Creating a Course Classification Taxonomy Designed to Help Students Make More Informed Decisions in Course Selection

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Abstract

Traditional methods of classifying course activities and content tend to rely heavily on student satisfaction or grade performance. These methods are useful but rarely give students a sense of what to expect on while enrolled in a course. A new course classification system is proposed that will evaluate several factors proven to affect student performance. Factors investigated in this paper are percentage online versus face-to-face, individualistic or collectivist teaching styles, synchronous versus asynchronous communications, active versus passive learning, traditional or constructivist, technologies used, and instructor personality. Factors that are subjective, such as instructor clarity, “easiness” of content, and helpfulness, would not be covered in this instrument because one student’s rating of one factor may not match up with another student’s rating. The goal of this system to help students make more informed decisions on which courses to take by increasing foreknowledge of learning activities and teaching style.

Keywords: course taxonomy, course selection, instructor evaluation, student feedback

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Traditionally, college students have one official source of information about a course they want to take: the course catalog. Informal networks might give students an idea of how hard a certain instructor is rumored to be, or how strict an attendance policy is enforced, but the course description serves as the major official statement of what to expect when attempting to take any course. With the rise of technology, many instructors are posting the course syllabus online before classes start – but this information is often not available at the time of registration. Even if it were available, a course syllabus often contains detailed descriptions of course content that does not help students gain a quick assessment of what to expect from a course as far as work load or how they are expected to learn the content. How can students be expected to predict success or failure in a course without a quick and easy system to communicate to them what they expect to encounter?

Add to this confusion the various new course structures that are becoming more common at the college level. Traditionally, there were two basic course structures: lecture and laboratory. The lecture course meant that a student would sit in class, take notes, and then expect to write a paper or pass a test based on readings of the text and notes in class. The laboratory class meant that students would be in some type of hands-on environment recreating specific scenarios or experiments to learn the content in a hands-on manner. However, this simplistic structure has been changing for quite some time now.

For example, students might meet in lecture courses and then proceed to discuss content in groups. They may be asked to work on a project in the community rather than a paper. They may have hands on “laboratory” experiences one week in course and then listen to a guest

lecturer the next. Then there are online courses, which may be somewhat instructor driven, but requires that students be very self-motivated. Courses might be partially online and partially on campus. Instructors may take a student-centered approach that allows students to create their own assessments. Or one course may experiment with anything and everything possible in a course before the last meeting occurs.

Should a course description be able to communicate different factors to students than what it currently does? What if students could more accurately determine the overall load of the course for their individual needs? For example, differing activities like group work or term papers would be seen as having different "loads" to different students. Students need a way to gauge that. Or what if students could easily determine how the load of different classes combined may affect them? For example, some students might feel that four courses with group work may be too much for a semester while others may prefer that much group work. If being self-directed is seen as a major factor is certain delivery methods (such as online), would it help students to be able to quickly gauge to what extent they need to prepare to be self-directed? Questions such as this are not easily answered by current course assessment instruments.

Current instruments that assess whether or not students are ready for courses generally tend to focus on student factors such as time management, study skills, or social skills (Kumrow, 2007; Wiley, Wyatt, & Camara, 2010; Lombard, Seburn, & Conley, 2011). Other course evaluation tools focus on learning that takes place while the course is being offered or on the student's performance of tasks in the course (Benigno & Trentin, 2000; Algozzine, et al., 2010; Moyer, 2002). Neither of these methods focuses on classifying a course in order to communicate expectations before the course starts. Still other evaluation methods focus on student satisfaction factors like easiness, clarity, and content difficulty (Mashaw, 2012; Costin, Greenough, &

Menges, 1973). This method is the basis of the popular website RateMyProfessors.com. While there are supporters of this method (Marsh & Roche, 1997), these methods tend to be very subjective and limited (Hoyt & Pallett, 1999) and therefore may present factors that different students might rate differently (for example, one student's observation of "clarity" might not match up with another student's observation).

