Teaching and the Human Brain

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ABSTRACT

The assessment process built into student evaluations for such courses should take into account the various learning engagement points that enhanced the learning experience.

Introduction

As traditional education approaches become increasingly outdated and even irrelevant, students will become acutely aware of the disadvantages of old instructional delivery methods as they desire the convenience and flexibility afforded by new educational technologies. Many colleges and universities already have added courses that either are hybrid (i.e., brick-and-mortar mixed with online engagement and activities) or exclusively online which are responsive to the demanding schedule needs of today's students. Online education, in particular, has become popular because it gives many students a broad, diverse access to many educational opportunities and interactions that might not be otherwise possible because of the demands of their personal and work schedules. There are four key factors that shape the virtual learning environment: socialization, internalization, combination, and externalization. Each of these factors has been demonstrated to be positively correlated to performance in the virtual knowledge environment. In the virtual environment these factors must be incorporated into the student assessment process, especially as they relate to student-faculty contact and interaction, the essential need for timely student feedback, student's cooperation, and the value of time and deadlines on tasks and assignments.

Socialization, for example, can be just as challenging in the virtual learning setting as in the traditional environment. For an educator, the element of a virtual learning setting provides the individual with the capability to observe and track in real time, the student's motivation, intellectual commitment, and peer performance standards. However, an educator and student also can miss the benefit of having face-to-face interaction in the classroom as well as the proactive sense that comes when students are engaged in the classroom and when educators are able to bring in other materials and sources from other disciplines to enrich the course materials. So it is important to ensure the assessment process emphasizes proper and relevant attributes that are key for active learning. Specifically, the online requirements parallel real-time educational interaction: responding with frequent emails and correspondence that answer questions, offer comments about course content, and give focused instructions; scheduling virtual office hours; acknowledging all questions from students; providing models and samples of assignments to demonstrate course expectations, and following up on feedback, especially if students fail to respond initially to the instructor's comments. Practiced diligently, the approach ensures students will find the most comfortable ways in which to receive feedback and interact with both instructors and students.

Building Effective Assessment

In the online setting, tools such as peer reviews, discussion boards, live chats, and team or group projects, and any team learning can prime the environment effectively for active learning. This objective of socialization remains formidable, even in the traditional face-to-face classroom setting. Students might isolate themselves deliberately because they are shy, introverted, unsure, or even insecure about engaging actively with their peers. The challenge is similar in the virtual setting. What I normally do, for example, in the initial assignments for the first week of class is offer students an individual assignment that then becomes the basis for a team project designed to foster a classroom setting conducive to socialization. This assignment serves as a bridge, enabling students to engage and contribute to building a sense of community in the virtual environment. Thus there are carryovers from the traditional classroom setting to the online environment as the professor explains and explains defines course goals, performance objectives, grading

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and evaluation. The grading criteria and rubrics should indicate the relative emphasis on facts, critical thinking, and analysis, reasoning and other measures important to the course, but they should also lead the students toward a path of active learning. Thus, the value of text-based asynchronous interaction is extremely important. For example, making peer feedback available on assignments encourages personal responsibility, collaborative skills, and group processing. The goal is to get the students to become interactive and be responsible for their own learning and the learning of the team in which they collaborate.

Likewise, internalization, combination, and externalization have found to be positively related to performance in a virtual learning environment. I try to reach the students in different ways and methods based on the subject matter or the nature of the course and method of delivery or the combination of methods. Several studies (Tsai and Ghoshal, 1998; Yli-Renko et al, 2001), have shown that the acquisition and cultivation of social capital are associated with greater knowledge acquisition and exploitation, which can be achieved by engaging an infrastructure process based on knowledge that already has been developed or aggregated. One of the learning tools I use in the marketing management class involves a video that takes the students through the formative development of Google from a text marketing search engine to the analytical, multitasking powerhouse it has become (http://windowsmedia.pearsoncmg.com/ph/bp/bp video library/Google.wvx). This demonstration fosters a climate for social engagement among the enrolled students by offering their feedback and comments on a topic with which they have become most familiar.

Furthermore, online tools such as a blog and chat facilitate an ongoing conversation on the Google platform. Here, instructors ask students to articulate what they hope/intend to accomplish in the course, to provide and assess websites and pages that enrich learning; to develop projects and learning activities; to encourage thoughts as well as facts as they critique other students' work, and, in general, to reflect on their own work and performance, the evolution of their learning, problems and examples used during the course and from their own experience, and processes involved. Students can contribute significantly to exploring the question of why this new knowledge is important.

