Using Podcasts in a High School Advanced Placement Statistics Course to Encourage a Higher Achieving Learning Environment

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Let's Take a Poll!

Image taken from "Off the Mark" by Mark Parisi

Podcasts in AP Statistics to Achieve a Higher Learning Environment
Let's Take a Poll!

As a teacher, have you had at least one student miss an important lesson or activity because of an absence?
New Technologies, New Students

- Advanced Placement (AP) curriculum has not changed

"There aren't any icons to click. It's a chalk board."

Podcasts in AP Statistics to Achieve a Higher Learning Environment
New Technologies, New Students

- Advanced Placement (AP) curriculum has not changed
- Students learning styles have changed

Podcasts in AP Statistics to Achieve a Higher Learning Environment
New Technologies, New Students

- Advanced Placement (AP) curriculum has not changed
- Students learning styles have changed
- Students are participating in more activities
New Technologies, New Students

- Advanced Placement (AP) curriculum has not changed
- Students learning styles have changed
- Students are participating in more activities
- Other AP courses

Podcasts in AP Statistics to Achieve a Higher Learning Environment
New Technologies, New Students

- Advanced Placement (AP) curriculum has not changed
- Students learning styles have changed
- Students are participating in more activities
- International Baccalaureate (IB) classes

Podcasts in AP Statistics to Achieve a Higher Learning Environment
New Technologies, New Students

- Advanced Placement (AP) curriculum has not changed
- Students learning styles have changed
- Students are participating in more activities
- Sports

Podcasts in AP Statistics to Achieve a Higher Learning Environment
New Technologies, New Students

- Advanced Placement (AP) curriculum has not changed
- Students learning styles have changed
- Students are participating in more activities
- Clubs

Podcasts in AP Statistics to Achieve a Higher Learning Environment
New Technologies, New Students

- Advanced Placement (AP) curriculum has not changed
- Students learning styles have changed
- Students are participating in more activities
- Student leadership

Podcasts in AP Statistics to Achieve a Higher Learning Environment
New Technologies, New Students

- Advanced Placement (AP) curriculum has not changed
- Students learning styles have changed
- Students are participating in more activities
- School plays

Podcasts in AP Statistics to Achieve a Higher Learning Environment
New Technologies, New Students

- Advanced Placement (AP) curriculum has not changed
- Students learning styles have changed
- Students are participating in more activities
- Dance

Podcasts in AP Statistics to Achieve a Higher Learning Environment
New Technologies, New Students

- Advanced Placement (AP) curriculum has not changed
- Students learning styles have changed
- Students are participating in more activities
- Music

Podcasts in AP Statistics to Achieve a Higher Learning Environment
New Technologies, New Students

- Advanced Placement (AP) curriculum has not changed
- Students learning styles have changed
- Students are participating in more activities
- Theater

Podcasts in AP Statistics to Achieve a Higher Learning Environment
Purpose

Podcasts in AP Statistics to Achieve a Higher Learning Environment

www.thefunnyblog.org
Purpose

The purpose of this instructional design project is to implement and evaluate the effectiveness of podcasts, as a supplemental online resource, on probability in Moodle for 12th grade students in AP Statistics at a private school in Honolulu, Hawaii.
A High School Senior's Concern

College?!?!
A High School Senior’s Concern

- College?!?!
- Applications

Podcasts in AP Statistics to Achieve a Higher Learning Environment
A High School Senior’s Concern

- College?!?!
- Applications
- Essays

Podcasts in AP Statistics to Achieve a Higher Learning Environment
A High School Senior’s Concern

- College?!?!
- Applications
- Essays
- Teacher recommendation letters

Podcasts in AP Statistics to Achieve a Higher Learning Environment
# A High School Senior's Concern

- College?!?!
- Applications
- Essays
- Teacher recommendation letters
- Interviews

Podcasts in AP Statistics to Achieve a Higher Learning Environment
A High School Senior’s Concern

- College?!?
- Applications
- Essays
- Teacher recommendation letters
- Interviews
- All in the November month

Podcasts in AP Statistics to Achieve a Higher Learning Environment
A High School Teacher’s Solution

* The reason for a lack of understanding in probability, November’s main topic:
A High School Teacher’s Solution

- The reason for a lack of understanding in probability, November’s main topic:
- It’s a hard exam!
A High School Teacher’s Solution

* The reason for a lack of understanding in probability, November’s main topic:

* The foundation of the topic is covered while students are preoccupied with college applications
A High School Teacher's Solution

- The reason for a lack of understanding in probability, November's main topic:
- The foundation of the topic is covered while students are preoccupied with college applications
- Make supplemental podcasts in the spring to review forgotten concepts

Podcasts in AP Statistics to Achieve a Higher Learning Environment
Methods for Implementation

- Twenty-two high school seniors

Podcasts in AP Statistics to Achieve a Higher Learning Environment
Methods for Implementation

* Eighteen high school seniors
Methods for Implementation

- Eighteen high school seniors
- Extra-credit incentive

Podcasts in AP Statistics to Achieve a Higher Learning Environment
Methods for Implementation