While investigating student instructional ratings in college courses, Murray, Rushton, and Paunonen (1990) found that "university teachers tend to be differentially suited to different types of courses rather than uniformly effective or ineffective in all types of courses" (p. 259). They go on to quote Gage and Berliner (1984) who stated "just as plays and movies require casting, and not every actor is suitable for every role, so teaching methods require matching with the strengths and weaknesses of the teacher" (p. 482). Unfortunately, this matching of instructors with courses will not always be possible in the university setting. What could be a possibility is allowing students to know what a course is like before they enroll, so they can get a sense of how differentially suited instructors are teaching a course even if the course isn't matched to the strengths and weaknesses of the instructor. Therefore, a new instrument is proposed that will help students better and more quickly understand what a course is like before they register for it. The goal of this new instrument will be to help students have the opportunity to make informed decisions on courses to take as well as to be better prepared for success in the courses that they end up taking. This instrument will allow instructors to rate various course factors (to be explored in the Literature Review below). These ratings will then need to be connected to a system that quickly and simply communicates the results of the instrument to students. An additional idea for further exploration would be a system of allowing students to give instructors feedback on their ratings in order to improve accuracy.

Literature Review

Much of the literature on student readiness and preparedness for learning has focused on factors such as computer technical skills, time management skills, and learning styles (Pillay, Irving, & Tones, 2007). These are all important factors, but they focus on factors intrinsic to a student's personal abilities and not on what students can expect from any certain course. Pillay, Irving, & Tones point out that even though the level of technical skills "does not seem to directly affect student achievement, they do influence student engagement with technology" (p. 219). In any type of course that engages with technology (such as an online delivery method), these engagement factors could be important for student success. But the focus would still be on how the student is ready for certain courses in general, not a specific offering of a particular topic. Pillay, Irving, & Tones also point to an earlier study by Watkins, Leigh, & Triner (2004) that notes the importance of technical skills. But as Pillay, Irving, & Tones observe, how technical skills really affect student performance is still "contingent on the design of the learning experience" (p. 218).

In response to the growth of online learning, many colleges and universities have developed assessments or programs of some kind to determine student readiness for online courses. Martinez, Torres, and Giesel (2006) performed a survey of various online student preparation assessments to see what trends could be found. Their summary concluded that "assessments generally tend to focus on two areas: (1) technical skill, and (2) on study skills and motivation" while also finding that "some assessments also address learning styles" (p. 1). While not an exhaustive list of every program at every college or university, the list does show that many colleges are focusing on technical skills and student factors such as motivation. Since these factors have proven to be important in research studies, students do need to be aware of where

they stand. But the connection of these factors to various course designs is less clear from the assessments that Martinez, Torres, & Giesel (2006) examine.

In preparing to create this instrument, research into what objective factors have been proven to affect student performance or preferences is needed. Subjective factors (such as how "hard" a course is perceived to be versus how "easy" a course is perceived to be) will certainly be of interest to many students. However, measuring these issues would rely on subjective issues of personal preference, so these types of factors are outside of the parameters of this instrument.

Percentage Online Versus Face-to-Face

One such factor that could possibly need classification is the percentage of a course that is offered online versus face-to-face. This may seem straight forward at first, with online courses obviously being 100% online and in-person courses being 100% face-to-face. But those numbers are changing. An increasing number of traditional courses are "adding an online component, creating hybrid courses in different formats" (Jones & Graham, 2010, p. 239). Hybrid courses offer a portion of course interactions online, and are growing in popularity (Kumrow, 2007). Jaggers (in press) found that students have a wide range of opinions on whether or not they prefer online courses. One study participant points out that they don't know "if [online professors] learn the same way, or teach the same way I learn" but they concluded about online learning that they "enjoy it a lot" (p. 8). Jaggers (in press) concluded that "students made a conscious decision to enroll in a particular course online versus face-to-face, based on three factors specific to the academic subject area: (1) whether the subject area was well suited to the online context, (2) whether the course was 'easy' or 'difficult', and (3) whether the course was 'interesting' and/or 'important'" (p. 10-11). Factors like easy, difficult, interesting, important, or suited to online context are very subjective, but with a growing mix of online and hybrid courses,

students need to know objectively how much of a course is online so they can make a subjective determination on those factors.

Individualistic or Collectivist Teaching Styles

Another factor that may affect student attitude in courses is their cultural bias towards individualistic or collectivist teaching styles. Hofstede, Hofstede, and Minkov (1991) define the basic differences between individualistic and collectivist societies: individualistic societies tend to focus on the individual person with children growing up to basically think in terms of "I," while collectivist societies tend to focus on families, groups, and social networks with children growing up to basically think in terms of "we". Based on these definitions, Tapanes, Smith, and White (2009) found that students from a collectivist culture found individualistic instructional style to be inconsiderate of their cultural circumstances. The researchers found that students from a collectivist culture "attached more importance to be informed about relevant cultural differences arising from being enrolled in a course taught from an individualist perspective" (p. 29). Additionally, students from the collectivist culture reported decreased motivation, increased alienation, and increased pressure to stay silent when being taught in an individualist course design. Giving these students the ability to choose course styles or at least know the level of individuality in the course could possibly be a way to deal with these issues.