Once the individual assignment has been completed, teams are tasked with new assignments and once the data are collected the teams are asked to complete a series of interactive exercises to continue their engagement and develop their knowledge base. In order to avoid the potential problems of being distracted or losing motivation in the course, the instructor can approach this challenge in several ways. The instructor should select real world cases and examples, which are relevant, and offer real-world assignments that allow students to apply course concepts. The instructor should also incorporate short benchmarks for feedback in an ongoing basis from the students and to the students. The instructor can emphasize that student replies and feedback are important values of online discussions, which can be incorporated or weighted in final grades. Thus, the engagement in an online setting becomes just as valuable and as effective as in the traditional face-to-face setting. Ensuring the course content is as fresh and timely as possible, the instructor addresses, in part at least, the fact that there are many external sources competing for students' attention. No doubt, the problem is evident in the face-to-face classroom setting too. The ever-present phone and Internet connection are equally problematic in both instructional settings but the instructor in the virtual learning environment must be fully aware of the need to help a student recognize her learning style which, in turn, strengthens her academic performance. Furthermore, the online environment provides the best platform for distinguishing the learning styles of others, which can expand a student's collection of learning strategies. Thus, the following applies to what students have come to expect in the online world:

- Collaborative tasks—task groups meeting or performing tasks suited to a virtual environment, often eliminating the need for travel, and specifically addressing logistical concerns.
- Risk assessment—activities that could carry significant transformative consequences in the real world can be risk assessed as a 'virtual task' (i.e., simulation) in a virtual world prior to the real event.

Simulation of a real-world situation can help to drive home the point as in, for example, a case analysis regarding a company like Apple or Lenovo.

As indicated earlier, the assessment process built into student evaluations for such courses should take into account the various learning engagement points that enhanced the learning experience. Learning always involves conscious and unconscious processes (Caine, 1990)**.** Students have the ability to learn much more than they ever might consciously understand or acknowledge. To reach their full capabilities we, as instructors, must provide information in as many ways and forms as possible through different media so

that all of the students' senses are impacted. That interaction can shape and influence the student's learning process cycle. There is a body of well-established research here: "having reached the brain, this information emerges in it conscious with some delay, or it influences motives and decisions" (Lozanov, 1978a). Human beings remember what they have experienced; not just what they have been told. So reaching the students by many different methods and media can be manifested in dynamic benefits. The virtual learning environment offers the capacity to be witness to the interaction as it unfolds in the online environment, because technology affords the advantage of capturing quickly and efficiently all of the data connected to the student's participation and engagement in the virtual course. In turn, the infrastructure provides the student the capabilities to review lecture and exercise notes, take practice quizzes as needed, reply and respond on discussion boards, and ask questions through individual email, all at the student's own convenience and comfortable pace.

The virtual learning environment is no different than the face-to-face class in how student engagement with the instructional environment affects academic performance. Students who have lower rates and levels of online engagement have lower final marks, whether or not that online access or use occurs on campus or at home (Mogus, 2012). Although students are more likely to use a virtual learning environment while on campus rather than at home, the place where they access the virtual learning environment (i.e., home or university campus) does not significantly affect their performance (Chanchary and Haque, 2007). Measurable factors of success include appropriate motivation, student opportunities to interact with and collaborate with peers, a variety of instructional delivery methods, and the presence of user-oriented technology and teachers actively participating in the online environment. The accessible range of components for the virtual learning environment offers various opportunities to enhance student-centered learning and these impacts cumulatively can influence their final academic results and grades (Pislaru and Mishra, 2009). Thus, those students who are sufficiently motivated to reap the potential range of benefits afforded by the virtual learning experience will likely achieve desirable, positive academic results, and will likely build upon their own confidence and self-efficacy to move through all aspects of the virtual learning process and the tools and platforms made available. Thus, students responding in the final assessment process also will provide the instructor relevant input as to the validity and usefulness of the current virtual learning infrastructure. Furthermore, instructors are better informed to incorporate a virtual infrastructure that accommodates flexibly the various learning styles different students prefer (Heaton-Shrestha et al., 2007).

Research has shown that a virtual learning environment should, if suitably designed, accommodate a variety of learning approaches, including active and reflective styles (Entwistle, 2003). Students who prefer to learn online might adopt a more independent style, while the on-campus student is more dependent upon a fixed structure (Heaton et al., 2007). For example, among students who spend two or more hours per week on pre- and post-processing of the lectures, there is evidence that 'heavy' virtual learning environment users perform better than non-users in the final examination and that the 'heavy' users' performance in the virtual learning environment emerges as the best predictor of the grades in the final examination (Stricker et al., 2011).

