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# STUDENT USE OF UNIFIED COMMUNICATION TECHNOLOGIES: A PILOT STUDY

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## ABSTRACT

Unified Communications (UC) is being widely adopted by business and industry. Research has shown that UC increases productivity. Although UC tools are being used widely on campus, very little research has been done on the use of UC in the classroom. This paper reports the findings of a pilot study that asked students to indicate their use of various communication technologies to support their academic studies. Students indicated heavy use of email, voice and text messaging and limited use of instant messaging, teleconferencing and videoconferencing. Patterns of use were distinct – students prefer to use different technologies when communicating with faculty than when communicating with peers. The academic use of communication technologies will continue to evolve, although gradually. The next generation of Learning Management Systems that purposefully and thoughtfully integrate communications technologies will be positioned to become the infrastructure provider for UC in the classroom.

## Keywords

Unified Communications, UC, student technology use, learning management system

## INTRODUCTION

Communication technologies continue to evolve and expand, often as separate and isolated systems. Unified Communications represents a technological architecture that integrates these multiple communications services into a unified user experience (Pleasant and Jamison, 2008). Originally conceived as a way to improve telephone communications, UC has evolved into the integration of real-time, near real-time and non-real time communication services based on the presence of the message recipient. Presence, in this case, is multi-dimensional. It refers to location as well as availability and willingness to engage in communication at a particular point in time. In other words, UC is the blending of otherwise disparate services so that communications is enabled by any means at any place with anyone over any device.

UC is being widely adopted in business and industry and has become transformational in the way many employees work (Martinez and Smith, 2010). UC allows workers to have the same communication resources regardless of their location through such tools as voice, text, fax, instant messaging (IM), audio, video and web conferencing, file sharing, application sharing, and other collaboration tools that support knowledge sharing. UC not only increases individual user effectiveness and efficiency, it also supports virtual team environments increasing the effectiveness of group work (Pleasant and Jamison, 2008). The use of these tools has been shown to increase worker productivity (Pleasant and Jamison, 2008).

Very little research has been done on the use of UC in the classroom; although UC tools are being used widely on campus. The 2012 results of the annual ECAR study of undergraduate students and information technology found that communications remains the primary student use of IT with more than 90% of the students using text messaging and accessing social networking sites on a daily basis and 40% using voice and video supported tools such as Skype on a monthly basis (Dahlstrom, 2012). However, students tend to keep their academic and social lives separate; students prefer to interact with professors via email or face-to-face and interact with other students using text messaging and other on-demand interactive communication technologies, such as IM (Dahlstrom, 2012).

When UC has been mentioned in the context of higher education, it has mostly been in its applications to improve administrative functions or campus infrastructure. For instance, vendors have reported that UC has been used to reduce phone costs, improve phone routing services, support activities such as video enhanced web-conferencing (Unified Communications for Higher Education, nd) or to implement a standardized communications infrastructure across multiple campus locations and facilities (Microsoft, 2012 and Watts, 2009). These technologies do have an impact on education; they

provide new ways to support ‘learning anytime, anywhere’ (Hui, Fong, and Lau, 2002). Further, most universities have adopted some form of learning management system (Coates, James and Baldwin, 2005). The original focus of learning management systems was on content delivery and course administration. However, they also include various forms of synchronous and asynchronous communication technologies such as email and instant messaging and as they evolve are including many of the newer communication technologies featured in UC platforms. LMS implementation is undergoing transition. The Campus Computing Survey reports that legacy systems are being replaced by newer competitors. Green cites that “The LMS market is a textbook example of a mature market with immature, or evolving, technologies...” and that is driving institutions to re-evaluate their campus LMS strategy (Green, 2012).

**Research Questions**

One of the major challenges presented by the multitude of communications channels currently available is the ability to bring together disparate systems in a unified presentation. Through the implementation of UC, business has found a way to address this issue and in doing so has demonstrated it positively impacts productivity. Students face the same challenges in their academic studies. The question remains, however, as to whether the same benefits UC technologies bring to the workplace will transcend the classroom. Conceptually, many benefits can be perceived. It appears that UC could potentially facilitate the exchange of knowledge as well as improve student/faculty interaction and student-to-student interaction especially when group work is involved. However, before UC can be proposed as an educational tool, we need to understand the communications technologies students are using and how they are using them to support their academic work. This exploratory student investigates two areas:

What communications tools, as represented in the UC framework, do students use?

How often, and for what purpose, do they use these communication tools to support their academic work?

