iWin2: DEVELOPING A CULTURE OF PROFESSIONAL USE OF TECHNOLOGY IN THE ON-GROUND CLASSROOM

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ABSTRACT
*The debate over the advantage and/or disadvantage of students using technology in the on-ground classroom continues. Unlike the 70s where overhead projectors and flipcharts were the standard equipment in the classroom, today on-ground Smart Classrooms in higher education are outfitted with computers, laptops, Smart podia, Blu-ray player, HD projector, Data projector, DVD player, sound speakers, Document Camera, etc. Because of the increasing use of technology in the classroom and because students bring their own technology to the classroom, faculty are setting limits on the degree to which students use their laptops, tablets, iPods, iPads, and cell phones. Some faculty have banned students from using technology during their lectures, while others have barred students using technology in the classroom altogether. Although a number of students during class may be taking notes, interacting with professor's guided instruction, reading the text materials or following along with the instructor— others are texting, emailing, surfing the web, on Facebook, hulu, Netflix, YouTube, Twitter, Skype, etc. These students are doing everything **but** their assigned work; their multitasking and/or off-task behavior may interfere with both teaching and learning. Because many students may be misusing technology in the classroom, faculty have developed policies to effectively manage student use while in class. This concept paper examines how professors' use guided instruction to control the use of technology in the on-ground classroom—increasing success in both teaching and learning.*

INTRODUCTION

This conceptual paper examines the ongoing debate on using technology in the on-ground/traditional classroom. We investigate the types of technology used by professors in Smart Classrooms including how they use technology in their delivery of instruction. We also examine students' misuse of technology—whether instructors should require rules and regulations to facilitate better learning. Our research aims to address the following questions: 1) Does the potential disruption of learning for student abusers of technology (SAOT) and disruption of their classmates outweigh the use technology of in the classroom? 2) Does the potential disruption of learning for SAOT and disruption of their classmates demand a need to develop a policy for using technology in the classroom? 3) If policy for using

technology in the classroom is developed, should students contribute to the development of this policy? 4) Should students contribute to the enforcement of this policy?

The ongoing debate over the advantage and/or disadvantage of students using technology such as smart phones, tablets, computers in the on-ground classroom is widespread in educational institutions (Campbell, 2006). Unlike the 70s where overhead projectors, videos, televisions, and flipcharts were the standard equipment; today, on-ground classrooms are now outfitted with computers, tablets, Smart podia, Blu-ray player, HD projector, Data projector, DVD player, sound speakers, Document Camera, etc (Tyack & Cuban, 2000).

Because educational institutions are adopting the latest technologies and increasing use of technology in the traditional classroom and because students bring their own smart devices to the classroom, many faculty are setting limits on the degree to which students use these technologies. While some faculty are apathetic about how students use technology, others have limited students from using technology during their lectures, or have prohibited the use of technology in the classroom altogether. However, due to these problems associated with integrating technology in their classes, some faculty have redirected the use of technology from laptops and Web-based learning back to the standard equipment like the 70s, citing that technology create a distraction in the classroom (Fink, 2010).

In his study, Kay (2011) examines challenges of using smart devices in the classroom and noted three main areas: 1) Students using laptops in class for everything other than the class discussion were very distracting to students who used their laptop as guided by the instructor. 2) Students instant messaging, texting, or emailing most or all of the time in class. 3) Students playing games, listening to music, surfing the web, or watching movies while in class.

Wright, Perry, Yoshizuka, Barnett (2011), however, argue that technology in the classroom is not the problem but rather the students' unwillingness to pay attention. They believe that students' electronics' has only enhanced inattention, and is no different from those who would doodle or daydream in class when technology was not available to them. Hence, the actions by some unconcerned students are not a reason to disallow technology in the traditional classroom. They suggest that if the instructors lecture were not boring, then the student would pay more attention in class.

ADVANTAGE OF USING TECHNOLOGY IN THE ON-GROUND CLASSROOM
 For several years, researchers have investigated the importance of teacher and learner perception on the social and psychological aspects of the classroom, which attributes to variance in students cognitive and affective behavior (Fraser, 1991, 1998; Walberg, 1984). Using this theory, Barak, Lipson, Lerman (2006) examined students' perceptions of their class, described what they learned, assessed if and/or how wireless laptops facilitate engagement in learning in large lecture halls. The results of their study showed that students had higher positive perceptions *about using laptops in class and less positive perceptions about being active in class*. When teachers feel comfortable with technology as an instructional tool and have a positive attitude about using technology before integrating them into practice in their classes, they can achieve a higher degree of success when using technology in their classes (Groof, 2006).

