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Colloquium Defense
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OLIVET NAZARENE UNIVERSITY
ED.D ETHICAL LEADERSHIP

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Increasing Student Achievement In Advanced Placement Courses with Specially Designed Support Systems
AP founded by the College Board in mid-1950s
- Goal: to provide students with the opportunity to engage in accelerated coursework & have chance to earn college credit

For 40-50 years, the program catered to the most elite students (Mcalister, 2013)

# of schools offering AP courses rose & the amount of AP programs available

Yet, AP was restricting access to qualified minority & low-income students (Kerr, 2014)
Equity & Access Concerns

- Schools serving low-income students offer significantly fewer AP courses than schools in high-income communities (Dougherty, Milor, & Jian, 2006; Zarate & Pachon, 2006)

- AP Equity Push 2010

- Current research only addresses why schools should increase the number of students taking AP courses (Barnard-Brak et al; Hallet & Venegas, 2013; Tomlinson & Jarvis, 2014) not the effect of increased non-traditional students
<table>
<thead>
<tr>
<th></th>
<th>CLASS OF 2003</th>
<th>CLASS OF 2013</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total AP Examinees</td>
<td>514,163</td>
<td>1,003,430</td>
<td>489,267</td>
</tr>
<tr>
<td>Total AP Low-Income Examinees</td>
<td>58,489</td>
<td>275,864</td>
<td>217,375</td>
</tr>
<tr>
<td>Total AP Examinees with Only Scores of &lt; 3</td>
<td>182,429</td>
<td>395,925</td>
<td>213,496</td>
</tr>
<tr>
<td>Total AP Examinees with at Least One Score of 3+</td>
<td>331,734</td>
<td>607,505</td>
<td>275,771</td>
</tr>
</tbody>
</table>

Source: AP Report to the Nation: 10\textsuperscript{th} Annual AP Report (2014)
Providing Support for AP Students

- Schools need to offer support services to their new (non-traditional) AP learners to help bridge the skill gap.

- Allowing more students into AP courses has not correlated into higher numbers of students being successful on AP Exams (Judson & Hobson, 2015).

- Summer enrichment program for academic skill development can lead to increased student achievement (Li, Alfeld, Kennedy, & Putallaz, 2009).
Benefits of AP

- Increased college readiness (Klopfenstein & Thomas, 2009)
- Reduced college costs & time-to-degree (Ackerman, Kanfer, & Calderwood, 2013; Chajewski, Mattern, & Shaw, 2011)
- Students who participated in AP courses are more likely to have higher first semester college GPA’s (Scott, Tolson, & Yi-Hsuan, 2010)
High schools in Illinois lack support systems for their AP learners. The College Board has enacted a policy to offer increased access to AP courses in order to provide equity and opportunities for previously underrepresented groups.

While more non-traditional students are taking AP classes, many struggle with the rigorous, accelerated coursework.
Numerous AP students lack the skills and experience needed to excel in advanced classes.

Implementing a support system for new and experienced AP students would allow them more opportunities to gain the skills necessary to be more successful in their AP courses and on their AP exams.
Data Collection

- Midwestern, Diverse High School
- Academic Years:
  - 2014-2015 Control Group
  - 2015-2016 Experimental Group
  *Jr year AP English & History students

Sample

- **RQ1:** $n = 78$
- **RQ2:**
  - AP U.S. History $n = 85$
  - AP Language & Composition $n = 171$
- **RQ3:**
  - AP U.S. History $n = 74$
  - AP Language & Composition $n = 150$
Overall Research Design

Quantitative Research Methodology (Salkind, 2012)

- In the form of quasi-experimental design
- Utilizing a pretest-posttest non-randomized control group design
Research Question 1

What support systems do all AP students need in order to be successful?
Administered the College Level Study Skills Inventory (CLSSI)

- Developed and tested by (Congos, 2011)

Instrument designed to identify the strengths & weaknesses of students’ study skills

51 questions, rated with a 5 point Likert scale; asked participants to rate their behavior for each study skill
Research Design: RQ1

CLSSI Divided into 6 subscales:

- Text book reading (eight items)
- Note-taking (five items)
- Memory (nine items)
- Test preparation (thirteen items)
- Concentration (ten items)
- Time Management (six items)

Each item is rated on a 5-point Likert-type scale ranging from 1 = almost never, 2 = less than half the time, 3 = about half of the time, 4 = more than half the time to 5 = almost always.
Data Analysis: RQ1

- Overall scores of each participant’s subscales were calculated
- Overall subscale means were calculated
- Scores for the 6 study skills were analyzed using a repeated measures ANOVA
- Post hoc Pairwise Comparisons with a Bonferroni Correction was run to control Familywise Error
- Analyzed data was used to plan AP Brain Camp *(the intervention)*
### Findings

#### RQ1

<table>
<thead>
<tr>
<th>Study Skill</th>
<th>Study Skill</th>
<th>Mean Difference</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textbook Reading</td>
<td>Note Taking</td>
<td>-0.41</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Memory</td>
<td>-0.38</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Test Preparation</td>
<td>-0.30</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Concentration</td>
<td>-0.46</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Time Management</td>
<td>0.41</td>
<td>0.01</td>
</tr>
<tr>
<td>Time Management</td>
<td>Note Taking</td>
<td>-0.82</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Memory</td>
<td>-0.79</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Test Prep</td>
<td>-0.71</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Concentration</td>
<td>-0.87</td>
<td>0.00</td>
</tr>
</tbody>
</table>

*Study Skill Pairwise Comparisons for the CLSSI*
Results Explained: RQ1

- On average, the participants felt more comfortable with performing the skill of textbook reading compared to the skills of note taking \( F(1, 78) = -0.41, p < .01 \), memory \( F(1, 78) = -0.38, p < .01 \), test preparation \( F(1, 78) = -0.30, p < .01 \), concentration \( F(1, 78) = -0.46, p < .01 \), and time management \( F(1, 78) = 0.41, p < .01 \).

