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An Exploratory Study on CM Syllabi Components

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The course syllabus is a staple document in virtually every higher education classroom. Studies suggest that given appropriate attention to contents, the syllabus has opportunity to elevate student engagement and performance in a class. However, research on syllabi components in construction management (CM) is minimal to date. This paper presents an introductory exploration into the inclusion of syllabi components within CM that informed a larger body of research currently ongoing. Course syllabi from 34, 4-year CM programs were evaluated for the presence of 26 specific components. These results were compared to a previous study of 350 syllabi in higher education and current recommended practice by selected teaching and learning centers to determine the areas where CM syllabi exceed or fall short of other disciplines. CM syllabi exceeded other disciplines within higher education in most categories. Details related to course assignments, instructor contact information, events specific to CM, and motivation of learning tactics were the key areas where CM syllabi had potential to enhance educational effectiveness within the CM discipline.

Key Words: Construction Education, Syllabus, Policy, Grading

Introduction

In recent years, CM education has experienced new commitments to the student experience and learning. Recent trends and shifts have led to enhanced expectations in the classroom. The American Council of Construction Education's (ACCE's) shift to student learning outcomes has focused the educational experience on the skills and knowledge the student is expected to gain in CM than ever before, and industry is fully engaged in creating meaningful internships. Renewed focus has been placed on creating a positive experience for underrepresented populations. And, a focus on active learning in the construction classroom through experiences like service learning, lab experiences, and competition teams have been a focus. As an instructor in this environment where learning and development is a priority, one has the opportunity to consider the student's educational needs, interests, and purposes as one begins to develop the curriculum of a given class.

The syllabus is often the first item distributed in most CM classes and perhaps the first opportunity to address educational needs, interest, and purpose. Studies indicate most faculty embrace the importance of the syllabus as it sets policy and expectations. However, there are differences in the areas of what a syllabus should do and how it should be used. Some syllabi are extremely detailed and uniform; others may be inconsistent and serve multiple purposes and audiences. Beyond the required

information, an opportunity exists for instructors to use the syllabus as a learning tool that can reinforce the “intentions, roles, attitudes, and strategies” used to “promote active purposeful, effective learning” (Grunert, 1997, p. 3). Purposeful development of a syllabus with focus on these elements has been shown to improve student performance. However, syllabi can lack the components necessary to achieve this. While the use of learning management systems has been suggested as one tool to help remedy this issue, literature on them indicates otherwise (Jaschik & Lederman, 2014; Kasim & Khalid, 2016). Research exists on syllabi in higher education. However, the published research to date on the components of CM syllabi is limited (.....).

This study served as the introductory work that was part of a larger research endeavor to further understanding about the constructs of CM syllabi. Frequencies of CM syllabi components were evaluated against other areas of higher education in an effort to determine differences that may exist, as well as highlight common areas of occurrence. Furthering this area of knowledge provides opportunity to improve understanding about the strengths and weaknesses in CM higher education and serve to advance educational effectiveness of the discipline. This exploratory study provides a basis for additional research on syllabi elements in connection with student expectations and learning.

Literature Review

Syllabi can serve a variety of functions in an effort to support and challenge students. Parkes and Harris (2002) stated the basic purposes more succinctly as a contract, a permanent record, and a resource for student learning. They argued that the student has an opportunity to determine if they wish to remain in the course, schedule their time, and review their progress along the way in the class. The permanent record aspect of the syllabus protects the instructor, university, and students (Habaneck, 2005). Often used in accreditation, the permanent record also allows reviewers to examine a course within the curriculum (Slattery & Carlson, 2005). Davis (2009) suggests a comprehensive course syllabus should include twelve basic elements:

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|-----------------------------|-------------------------------|---------------------------------------|
| 1. Basic course information | 6. Course Schedule | 10. Rights and Responsibilities |
| 2. Course Description | 7. Student Resources | 11. Safety and Emergency Preparedness |
| 3. Course Materials | 8. Statement on Accommodation | 12. Instructor Disclaimer |
| 4. Requirements | 9. Assessment of learning | |
| 5. Policies | | |

Parkes and Harris also argue that the syllabus is an effective tool for students to develop skills to be self-regulated learners when the proper components are included (2002). Other items in syllabi may be used to enhance learning in the class by addressing the logic/ organization of the class, identifying instructional priorities, and providing a blueprint for the learning in the class (Grunert, 1997). Some researchers have noted that the syllabus not only informs students about the course but also conveys the personality of the instructor, creates a first impression of the instructor and his/her attitudes toward teaching (Harnish & Bridges, 2011; McKeachie, 1986). Bain (2004) introduced the promising syllabus which focused on ‘beyond the classroom’ learning. Such an approach shifts the course from “instructor focused” to “learner focused” and considers three primary components. These components are “What this course promises you.”; “How will you fulfil these promises?”; and “Here begins a conversation about how the teacher and student will best come to understand the nature and progress of the student’s learning”. Similarly, a recent study on psychology syllabi suggested that learner-centered syllabi emphasize elements of community, student autonomy, and clear evaluation/assessment procedures toward identified learning outcomes (Richmond, Morgan, Slattery, Mitchell, & Cooper, 2019). Cullen and Harris (2009) describe these three categories as “community”,

