

Plickers!

Rotate, Raise and Scan a Card

Robin G. Coombs, Dr. D. Morrish, Dr. D. Wakefield & Dr. E. Benavides
Texas State University, Department of Agriculture





Welcome to Class!

Sustained and unchanged low level activity (listening to lecture) equals lower student concentration. (Dervan, 2014)





Introduction

- Plickers is an emerging classroom response system (CRS). It requires cards, an instructor with a smart phone, and downloading software.





Literature Review

- CRS provides an active learning environment with immediate feedback. (Auras, Bali,& Bix 2010)
- Academic performance of students increases with CRS. (Awed, Mueen, Zafar, & Manzoor, 2014)
- Number of students dropping classes decreases with CRS. (Atabek, Balkan, Cetinkaya, 2014)
- Creative alternative strategy for reinforcing concepts, and evaluating the understanding of concepts. (Patterson, Kilpatrick, & Woebkenberg, 2010)
- CRS addresses higher-level cognitive skills by creating questions requiring multiple steps to derive an answer (Bloom's taxonomy) (Gould, 2016)



Purpose & Research Questions

- ❖ Determine whether the use of Plickers technology improves student engagement in lectures.
- ❖ Determine the effectiveness of the use of Plickers in the classroom.
- ❖ Determine whether Plickers improves professor's ability to evaluate the transfer of learning within the classroom.





Methods

- Surveyed Texas State University students in 2 Agriculture Classes during the Spring 2016 where Plickers were incorporated in lectures.
 - Animal Health
 - Reproduction of Farm Animals
- Students (n=76) participated in the study.





Plicker Card Background

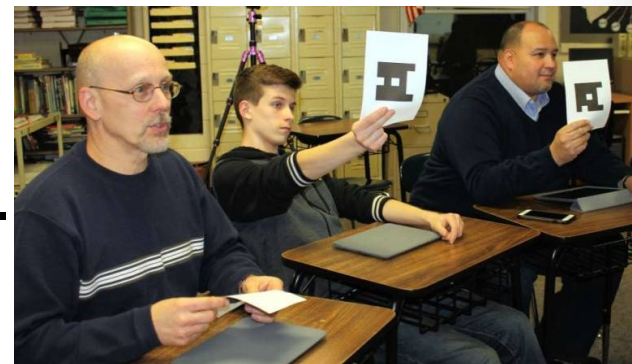
- Each student receives a Plicker card.
- Each card is numbered and registered to a student.
- Cards can be rotated to change orientation thus changing response to A, B, C, or D.
- Professor projects a multiple choice question.





- Students hold up the card with their answer choice at the top of the card.
- Professor scans the room with a smart phone.
- Class answers are projected.
- Students able to see if they answered correctly.
- Professor gets immediate feedback on the understanding level of the concept being taught.

** Records attendance also





Educational Demographics of Survey

College Major	<i>n</i>	%
Animal Science – Pre-Veterinary	38	50.0%
Animal Science – Integrated Ranch Management	22	28.9%
General Agriculture	9	11.8%
Major other than Agriculture	3	3.9%
Agribusiness Management	2	2.7%
General Agriculture – Teacher Certification	2	2.7%
Total	76	100.0%



Ease of Using Plickers

	n	M	SD
Plickers were easy to use.	76	4.83	.47
Class time was efficiently used with Plickers.	76	4.75	.57
Agricultural concepts and information were easy to adapt to the Plickers system.	76	4.72	.60
The different orientations of the Plickers card were easy to understand.	76	4.70	.59
Plickers cards were easily scanned by the professor.	76	4.68	.66

** Scale: 5 = Strongly agree, 4 = Agree, 3 = Neither agree/ disagree 2 = Disagree, 1 = Strongly disagree



Effectiveness of Plickers

	<i>n</i>	<i>M</i>	<i>SD</i>
The use of an in-class student response system such as Plickers was helpful to my learning.	76	4.79	.55
By using Plickers, I got immediate feedback on my understanding of course materials.	76	4.77	.56
Use of Plickers was helpful because it introduced a bit of fun in the lectures.	76	4.66	.68
Plickers are an effective way of teaching agricultural concepts.	76	4.58	.72
Plickers increased my enjoyment of the lectures.	75	4.43	.86
Using Plickers improved my grades.	76	4.30	.92
Plickers should be a graded class activity.	76	3.68	1.33

** Scale: 5 = Strongly agree, 4 = Agree, 3 = Neither agree/ disagree 2 = Disagree, 1 = Strongly disagree



Student Engagement with Plickers

	n	M	SD
Plickers made the lectures more interactive.	76	4.71	.58
Using Plickers improved my engagement during lectures.	76	4.64	.60
Plickers provided a more “hands-on” element to lecture.	76	4.57	.74
Plickers helped improve my concentration during class.	76	4.47	.74
Plickers gave me more confidence to participate in class.	76	4.44	.85
Plickers encouraged me to prepare ahead of time for my agricultural lectures.	76	4.03	1.01

