

Is Classroom Polling an Effective Method for Facilitating Student Interaction?



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Background



Objectives



Polling
Software



Results



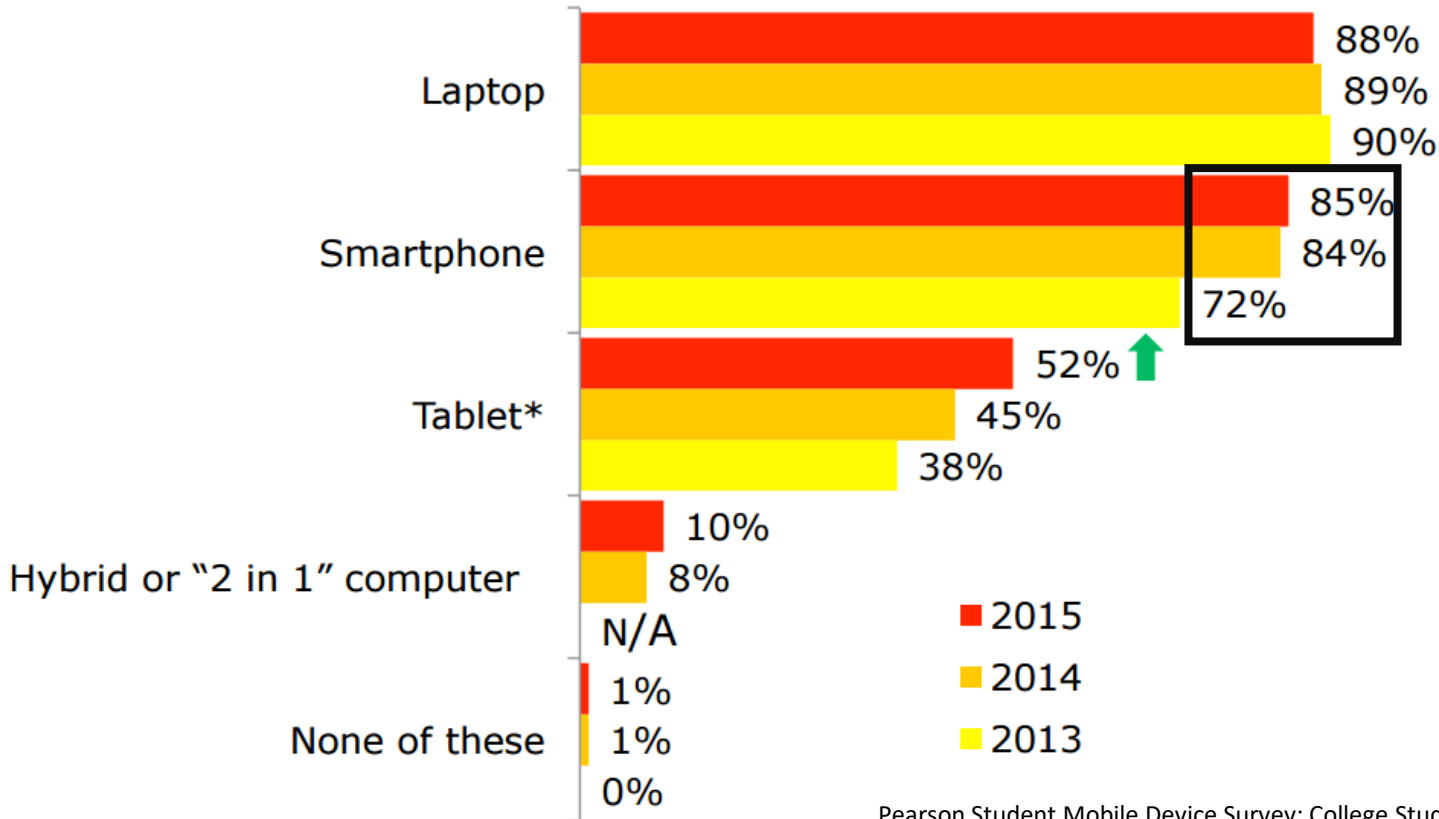
Conclusion

Why Polling?

- 85% of college students own a smartphone and 52% of college students own a tablet (Pearson 2015)



Device Ownership



Pearson Student Mobile Device Survey: College Students, 2015



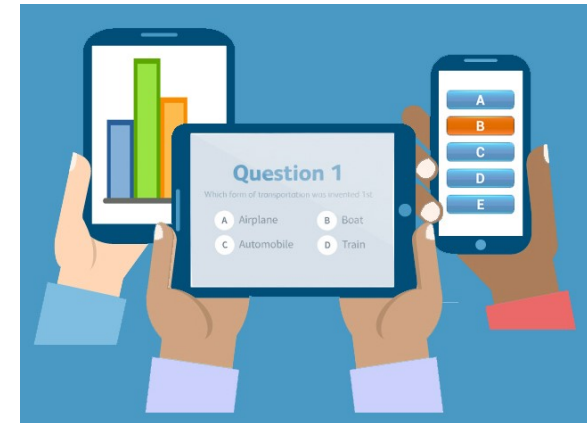
Why Polling?