“power and control”, and “evaluation/assessment” in their syllabus evaluation rubric. Grunert (1997, pp. 14–19) identified sixteen functions of a syllabus that help support increased student engagement:

- | | |
|--|---|
| 1. Establishes an early point of contact and connection between student and instructor | 9. Sets the course in a broader context for learning |
| 2. Helps set the tone for the course | 10. Provides a conceptual framework |
| 3. Describes instructor’s beliefs about educational purposes | 11. Describes available learning resources |
| 4. Acquaints students with the logistics | 12. Communicates the role of technology |
| 5. Contains collected handouts | 13. Can expand to provide difficult to obtain reading materials |
| 6. Defines student responsibilities for successful course work | 14. Can improve the effectiveness of note taking |
| 7. Describes active learning | 15. Can include material that supports learning outside the classroom |
| 8. Helps students to assess their readiness | 16. Can serve as a learning contract |

Multiple studies agree that syllabi focused on the learner (learner-centered) yield higher student evaluations of instructor, course, and syllabus and sets the stage for a high level of learning within the classroom (Harnish & Bridges, 2011; Richmond, Slattery, Morgan, Mitchell, & Becknell, 2016). One study indicates the most important syllabus components included assignment information, grading information, attendance information, and instructor contact information (Garavalia, Hummel, Wiley, & Huitt, 1999). Another study identified assignment, grading, attendance information, and required work as items students focused on when reviewing a syllabus (Becker & Calhoun, 1999). Other studies indicate students were more engaged in a class if the syllabus promoted: student involvement in creating course policies (DiClementi & Handelsman, 2005), greater detail about course assignment and grading requirements (Saville, Zinn, Brown, & Marchuk, 2010), and demonstrating concern for student learning (Richmond et al., 2016). As compared to students, instructors indicated the most essential elements of the syllabus to include “communication mechanism”, “course plan for students”, a “contract” and a “planning tool for the instructor” – components more (Fink, 2012). These cited differences in teacher-centered vs. student-centered syllabi are summarized in Table 1.

Table 1

Summary of Teacher-Centered vs. Student-Centered Syllabus

Syllabus Element	Teacher-Centered	Student-Centered
Professor Information (Name, contact info, office hours)	Transmitted from instructor with limited options	Multiple options with student input
Course Information (Description, location, texts, topics, course calendar)	Emphasizes teacher as leader/authority with syllabus as planning tool for instructor	Presents teacher as facilitator/partner in learning with detailed assignment information
Grading Information (policy, scale, assignments)	Focus on grades and punishment	Ongoing feedback with multiple assessment approaches focused on curiosity, student autonomy, community
Policy Information (attendance, late work, honor code, disability)	Fosters competitive, individualistic approach	Fosters collaborative, supportive environment

The research suggests that if course syllabi were constructed to be more learner-centered instead of teacher-centered, this could positively influence student’s attitudes towards the class and instructor which promote increased motivation. Understanding more about the typical constructs of CM syllabi could provide insight about potential opportunities to enhance learning within the discipline. The information presented in this paper, which is part of a larger research study, looks at the components included in a small sample of CM syllabi.

Method

The study was delimited to a sample population of baccalaureate CM programs accredited by the American Council for Construction Education (ACCE). ACCE includes an accessible population of 76 schools. Syllabi were selected on a per school basis since ACCE’s accreditation standardizes some of the syllabi elements including areas of objectives, content, resources, and grading information (*Document 102B: Preparation of the Self-Evaluation Study Bachelor’s Degree*, 2019). Based on this understanding, the researchers used the assumption – recognizing this is a limitation – that one syllabus collected from a program would provide a representative sample for that entire program. To achieve results generalizable to the population, a sample size of 36 syllabi was determined using a $p=.10$, and a 90% confidence interval.

A total of 34 syllabi from different construction programs across the U.S. were collected and evaluated (Table 2). Syllabi were collected from open-access portals including the Associated Schools of Construction – Construction Expertise Exchange hosted by Procore (10 syllabi), university websites (3 syllabi) and faculty solicitation (21 syllabi). Only syllabi from face-to-face classes were included. Since only 34 syllabi were collected, the study is just short of the required 36 to provide a sample at a statistically significance level $p=.10$, $CI=90\%$.

