

Clickers in the Classroom

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Compton Flex Day

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For more clicker information or a copy of this presentation, please visit:

<http://www.elcamino.edu/faculty/dvakil/clickers.htm>

(there's also a link to the clicker page on my home page)

Presentation outline

- What are clickers?
- How can they be used?
- Why should you use clickers?
 - What are the benefits?
- Please ASK QUESTIONS **during** this presentation.

Big Picture: Clickers enable you to do student-centered learning. Let's start with a "student"-centered activity, rather than with me lecturing. This is what clickers are about.

**Respond as though you are students in
YOUR class.**

By show of hands...

Who believes:

**“Not enough students answer questions
that I ask during class.”**

Blank Slide

Not enough students answer questions that I ask during class.

19 1. True

4 2. False

See how much the vote participation increases with clickers?

What are clickers?

- Clickers get quick results to multiple choice questions.
- They send signals using Radio frequency (RF) light
 - Radio light doesn't require line-of-sight, unlike household remote controls
 - Receiver is small and portable.

TurningPoint clickers – ECC's standard

- Platform uses:
 - Integrates EASILY with PowerPoint.
 - Available as stand-alone software.
 - Model available with no computer needed!
 - Macintosh model available
- TurningPoint's RF clicker:
 - Comes in Braille also
 - Uses 2 coin cell 2032 (3.0V) batteries
 - Simple to use for student
 - RF **LCD** model has display screen – BUY THIS ONE!
- TurningPoint's XR clicker:
 - Has screen for direct feedback to student; allows for clicker-tests and word answers!
 - Uses 2 AAA batteries.
 - More features, slightly more complicated for student



Costs & getting started

- Costs:
 - Clickers – cost \$30 each. **LCD model = \$34 each.**
 - Receiver – needed to get the signals from the clickers. Cost \$99 each (one per class set).
 - Carrying case - ??\$75??
 - Software to interpret the signals. (free)
- Getting started
 - Train yourself for the software
 - Self-exploration
 - Web-based demonstrations
 - Read the manual
 - Ask me or watch my training videos
 - Start small in your classes

Information gathered by clicker

- Which clickers responded to the question
 - What answer each clicker gave to each question
 - If multiple answers given, order is saved, useful for:
 - multi-digit numbers
 - Ranking a list (prioritizing)
 - Turning Point results are easily exported to Excel
 - How long it took each clicker (student) to answer
 - When question is re-pollled, both answers are saved
-
- Decimals (only on XR model)
 - Some math symbols/expressions (also only on XR)

Some examples of how
clickers can be used
in classes

PRE-TEST: A light year is a measure of

5 1. Time

14 2. Distance

Timed question!

**Checking current understanding
during class**

A miniature astronomy lecture

- The universe is 13.7 billion years old.
- A light year is _____,
approximately 6 trillion _____.

POST-TEST: A light year is a measure of

1. Time
2. Distance

As seen here, you can visually compare to questions, or, in this case, pre- and post-lecture answers.

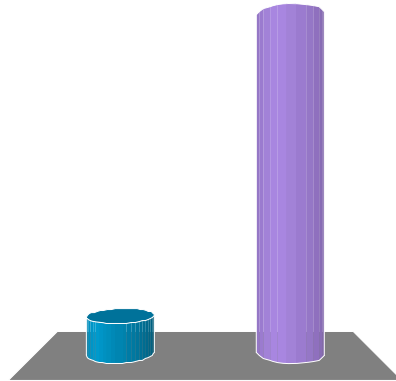
Purple = previous. Blue = current.

Think-Pair-Share

- Ask the question
- If results are between 50-75% correct, consult with your neighbor and vote again.
 - If 40-50% correct, coach them a little first.
 - If less than 40% correct, they need more help first.
- Usually results improve noticeably, often 80+%.
- Students understand and remember concept better
- Takes only 1 minute or less per question asked
 - I typically give 60 seconds per conceptual question.
- Here's an example...

It is possible for astronomers to detect an object 15 billion light years away from Earth.

1. True
2. False



What can you do with clickers?