In his research, Kay (2011) examined the benefits of technology in the classroom. He described note taking as the most common and important laptop activity participated in during class. Using a laptop for academic activities such as searching for supplemental resources and working with subject-specific software programs are benefits. Another benefit is students' access to academic-based resources during class, as they could look up the meaning of information, which would supplement or contribute to the topic of discussion. He also notes other benefits of using technology in the classroom such as better

student-faculty interaction and communication, improved peer collaboration, and instant messaging to peers about concepts covered in class.

Trimmel & Bachmann, (2004) compared classrooms with no laptops to those with laptops and found that students in laptop classrooms had higher participation rates, showed more interest in learning, and were more motivated to achieve. Other studies show that students using laptops the classroom increase class participation and facilitate engagement between the teacher and learner (Fitch, 2004; Partee, 1996; Stephens, 2005). In their research, Finn and Inman (2004) gave laptops to each incoming freshman and found that students' had a more positive attitude towards their education.

DISADVANTAGE OF USING TECHNOLOGY IN THE ON-GROUND CLASSROOM
In their study, End, Worthman, Mathews, Wetterau, K. (2009) required students to answer questions while watching a video on the content of lecture materials. Students reported that they felt that their performance in understanding the video was impaired when they were disturbed by the sound of a ringing cell phone. Their answers were either unanswered or answered incorrectly, corresponding with the point of content interruption, which was at the time the cell phone, began ringing.

Students multitasking while using cell phones and laptops in class create a significant distraction to other students and negatively affects student learning. With fewer distractions, students have a better chance to learn (Maclean's 2010).   With the distractions of cell phones and laptops, instructors are having a difficult time teaching when students are engaged in non-learning activities that distracts both teaching and learning. He noted that a professor at Syracuse University ends his class and walks out when he catches students' texting or using computers inappropriately (Galagan 2010).

Discerning nonverbal communication may be challenging when using cell phones. Many nonverbal details such as the tone of someone's voice, facial expressions, and physical gestures provide important meaning to the words spoken. Nonverbal details are lost in translation when encoded and or decode via technology such as texts, email, or instant messaging (End, 2009).

Many educational institutions in the U.S. have formal policies banning smart phone use in classrooms and on school grounds. Because of potential need for students to communicate with the outside world in the event of an emergency, state laws against the technology in schools are not exacting (Campbell, 2006).

In his study, Campbell, (2006) found a general negative attitude about mobile phones in college classrooms. Participants in the study regarded the ringing during class as a serious problem and supported policies restricting mobile phones in the classroom. A significant relationship to perceptions of policies restricting mobile phones in the classroom with the predictor variable of age demonstrated that younger participants (K-12) reported less support for policies and more tolerance for cell phone ringing during class than older participants.

In their study, Gardner, Morrison, Jarman, Reilly, & McNally, (1994) noted a negative effect on success when students used laptops in subjects of English and mathematics. According to Grace-Martin & Gay, (2001) laptops increased opportunities for off-task behavior, limited learning, and reversed the benefits of learning as measured by academic performance.

Vitale (2011) observed student outcomes as measured by their low grades when they used laptops in his Business to Business Marketing classes. By banning technology – after the first exam of the Spring 2010 semester, the class average on the following exams was improved. In Fall 10 and Spring 11, computers were banned completely. He noted significant improvement in class average (Table 1). While further

research is necessary, the general decline in student performance from 2005 to 2009 appears coincident with the increased student use of computers in the class. The teaching style used in this course is lecture with participative interaction by students; testing is essay format.