**METHODOLOGY**

This study is a pilot study designed to provide a preliminary investigation of the types of technologies students use to support their academic endeavors. The research methodology for this study employed the use of a survey instrument that asked respondents to indicate their use of a set of specific technologies (voice, text, instant messaging, teleconferencing, videoconferencing and fax) and to report how they used these technologies in the classroom. Students were also asked to provide their comments and opinions on whether these technologies should be used more or less to support coursework, whether they believe these technologies enhance student academic success and how these technologies are changing, both positively and negatively, the educational experience. The survey was administered, online, to students enrolled in two sections of a digital literacy course open to all students enrolled in a regional university in the southeastern United States. Sixty-two students were invited to respond to the survey; 50 students (81%) completed the survey. All responses were anonymous. Table 1 depicts the demographic make-up of the students in the course. Although the majority of students were female of traditional college age, there was diversity among the respondents. Thirty-eight percent of the students were over the age of 24. Most of the students (82%) were upper-classmen. The majority of students were social science/humanities majors with communication majors accounting for half of all survey respondents.

<b>Gender</b>	<b>Count</b>	<b>Percent</b>	<b>Gender</b>	<b>Count</b>	<b>Percent</b>
Male	16	32.00%	Female	34	68.00%
<b>Age</b>	<b>Count</b>	<b>Percent</b>	<b>Class Standing</b>	<b>Count</b>	<b>Percent</b>
18-23	31	62.00%	Freshman	2	4.00%
24-30	11	22.00%	Sophomore	7	14.00%
31-40	5	10.00%	Junior	27	54.00%
over 40	3	6.00%	Senior	14	28.00%
<b>Major</b>	<b>Count</b>	<b>Percent</b>	<b>Major</b>	<b>Count</b>	<b>Percent</b>
Communications	25	50.00%	Computer Science	1	2.00%
Criminal Justice	8	16.00%	Exercise Science	1	2.00%
Psychology	5	10.00%	Education	1	2.00%
Business	4	8.00%	Other	3	6.00%
Political Science	2	4.00%			

**Table 1. Respondent Demographics**

**FINDINGS**

Students were asked to report their use of six different communication technologies. All students reported using voice, email and text messaging. All but two students reported having a smart phone with just over 70% having an iPhone and 27% having Android phones. Student use of these technologies varied. In a given day, students reported making an average of 7 calls, sending 4 and receiving 23 emails and sending 57 and receiving 61 text messages. Approximately one-third of the students reported using instant messaging, teleconferencing and video conferencing technologies. Of those using instant messaging, most reported using the chat feature in Facebook. The teleconferencing and videoconferencing technology most often mentioned was Skype, although a few students reported using Apple’s Facetime, one student reported using Google’s Hangouts and one student indicated using WIMBA, a web conferencing tool integrated with Blackboard’s Learning Management Systems. Technology use is presented in Table 2.

	<b>% Using</b>	<b>% Not Using</b>		<b>Average per day</b>
Email	100%	0%		
			Emails sent	3.64
			Emails received	22.58
Phone	100%	0%		
			Number of calls	6.68
Text Messaging	100%	0%		
			Text messages sent	56.52
			Text messages received	61
Instant Messaging/Chat	40%	60%		
Teleconference	34%	66%		
Videoconference	36%	64%		
Fax	2%	98%		
*Other - Four students reported using 'Facebook' as another communication technology they used				

**Table 2. Student Reported Technology Use**

Although email, voice and texting, were cited most often as technologies students use to support academic work, distinct differences emerged. Figure 1 presents data on student communication technology use with professors and other students. All students reported using email to communicate with faculty and 84 % reported using email to communicate with other students. On average, students reported emailing professors 8 times (mode =10) during the semester and emailing other students 6 times (mode = 2). The most common reason students emailed a professor was in relation to an assignment, notification of absence or a grade issue. The most common reasons students emailed other students was related to group work, class notes, help with an assignment or to inquire about a due date. In terms of using the phone, only 20% of the student indicated calling a professor and those that did called their professors infrequently (less than 2 times on average during a semester). Approximately half of the students (52%) called other students, but again, most students reported using the phone infrequently (less than 4 times on average per semester). When students did call professors, it was in regards to a grade issue or needing help with an assignment. When students called other students, it was most often in regards to group work or to inquire about an assignment due date. Text messaging shows a very different pattern; only four students (8%) reported texting a professor while 70% reported texting a fellow student. In a semester, students averaged sending more than 18 text messages to other students in relation to school work. The most common reasons students gave for using text messaging was for group work. Table 3 depicts reasons students report for using email, phone and text messaging.