Table 2

Descriptive Statistics of Construction Program Syllabi Evaluated

US Region		College		Course Type		Syllabus Term	
Northeast	2	Architecture & Design	7	Precon/PM	10	Not Indicated	7
Midwest	10	Engineering & Technology	20	Estimating / Scheduling	8	Spring 2018	1
Southeast	6	Business	2	VDC/Tech	1	Fall 2018	4
Southwest	6	Other	5	Fundamentals	12	Spring 2019	12
Northwest	10			Law/Pro Practice	3	Fall 2019	10

Note: “Fundamentals” includes structures, safety, materials & methods, MEP systems, and documents.

Each of the 34 syllabi were visually evaluated based on the 26 components reported by Doolittle and Siudzinski (2010). Recognizing the age of the Doolittle study, syllabi were also evaluated based on component recommendations for syllabi published by six teaching and learning centers that operate at schools in the top 35 US universities as defined by *US News & World Report* (2019). Syllabi

components included four broad categories: professor information, course information, grading information, and policy information. The researchers independently conducted visual evaluation of each syllabus for inclusion or absence of noted components and recorded their findings in an excel spreadsheet. Their individual findings were then combined into a single spreadsheet for final analysis. No attempt was made to evaluate the efficacy or quality of the syllabus components.

Syllabi were evaluated using what was printed on the syllabus only and did not include additional details that may have been included in an accompanying learning management system such as Canvas or Blackboard. Of the syllabi studied, 17 had notes in the syllabi that referenced some type of learning management system that supported the class. The authors recognize that additional detail included in any learning management system could alter the results of this study. However, literature on the most common uses of learning management systems (LMS) indicates faculty use them as a repository for course documents – including syllabi (Jaschik & Lederman, 2014) and as a communication tool for course announcements and discussions (Kasim & Khalid, 2016). The majority of faculty do not take advantage of the more advanced elements of an LMS to improve course learning outcomes (Dahlstrom, Brooks, & Bichsel, 2014).

Results

Results were obtained for each of the three research questions: 1) What syllabus components are included by CM faculty members within their syllabi? 2) What syllabus components are often omitted from CM syllabi? 3) What differences, if any exists, between syllabi in other disciplines and CM syllabi?

Comparison of 26 Components as Identified by Doolittle and Siudzinski

Results indicate that CM syllabi have a higher overall inclusion rate when compared to the higher education syllabi study (Figure 1). However, CM syllabi have a decreasing trend similar to that of the higher education study.

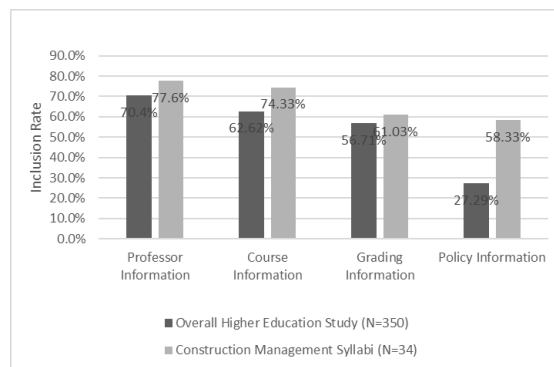


Figure 1. Syllabus Inclusion Rates by Syllabus Category

Components of syllabi are shown in Table 3. Three of the five most frequently occurring items occurred in both overall higher education and CM syllabi.

Table 3

Components Included in Higher Education Syllabi

Category	Frequency in Overall Higher Education Study (N=350)	Frequency in CM Syllabi (N=34)	Rank in Overall Higher Education Study	Rank in CM Syllabi
Professor Information				
Professor Name	303	30	4	8
Office Location	231	29	9	10
Office Hours	210	19	12	19
Office Phone	240	24	8	14
Professor e-mail	248	30	7	8
Course Information				
Course Name	335	34	1	1
Course Number	327	34	2	1
Course Description	222	32	10	6
Course Location	141	23	20	16
Course Time	173	22	16	17
Course Goals/Objectives	214	33	11	3
Course Required Texts	312	31	3	7
Course Supplemental Readings	62	11	25	23
Course Topics	260	24	6	14
Course Calendar	209	22	13	17
Course Due Dates	156	12	18	22
Grading Information				
Grading Policy	283	33	5	3
Grading Scale	162	28	17	11
Assignment Names	204	15	14	20
Assignment Description	145	7	19	26
Policy Information				
Attendance Policy	194	26	15	12
Late Work Policy	88	15	22	20
Missed Work Policy	70	11	24	23
Honor Code Policy	122	33	21	3
Disability Policy	83	26	23	12
Student Support Services	16	8	26	25

On the basis of student benefit, both studies indicate strong performance in the area of instructor accessibility, with the weakest areas being in policies on missed and late work. Information inclusion

related to course assignments and grading had a broad range for inclusion rank. The box plot in figure 2 illustrates the spread of inclusion rank for the assignment and grading information.

