

Can Absenteeism Tracking Technology Improve Student Attendance & Increase Their Learning?

- Using Two Classes as Examples

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Abstract

Class attendance is often positively correlated with exams and class performance. However, instructors often cite not wanting to spend valuable class time recording attendance by calling names, especially in large size classes. With the advancement of wireless technology, cell phones, and apps, instructors are now able to access a free, automated method of attendance tracking using iClicker technology. iClicker was used in Principles of Horticulture, an introductory course with an average of 50 students, and Professional Practice, an advanced Landscape Architecture course averaging 15 students at Oklahoma State University last year. Students were given a five-question survey on their perceptions related to their likes, dislikes, attendance behavior, potential to facilitate course learning indirectly, and arrival time. Students cited ease of use, motivation to attend class, ability to monitor their own attendance records, and the ability to always count on it as positives. For negatives, students noted that the GPS function could be glitchy and failure to remember to sign in as negatives. Students in the introductory course self-reported increased attendance and learning related to the use of iClicker, but were neutral on the technology resulting in greater on-time arrival. The advanced class did not self-report increased attendance, learning, or on-time arrival to class. For instructors, it provides a record of attendance, if part of academic policy. Without using any class time, though instructors should remind students to log in each time before class. In addition, an incentive, points related to attendance, could be used to encourage participation.

Introduction

- The rise is a growing trend among students in higher education to not attend lectures (Massingham and Hemington, 2006).
- A 2010 meta-analytic review of college data showed a strong relationship between attendance and both class grades and GPA and concluded that class attendance was the best of any known predictor of academic performance (Crede et al., 2010).
- Personal response systems, student response systems, and automated response systems are commonly referred to as "clickers" (Olgren and Kuehnle, 2013).
- Over time, clicker devices have evolved from dedicated hand-held devices to web-based applications that can be accessed via a laptop, tablet, or smart-phone, but students are required to possess and bring their own device (BYOD) (Janda, 2018).
- iClicker is a classroom response system developed in 2003 by a team of physicists from the University of Illinois to encourage active learning and has polling, quizzing, and attendance features.
- Although most of the literature focuses on polling and quizzes, Morling et al. (2008) suggested that clickers can be used for both student engagement as well as helping with class management activities like attendance.
- Sorriglio et al. (2013) reported that the number one reason students choose not to attend class was because attendance is not taken in the class.

Table 1. Survey instrument used to determine student perspectives of iClicker Cloud technology to track attendance in an introductory and advanced Horticulture and Landscape Architecture Courses at Oklahoma State University.

Survey Questions:	
1. What do you like about using iClicker to track attendance?	
2. What do you NOT like about using iClicker to track attendance?	
3. Does using iClicker increase your attendance in this class compared to another that does not track attendance? (yes or no)	
4. Do you think iClicker facilitates course learning indirectly by helping attendance throughout the semester compared to another class that does not? (yes or no)	
5. Does using iClicker increase your on-time arrival in this class? (yes or no)	

Materials and Methods

iClicker Cloud (version 4.6) was used in Principles of Horticulture, an introductory course with 48 students, and Professional Practice, an advanced Landscape Architecture course with 15 students, at Oklahoma State University in spring 2019 (Figures 1-4). Students were given a five-question survey on their perceptions related to their likes, dislikes, attendance behavior, potential to facilitate course learning indirectly, and arrival time (Table 1). Chi-square was done on the binary data by setting alpha at 0.05.

Figure 1. Download iClicker Cloud at <https://www.iclicker.com/instructor/signup>



Figure 3. Create a course.



Figure 2. Create an account.



Figure 4. Under the attendance tab, you can set the go goals to run automatically on set days, times, and at a specific location.



Table 2. Survey responses of student perspectives of iClicker Cloud technology to track attendance in introductory and advanced Horticulture and Landscape Architecture Courses at Oklahoma State University.

Survey questions	Self-reported response	Frequency
1. What do you like about iClicker?		
Easy to use.	26	
Can monitor mistakes.	10	
Does not waste class time.	6	
Nothing.	4	
Motivation to attend class.	3	
Accurate.	3	
Accountability.	2	
Free.	2	
You know attendance will be taken.	2	
2. What do you NOT like about iClicker?		
GPS glitch.	23	
Remembering to sign-in.	19	
Nothing.	4	
If phone is dead or forgot to bring, can't check in for attendance.	3	
There is no handy feature.	3	
Using phone for class.	2	
Each class requires different iClicker technology.	1	

Table 3. Survey responses of student perspectives of iClicker Cloud technology to track attendance in an introductory and advanced Horticulture and Landscape Architecture Courses at Oklahoma State University.

Survey questions	Courses	Yes	No	Chi-square
3. Does using iClicker increase your attendance?	HORT1013	25 (55%)	13 (55%)	4.65*
	LA3682	4 (27%)	11 (73%)	4.17*
	Total	29	24	0.47
4. Does use of iClicker facilitate course learning?	HORT1013	26 (73%)	10 (27%)	10.66*
	LA3682	5 (33%)	10 (67%)	1.67
	Total	31	20	2.42
5. Does use of iClicker increase on-time arrival?	HORT1013	16 (47%)	20 (53%)	0.10
	LA3682	4 (27%)	11 (73%)	2.12
	Total	22	31	0.95

Results and Discussion

- Students cited ease of use, motivation to attend class, ability to monitor their own attendance records, and the ability to always count on iClicker Cloud as positives for use of the technology to track attendance (Table 2). Janda (2018) also noted that web-based systems have a clear advantage due to ease of set-up and implementation.
- Students noted that the GPS function can be glitchy and failure to remember to sign in as what they did not like about the technology (Table 2).
- Students in the introductory course (HORT1013) self-reported increased attendance and learning related to use of iClicker. Students were given bonus points at the end of the semester if they had less than five misses, so this likely influenced the behavior more than the technology use (Table 3). According to Onegg (1966), while instructors have a responsibility in encouraging attendance through subject matter interest, enthusiasm for the subject, and regular ask for on-attendance.
- The advanced class (LA3682) did not self-report increased attendance or learning, but did report greater on-time arrival to class (Table 3). White (1992) noted that teachers often have no influence on students' conception of benefits and costs as part of the decision framework to attend class or not.

Conclusion

- Based on the results of this study, students found the use of iClicker Cloud technology to be beneficial; however, the usefulness served different purposes depending largely on student classification and course type.
- The attendance part of the technology is free and students valued the positives over the negatives as only a few indicated that they liked nothing.
- Instructors should remind students to login each time before class.
- Students are able to overcome the GPS issue by clicking the entry feature, checking to see if Wi-Fi is on, or resetting their phone.

Literature Cited

- Crede, M., Koch, S.B., Kienzysky, U.M. 2010. Class attendance in college: a meta-analytic review of the relationship of class attendance with grades and student characteristics. *Rev. Educ. Res.* 80:272-295.
- Onegg, C. 1966. Teacher and student responsibility in class attendance. *NACADA* 10:71-72.
- Janda, N. 2018. Clicker student response systems: Dedicated physical devices or web-enabled systems that allow student to bring their own device. *J. Microbiol. Biol. Ed.* 10:219-231.
- Massingham, P., Hemington, T. 2006. Does attendance matter? An examination of student attitudes, participation, performance, and attendance. *J. Univ. Teach. Learn. Pract.* 3:3.
- Olgren, J., and Kuehnle, 2013. Students' perceptions of clickers as an instructional tool to promote active learning. *Ed. Info. Technol.* 18:15-28.