** Scale: 5 = Strongly agree, 4 = Agree, 3 = Neither agree/ disagree 2 = Disagree, 1 = Strongly disagree



Professor Interaction with Plickers

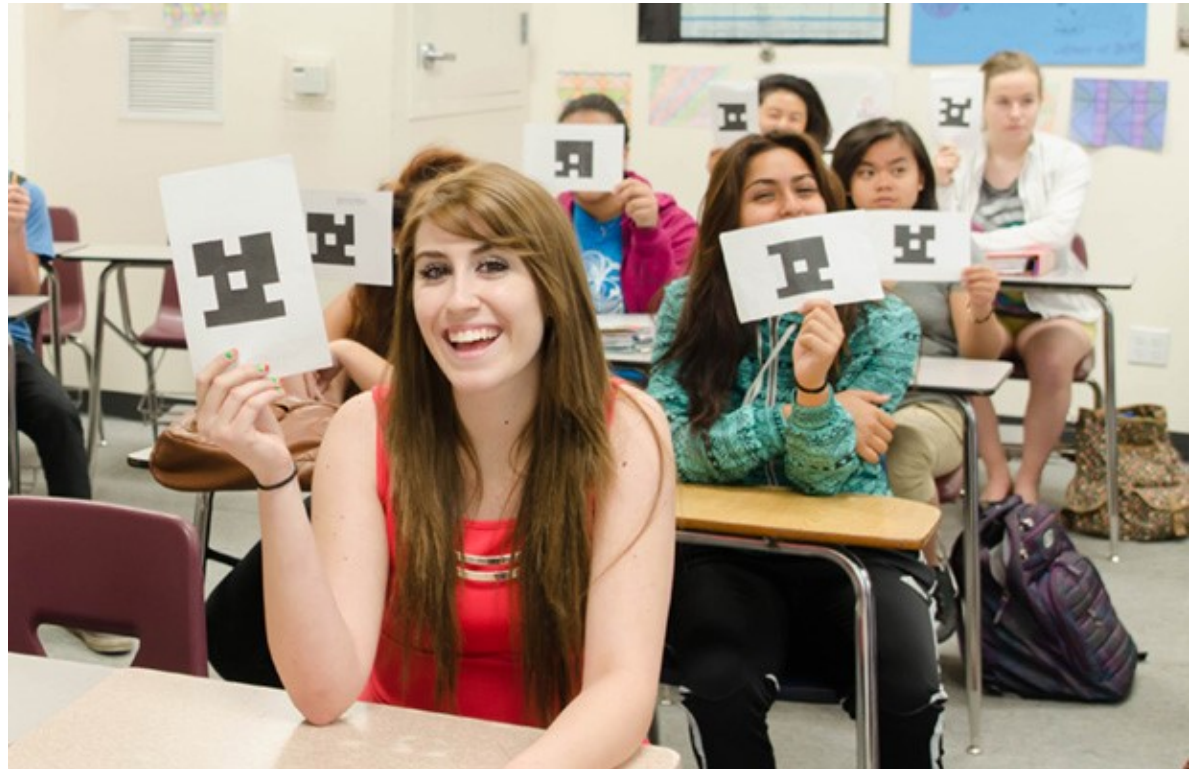
	n	M	SD
Feedback from Plickers helped the professor understand where the students had difficulty.	76	4.67	.79
Plickers provided more variety to the professor's lecture.	76	4.54	.68
Interaction between the student and the professor is improved by Plickers,	76	4.47	.82
Plickers helped me feel more connected with the professor.	76	4.21	1.05

** Scale: 5 = Strongly agree, 4 = Agree, 3 = Neither agree/ disagree 2 = Disagree, 1 = Strongly disagree



Qualitative Results

- Themes for Ease of Using Plickers
 - Easy
 - Tests
 - Fun





- Themes for Effectiveness of Plickers
 - Graded
 - Review and Retain
- Theme for Engagement with Plickers
 - Interactive
- Theme for Professor Interaction with Plickers
 - Helped with “trouble” spots



Overall Advantages/Disadvantages to Plickers

- Themes of Advantages

- Feedback
- Interactive and Engagement
- Where to focus study
- Tests/Exams
- Retain and Review
- Identify “trouble” spots

- Theme of Disadvantages

- Keeping track of the card





Conclusion

- Study showed that Plickers
 - ✓ Introduced some **FUN** into lecture
 - ✓ **Improved** information **retention**
 - ✓ **Identified misunderstood** concepts
 - ✓ Helped **prepare** for exams
 - ✓ **Boosted** self-confidence
 - ✓ **Reinforced concepts** learned





Recommendations for Further Studies

- Increase the population by examining additional courses using Plickers.
- Examine students' perceptions of Plickers and their final grade in class.
- Examine if a statistically significant difference exists between the majors in the department and their perceptions of Plickers.



References

- Atabek Yigit, E., Balkan Kiyici, F., & Çetinkaya, G. (2014). Evaluating the testing effect in the classroom: An effective way to retrieve learned information. *Eurasian Journal of Educational Research*, (54), 99-116.
- Auras, R., Bali, V. A. 1., & Bix, L. (2010). Students opinions of a student response system for introductory packaging classes. *NACTA Journal*, 54(3), 2-8.
- Awedh, M., Mueen, A., Zafar, B., & Manzoor, U. (2014). Using socrative and smartphones for the support of collaborative learning. *International Journal on Integrating Technology in Education*, 3(4), 17-24.
- Dervan, P. (2014). Enhancing in-class student engagement using socrative (an online student response system): A report. *AISHE-J: The all Ireland Journal of Teaching & Learning in Higher Education*, 6(3), 1801-18013.
- Gould, S. M. (2016). Potential use of classroom response systems (CRS, clickers) in foods, nutrition, and dietetics higher education. *Journal of Nutrition Education and Behavior*, 48(9), 669-674.
- Patterson, B., Kilpatrick, J., & Woebkenberg, E. (2010). Evidence for teaching practice: The impact of clickers in a large classroom environment. *Nurse Education Today*, 30, 603-607.