- Pre- and post- instruction questions. (Did they learn?)
- Taking attendance (automatically calculated if any question is asked)
- Classroom demographics
 - Who are your students?
 - How does performance relate to various characteristics?
- Gathering feedback about class or getting opinions
 - like/dislike activity
 - useful/useless
- Quick assessment of recently covered material
 - Ask about facts or conceptual understanding.
 - No question is too easy to ask students. You'll be amazed.
 - Build their confidence or shake yours!
- Ice-breakers
- Discussion starters

Uses, continued

- Data gathering – very useful for accountability reports
- Cooperative learning: Think-pair-share
- Quizzes
 - End of class summary
 - Beginning of class review
 - Determine if students did reading/homework
- Full-length tests
- Ranking choices
- On-the-fly questions to suit whatever comes to mind during class.
 - Some of my best & worst questions were done on the fly.
 - When students ask a question, DON'T ANSWER THEM! Click!
- Fastest responses
- Team questions/answers

What skills are needed to use clickers?

- Knowledge of presentation software (e.g. PowerPoint) helpful, **but not required**.
- Anybody with basic knowledge of computers
- TurningPoint is easy for novices
- TurningPoint is also powerful and versatile for advanced users

Why you should use clickers...

Qualitative reasons to use clickers

- Interactive
- Student-centered, minds-on
- Just-in-time teaching
- Immediate feedback – to you AND your students
 - Create responsible & informed learners!
- **FUN** (competitive?)
- Gets everyone actively (not passively) involved
 - (Semi?) anonymous, which helps shy students!
- Early and frequent assessment. Diagnose and fix bad lectures/activities
 - Catch poor students quickly, start troubleshooting early

Quantitative reasons to use clickers

- Attendance increases noticeably
 - Research at 4-year schools shows attendance at 85%.
- Similar research shows students read the text more, are more interested in the course, have a more positive attitude towards the course. Clickers help students enjoy school!
 - When I don't use clickers during class, I get complaints! Students like clickers and learn from using them.
- FOR MY CLASSES: my school's research team found:
 - Success (# earning C or better) increased 12%.
 - Retention (# finished) increased 2% (astro) & 25% (physics).
 - GPA didn't change much because W's → C's.
- Success gains this large are VERY difficult to achieve.
 - Gains partly from technology, mostly from new way of teaching

Clicker capabilities

- The following slides show some other things you can do with clickers.

MULTI-ANSWER: Which of the following are **NOT** types of electromagnetic radiation? Select all that apply.

6 1. Gamma rays

7 2. X-rays

6 3. Infrared

6 4. Ultraviolet

7 5. Ultrasound

16 6. Sound waves

9 7. Microwaves

11 8. Radio waves

Improve in-class demonstrations

- Explain the demo set-up
- Have students predict the outcome
- Do the demonstration
- Specifically ask students “Was your prediction correct?”
 - Shows students who lack confidence they aren’t alone
 - Recognize intuition can be wrong

I will drop a pen and a crumpled piece of paper. Which will hit the ground first?

- 12 1. The pen will hit the ground first.
- 8 2. They will hit the ground at the same time.
- 3 3. The paper will hit the ground first.

I will now perform the demonstration

Quizzes & Tests

- XR clickers can handle tests & quizzes
- Requires some student training of the clickers, so I won't demonstrate that now.

How could YOU use clickers?

- Time permitting: we'll try your questions.
- Work with neighbor
- How to assess learning in YOUR classes:
 - Write an important question about a lesson you are teaching soon or taught very recently.
 - Write a SHORT one or two line correct answer
 - Write 3-4 **common** INCORRECT answers, approximately the same length as the correct answer.
 - Bring your question and answers to me. Don't tell me which answer is correct.

As a triage nurse, which of the following is the highest priority?

- | | |
|----|-------------------------------|
| 18 | 1. Cardiac arrest |
| 1 | 2. Gun shot wound |
| 1 | 3. Stroke |
| 1 | 4. Bleeding from a stab wound |

If I am looking at a patient's head, I am looking at their:

1 1. Inferior view

6 2. Ventral

1 3. Dorsal

11 4. Superior

Which of the following is an example of operating system:

1. MS Word

2. Windows 7

3. MS Office package

1 4. Windows Vista

15 5. Both choice 2 and 4

CONCLUSION

- There are a LOT of things you can do with clickers in your class
- Method of student-centered learning
- They dramatically increase learning
- Particularly well-suited for lecture classes
- Questions? Comments?
- **STRONGLY RECOMMEND READING:**
 - Derek Bruff's book *Teaching with Classroom Response Systems, Creating Active Learning Environments*.