

# The Use of Mobile Devices for Academic Purposes at the University of Washington: Current State and Future Prospects

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## Executive Summary

Findings from the annual EDUCAUSE ECAR survey show a marked increase from 2013 to 2014 in the ownership and use of mobile devices for educational purposes. Additionally, the perceived importance of mobile devices for enhancing academic success has grown significantly among students. Despite these gains, students voiced frustrations about interacting with mobile interfaces that lacked functionality and usability, particularly with regards to the LMS. Instructors see the value of mobile devices as a learning tool, however they don't know how to best incorporate these devices into their teaching and see them as a distraction. Based on these and other findings we make the following recommendations:

- Continue improving mobile device interfaces and encourage the development of innovative teaching and learning mobile apps
- Provide professional development opportunities for instructors who desire harnessing mobile devices as a teaching and learning tool. Incentives, such as time off from teaching to learn how to integrate emerging technologies will encourage adoption
- Expand access policies for students, including loans that span the entire academic quarter, additional equipment available for loan, and priority for students with greater financial need, so all students can enjoy the educational benefits of mobile devices

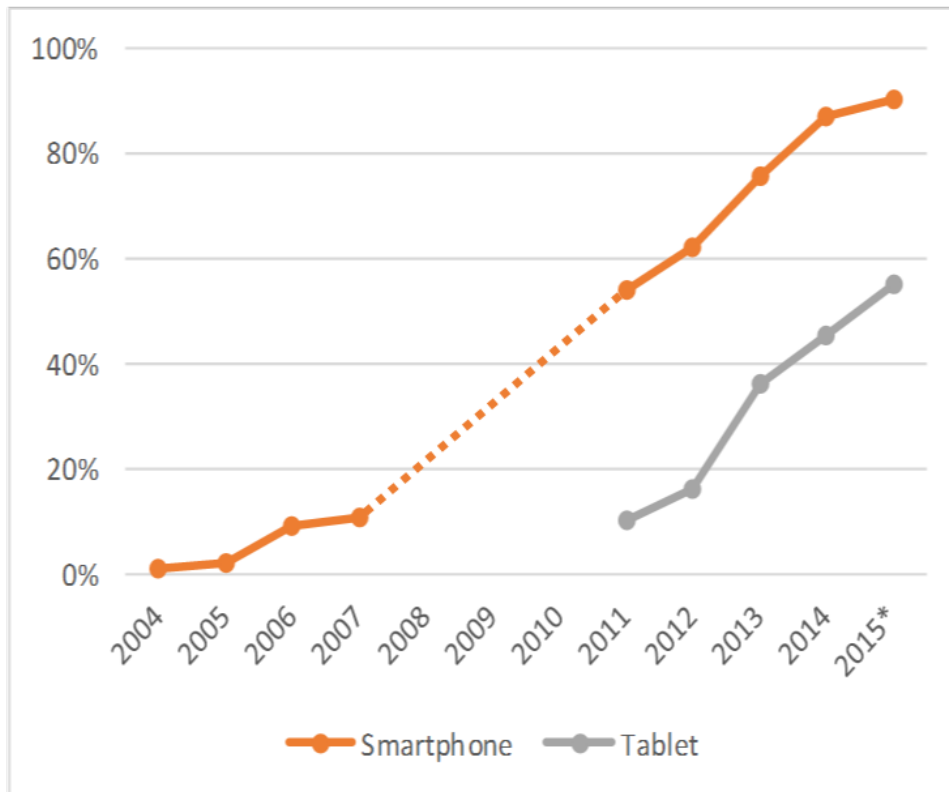
## Introduction

For the past 10 years, the EDUCAUSE Center for Analysis and Research (ECAR) has conducted an annual survey that examines the technology experiences of undergraduates. The University of Washington (UW) is one of 250 institutions of higher education that participates in this survey, providing UW Information Technology (UW-IT) a unique opportunity to investigate how UW students' use of, and perceptions about, educational technologies compare with their peers. Analysis of longitudinal data from the ECAR surveys further allows UW-IT to assess the changing technology needs of UW students. In 2014, ECAR piloted a faculty survey, expanding the utility of this research effort to include survey items on how educators are using technology.

