Using Mobile Devices in the Classroom

Research evidence describes mobile device use in higher education to be both helpful for student learning and harmful in causing distraction for the user and other students in the classroom.

The main ways mobile device use promotes learning is through active engagement, digital access to information, instant feedback (summative and formative), focus on discussion, and learning experiences that are convenient and more engaging with the use of apps and digital resources (Himmelsbach, 2019; Ortiz & Green, 2019; Synnott, 2012). Students are motivated by technology use to support learning, recognize resources are beneficial in explaining content, and expect professors to utilize technology (Fernandez, 2018; Ortiz & Green).

Mobile device use in the classroom may be distracting and harmful based on students' urge to text or check notifications as they pop up on the screen, technological difficulties, off task behaviors or academic dishonesty, and overuse of technology is correlated with decreased cognitive thinking skills, social interaction and a decrease in attention span (Himmelsbach, 2019; Morgan, n.d.; Tindell & Bohlander, 2012; The President and Fellows of Harvard College, 2019; Tossell et al., 2015). There is a lack of evidence supporting the use of mobile devices for increasing grades or enhancing student academic goals; however, there is a correlation between mobile device use in the classroom and poorer grades (Tossell et al.; Whitford, 2018).

There is evidence indicating students will continue to use mobile devices in class even if there are policy bans in place, requiring faculty efforts to transform classrooms based on student perspective and preference (Lieberman, 2019; Morgan, n.d.). From the literature, a common theme emerged that students and faculty must collaborate to create a structured policy and plan ways mobile devices will be directly used in the classroom in order to achieve better on task behaviors and optimize the benefits mobile devices can provide to student learning (Himmelsbach, 2019; The President and Fellows of Harvard College, 2019; Tossell et al., 2015). Mobile device technology is supported as an adjunct to the teacher to create a flexible, collaborative learning environment for students in higher education.

How do current college students use mobile devices (phones, tablets and laptops) in the classroom?
- Active learning
- Planning for learning
- Teachers are using mobile devices for online polling, online engagement systems to regularly check in with students for feedback, data analytics to analyze where students are having difficulties, pre/post lecture quizzes (not to be graded) to determine student retention or understanding of content
- Participating in classroom "gamification"- competitive scenarios, points and rewards to support course learning objectives
- Online syllabus
- Sending reminders
- Complete school related tasks (i.e. access course schedule, class announcements, academic calendar) (Tossell et al., 2015)
- Use of cameras to take pictures of information on board/screen allows students to pay more attention rather than trying to take notes (Synnott, 2018)
- Look up terminology, vocabulary acquisition
- Create discussions, crowd source questions using social media
- Take collaborative notes in an open document
- Listen to recorded lectures

o Move around the classroom for collaboration with use of mobile devices for learning rather than remaining sedentary the entire class time

- **Summary of research on mobile device use as helpful/productive in the classroom**
  - o Allows students to explore content and obtain instant feedback (Himmelsbach, 2019)
  - o Flipped classroom or adding technology into class builds credibility between teachers and students
  - o Active learning/ increased engagement (i.e. online polling, quiz questions during lectures with instant results), students appreciate the convenience and speed
  - o Subject matter is dynamic (digital textbooks with embedded links to resource materials and wikis)
  - o Promotes participation including shy students who may not be willing to raise hand to participate (Himmelsbach, 2019)
  - o Countless apps, e-textbooks, organizational platforms to enhance education and make learning more engaging and interesting
  - o Automation of tedious teacher tasks (i.e. keeping track of attendance, student performance, grading assignments) (Himmelsbach, 2019)
  - o Instant access to up to date information, instant access to university online databases
  - o Digital literacy is a life skill (i.e. creating presentations, differentiating reliable vs unreliable content, online etiquette) (Himmelsbach, 2019)
  - o Allows for distance learning via portability and flexibility
  - o Increases student engagement respecting various learning styles and supporting students' use of new technology such as virtual and augmented reality
  - o Saves trees, cuts down on paper, reduces textbook costs (Paskevicius & Knaack, 2018)
  - o Correlated with increased student motivation to learn both in and outside the classroom (Fernandez, 2018)

- **Summary of research on mobile device use as distracting/harmful in the classroom**
  - Interferes with learning, leads to worse grades, distracts classmates from learning (especially texting and laptop use) - *Create expectations and guidelines (i.e. specific projects, times during class) for use of technology (Himmelsbach, 2019; Morgan, n.d.; Tindell & Bohlander, 2012; Tossell et al., 2015; Whitford, 2018)
    - Push notifications and alerts from apps create a distraction for students who are using mobile devices for learning purposes. This requires selective attention to keep focus on the learning content rather than the other notifications- requires self-regulations to avoid temptation of using mobile device for entertainment
    - Activation of the phone (chime, ring, or vibration) will cause student to lose focus no matter how invested he/she may be in class lecture
    - Inability to multi-task (Whitford, 2018)
    - Habitual behaviors associated with need to continuously check phone- overestimated how much mobile devices help achieve higher grades (initially thought it helps complete homework, achieve high test grades, and promote learning outside the classroom (Tossell et al., 2015)
    - Weak evidence to support direct relationship between mobile learning management systems and grades
    - Technology issues and difficulties associated with mobile devices (small screen size make is difficult to view pages of text, complex graphics, detailed pictures for long duration; battery life; security issues, piracy risks, theft of student information; long page loading delays)
    - Use of technology reduces cognitive thinking ability, has resulted in shorter attention spans, decreased ability to "think on feet" and problem solve without being dependent on internet, decreased long-term retention of information (Morgan; Whitford, 2018)
    - Relying too much on technology can impact social interaction and verbal communication, missed opportunities to socialize face-to-face, avoid participating in class. Better to create assignments that use both technology and oral presentation for dynamic group collaboration (Himmelsbach, 2019; Morgan)
  - Academic dishonesty- Technology makes it easier to cheat. Students report sending text messages during exams and using phones to cheat (Tindell & Bohlander, 2012)
  - Students may have unequal access to technology (Himmelsbach, 2019)
  - Use of technology is correlated with poor handwriting (Fernandez, 2018)
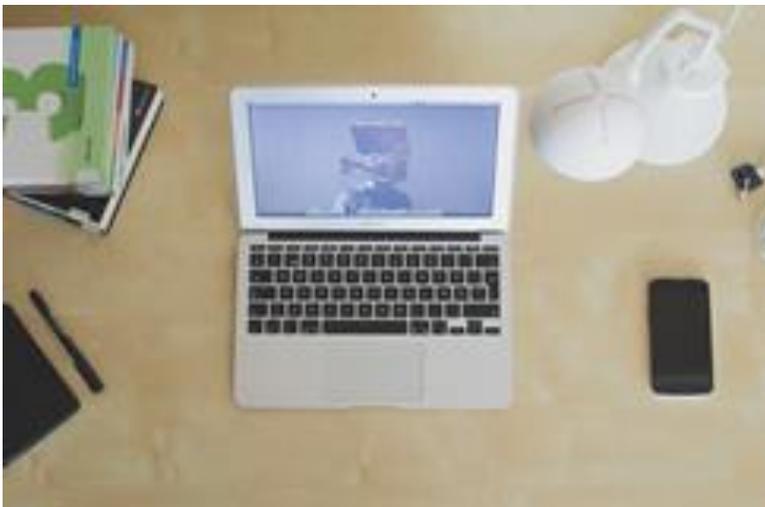
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