<b>Reason Reported- Student to Professor</b>	<b>Communication Technology</b>		
	<b>Email</b>	<b>Phone</b>	<b>Text Messaging</b>
Grade issue	54%	14%	4%
Help with an assignment	78%	10%	
Submit an assignment (email only)	76%		
Question about a due date	28%	6%	2%
Discuss {share info} course topic	16%	2%	
Notification of reason for absence	62%	10%	6%
Other	16%	8%	

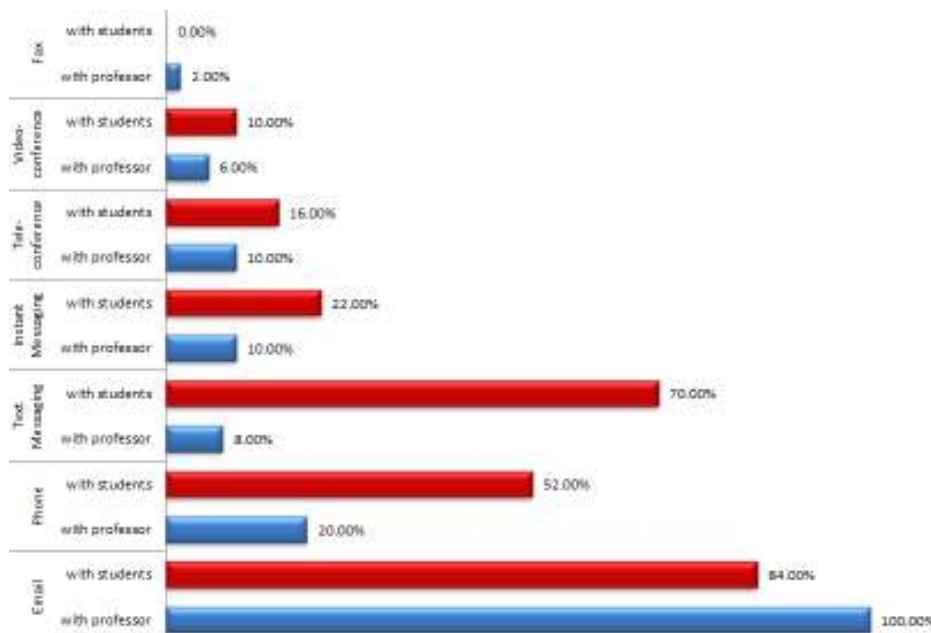
\*Other reasons reported for using email included professional experience or referral, internship opportunity, inquiring about extra credit, meeting appointment, group member issue  
 \*Other reasons reported for using phone included discussing event announced in class

Reason Reported- Student to Student	Communication Technology		
	Email	Phone	Text Messaging
Help with an assignment	42%	26%	34%
Group work	74%	46%	58%
Study for an exam or setting up study group	32%	24%	36%
Class notes	46%	30%	22%
Question about a due date	42%	36%	34%
Discuss a course topic	34%	12%	16%
Other	0%	2%	6%

\*Other reasons reported include borrowing a book (text and phone), asking for an email address (text), and asking how another student did on an exam (text)

**Table 3. Student Reported Reasons for using Email, Phone and Texting to Support Academic Work**

Students reported using instant messaging, teleconferencing, and videoconferencing much less frequently. When students did engage with these technologies, they more often used them with other students. Students reported the most common use of instant messaging was for group work. Only one student reporting faxing and that was to submit work to a professor. When students did engage with synchronous technologies (IM, teleconferencing and videoconferencing) with professors, it was primarily for class participation. Two students did indicate they used chatting to get help with an assignment. When students engaged with these interactive technologies with other students, it was primarily to support group work. Only one student reported using teleconferencing or videoconferencing for any purpose other than class participation. Eight students, however, reported using instant messaging with other students to get help on assignments, four students used IM to get information about due dates, and three students when studying for an exam or to discuss a course topic. Figure 1 presents data on communication technology use between students and professors and students with other students.