- 85% of college students own a smartphone and 52% of college students own a tablet (Pearson 2015)
- 40% of students would like to use mobile devices more often in class (Pearson 2015)
- 99% of 209 Introductory Crop Science students at Kansas State own a smartphone (Fall 2015/Spring 2016) (Hay et al. 2016)
- Many different applications allow for instant feedback
 - Smartphones decrease the cumbersome problems of clickers
- Creates the opportunity for peer discussion, enhancing student understanding (Smith et al. 2009)
- Incorporates technology into classroom providing additional strategy to allow for fundamental interaction by all students



Objectives

- Compare the functionality, cost, and effectiveness of three polling tools used by the Department of Agronomy at Kansas State University



Background



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Polling Software

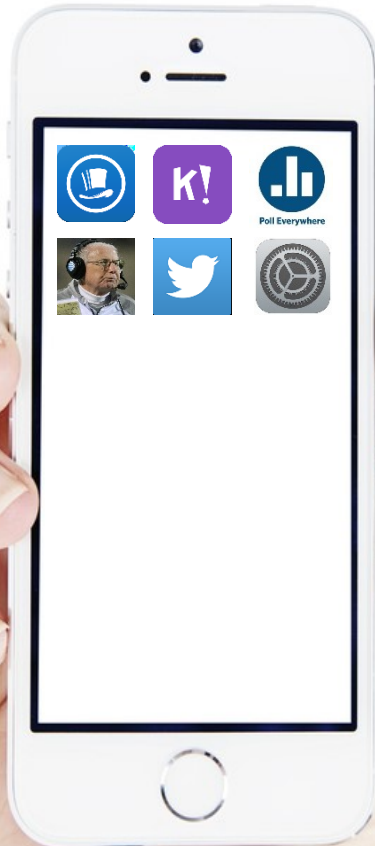


Results



Conclusion

Polling Software used in KSU Agronomy Department

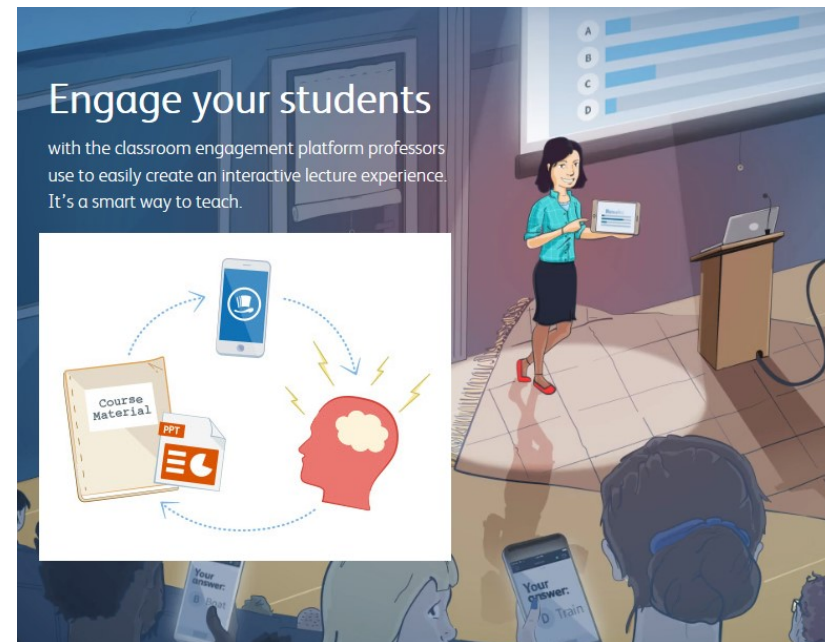


1. Top Hat
 - Soil Science (121 students)
 - Integrated Weed Management (36 students)
 - Crop Growth and Development (40 students)
2. Kahoot!
 - Integrated Weed Management (36 students)
 - Crop Science (71 students)
3. Poll Everywhere
 - Crop Science (71 students)
 - Weed Science (80 students)



Top Hat

- Receive unique join code for a given class
- Submission via Web Browser, Top Hat App, SMS/Text message
- Student Pricing
 - One Term: \$26
 - Annual: \$38
 - Four Year: \$75
- Built in Gradebook/Export to Excel
 - Can sync with Canvas
- Question types: Multiple choice, Word answer, Numeric answer, Matching, Click on target, Sorting
- Ability to upload all types of files
- Attendance function
- Requires WiFi and/or cellular reception