This year's survey provides insight into the current and projected use of mobile devices for educational activities and how mobile device use here compares with the UW's peer institutions. This data lets UW-IT pinpoint successful efforts, identify areas of need, and discover opportunities for innovation.

## Findings

A number of salient and informative findings emerged on the use of handheld mobile devices for academic purposes, as well as perceptions regarding their use, painting a picture of the current mobile device climate at UW and forecasting areas of emerging need. In this section, we will detail handheld mobile device ownership patterns over time and their uses in educational contexts by both faculty and students, and compare some of these findings with those from peer universities. A total of 688 UW students and 585 UW instructors took the survey.

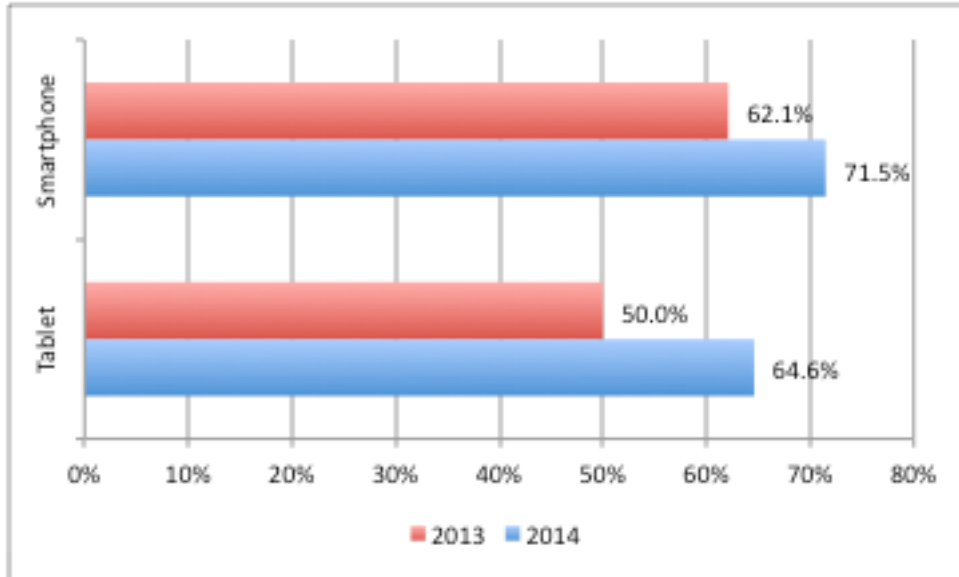


**Figure 1. Device ownership across all institutions:** This figure illustrates observed growth in mobile device ownership, as well as predicted growth in 2015, based on planned purchases, across all institutions included in the ECAR survey population. The dotted line represents predicted trends during these years, given that no data was collected on smartphone ownership during this period.

***The use of mobile devices for academic purposes has increased at the UW.*** Similar to students at our peer universities, an increasing number of UW students own handheld mobile devices (tablets and smartphones) (Figure 1). In the 2013 ECAR survey, 27.8% of UW students reported that they owned a tablet, increasing considerably to 38.5% in 2014 ( $p < 0.001$ ). Based on planned purchases this percentage is projected to reach 46.9% by 2015. Student responses also indicated a significant increase in tablet use for academic purposes, rising from 37.4% in 2013 to 46.1% in 2014 ( $p < 0.01$ ). Among students who reported owning a tablet, 85.6% said that they used their tablet for academic purposes.

Similar trends were observed in the use of smartphones. In the 2013 ECAR survey, 80.1% of UW students said they owned a smartphone, and 69.3% of all UW student participants said

they used a smartphone for academic purposes. By 2014, device ownership increased significantly to 87.9%, and 73.8% of UW survey participants reported using a smartphone for academic purposes ( $p < 0.001$ ,  $p = 0.07$ , respectively). Looking only at those who own smartphones, nearly 80% said they used their device for academic purposes. Based on planned purchases of smartphones, ownership is predicted to increase to 91.5% by 2015.



**Figure 2. Importance to Academic Success:** From 2013 to 2014 there was an observable growth in how important students feel these devices are to their academic success.

In conjunction with use and ownership trends, findings indicate a belief among UW students that handheld devices are becoming increasingly important to their academic success (Figure 2). In 2013, 50% of students reported that tablets were important (this combines “moderately important,” “very important,” or “extremely important”) to their academic success. This trend increased in 2014, with 64.6% of students reporting that tablet use was important to their academic success ( $p < 0.001$ ). Likewise, in 2013, 62.1% of students reported that smartphones were important to academic success, with this percentage increasing to 71.5% in 2014 ( $p < 0.001$ ).