Table 1
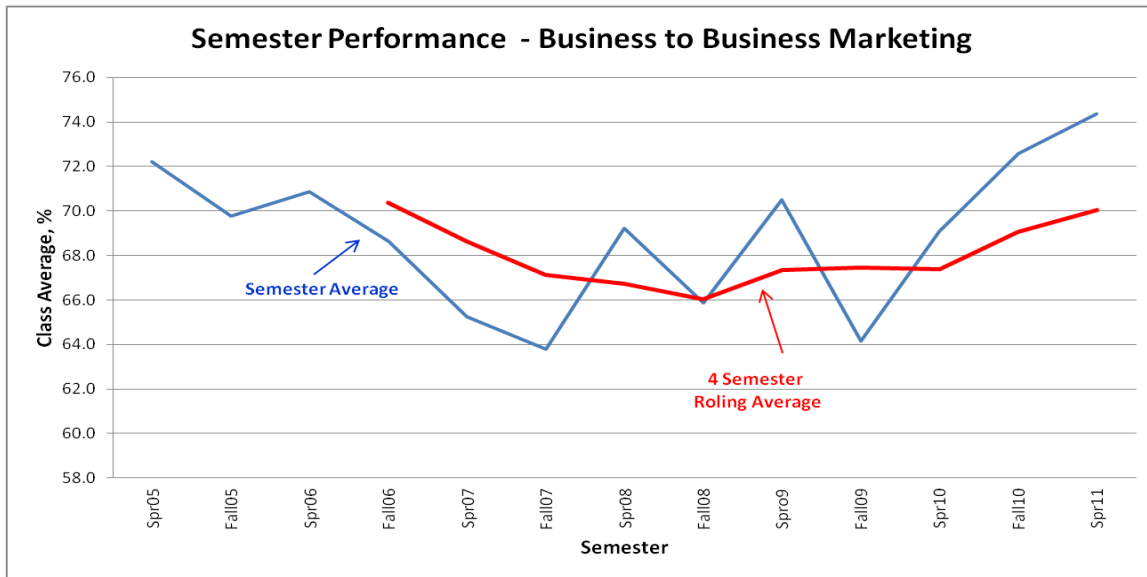
DIFFERENT TYPES OF TECHNOLOGY
Various technologies have appeared in education, intended to enhance the learning environment both in the classroom as well as student-faculty interaction beyond the classroom. Many early efforts were aimed at extending the range of the classroom; distance learning via video conference can enable two-way interaction between faculty and students in real time across any distance. While there have been significant advances in this technology (Cisco Telepresence is an example), these methods are costly and generally require central locations for both transmission and reception. Video streaming, the use of web communications, can provide similar results without the need for intricate local facilities. The focus in the following summary is on technologies that are "doable" (affordable, portable, student accessible) and have received widespread, if somewhat random, application.

Course Management
Systems that are not "platform dependent" (not tied to any particular hardware format) are available from several sources. These systems provide a way for faculty and students to communicate regardless of the sophistication or complexity of the user's hardware – provided the minimum communication resources are available. Desire2Learn (D2L) is such a course management system which gives both instructor and student access to course materials, quizzes, discussion groups, media-files, grades, dropboxes, pager, locker, email etc. When D2L is used as the course management platform, course materials are available 24/7.

Communication Resources
Smart devices like computers, tablets, and smartphones are a new staple in the collegiate learning environment. These devices have been adopted by students and faculty alike as essential in modern society. Personal computers are the foundation from which the other two devices stem.

A computer is an electronic device that allows users to perform a wide range of functions. From communication to data gathering, computers allow access to key information that can enrich academic and extracurricular activities alike.

While they have the ability to perform the same tasks as computers, smartphones and tablets are lightweight and streamlined to have better mobility. Smartphones and tablets often use a simpler operating system that is "app" based for faster access to programs. (An "app" is an inexpensive, condensed computer program that is paired down to only perform one basic task. Computer applications are much denser with tools and can be difficult to use.)

Teaching Approach
There are two basic teaching styles and computers can be used in both. In the one-way teaching style – monologue – professors can use a computer, tablet, or smartphone and connect to a digital display (such as a television or projector) for visual aids during a lecture. This can reinforce high concept ideas and provide stimuli to different types of learners, thus making the subject matter more engaging. Alternatively, in the two-way style of teaching, – dialog – students can interact freely with professors and other students. They can share information across platforms, check grades and have immediate connectivity to resources that can aid in class participation. The application of either approach is most effective when designed in – not added on. Each can add significant substance to the classroom when planned effectively and accepted by a willing student body.

DIFFERENT STYLES OF TEACHING
Professors can use smart devices, like the iPad tablet, as a tool for one-way communication. iPads are an extremely portable way to store and present presentations, as well as grade digitally submitted student papers using handwriting apps and a stylus pen. In two-way communication an iPad can be used by students to take and share notes and audio files, as well as email or chat with other students or professors.

To maximize the advantages of technology in the classroom, students should be equipped to follow along in certain apps that the professor requires. Just as professors may require certain textbooks, they may require students to download certain software. The professor can engage students by having them connect to a shared digital dropbox, such as those offered by the Desire 2 Learn platform, to explore files. The key is to keep everyone on task, sharing the learning experience in-time with the professor. This minimizes the likelihood that a student would be distracted, though requires the removal of temping distractions.

APPLICATION OF TECHNOLOGY IN DIFFERENT STYLES
Technology has served as a teaching and learning advantage in many classrooms—facilitating greater class interaction and material retention. Many of the world's leading educational institutions are video streaming lectures and are "podcasting" them via iTunesU. Faculty from leading educational institutions have made their lectures available to students both synchronous and asynchronous. Professors also have utilized web applications that provide online storage of class materials, notes, tests, and supplements—making them available for the students to download. In cases of two-way interaction with students, professors have the ability to extend the class discussion in online forums, chat rooms, or web video meetings.