**Figure 1. Student Reported Use of UC Technologies to Support Academic Work**

Students were asked to respond to three open ended questions. When asked whether they thought communications technologies should be used more or less to support coursework, only six students felt they should be used less. The main reason given for this was the preference for face-to-face communications, especially with instructors. One student expressed concern that some students may not have full access to these technologies. Students felt that a primary benefit provided by these technologies was the opening up of communication channels reducing boundary and time constraints and expanding opportunities for more engagement between faculty and students enrolled in a course. Two students expressed that it was easier for them to participate in class discussions or communicate with professors using these technologies. Four students felt that the use of technology should stay as it currently is, while four other students felt that more communication technologies should be made available for student-to-student interaction but not for student-to-faculty communication. As several students indicated, the more communication channels used by the faculty, the more complicated the learning environment becomes for the student making the technology a hindrance to rather than a facilitator of learning. One student lamented, "...there is an increased pressure on the student, we can never really escape our professors emailing or messaging us to tell us to do things. In a way that's a positive, but I do miss the days when you got homework, went home, did it, then handed it in. Now I get homework, do it, and my professor can send me a correction to it and I have to do it again. It just seems like things were simpler before it."

The greater majority of students felt that communication technologies enhanced their ability to be successful as a student. Primarily, this was due to the fact that communication technologies make it much easier to collaborate with other students and to reach out to peers and faculty for help with coursework. As one student stated, "I do believe these different forms of technologies do enhance the ability for students to be successful because they provide alternatives for the student. These technologies allow students to easily interact outside of the classroom in a more upfront, engaging way. These technologies have the potential to create stronger learning communities within schools." Eight students provided a negative response to this question and those who elaborated on their response indicated that they learned better using means other than technology. Two students indicated that while the technologies could be positive, they might also be distracting.

All but four students (two simply stating 'no;' two stating they did not know) responded that communications technologies were changing education. Most felt it was a positive change. Again, many students responded that these technologies create more opportunities for faculty and students to stay connected; although several students qualified this by citing it as a benefit when face-to-face meetings were not an option. Several students noted that the 'world is changing' and becoming more reliant on technology, and as such, the university needs to provide more opportunities for students to engage with these technologies in their academic discourse. Many students, however, expressed a caveat to this best stated by a student who said, "I just don't want to see an education setting where all communication is technology based."

## CONCLUSION

Teaching and learning do not happen in a vacuum. They require interchange between student and teacher. Communication technologies facilitate this interchange. However, there is often a lag between the time new technologies are introduced and when they are adopted or utilized in the classroom. This is the case with unified communications. While UC has become a vehicle in knowledge transfer and knowledge sharing in business and industry, it is just emerging in the higher education classroom. Just as UC has shown positive benefit in the business environment, it shows promise for the academic environment as well. Consider, for example, this scenario recently experienced: A faculty member presents a lecture streamed live to students in remote locations. During the lecture, a student calls the professor from her cell phone and asks a question. The student watches as the professor answers his phone and proceeds to answer her question. At another point during the lecture, the professor checks his smartphone for student questions emailed to him. He opens an email, reads it to the class and answers that question as well. Multiple communications channels have found their way into the classroom.

According to EDUCAUSE, undergraduate student behavior drives the adoption of technology (Dahlstrom, 2012). Students use a variety of communication technologies and use them in their daily lives. However, they tend to use different modes for their social lives and their academic lives, or at least between different recipients. Students prefer to use formal asynchronous forms of communications (i.e. email) with professors. With peers, they prefer texting but are also open to synchronous forms of communication (such as instant messaging and videoconferencing) as well. Consequently, a move to full implementation of UC in the classroom will be gradual. EDUCAUSE recommends the next step for integrating communication technologies should be "to provide networking opportunities that support academic work but are one step removed from faculty oversight or involvement," "use e-mail and the course management system for formal communication with students" and "experiment with text messaging and instant messaging/online chatting" (Dahlstrom, 2012, p. 32).

As communication technologies continue to become pervasive in our social lives, so will their use in our academic lives. However, this will not be without challenges. As one student stated, "I have no problems with the amount that technology is

used, but rather, it drives me insane trying to keep up with all the different technologies professors want me to use. Nothing is ever in just one place.” Unified Communications purports a technical architecture that integrates multiple technologies into a single communications platform supported by a consistent unified user interface. In higher education, Learning Management Systems are positioned to present this type of consistent user experience to students. To achieve this role, however, LMS’s must become more sophisticated in terms of the types of communication and real-time interaction technologies they feature and incorporate into their technology model for instructional support. As students recognize these systems do more than provide course content and serve as a dropbox for course assignments, they will become course communication hubs (Dahlstrom, 2012). Unified Communications has proven itself as the communications hub in the business environment and a unified communications platforms show promise for students. However, purposefulness and thoughtfulness is needed as additional communication technologies are adopted to support the teaching/learning process.

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