***Students need to complete a wide-range of academic tasks on their handheld device.*** UW students indicated that they use their handheld devices for a wide range of academic purposes. The ECAR survey asked students how important it was to complete certain tasks on a mobile device, on a scale of 1 to 5 (5=extremely important, 4=very important, 3=moderately important, 2=not very important, 1=not important at all).

As Table 1 indicates, the three most important tasks for UW students were communicating with other students about course-related matters (mean=3.93), looking up information in class (3.56), and checking grades (3.47). There were notable differences between UW students and their peers with regards to the perceived importance of completing tasks on a mobile device. UW students rated checking grades and registering for courses significantly higher on the importance scale, but rated participation in class activities and using the Learning Management System (LMS) significantly lower on the scale compared with their peers.

**Table 1. Importance of using mobile devices for different functions:** This table compares the aggregate importance ratings between UW students and students in peer universities for a variety of functions that mobile devices may fill. Participants responded on a 5-point importance scale: 5=extremely important, 4=very important, 3=moderately important, 2=not important, 1=not important at all. Results are ranked from highest average UW response to the lowest. Colored boxes indicate those tasks that were rated higher by UW students compared with their peers.

Mobile device tasks	UW (Mean)	Peer Institutions (Mean)	p-value
Communicate with other students about class-related matters outside of class	3.93	3.90	0.839
Look up information while in class	3.56	3.54	0.329
Check Grades	3.47	3.73	<0.001*
Accessing information about events, etc.	3.36	3.37	0.756
Registering for Courses	3.18	2.97	0.003*
Use the CMS/LMS	3.10	3.57	<0.001*
Capture static images of in-class activities	3.08	3.06	0.650
Read e-texts	3.04	3.07	0.839
Access to Library Resources	2.77	2.82	0.132
Use as Digital Passport	2.60	2.73	0.056
Participate in Class Activities	2.58	2.85	<0.001*
Record lecture or in-class activities	2.47	2.53	0.297

\* Statistically significant differences between UW students and their peers, as calculated using Chi Square Test.

***Faculty see mobile devices as both a distraction and a valuable learning tool.*** When it comes to policies regarding the use of handheld mobile devices in the classroom, there appears to be a breakdown in communication between what faculty say their in-class policies are, versus what students report. Students report that policies surrounding the use of handheld devices are much more restrictive than those policies faculty indicate implementing. For example, 70% of students at the UW indicated that in-class use of smartphones is either banned or discouraged by their professors, while only 46.8% of faculty said this is actually the case.

Instructors see both the costs and benefits of incorporating mobile devices in the classroom. A majority of UW faculty (70%) felt mobile devices in the classroom are distracting. About half indicated that mobile devices have the potential to enhance learning, though only 31.6% responded that they actually created assignments that take advantage of mobile technologies. A lack of knowledge in this area may be the barrier. Almost half of respondents indicated an interest in receiving training on how to best utilize mobile devices in their teaching, and about a third of respondents indicated they would be more effective educators if they were better skilled at doing so. As one faculty member summarized in a written comment, “mobile in-class devices can...enhance learning but they can also distract. It depends on how they are used, [and] I’d like to learn more...to improve my teaching.”

## **Discussion**

### **What mobile devices offer: Opportunity for innovation**

The increase in mobile device use for educational purposes generates ample opportunity for innovations designed to help students achieve their learning goals and help them navigate the logistics of being a student. One ECAR finding serves as an example of how mobile apps can make a difference to students. UW students indicated that using mobile devices for registration is very important, and rated this use higher than their peers did. This is arguably the result of Notify.UW, an app created by UW-IT that helps students register for popular classes. Notify.UW enables students to “watch” these courses, sending a text message when a space opens up.

UW-IT has created additional mobile tools intended to address the emerging needs of UW students, including SpaceScout and MyUW mobile. The SpaceScout app allows students to use their smartphone or tablet to locate campus study spaces that meet specific criteria, helping students find exactly what they need when studying alone or working in a group. Recent upgrades to MyUW mobile have also improved the student experience on the go. MyUW now provides students with timely, personalized information, and future enhancements are forthcoming. By offering additional tools and making improvements to existing tools that take advantage of mobile devices in this manner, the UW will continue to respond to students’ evolving needs and use of technology.

