



Research Article

THE USE OF LAPTOPS AND CELL PHONES IN CLASSROOMS OF UNDERGRADUATE STUDENTS AT KING SAUD BIN ABDULAZIZ UNIVERSITY FOR HEALTH SCIENCE

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ABSTRACT

Technology, such as laptops and cell phones, has invaded classrooms, raising considerable concerns about its use in such a place.

Objectives: To determine the reasons for having laptops in classrooms from students' perspectives, how they are using laptops during class, and the frequency of laptop and cell phone usage by students in classrooms and to identify students' perceptions of the use of laptops and cell phones in class, based on 34 elements.

Method: A quantitative exploratory study was conducted in King Saud bin Abdulaziz University for Health Sciences, Jeddah, Saudi Arabia. The digital device use was investigated through a survey that was distributed among 66 and 199 medical and basic science students respectively, including 168 males and 97 females aged 17 to 23 years for academic years 2010 to 2014. Data gathering focused on students' in-class use of laptops and the frequency of cell phones and laptops use for non-class activities using a questionnaire on a 5-point scale.

Results: The results revealed that class presentations were the main reason why students bring laptops to class, according to 58% of the students; 29% self-reported using laptops for non-class activities. In addition, 25% and 14% of students reported using cell phones and laptops, respectively, more than 5 times per 60-minute class period.

Conclusion: Students are using laptops and cell phones for academic and non-academic activities, which could indirectly affect students' concentration and ability to learn in classrooms, and may necessitate controlling technology use in the classroom by students.

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INTRODUCTION

Laptops and cell phones have become standard equipment for postgraduate students as many universities have a free access to a Wi-Fi technology to their students and allow them to use it in classrooms [1]. But, recently there has been a backlash against using such technology in classrooms due to their negative impact on students' learning ([2], [3]). The study by Fried found that laptop use in classrooms negatively affects students' performance and learning [4]. In addition, Granberg and Witte found that students' grades do not improve when they use laptops in classrooms compared to students who do not use laptops[5].

A study by the University of Michigan Center for Research on Learning and Teaching (CRLT) examined how laptop use in class affected students' learning, engagement, and attentiveness. The authors found that the majority of students used their laptops in class for non-educational activities such as social networking and checking emails [6].

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Research on human cognition found that pop-up messages, appearance of new information while performing a task increase errors and slows performance ([7]-[9]). Many faculties have raised concerns about the distraction posed by laptops and cell-phones use in classrooms. Granberg and Witte compared overall class grades of laptop and non-laptop sections and found no difference [5]. Levine found that using laptop-up laptop-down system, which prevents the students from using laptops during lecture time, makes students pay attention to the lecture [10]. Studies have described the distractions posed by laptops and cell phones use in class and the frustrations felt by faculty ([3],[11]-[13]). Press has reported efforts on ban or block laptop use from University of Pennsylvania, [14] Bentley College, [15] Michigan Law, [16] Kansas [17] and Harvard [13].

On the other hand, some studies have found that laptop use in class can increase students' participation and facilitate faculty-student interaction ([18]-[20]). Driver found that laptop use in class for group projects enhance satisfaction among students [21]. Other studies have found that the use of laptops classrooms can increase students' knowledge,

motivation, and their academic achievements ([22]-[23]). But even those who support the use of laptops in class argued that it should be controlled. Levine has suggested the use of software that allows instructors to control and monitor what students are doing with their laptops in classrooms [24]. Cell phone ringing in classrooms has significant effects on cognitive performance [25]. And could distract both faculty and students ([26],[27]). The National Education Association study in U.S. found that 85% of a sample of higher education instructors agreed that professors should ban cell phones in classrooms [26]. Douglas found a significant negative correlation between final grades and the frequency of cell-phone use in class, where 75% of students reported regular cell phone use [28]. Many educational institutions in the U.S. have formal policies banning cell phone use in classrooms ([2], [3]). The key question for most higher education instructors is simply whether innovation of these technological advances will have a positive or negative impact on education. The purpose of the present research is to describe the nature of use of technology (laptops and cell-phones) in classrooms and to determine the frequency of laptop and cell-phone use in class.

METHOD

Study design: Quantitative exploratory study.

Two hundred sixty-five students participated in this research, 66 students from the medical college and 199 students from the basic science college, 97 females and 168 males, aged 17 to 23 years for academic years 2010 to 2014. The research was conducted in classrooms where laptops and cell phones were not utilized in any organized fashion. All students in each class had cell phones and laptops with wireless networking capabilities, and classrooms were equipped with Wi-Fi. A validated self-administrated questionnaire was handed to the students in multiple classrooms and it was divided into two parts: in the first part, students were asked to report, on a 5-point scale, their perception about the use of laptops in class, whether they had used their laptops for things other than taking notes, and how they had used their laptops (table1). The second part (on a 5-point scale as well) involved asking students to report their frequency of in-class laptop and cell phone use for non-educational activities (table2).