- Eighteen high school seniors
- Extra-credit incentive
- Students use MOODLE, an online course management system, to post homework

Podcasts in AP Statistics to Achieve a Higher Learning Environment
Methods for Implementation

- Eighteen high school seniors
- Extra-credit incentive
- Students use MOODLE, an online course management system, to complete online quizzes in multiple-choice format

Podcasts in AP Statistics to Achieve a Higher Learning Environment
Methods for Implementation

- Eighteen high school seniors
- Extra-credit incentive
- Students use MOODLE, an online course management system, to view .PDF's of the lesson simultaneously with lectures

Podcasts in AP Statistics to Achieve a Higher Learning Environment
Methods for Implementation

- Eighteen high school seniors
- Extra-credit incentive
- Students use MOODLE, an online course management system
- Lessons are taught in a traditional lecture format with presentations in Keynote on a Smart Board

Podcasts in AP Statistics to Achieve a Higher Learning Environment
Methods for Implementation

- Everyday use of graphing calculator in class

Podcasts in AP Statistics to Achieve a Higher Learning Environment
Methods for Implementation

* Everyday use of graphing calculator in class
* Additional help after school

Podcasts in AP Statistics to Achieve a Higher Learning Environment
Methods for Implementation

- Everyday use of graphing calculator in class
- Additional help after school
- More help at home... but a teacher isn't accessible there
Methods for Implementation

* Everyday use of graphing calculator in class
* Additional help after school
* More help at home... but a teacher isn’t accessible there
* Solution: podcasts as a teacher voice at home

Podcasts in AP Statistics to Achieve a Higher Learning Environment
Podcasts in AP Statistics to Achieve a Higher Learning Environment
How To Make a Podcast

- New presentations in Keynote

Podcasts in AP Statistics to Achieve a Higher Learning Environment
How To Make a Podcast

- New presentations in Keynote
- Extra examples not covered in the book

Podcasts in AP Statistics to Achieve a Higher Learning Environment
How To Make a Podcast

- New presentations in Keynote
- Extra examples not covered in the book
- Recorded using QuickTime recorder with voice narration
How To Make a Podcast

- New presentations in Keynote
- Extra examples not covered in the book
- Recorded using QuickTime recorder with voice narration
- Smart Notebook software
How To Make a Podcast

- New presentations in Keynote
- Extra examples not covered in the book
- Recorded using QuickTime recorder with voice narration
- Smart Notebook software
- Writing on Notebook with assistance of tablet

Podcasts in AP Statistics to Achieve a Higher Learning Environment
How To Make a Podcast

- Podcasts saved in .m4v format
How To Make a Podcast

- Podcasts saved in .m4v format
- Three podcasts posted in Moodle

Podcasts in AP Statistics to Achieve a Higher Learning Environment
How To Make a Podcast

- Podcasts saved in .m4v format
- Three podcasts posted in Moodle
- Five to fifteen minutes each
How To Make a Podcast

- Podcasts saved in .m4v format
- Three podcasts posted in Moodle
- Five to fifteen minutes each
- Uploaded to YouTube

Podcasts in AP Statistics to Achieve a Higher Learning Environment
How To Make a Podcast

- Podcasts saved in .m4v format
- Three podcasts posted in Moodle
- Five to fifteen minutes each
- Uploaded to YouTube
- Students viewed on mobile devices with YouTube access or on a personal computer

Podcasts in AP Statistics to Achieve a Higher Learning Environment
How To Make a Podcast

Podcasts in AP Statistics to Achieve a Higher Learning Environment
How To Test for Understanding

- Paper-based pre-test in November as a quiz

Podcasts in AP Statistics to Achieve a Higher Learning Environment
How To Test for Understanding

* Paper-based pre-test in November as a quiz
* Online post-test on SurveyMonkey in the spring semester
How To Test for Understanding

Podcasts in AP Statistics to Achieve a Higher Learning Environment
What Do Students Like?

Demographic survey in SurveyMonkey

Podcasts in AP Statistics to Achieve a Higher Learning Environment
What Do Students Like?

- Demographic survey in SurveyMonkey
- How often do you access Moodle?

<table>
<thead>
<tr>
<th>1. On average, how often do you log in to Moodle, per week?</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 2 times</td>
<td>55.6%</td>
<td>10</td>
</tr>
<tr>
<td>3 – 5 times</td>
<td>33.3%</td>
<td>6</td>
</tr>
<tr>
<td>6 – 8 times</td>
<td>5.6%</td>
<td>1</td>
</tr>
<tr>
<td>More than 8 times</td>
<td>5.6%</td>
<td>1</td>
</tr>
</tbody>
</table>

Podcasts in AP Statistics to Achieve a Higher Learning Environment
What Do Students Like?

- Demographic survey in SurveyMonkey
- How many AP courses have you taken and/or are taking?