Synchronous Versus Asynchronous Communications

Asynchronous learning may be another factor that students want to know about before signing up for class, but it may also relate to what activities occur in the course. Umesh Sheth, Dowling, and Congdon (2013) found that almost 67% of the students in their study prefer synchronous education, but primarily because it helps them prepare for graded assessments.

Knowing that a course contains graded assessments but asynchronous delivery methods would be very important for these students.

On the other hand, Li, Finley, Pitts, and Guo (2011) found that students reported greater satisfaction with and a higher preference for communicating asynchronously through email with their instructors. This may indicate that courses will need two separate ratings in this area: one for the amount of course content delivered asynchronously versus synchronously, and one for the amount of instructor interaction carried out asynchronously versus synchronously. If given the option, students could possibly pick the combination that works best for them. If there is only one option for a course, students can possibly be given the opportunity to prepare for a combination that is not their preference.

Active Versus Passive Learning

Another factor that students might want to know about before entering a class is the basic nature of the learning. Will there be active learning or passive learning? Will the course be student centered or focused on the instructor? Courses that take advantage of active learning designs tend to show higher student-reported satisfaction and engagement (Armbruster, Patel, Johnson, & Weiss, 2009) as well as greater retention (Smith & Cardaciotto, 2011). Student-led activities have also been found to increase innovative educational strategies as well as motivation (Baran & Correia, 2009). Of course, not every student prefers active learning or student-led instruction; the point is that these factors do seem to affect learning for some and therefore those that are affected could possibly benefit from knowing these activities will occur within a course.

Traditional or Constructivist

Additionally, the focus of who leads the learning could point to philosophical differences in how courses are designed. Philosophical design of courses might also offer differences that

affect how students approach a course. Rovai (2004) characterizes the traditional approach as "An online course structured as a sequence of online lectures or textbook-based reading assignments followed by traditional assessments" that "represents a passive form of learning that is teacher-centered and better aligned with the more traditional form of higher education" while a more constructivist-based learning environment would be one that is "learner-centered, where the focus is on learning rather than teaching, and where active learning and cooperation through discussion take place" (p. 90). Tynjälä (1999) found that students in a course designed based on constructivist theories displayed a greater diversity of knowledge than those that were in a more traditionally designed course. However, just because students may learn more does not necessarily indicate that they prefer those types of courses. Baeten, Kyndt, Struyven, and Dochy (2010) found that student preferences on student-centered constructivist learning varied across various disciplines and personality types.

Technologies Used

Even the tools that instructors use can have an effect on everything from student satisfaction to perceived learning. Tools such as discussion boards (Wu & Hiltz, 2004), blogging (Halic, Lee, Paulys, & Spence, 2010), video (Zhang, Zhou, Briggs, & Nunamaker Jr, 2006), and games (Liu, Cheng, & Huang, 2011) have been found to affect how student's perceive their learning. Giving students an overview of what tools they will be using in a course could prove useful if students have a strong feeling about certain tools. Additionally, social media tools such as Facebook (Wang, Woo, Quek, Yang, & Liu, 2012) or Twitter (Rinaldo, Tap, & Laverie, 2011; Junco, Heiberger, & Loken, 2011) could also possibly influence student's perception of learning. If it is possible to communicate the usage of these tools before a course starts, what would be the

impact on student satisfaction and preparation? This is the area that needs to be investigated in future research.

Instructor Personality

A final area to investigate is the effect of effect of instructor personality on student achievement. Murray, Rushton, and Paunonen (1990) found that personality traits may affect student performance in different classes because "the specific personality traits contributing to effective teaching differed markedly for different course types" (p. 250). The interesting part of this study is that the instructors had their personality rated on 29 factors by other instructors and then these ratings were matched with student evaluations. Other personality factors such as humor (Torok, McMorris, & Lin, 2004; Bryant, Comisky, Crane, & Zillmann, 1980) and spontaneity (Cole, 1989; Williams, 2007) have been found to have an effect on learning. Again, the point of looking at these factors is not to determine which "side" is best, but to give student information that helps them determine how the courses they take will practically operate.