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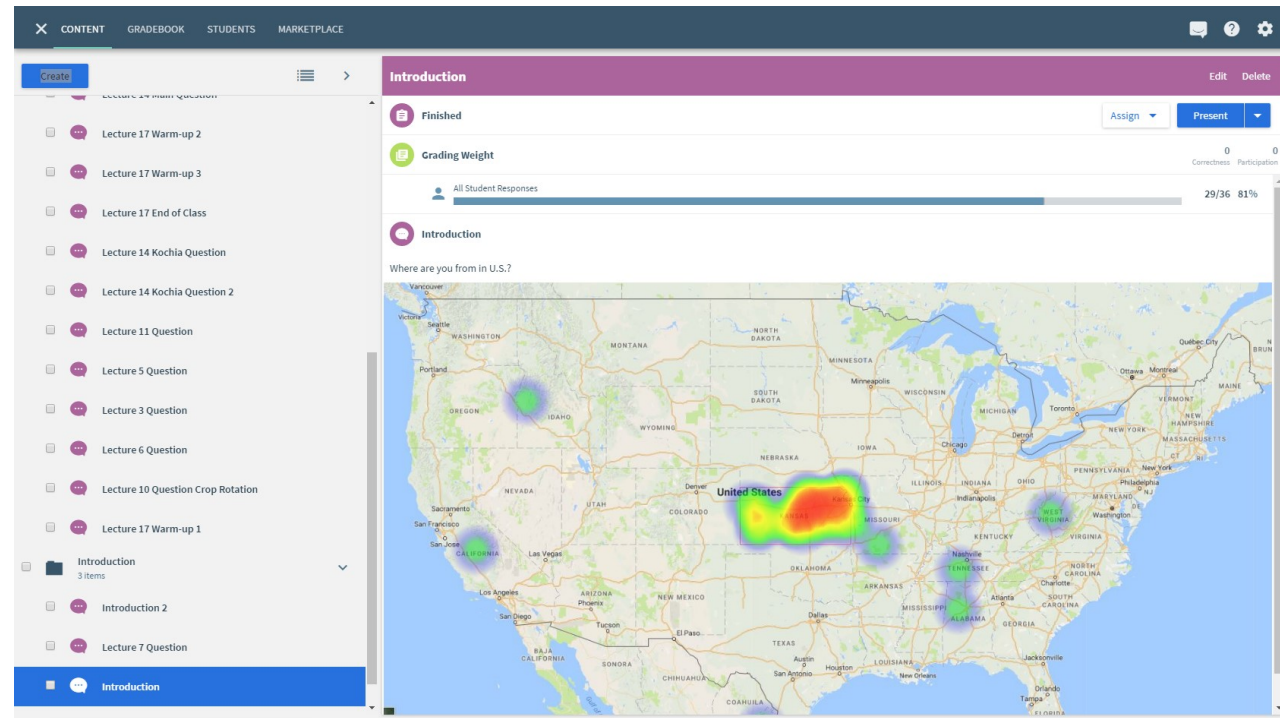
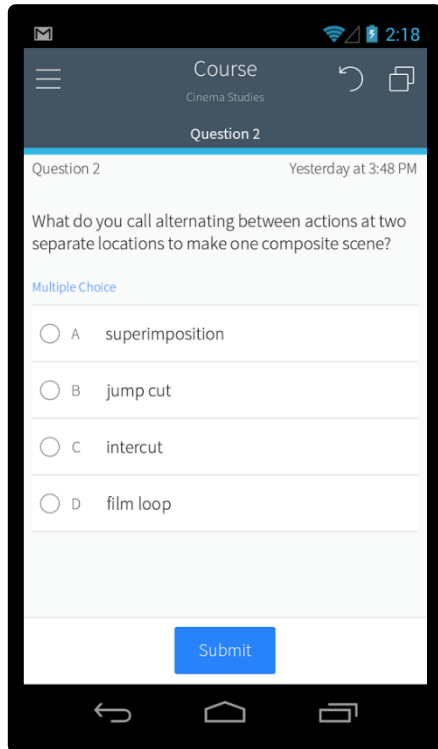