As for tracking and monitoring student activity in a virtual learning environment, log files in the virtual learning environment allow educators to collect and subsequently review statistical data such as how students discover and use different course materials, their approaches to the forum and usage, how long they view various elements and at what times, and their interactions and replies with their peers (Zorilla et al., 2005). Some research has shown the majority of students (75 percent, in one study) use a computer for research on the Internet on a daily basis while others use it several times a week or month (Mogus, 2012). Using the Internet for learning purposes on a daily basis is the case, however, for only 16 percent of students (Mogus, 2012).

In summary, 45 percent of students do such activities several times a week, 25 percent do so monthly and 12 percent rarely. Thus, one can conclude that the majority of students use a computer and the Internet for learning on at least a weekly basis, which is a sufficient indicator for making available as broad as possible opportunities for student engagement in the virtual learning environment (Mogus, 2012). Downloading content of any kind from the Internet daily is accomplished by 22 percent of students, and 38 percent do so several times a week. Some 29 percent of the students download content on at least a monthly basis while just a small fraction of students does so rarely. Almost 78 percent of students regularly participate in online forums and chats outside of a virtual learning environment, for social, non-course-related activities. On average, students started to use computers when they were 10 (Mogus, 2012). Today, that statistic

likely would reflect a much earlier age as hands-on digital technology has become so widespread and affordable (see chart below).

Sources: The Pew Research Center's Internet & American Life Project 2011 Teen/Parent Survey	**% of teen internet users in the U.S. who do the following activities online** ▼
Use an online social networking site like MySpace or Facebook	80
Go online to get news or information about current events or politics	62
Buy things online, such as books, clothing, or music	48
Share something online that you created yourself, such as your own artwork, photos, stories or videos	38
Have a video chat conversation with other people using applications like Skype, Googletalk or iChat	37
Look online for health, dieting, or physical fitness information	31
Record and upload videos	27
Take material you find online like songs, text or images and remix it into your own artistic creation	21
Look for information online about a health topic that's hard to talk about, like drug use, sexual health, or depression	17
Use Twitter	16
Create or work on your own online journal or blog	14
Stream video live to the internet for other people to watch	13
Visit virtual worlds such as Gaia, Second Life or Habbo Hotel	8

Sources: The Pew Research Center's Internet & American Life Project 2011 Teen/Parent Survey, April 19 – July 14, 2011. n=799 teens ages 12-17 and a parent or guardian. The Pew Research Center's Internet & American Life project 2009 Parent-Teen Cell Phone Survey, conducted from June 26 to September 24, 2009. n= 800 teens ages 12-17.

Chickering and Gamson concluded a student's success is predicated upon two teaching principles. The first encourages student–faculty interaction, while the second emphasizes the cooperation and engagement among the students. Prompt feedback is critical especially in fostering the student's most effective time on task, and on drawing important connections between the course's content and real-world problem applications. When realistic performance expectations are clearly communicated by instructors through practical exercises and open commutations, it will enable students to have a better understanding of the criteria required for successful performance. The students will also gain insights about expected performances necessary for real-world problem solving (Magnani et al., 1999; Vye et al., 1998). The cooperation among students is a principle underlying the acknowledgment of how social interaction enhances learning (Svinicki, 1999). A better understanding of concepts occurs when students have active learning experiences. The students need the ability and the opportunities to talk, to listen, to engage and to reflect with their peers as they participate in problem-solving exercises that require them to apply newly acquired knowledge and skills (Millis & Cottrell, 1998).

Assessment in a course such as International Consumer Behavior, for example is segmented into four groups as indicated below. The key is making sure that the assessment focuses on student behaviors most closely aligned with productive learning skills.

Assessment Criteria

By reinforcing the student behaviors that allow for active learning and by providing instruction centered on real-world examples the process helps cultivate the interaction essential for meaningful engagement between teacher and student and among the peer group of students:

Blogs		**10%**
Discussion questions and current events	**15%**	
Case Studies		**50%**
Term Paper		**25%**

The assessment tool for this particular course was especially useful for supplying detailed evaluation and applicable feedback that students could apply to revise and resubmit assignments in a clear and certain manner. The momentum also is sustained through quick feedback by the instructor to the students and this timely response mode nurtures an environment that helps motivate students to do their best. An instructor's responsive performance is believed to be directly related to a student's confidence-building perception of the instructor's effort to supply prompt and supportive feedback.