Most on-ground teaching efforts cannot be directly transferred to online technology, but must be designed in. Different degrees of technology application will require different levels of effort by faculty. Computers, tablets, and smartphones can be advantages to all learning types. For visual learners, they supply visual slide presentations, or electronic flash card applications. Kinesthetic learners can learn by

using a stylus on tablets to take notes. Auditory learners can record the lectures on there smartphone and have it accessible for playback wherever they go.

On smart devices, applications for flashcards, language skills, and reference books make information easy to access for students. In-group exercises and web applications that allow group editing can help students complete their assignments in addition to providing assistance on delivering a professional presentation or using computer programs like PowerPoint. These tools empower students to learn as well as familiarizing them with technology used in many workplace situations.

When faculty have not had experience with classroom technology enhancement, probably the least complex step in transition to technology application is to use course management software (such as D2L) to deliver handouts, report grades, and comment on assignments. This works with either one-way or two-way interaction. Additionally, students can interact with each other, facilitating team projects and learning. The effort should *enhance* classroom activity, not replace it.

As the complexity of technology use increases, so does the intensity of course preparation. Faculty must understand the technology in depth, minimizing its disadvantages while maximizing the benefits. When course content is stored rather than live, the necessity of the classroom is reduced, evolving to complete online courses. While this seems to be a goal of many efforts, the transition to online is not suited for all materials. Often, a combination of both on-ground teaching and offline technology use (hybrid courses), is the best solution. In teaching a course on Integrated Marketing Communications, including development of student ability to give a persuasive presentation, as an example, the basic promotional material is suitable for technology use. However, the coaching of student speaking and presentation skills is likely better achieved "in person."

Table 2 provides a snap shot of the typical professors' instructional delivery in the on-ground classroom and some implications of the types of technology that can be used.

Method of Class Instruction	TECHNOLOGY			
	D2L	**Tablet**	**Smart Phone**	**Computer**
Lecture: One-way (Monolog)	Interaction among students, Audio addresses different learning styles, Audio files can be recorded by instructors as feedback.	Visual displays, using a stylus, professor can "draw" directly on the materials. Notes, Apps, Podcast, Flashcards.	Auditory, Can add character and personality to the course, Notes, Apps, Podcast, Flashcards.	Live or moving displays of instructional materials. PowerPoint, Notes, Apps, Podcast, Flashcards.
Lecture: Two-way Interaction (Dialog)	Interactive among students, Complex visuals could be accompanied by an audio file and transcript explaining the concept. Administering grades to students.	Handwriting recognition for both teaching and learning. Wireless networking built in connection for both teaching and learning.	Interactive student response, can be use to deliver grades and gage performance. students can text their responses to questions, Notes, Apps, Podcast, Flashcards.	Rich resources of the web, note-taking. Access to the internet, Immediate access to resources. Notes, Apps, Podcast, Flashcards.
Advantage	Seeing and hearing live demos make capture attention better, increasing students' motivation and active learning, submit papers in drop box, track their own progress.	Clickers may make shy students more willing to participate, improving problem solving skills, Can be displayed in either landscape portrait manner.	Interacting with other students may engage students, promoting academic achievements Responding the instructor anonymously.	Student grades are accessible, strengthening connections between disciplines, Interaction within/ between nation(s).
Disadvantage	Instructor's delivery is boring, Can distract the other students who are trying to engage in learning, Content of the Classroom is considered too easy, Off-task behavior.	Content can give illusion that learning is quick, Content of Classroom is considered irrelevant to their career, less one-on-one attention. Off-task behavior.	Competition of Interest, i.e. Something else is more interesting than what is going on in the classroom, Off-task behavior.	Can give the illusion the knowing is a simple accumulation of bits and pieces. Content of Classroom is considered stereotypical difficult (e.g., statistics). Off-task behavior.

TABLE 2: SNAPSHOT OF DELIVERY METHODS

IMPLICATIONS

This conceptual paper examines the advantages and disadvantages of the use of technology in the classroom. Administrators, educators, and faculty have the task to identify the technology and its use to maximize both teaching and learning. They should also develop a culture of professional use of technology in the on-ground classroom. They have a responsibility to develop and implement an ethical conduct for classroom behavior when using technology in on-ground classrooms.

In the future, we will further investigate ways to design policies to promote clear documents about specific conduct and accepted behavior when using technology in the classrooms. Educators' modeling ethical use of technology inside and outside the on-ground classroom may demonstrate and reinforce a respect for how technology can be used in cultivating a professional use if technology by students.

Many questions are yet to be addressed. "What wide variety of policies on classroom technology etiquette already exists? What do college instructors believe the policy should be? What do college students believe the policy should be? How do policies get enforced in the classroom? How do we create a classroom culture that embraces the professional use of technology?"

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