Table 1 Use of laptop in classroom

	Mean	±	Std. Dev
Laptops enhance students' learning	1.56	±	.498
Laptops enhance students' capabilities of self-learning	1.58	±	.494
Laptops improve students' communication skills	1.40	±	.491
Laptops facilitate faculty-students interaction	1.43	±	.497
Laptops enhance teamwork in class	1.35	±	.477
Laptops improve class materials presentation	1.62	±	.486
It is inconvenient to use my laptop during class	1.32	±	.468
Laptops aid students to solve challenging problems	1.57	±	.496
Students' attention is distracted due to the use of their laptops during lectures	1.39	±	.488
Laptops are convenient for students to use during in-class exercises and exams	1.37	±	.484
Student-instructor interaction is directly linked to the use of laptops	1.22	±	.418
Students use their laptops actively during the lecture sessions	1.32	±	.467
I use laptop during class to write notes	1.28	±	.449
I use laptop during class for PowerPoint Presentations	1.46	±	.499
I use laptop during class for sending and receiving assignments	1.36	±	.480
I use laptop during class for sending emails	1.22	±	.416
I use laptop during class for checking emails	1.25	±	.433
I use laptop during class for creating discussions and discussion groups among students	1.16	±	.366
I use laptop during class for other non-educational purposes	1.30	±	.458
I use laptop during class for taking notes	1.36	±	.482
I use laptop during class for instant messaging	1.23	±	.419
I use laptop during class for playing games	1.16	±	.365
I use laptop during class for surfing the net	1.31	±	.462

Table 2 Frequent use of laptop and cell phone in the classroom

	Means	±	St.Dev.
I never use laptops during class for things other than taking notes	1.33	±	.472
I use laptops 1-2 times during class for things other than taking notes	1.27	±	.444
I use laptops 3-5 times during class for things other than taking notes	1.16	±	.371
I use laptops over 5 times during class	1.14	±	.349
I never use cell phone during class	1.24	±	.428
I use cell phone 1-2 times during class	1.35	±	.479
I use cell phone 3-5 times during class	1.28	±	.449
I use cell phone over 5 times during class	1.27	±	.446
The College's technical infrastructure (e.g. network / wireless connections) is adequate for the full implementation of the use of wireless laptops	1.55	±	.498
The College's infrastructure and IT support services are excellent overall	1.47	±	.500
Network accessibility at KSAU-HS is easy	1.54	±	.499

The options for use of technology in class (34 elements) included the educational and non-educational use of laptops in classrooms, and the frequency of laptops and cell phones usage during class. All participants signed consent forms and were assured by the investigators that all data would be kept anonymous and that the survey results would not influence their grades.

RESULTS

Only students who completed both parts of the questionnaire were included in the analysis. Two hundred sixty-five students out of 293 completed the surveys, which gave an overall response rate of 90.4%. Of them, 29% self-reported using laptops during class for non-educational activities, 29% reported surfing the internet during class, 24% reported checking emails, 22% reported using instant messaging, 22% reported sending emails, 15% reported playing games, and 15% reported chatting (Fig.1). Twenty-five percent and 14% of the students self-reported using cell phones and laptops respectively more than 5 times per one hour class period, 26% and 15% reported using cell phones and laptops respectively 2-5 times, 33% and 26% reported using cell phones and laptops respectively 1-2 times, and never use of cell phone and laptops during class time reported by 23% and 33% of students respectively (Fig.2). The study found that only 27% of students use laptops to take notes, and when students were asked about the reasons of having laptops in class, presentation of classroom materials was the most common reason given (58 %) (Fig.3).

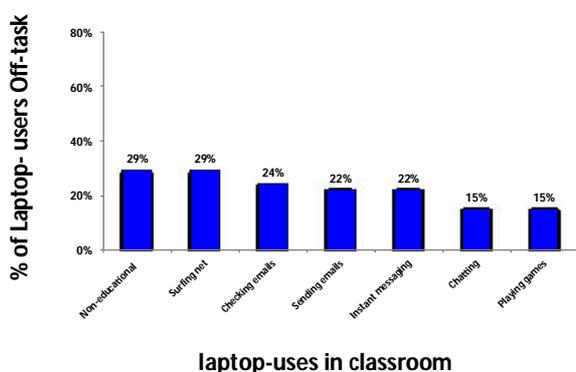


Figure 1 Off-task use of laptop in classroom

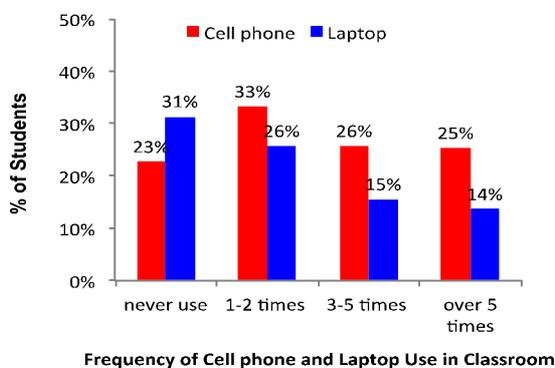


Figure 2 Self-reported Frequency of Cell phone and laptop Use(per class)