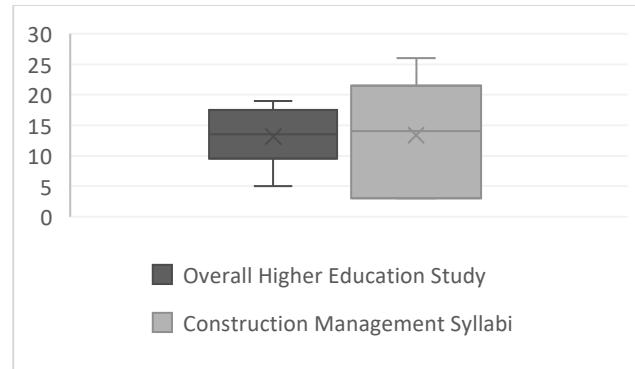


Figure 2. Syllabi inclusion ranking for assignment and grading information

Comparison of Syllabi Recommendations from Teaching and Learning Centers

Teaching and learning centers were considered at the following campuses: Cornell University, Princeton University, University of California-Berkley, University of Florida, University of Michigan, and Vanderbilt University. Results indicate a wider variation in syllabi requirements. While the topics included by those learning centers do not match exactly those used in the study by Doolittle and Siudzinski, all of the recommendations include detailed faculty information and schedule of assignments. In addition, three of the centers studied, commonly noted three items: instructor methods, prerequisites, and course websites.

Analysis and Conclusions

This study evaluated components of CM syllabi in comparison to other higher education disciplines and previous studies identifying syllabus elements beneficial to student learning. Overall, CM syllabi were shown to be more inclusive in the four major areas of professor information, course information, grading information, and policy information than the comparative 2007 study. However, the CM syllabi could be improved in the area of assessment information, and procedures supporting a student-centered learning approach. The results suggest that syllabi in the CM discipline do a better job of providing information important to influencing student engagement and enthusiasm in a course as compared to higher education in general. However, opportunities may exist to further elevate student interest and engagement by employing the recommendations listed in table 4 below.

The authors acknowledge that the results and subsequent conclusions are not without limitation. First, this study compared CM syllabi against results from a 2010 study. Recognizing that this study is nearly 10-years old, it is conceivable that syllabi components from other higher education sectors have changed since then. An attempt to temper this issue has been made by including current recommended syllabi practices from high ranking US institutions. Such inclusions suggest that developing opportunities for syllabi are in the area of student-centered learning, and further research is needed in this area within CM. Second, the sample population for CM syllabi was delimited to ACCE accredited programs on the basis that one syllabus from a program would be representative within that program. It is possible syllabi within a single program differ by course and faculty, and this should be studied further. As well, this study did not evaluate how the incorporation of learning

management systems may affect results. Other opportunities include evaluating the components of a syllabus valued by CM students and faculty. Despite the identified limitations, the study provides thought provoking information about possible strengths and weaknesses in CM higher education syllabi, and serves to advance educational effectiveness of the discipline.

Table 4

Overall Conclusions from Exploratory Study of Syllabi

CM Result	Relative to Doolittle Study	Relative to Teaching and Learning Center Recommendations	Relative to Student-Centered Syllabi	Recommendation
Relatively low in assignment related information	Overall HE had frequency in middle third; CM had frequency in bottom third.	All recommended full schedule of assignments	Inclusion of assignment details promote student freedom and clear evaluation procedures toward learning	Increase assignment details in syllabi including actual assignment, due date, and grading rubrics
Strong in instructor access/contact options, course goals/objective, and grading policy	Overall HE had all of these areas in top third; CM had contact options in top half and goals/objectives/grading policy in top quartile	All had some focus on contact options; Goals/objectives and grading policy were addressed or alluded to in most recommendations.	All are items important in student-centered environment Adds focus on class websites and teaching assistants in process	Consider additional contact options for instructors including multiple contact modes including social media/websites
Options to expand syllabi for CM specific issues exists	Not included in 2007 study	Adds field trips and safety related items	Motivates curiosity for learning and meaningfulness of class; Builds student engagement	Find opportunities to motivate learning and build CM culture by including safety and field trips
Instructor methods	Not included in 2007 study	Adds opportunity to detail	Motivates active learning; sets expectation for rigor: helps students learn	Include details of variety of methods in which learning will occur

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