### **What students want: Friendly user interfaces and more features**

Advances in mobile access to services such as the learning management system (LMS) have the potential to make a significant impact on the student experience. The LMS is a particularly interesting example as it both assists students logistically (e.g., monitoring

important due dates), while also enhancing learning (e.g., providing additional opportunity to review course material). Several findings combine to suggest that mobile devices will play a major role in a student's LMS experience in the near future. First, both faculty and students recognize the impact an LMS has on learning. Over half of UW instructors said they would be more effective educators if they were better at integrating the LMS into their teaching, and students felt they would be more effective learners if they were better skilled at using the LMS. Second, instructors expressed interest in increasing LMS presence in the courses they teach, and an overwhelming number of UW instructors (94.5%) already use an LMS in their courses to some extent. Despite the increasing impact of LMSs at UW, UW students, on average, rated the ability to access an LMS from a mobile device as "moderately important," lower than students at peer universities. This interest would likely be greater with advancements in the capability and usability of current LMS mobile interfaces. Write-in data reveals that UW students are seeking mobile device friendly interfaces and a wider range of mobile features to meet their educational needs. For example, one student said that the UW needs to "offer more of the features available on the desktop site on the mobile site," in reference to his/her LMS, and one requested that the UW "make all current features [on the Canvas LMS] compatible with smartphones." Another student indicated that the UW could use technology to better facilitate student academic success by providing mobile device accommodations for learning management platforms. The availability of a service on a mobile device is an important first step, but ultimately these services should offer the features students need on user-friendly interfaces.

### **Factors crucial to success: Instructor buy-in, student access and infrastructure**

Findings from the ECAR survey illuminate three factors crucial to the success of mobile devices in the classroom: instructor buy-in, student access, and infrastructure. ECAR data indicates that UW faculty see the potential in mobile devices as a means of making learning accessible and promoting engagement, but still have concerns about the distraction these devices cause. By preparing faculty to effectively utilize students' mobile devices to enhance student learning, we can reduce concerns about mobile devices being a distraction in the classroom, and the benefits will exceed perceived costs. Second, for mobile device use in the classroom to be a success, all students need access. For example, if a professor moves from using clickers as a classroom response system to a mobile app, some students will be unable to participate. As one student pointed out, faculty should be wary when they expect all students to have access to mobile technology. Finally, Wi-Fi access should be fast and reliable. Compared to their peers, UW ECAR participants were considerably more satisfied with Wi-Fi access, implying that students and instructors have the means necessary to confidently incorporate handheld mobile devices into the learning setting.

## **Recommendations**

### **Develop mobile device friendly web tools**

Mobile devices can have a wide impact on students' academic success by helping them manage their lives as students more efficiently and by enhancing their learning. Continued investment in improving the usability of mobile device friendly resources, building on pre-

existing tools like MyUW and Canvas, will greatly benefit students. Additionally, the development of innovative apps and assessment of third-party services that strengthen learning both inside and outside of the classroom is encouraged.

### **Incentivize and improve professional development opportunities**

UW should offer faculty training and professional development opportunities, focusing on how mobile devices are best utilized in the classroom, how to reduce their potential for distraction, and methods for communicating in-class mobile device policies with students. Training can inform instructors about how their students are currently using their devices for academic purposes, as well as how their students wish to use mobile devices to meet their learning goals. UW-IT's Learning Technologies unit and the Center for Teaching and Learning could lead this effort. Training opportunities alone are not enough to encourage faculty. ECAR findings suggest that providing incentives, such as time off to prepare for integrating new technologies, will encourage instructors to incorporate mobile technologies into their teaching.

### **Accommodate all students**

With more faculty creating classroom activities involving handheld mobile devices, the UW needs to ensure that all students have access to mobile devices through a device rental or loan service. While smartphones are currently unavailable, students can access other mobile devices on a rental basis through the Student Tech Fee Equipment Loan Program; however, current policies are restrictive in terms of availability and length of loan. Expanded access policies, including loans that span the entire academic quarter, more equipment available for loan, and priority for students with greater financial need, is recommended.