While 55% of the participants agreed that use of laptops in class enhance their capability of solving problems and self-learning. The average percentage of students who agreed that laptops facilitate faculty-students interaction, improve

students' communication skills and enhance teamwork was 38.3% (Fig. 3). When students were asked about their satisfaction regarding university's infrastructure, IT support services and network accessibility at university 45 to 52% of students were satisfy (Fig. 4).

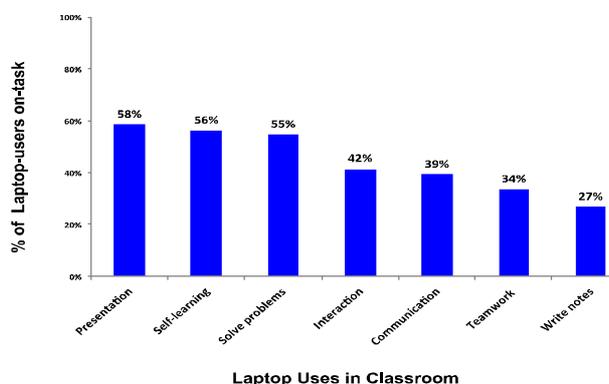


Fig. 3 Students' perception of laptop in classroom

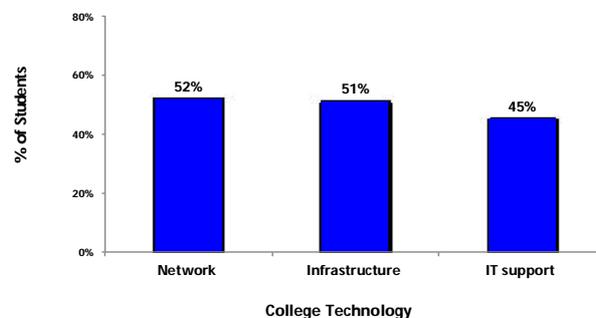


Fig. 4 Students' satisfaction about College Technology

DISCUSSION

The current study answers two important and serious questions. The first question was about the nature of use of laptops in classrooms and the second was about the frequency of laptops and cell phones usage during class. Use of laptops for non-educational and social network activities during class time has been self-reported by the students. Instant messaging and checking emails were the main two activities. Our first data which was about nature of use of laptop and cell phone in the classroom indicate that the percentage of laptops off-task during one class period (60 min) was 29% which was lower than self-reported study by Fried which indicated that 64% of students reported using their laptop for non-academic activates during class time[4]. And lower than low students where over 70% of them self-reported using laptops for non-educational activities during the class [29]. In another study 90% of students self-reported checking emails during class time [30]. However, self-reported data do not give an accurate percentage of laptop off-task users. Results would be more accurate if an electronic device or proxy server is used to monitor computer use as in Hembrooke & Gay study, which found that the student's laptop off-task was more than 50% of the class time [31]. While all of our participants from both medical and basic science classes own laptops only 27% of them use laptops to take notes and the presentation of classroom materials was the main reason for the participants to have laptops in class. This suggests that the use of laptops

in classrooms is not structured and their use in a different educational field is not clear to the students. The study confirmed that many students used cell phones more frequently than laptops during class time, which seems to be reasonable (given the small size of cell phones, easy to use and having most of laptop features) but such frequent use of both laptops and cell phones for non-educational activities reflect by indirect way how much students distract themselves by using digital devices in classrooms and indicating the important of structure laptop and cell phone use during class time.

One limitation of the study was that it was a single institution context which definitely does not reflect other different regions and universities. Therefore, further research is needed to confirm our funding in other universities and disciplines. Self-reported data is another limitation, which always raise concerns about the social desirability and does not give very accurate results. Therefore, monitoring laptop use during college time will give more accurate results about the nature of laptops use in classrooms and it will complement self-reported studies.

CONCLUSION

The results of this study suggested that more than 25% of students are not using laptops or cell phones in class for class-related materials. In addition, the use of cell phones was more frequent than laptops, which may reflect negatively on student's concentration and learning ability in class.

Therefore enact policies by universities for judicious use of digital devices during class time may be required.

Future research

Our future research will be to confirm our funding in other universities and disciplines. Also, we are going to involve faculty and know their perception about the use of laptops and cell phones by their students in classrooms.

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Competing interest

The authors declare that they have no conflict of interest.

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