<table>
<thead>
<tr>
<th>How many AP courses have you taken and/or are taking?</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 3</td>
<td>66.7%</td>
<td>12</td>
</tr>
<tr>
<td>4 – 6</td>
<td>33.3%</td>
<td>6</td>
</tr>
<tr>
<td>7 – 9</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>More than 9</td>
<td>0.0%</td>
<td>0</td>
</tr>
</tbody>
</table>

Podcasts in AP Statistics to Achieve a Higher Learning Environment
What Do Students Like?

- Demographic survey in SurveyMonkey
- What was your last math class?

<table>
<thead>
<tr>
<th>Course</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algebra II</td>
<td>16.7%</td>
<td>3</td>
</tr>
<tr>
<td>Pre-Calculus</td>
<td>38.9%</td>
<td>7</td>
</tr>
<tr>
<td>AP Calculus</td>
<td>22.2%</td>
<td>4</td>
</tr>
<tr>
<td>Intro to Statistics</td>
<td>22.2%</td>
<td>4</td>
</tr>
</tbody>
</table>

Podcasts in AP Statistics to Achieve a Higher Learning Environment
What Do Students Like?

- Demographic survey in SurveyMonkey
- Attitudinal survey in SurveyMonkey

Podcasts in AP Statistics to Achieve a Higher Learning Environment
What Do Students Like?

- Demographic survey in SurveyMonkey
- Attitudinal survey in SurveyMonkey
- Was the example easy to follow?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percent</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>88.5%</td>
<td>16</td>
</tr>
<tr>
<td>No</td>
<td>11.1%</td>
<td>2</td>
</tr>
</tbody>
</table>

Podcasts in AP Statistics to Achieve a Higher Learning Environment
What Do Students Like?

- Demographic survey in SurveyMonkey
- Attitudinal survey in SurveyMonkey
- Did you feel prepared for the post-test?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percent</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>88.9%</td>
<td>16</td>
</tr>
<tr>
<td>No</td>
<td>11.1%</td>
<td>2</td>
</tr>
</tbody>
</table>

Podcasts in AP Statistics to Achieve a Higher Learning Environment
What Do Students Like?

- Demographic survey in SurveyMonkey
- Attitudinal survey in SurveyMonkey
- Do you prefer podcasts?

<table>
<thead>
<tr>
<th></th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>66.7%</td>
<td>12</td>
</tr>
<tr>
<td>No</td>
<td>44.4%</td>
<td>8</td>
</tr>
</tbody>
</table>

Podcasts in AP Statistics to Achieve a Higher Learning Environment
The Value of a Voice

* The value of classroom interaction
The Value of a Voice

- The value of classroom interaction
- Keep podcasts as supplementary
The Value of a Voice

- The value of classroom interaction
- Keep podcasts as supplementary
- Test scores do not increase with the implementation of podcasts

Podcasts in AP Statistics to Achieve a Higher Learning Environment
The Value of a Voice

- The value of classroom interaction
- Keep podcasts as supplementary
- Test scores do not increase with the implementation of podcasts
- Student satisfaction increased, creating better attitudes towards the course and higher likelihood of efficiency

Podcasts in AP Statistics to Achieve a Higher Learning Environment
When Time and Money Aren’t Limiting

- Make podcasts for an entire semester
When Time and Money Aren't Limiting

- Make podcasts for an entire semester
- Study two classes of students
When Time and Money Aren’t Limiting

- Make podcasts for an entire semester
- Study two classes of students
- One class: Traditional
When Time and Money Aren't Limiting

- Make podcasts for an entire semester
- Study two classes of students
  - One class: Traditional
  - One class: Supplementary podcasts

Podcasts in AP Statistics to Achieve a Higher Learning Environment
When Time and Money Aren’t Limiting

- Make podcasts for an entire semester
- Study two classes of students
- One class: Traditional
- One class: Supplementary podcasts
- Software to track student activity

Podcasts in AP Statistics to Achieve a Higher Learning Environment
Conclusion

Podcasts in AP Statistics to Achieve a Higher Learning Environment

“It’s the new keyboard for the statistics lab. Once you learn how to use it, it will make computation of the standard deviation easier.”
Mahalo Nui Loa

* Andrew Krumland

Podcasts in AP Statistics to Achieve a Higher Learning Environment
Podcasts in AP Statistics to Achieve a Higher Learning Environment
Mahalo Nui Loa

- Andrew Krumland
- Masaru Uchino
- Michael Kato

Podcasts in AP Statistics to Achieve a Higher Learning Environment
Mahalo Nui Loa

* Andrew Krumland
* Masaru Uchino
* Michael Kato
* Colleagues

Podcasts in AP Statistics to Achieve a Higher Learning Environment
Mahalo Nui Loa

- Andrew Krumland
- Masaru Uchino
- Michael Kato
- Colleagues
- UH-Manoa ETEC faculty

Podcasts in AP Statistics to Achieve a Higher Learning Environment
Mahalo Nui Loa

- Andrew Krumland
- Masaru Uchino
- Michael Kato
- Colleagues
- UH-Manoa ETEC faculty
- Two years AP Statistics students

Podcasts in AP Statistics to Achieve a Higher Learning Environment
Questions?