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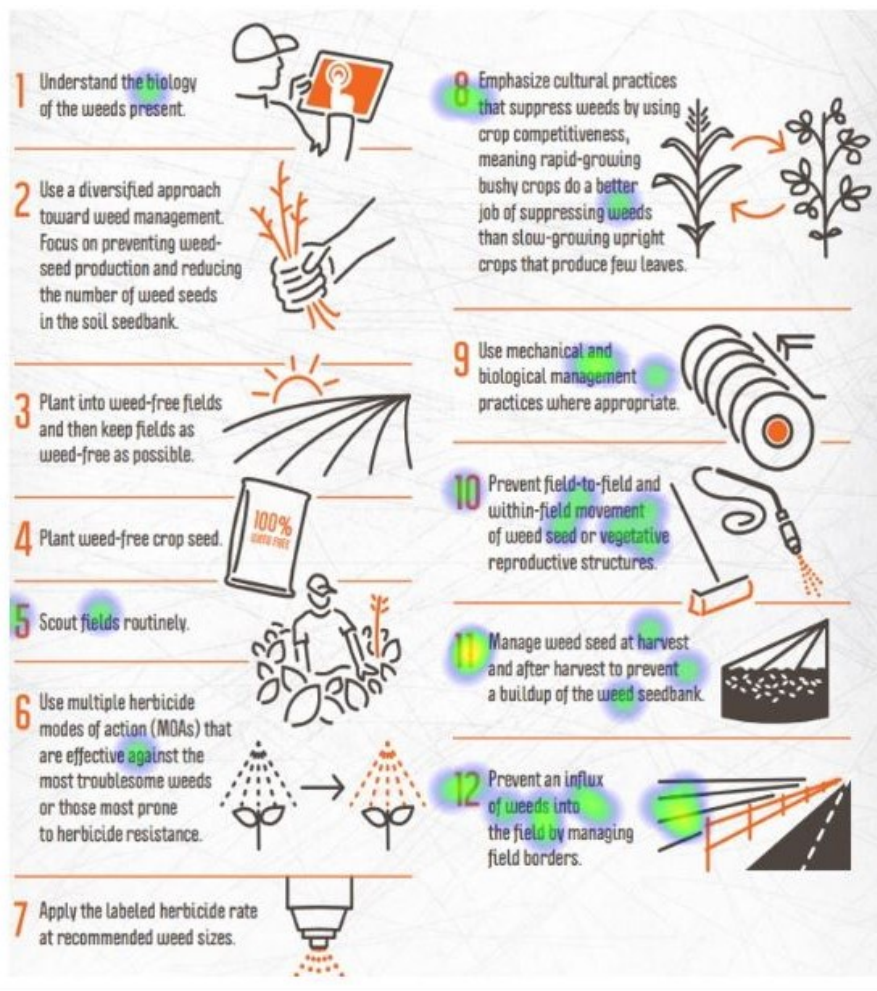
User Interface





Implementation

- Of these Best Management Practice's, which one are you least likely to implement on your farm or recommend to your clients?



Background



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March 30 Question 1 Edit Delete

Finished Assign Present

Grading Weight 0 1
Correctness Participation

All Student Responses 32/36 89%

Correct Responses 15/32 47%

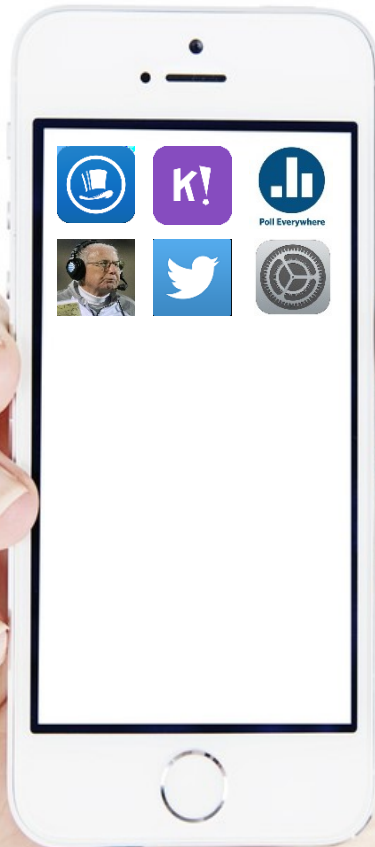
March 30 Question 1 Show Correct Answer

Which of the following best describes the chemical properties of atrazine on high pH soils?

A	neutral		15
B	positively charged		17
C	negative charge		0
D	ionic form		0



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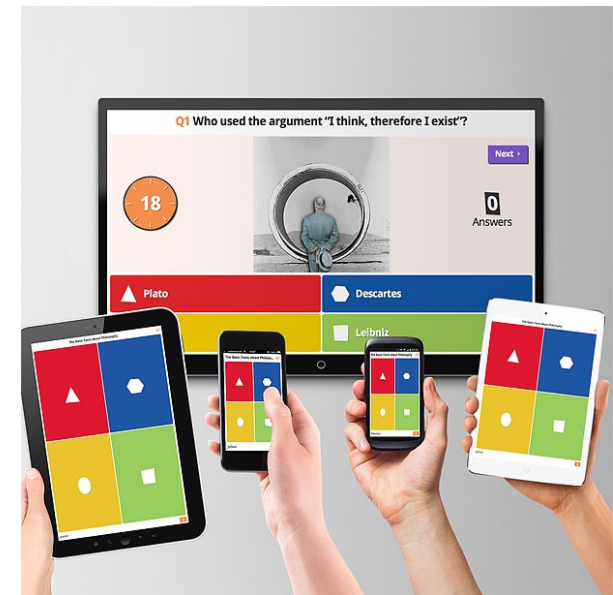
Conclusion

K!