The asynchronous nature of an Internet-based learning environments allows students to participate in courses at any time and place, changing the window of available time for completing tasks required to accomplish learning goals (Billings, 2000). The content modules should be used to communicate instructional objectives for each topic, while each of the weekly reading assignments should guide students through the process of concept building. The team problem-solving activities and case assignments should contain plenty of examples, links or videos to enhance learning. In the 24/7 world of today the virtual learning environment assignment tool carries advantages of promoting time on task because students are automatically reminded (e.g., push notifications) about assignment due dates and new assignment postings each time they access the central learning environment. These reminders become a major motivating source.

A model that is learner-centered offers instruction that can advocate prior knowledge, reasoning processing, personality styles, how one sees learning, and demographics – all factors that must be carefully considered when planning instruction (Svinicki, 1999). The key is offering a diverse array of learning activities and tools to accommodate different learning styles. Weekly reading assignments, discussions, blogs, and real world examples with detailed explanations are best suited for students with verbal processing strengths while instructional activities incorporating rich graphics and visual imagery are much better for learners with visual processing strengths (Menges, 1994).

Outlined on the below is the method underlying the scoring in the virtual learning environment:

Scoring Methodology

Scoring of Discussion Questions:

90 to 100%	1. Minimum length of response 100-200 words per question 2. Postings must be substantive and must demonstrate a synthesis of the key principles 3. Demonstrated use of personal or professional examples relevant to principles 4. Submission is made in a timely manner 5. The writing and style of posting is specific to course's relevance
80 to 89%	1. Minimum length of response 50- 99 words per question 2. Posting mentions key principles but they are not fully developed or synthesized 3. Uses some personal or professional examples but that are not relevant to the principles 4. Submission is made in a timely manner 5. The writing and style of posting meets adequate standards for the course's specific level

70 to 79%	1. Less than 50 words per question 2. Posting is missing the key principles 3. Uses no reference to personal or professional examples that are not well related to the principles 4. Submission is made in a timely manner 5. The writing and style of posting does not meet standards for the course's specific level

Scoring for Blog Posting:

90 to 100%	Logged in at the assigned time; actively participates in the blog discussion; stays on point within the thread; responds to questions when appropriate.
75 to 89%	Logged in at the assigned time; participates in some of the discussion but not al aspects; needs occasional prompting to encourage participation; does not deviate from the topic in the thread.
65 to 75%	Occasionally does not log in for the blogs or not at the assigned time; participates occasionally and contributes infrequently; needs encouragement to participate.

Scoring of Case Studies:

90 to 100%	Active participation in team development of case solutions; team solution shows outstanding reasoning and development in the responses to the questions presented in the case
75 to 89%	Participation in team development of case solutions; team solution shows good reasoning and development in the responses to the questions presented in the case
65 to 75%	Occasional participation in team development of case solutions; team solution shows fair reasoning and development in the responses to the questions presented in the case

Scoring of the Term Paper:

90 to 100%	Student presents an exceptionally well-written paper that develops the concepts from the course and relates them to real world situations
75 to 89%	Student develops a well-written paper that incorporates an acceptable, satisfactory understanding of concepts used in the course
65 to 75%	Student paper uses concepts but does not offer a clear understanding of concepts presented in the course

The significance of the two-way symmetrical communication process gains significant value in the virtual learning environment, not only at the end of the course but also throughout the course and through each learning module and assignment. The awareness levels of both teachers and students can then adjust to the emerging observations that come with each learning activity. Both instructors and students will be able to determine the platforms, portals, and tools that are most productive and convenient, especially for students whose technical capacities and capabilities at home and away from the classroom might not be as accessible as some instructors perceive. In fact, accessibility issues may be the ones affecting certain students more adversely than others, and these concerns can only be rectified by engaging and ensuring there is satisfactory two-way communication. Continuous tracking and points for seeking feedbacks as well as properly matched assessment items are most conducive to fostering this type of communications environment. For example, there also should be a group assessment protocol that allows each member of the group to evaluate both the group and the other individuals regarding a particular assignment performance.

This also emphasizes the sense of ownership, which is critical to the success of the virtual learning course environment. This type of evaluation will give the instructor constructive insight about the effectiveness of team collaboration and the extent to which the learning objectives are, indeed, helping students to master the course skills and objectives. By combining these types of evaluation the teacher will be able to evaluate the student and the group's performance in a fair, accurate representation. The feature of this type of evaluation approach is the balance between both an individual and group assessment with the individual's

performance, for instance, constituting 60 percent of the final grade for a particular assignment and the team's overall performance comprising the remainder of the assignment score.

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