Discussion

While it is important for every student to understand how prepared they are for college-level course work, the goal of this paper is examine the need for a bridge that connects those factors with specific activities in specific courses. An instrument is needed to identify and classify how any individual course should be classified according to various factors. The main goal of this instrument should be to help students feel better prepared for not only individual courses, but also the cumulative effect of all courses taken per semester. All factors that are not found to contribute to this effect will need to be eliminated from the instrument, no matter how popular they are. The overall idea is that this instrument should take on the role of course

taxonomy, allowing students to determine how their unique preferences and preparations will affect their ability to be successful in any given course.

Of course, the benefits of an instrument like this will not only be for the students. Another possibility for the instrument could be helping instructors and course designers make their courses more reflective of their intended design and teaching methods. In other words, this instrument could possibly be a way for instructors to check and see if their course design matches the intended philosophy. For example, if an instructor wants to have a student-centered group work-based course, this instrument could give an idea of how close they are to that goal. If they score low on, say, the factor of “student-centered”, they would know to examine their activities and re-design as needed. In addition, if students are allowed to provide feedback on the ratings, this would provide additional data that could lend to additional design evaluation. For example, if an instructor wanted to have a hybrid course that was half online and half in-person, but the student evaluations rated the course as spending a majority of the time in-person, the instructor could examine and evaluate what is giving students that impression and adjust class meeting times accordingly.

Another issue to consider is that various programs and departments at universities have different needs from their courses, therefore there may be a need for a flexible, customizable version of the instrument. For example, art courses may view collaborative work much differently than business courses, or certain technical programs that focus exclusively on hands-on work may not feel the need to point that out since it would apply to all courses. Ultimately, a flexible instrument made of interchangeable modules may end up serving the greatest range of programs. Future work would need to focus on this interchangeability.

But that is not the only flexibility that could be possible with this instrument. Another possibility is that this instrument could also allow course instructors teaching the same subjects to not all be forced to design or teach every course the same way. For example, colleges could offer an Introductory English Literature course in several different styles. All versions would cover the same content, but each one could be designed using one of several different delivery methods tailored for different student preferences. The course taxonomy instrument could provide the tool that would allow students to pick the design of the course that best matches their strengths and needs.

Ultimately, as courses continue to diversify with online courses giving way to hybrid courses and MOOCs, an instrument like this could be an important tool in helping both instructors and students to be more comfortable with the courses that a university offers. But this instrument could also possibly open up many innovative avenues in the teaching and learning process. If an instructor can communicate ahead of time what factors will be different from the normal course, both the instructor and the students could be better prepared for challenges that experimentation can cause. Additionally, foreknowledge of experimental design could help students become a part of the development process by giving them a chance to provide feedback that is more specifically targeted to the desired experimentation goals. Further research will be needed to see if this preparation lends to significant decreases in anxiety associated with educational experimentation.

Conclusion

Certainly an instrument that can classify course taxonomy will take time to develop. It will also change over time as learning changes, so it will probably never truly be finished. The goal is not to create a standard that can be adhered to for all time, but to set a series of ideas in

motion that can lead to better foreknowledge of course work for students. In the end, this system will need to be simple enough to understand at a glance for learners of all levels but flexible enough to communicate accurate information to make it useful for even upper-level and graduate courses.

The research in this paper focuses on factors that affect all courses and therefore all learners that take these courses. Future research will need to determine if the instrument may need to be adjusted for various subjects and/or disciplines. Potentially, each program and/or discipline could have a custom model of this classification system. Or the system itself could be composed of modules that can be chosen as needed in unique combinations like a custom set of building blocks. The possibilities are very open at this point and should stay that way throughout the life cycle of this idea.

Possible future directions could include creating computer software that would simplify the process of completing the instrument, displaying the results in an online catalog, and allowing students to submit feedback on the accuracy of the instruments results for each course. This software could possibly be designed to integrate with most major college software solutions, from learning management systems to student tracking software. If it is combined with data analytics that helps students determine what their learning preferences really are, it could also become a predictive system that recommends specific courses for students based on past success or failure rates in other courses.

Ultimately, however, the main goal of all work in this area should be to improve the learning experience for each individual student. All ideas and designs should feed into this simple overarching goal. This is not to say that divergent pathways cannot be explored; they just need to feed back into individual student success.

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