Kahoot!

Kahoot!

- K! Free learning platform
- K! Users must download Kahoot! App on device
- K! Up to 4,000 players can join same PIN
- K! Requires excellent bandwidth, WiFi, and/or cellular reception (1 Mbps/10 players)
- K! Game types include: Quiz, Jumble, Discussion, Survey
- K! Questions are limited to 95 characters
- K! 120 seconds for maximum time to answer
- K! Results come in Excel file format with tabs for detailed breakdown for each question



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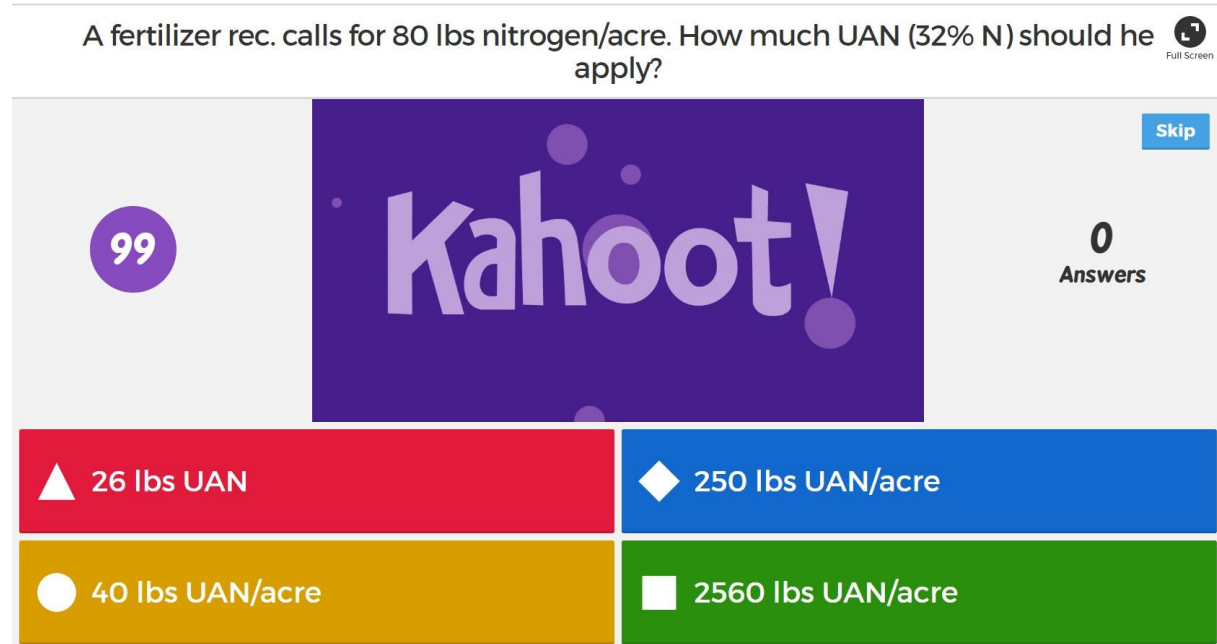
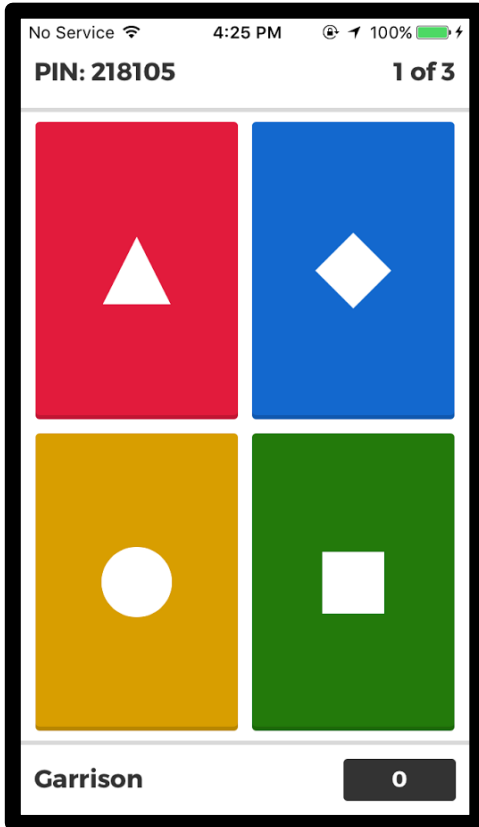


