explore each need, abstract various problem solving strategies within these areas and have time to reflect upon one's self growth within these domains.

Discussion and Response

The balance of the paper will look at four fundamental teaching/learning needs and a proposed pedagogical strategy to meet those needs. Based on having taught first-year classes for a considerable time there are several observations that become apparent, 1) students are not inclined to read as one might expect, 2) attendance is typically not an issue except for one or two students and 3) first-year students don't seem to be as distracted (by their computers) as seniors. The concern of how to engage the students in reading more resulted in research on how and what students read. Students are reading, they are just not reading the academic materials being presented to them. In a study by Jolliffe, and Harl (2008) of twenty-one randomly selected full-time paid freshmen participants from a volunteer pool of about one hundred students it was discovered that first-year student reading generally follows a common pattern.

By understanding first year student reading behaviors it may be useful in developing future classroom assignments that work toward engaging the students both in and out of class. Thus the study revealed the following reading behaviors.

- Students spent almost 3 hours/day reading all types of material, academic and nonacademic.
- All of the students spent time reading online documents.
- A substantial majority of them read their Facebook sites almost daily, sometimes for extended periods.
- Most of them read while doing something else: listening to music, checking emails and sending instant messages, or watching television.

According to Hawisher et al (2004), faculty members could enhance student learning through better engagement with reading by incorporating assignments that achieved two primary goals:

- Provide students with opportunities to interact with electronic hyperlinked texts.
- Engage student readers through reflection in electronic public spheres.

The FYE strategy currently being implemented relies heavily on blogs as a mechanism to engage the student in writing, reading and reflecting. All of which are interactive techniques that research has shown as being helpful in creating critical thinking and from that subsequent academic and career success.

Mastery of construction fundamentals within the construction industry

The critical aspects of mastering construction fundamentals were to develop content specific skills that a student could use in the context of the field or office and prepare them for a successful internship. The skills were simplified to content based communication and problem solving skills and involve career development, plan reading, and proper use of construction vocabulary, constructor ethics, sketching and Building Information Modeling (BIM). Instructional activities and assignments focus on text readings with quizzes and tests to assess reading and content knowledge, blogs based on integrating thoughts and reflect by writing on ethics and beliefs with the incorporation of the University Common Book, This I Believe II, and a content specific FYE book, Good Guys, Wise Guys and Putting up Buildings: A Life in Construction by Samuel C. Florman. The weekly blog is organized on a three part reflection strategy, What, So What and Now What and must address linkages between the student, a chapter in the Good Guys book and a reading of their choice from the This I Believe II book.

Self-Awareness

Self-awareness occurs over time and is built upon a beliefs system, coupled with maturity and experience. The context of this learning is to enable students to express themselves in writing and to articulate personal qualities and an awareness of individual strengths within a personal interview. This is being developed through a Strengths Assessment and then an inquiry into how these strengths can interface with various University resources, in resume development, with interviewing skills at the departmental construction career fairs and student directed Community Service projects. Assignments beyond the Strengths Quest Assessment and self-reflection that support growth in self-awareness are the development of resumes at one-year and 10-years. The development of a resume at 10-year career point requires research on career positions; an assessment of interests and strengths and what scaffolding needs to be built to achieve the proposed positions.

Academic Success

Academic success is tiered at four levels that student's can build as a scaffold for their academic career. The base level of academic success is to navigate toward a successful conclusion of their FYE course, followed by acquiring their undergraduate degree, the potential for a graduate degree, and identifying available campus resources that support student academic success. These achievements are reached through self-motivation, general literacy, problem solving while maintaining realistic expectations and being prepared to meet those expectations. A discriminating understanding of the distinctions between information and knowledge is paramount for academic and lifelong successes. Only by developing critical thinking skills can this be achieved. As a result problem-solving strategies must be introduced that foster inquiry and reflections, the hallmarks of the FYE. The fundamental social, cognitive and behavioral processing that a student must be engaged in to develop these skills and attitudes is

preparation, presentation, oral communications and social interaction. Assignments are generated around academic advising, academic planning, research inquires and presentation about on-campus academic resources and how each through self-awareness can help students navigate the University.

Life Long Success

The need assessment for life long success is that graduates need to be prepared for society beyond their academic careers and this requires self-awareness, experience, maturity and an appreciation for culture. The context is future plans that can help the student begin that journey. Therefore self-reflective activities are essential for this to take hold and blossom, thus the activities are both short and long term. The fundamental social, cognitive and behavioral processing that a student must be engaged in to develop these skills and attitudes is oral communications, risk-facing, acknowledgement and self-reflection. The assignments that are being generated to support this involve the interview process with recruiting professionals at the career fairs and the blog postings.

Conclusions

The AACU (2002) notes 'a college degree has in many ways become what a high school diploma became 100 years ago - the path to a successful career and to knowledgeable citizenship.' Today's New Millennium student is different than any previous generation of students. The preceding components of this paper recognize a unique student that has always been exposed to the WWW and enters the classroom with instant access to more information than is contained in a 1000 textbooks.

The world has become smaller; information and to many people knowledge is instantly at their fingertips. While faculty will embrace new pedagogical approaches the data indicates that we are losing student engagement and without some fundamental interventions by creative faculty an increased number of bored New Millennium students will arrive in the classroom and the frequently bored students will soon exceed the current 36% level. How this intervention can be done through the FYE is a challenge but is achievable. An upcoming companion paper will explore how different literacies can be woven into FYE courses to allow students to separate information from knowledge and assist them in generating problem solving, inquiry and integration skills. Thus a journey of a thousand textbooks starts with a single click.

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