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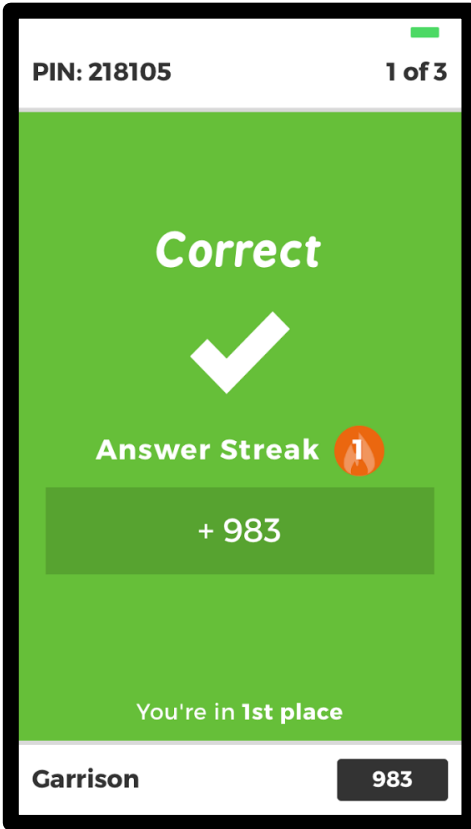


Results



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User Interface



A fertilizer rec. calls for 80 lbs nitrogen/acre. How much UAN (32% N) should he apply?



Next

Show image

End quiz

▲ 26 lbs UAN	◆ 250 lbs UAN/acre ✓
● 40 lbs UAN/acre	■ 2560 lbs UAN/acre

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Poll Everywhere

Poll Everywhere



- Free version limited to 40 responses per poll (400 for paid version)
- Pricing (paid version only)
 - \$14/student or \$349 Instructor payment
- Easily integrated into PowerPoint, Keynote, and Google Slides
- Submission via text message or through website
- Question types: Multiple choice, Word cloud, Q&A, Clickable image, Survey, Open-ended
- Results can be exported to Excel or printed as PDF (paid version only)
- Requires WiFi and/or cellular reception



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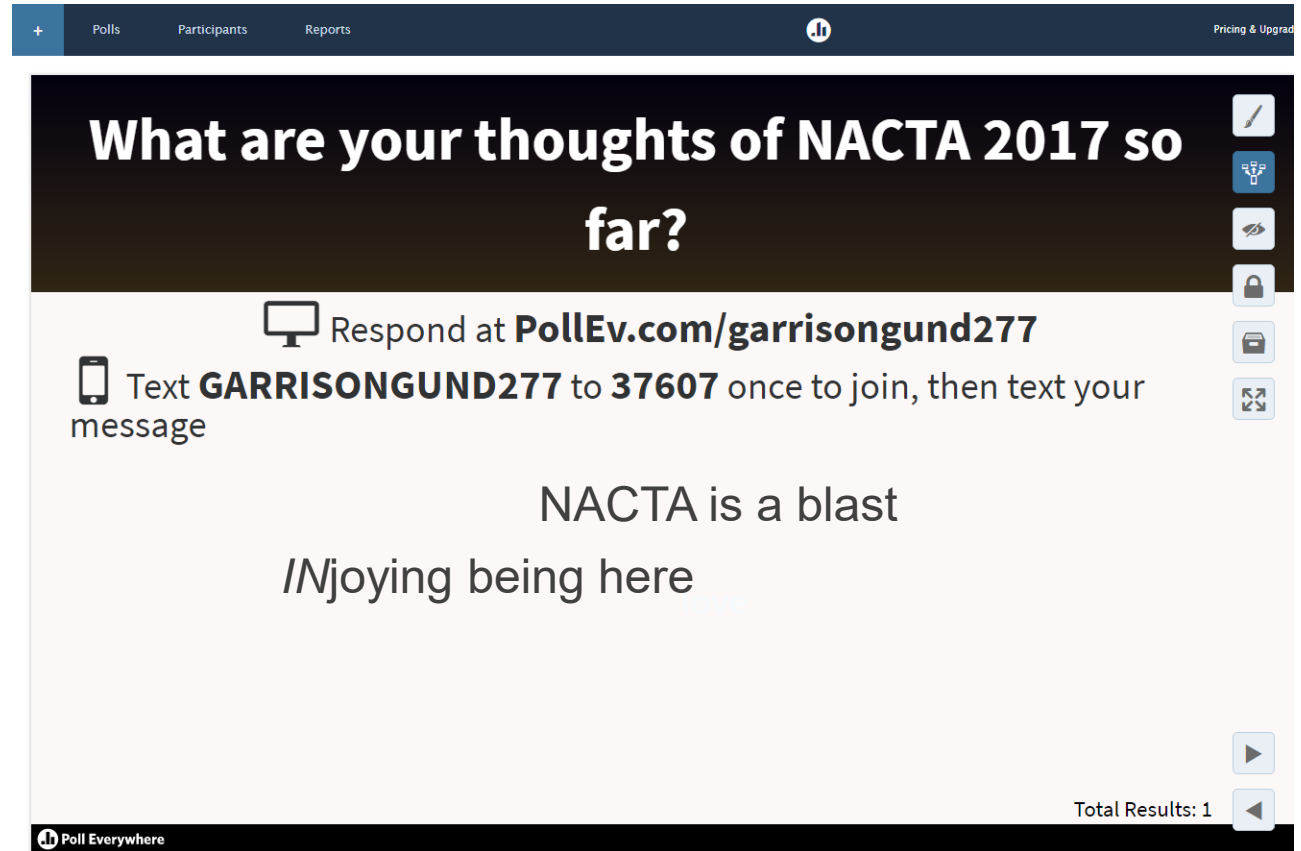
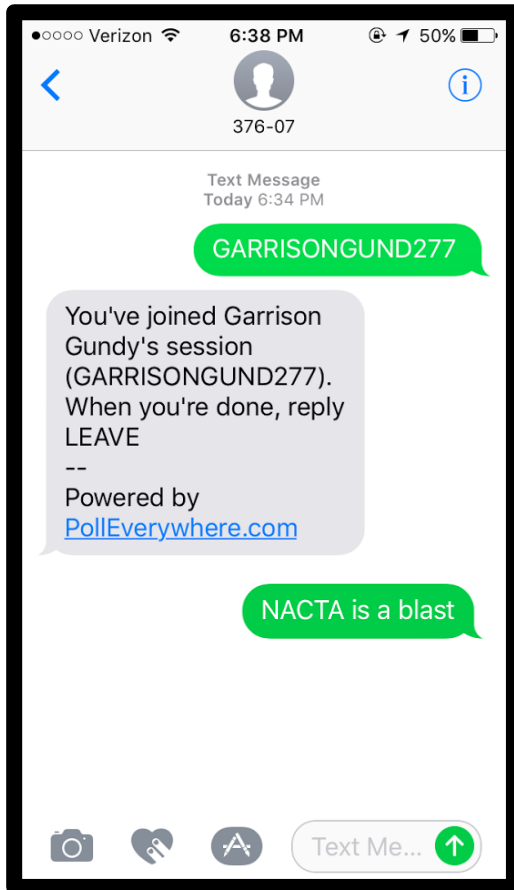


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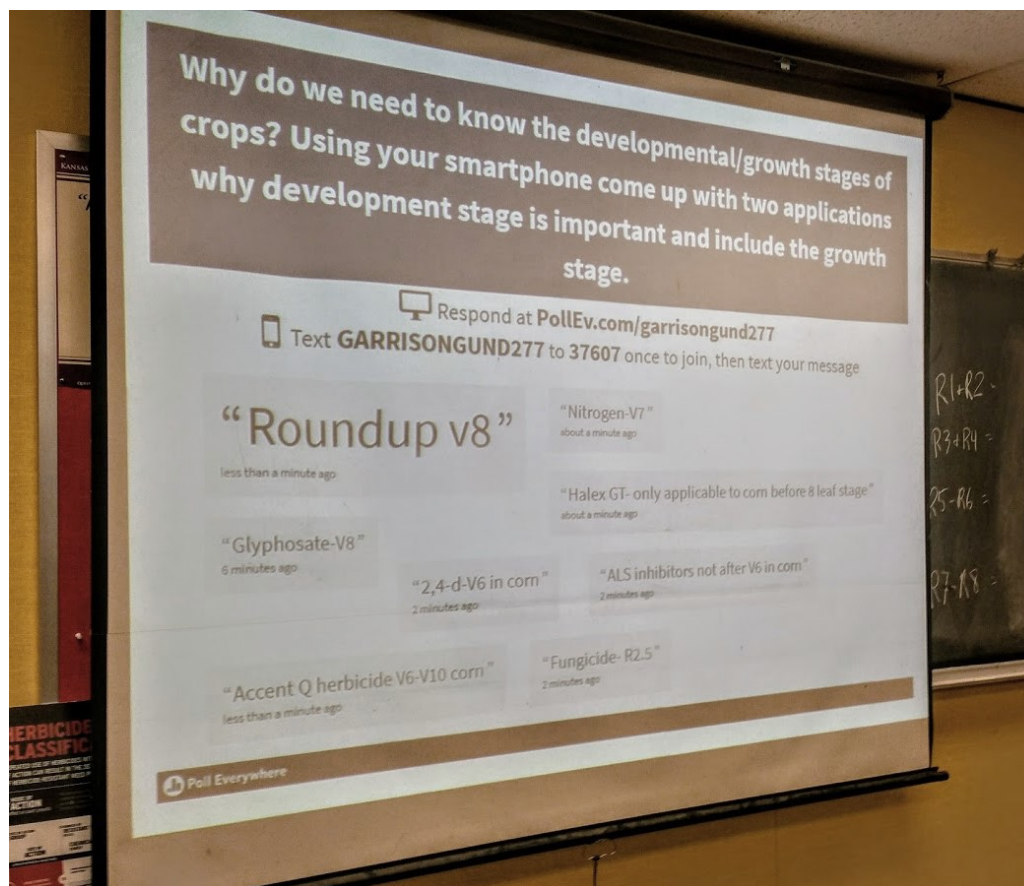
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Implementation



Implementation

List one Precision Ag tool or other technology tool that is used in your field of study. Be able to provide to the class what it is used for and how it benefits producers.

When poll is active, respond at [PollEv.com/garrisongund277](https://poll.ev.com/garrisongund277) Text **GARRISONGUND277** to **37607** once to join

“Row sense”
2 months ago

“Gps”
2 months ago

“GPS”
2 months ago

“GPS”
2 months ago

“Gps”
2 months ago

“Sensor technology”
2 months ago

“Drones”
2 months ago

“Norac Sprayer System and automatic boom shut off”
2 months ago

“Variable Rate”
2 months ago

“Precision applicators”
2 months ago

“Drone”
2 months ago

“Gps”
2 months ago

“Garrisongund277”
2 months ago

“GPS”
2 months ago

Total Results: 14

Background



Objectives



Polling Software



Results



Conclusion

Overview

Top Hat



Kahoot!



Poll Everywhere

Free Trial



Upgraded

	Top Hat	Kahoot!	Free Trial	Upgraded
Cost	Red	Green	Green	Yellow
Functionality	Green	Red	Yellow	Yellow
Ease of Implementation	Yellow	Green	Green	Green
Grading Ability	Green	Yellow	Red	Green
Attendance	Green	Yellow	Red	Yellow
User Interface	Green	Green	Green	Green



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Software



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Student Survey

Survey Question	Student Response (n = 23)
Did the polling software increase your desire to interact in the classroom?	3.74 (0.68)
Is polling an effective way to create discussion/interaction?	4.45 (0.71)
Did polling create a more inclusive classroom environment for all students?	4.00 (0.85)
Polling was effective at facilitating critical thinking and promoting deeper understanding.	4.04 (0.82)
The question/activities incorporated with the polling activity increased desire to learn.	3.83 (0.98)

Ratings based on 5-point scale from 1 (No Value) to 5 (Exceptional Value)

Comments: What changes are needed to be more effective?

I thought it was very effective and allowed for group interaction and discussion.

Enjoyed writing in own answers and then explaining to the class. Easier then risking raising hand and being wrong.

I enjoyed the polling and seeing where other kids could apply what we were learning to real life.

I feel like the polling exercises got us involved more than just listening to a lecture.

Needs to be used more often.

It's not something that gets me excited.



Take-Home

- Positive feedback from students
 - Polling is an effective way to create interaction
 - Enjoyable activity
 - “Apply to real life”
- Top Hat provides an overall complete polling package
- Kahoot! and free version of Poll Everywhere can be situationally effective with easier implementation
- All three applications can be utilized to create more inclusive learning environments
- Instructor must develop effective questions to meet learning outcomes
- Peer and instructor discussion must follow polling activities to maximize student’s conceptual understanding and desire to learn

References

Hay, M. M., Donnelly, K. J., Kerschen, K. J., (June 2016). Should smartphones be used to facilitate a new approach to agronomy education. NACTA conference conducted from Honolulu, Hawaii.

Pearson Student Mobile Device Survey: College Students. (June 2015). Accessed at <http://www.pearsoned.com/wp-content/uploads/2015-Pearson-Student-Mobile-Device-Survey-College.pdf>

Smith, M. K., Wood, W. B., Adams, W. K., Wieman, C., Knight, J. K., Guild, N., & Su, T. T. (2009). Why peer discussion improves student performance on in-class concept questions. *Science*, 323(5910), 122-124.

<https://www.polleverywhere.com/>

<https://kahoot.it/#/>

<https://tophat.com/>

Questions?



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