- A significant result also occurred when analyzing the study skill of time management. On average, the participants felt the least comfortable performing the skill of time management compared to the skills of note taking \( F(1, 78) = -0.82, p < .01 \), memory \( F(1, 78) = -0.79, p < .01 \), test preparation \( F(1, 78) = -0.71, p < .01 \), and concentration \( F(1, 78) = -0.87, p < .01 \).
Conclusions: RQ1

- Participants felt most comfortable with performing the skill of textbook reading & least comfortable when performing the skill of time management.
- By administering a learning inventory (like CLSSI) the instrument can measure what a student usually does when approaching a learning situation.
- Researchers can use this valuable information to determine what academic skills students are lacking.
- Endowing learners with efficient study skills can make them study more deliberatively.
Brain Camp
Day 1

Brain Camp
Day 2 & 3

Specific Study Skill Sessions

Examples:
• How to prep prior to class/study skills
• Healthy living and time management
• Reading/annotation strategies
• Discussion/presentation skills
Brain Camp
Day 4
College Day!

Brain Camp
Day 5
Research Question 2

Is there a statistically significant difference between current AP support systems and student achievement in AP classes?
Research Question 3

Is there a statistically significant difference between current AP support systems and student achievement on AP exams?
Accessed archival data

**RQ2**: accessed the Skyward electronic gradebooks for the 2014-2015 and 2015-2016 school years of the junior level English and history AP courses
- 1st & 2nd Semester Final Exam Scores were used

**RQ3**: obtained the AP exam scores for the 2014-2015 and 2015-2016 students of the junior level English and history AP courses
Data Analysis: RQ2 & RQ3

- Descriptive statistical procedures conducted

**RQ2:**
- 4 independent $t$-tests
  - Experimental Group final exams vs. Control Group final exams
    (conducted for each class for both 1st & 2nd semester)

**RQ3:**
- 2 independent $t$-tests
  - Experimental Group AP Exam scores vs. Control Group AP Exam scores
## Findings RQ2

<table>
<thead>
<tr>
<th></th>
<th>Control Group</th>
<th>Experimental Group</th>
<th>t</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Semester</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grades</td>
<td>2.49</td>
<td>2.68</td>
<td>-0.84</td>
<td>0.40</td>
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<tr>
<td><strong>Second Semester</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grades</td>
<td>1.98</td>
<td>2.24</td>
<td>-1.22</td>
<td>0.004</td>
</tr>
</tbody>
</table>
Results Explained: RQ2

A test comparing AP students’ AP Language and Composition first semester final exam scores prior to the intervention and after the intervention was nonsignificant \((t(122) = -0.84, p = 0.40, d = -0.17)\).

A test comparing AP student’s AP Language and Composition second semester final exam scores prior to the intervention and after the intervention found the results to be statistically significant \((t(120) = -1.22, p < .01, d = -0.22)\).
### Findings RQ2

**AP U.S. History Final Exam Scores**

<table>
<thead>
<tr>
<th></th>
<th>Control Group</th>
<th>Experimental Group</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Semester</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grades</td>
<td>2.71</td>
<td>2.95</td>
<td>-1.02</td>
<td>0.53</td>
</tr>
<tr>
<td><strong>Second Semester</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grades</td>
<td>3.34</td>
<td>1.94</td>
<td>5.17</td>
<td>0.94</td>
</tr>
</tbody>
</table>
Results Explained: RQ2

- A test comparing AP student’s AP U.S. History first semester final exam scores prior to the intervention and after the intervention was nonsignificant \((t(69) = -1.02, p = 0.53, d= -0.26)\).

- A test comparing AP student’s AP U.S. History second semester final exam scores prior to the intervention and after the intervention was found to be nonsignificant \((t(63) = 5.17, p = 0.94, d = 1.35)\).
Conclusions: RQ2

- Participants who attended the summer enrichment program did not score statistically higher on their final semester exams compared to those students who did not attend the intervention.

- Even though no significance was found, past research still reveals benefits taking AP classes:
  - Students who took 5+ AP courses typically outperformed those who took none.
  - Students are normally more engaged when they enjoy the content.
  - Increased engagement can lead to improved effort in classes.
## Findings RQ3

<table>
<thead>
<tr>
<th>Subject Exam Scores</th>
<th>Control Group</th>
<th>Experimental Group</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP Language and Composition</td>
<td>2.14</td>
<td>1.94</td>
<td>1.18</td>
<td>0.44</td>
</tr>
<tr>
<td>AP U.S. History</td>
<td>1.98</td>
<td>2.47</td>
<td>-1.50</td>
<td>0.72</td>
</tr>
</tbody>
</table>
Results Explained: RQ3

- A test comparing AP students’ AP Language and Composition AP Exam scores prior to the intervention and after the intervention was nonsignificant ($t(110) = 1.18, p = 0.44, d=0.24$).

- A test comparing AP students’ AP U.S. History AP Exam scores prior to the intervention and after the intervention was also nonsignificant ($t(57) = -1.50, p = 0.716, d= -0.43$).
Conclusions: RQ3

- Participants who attended the summer enrichment program did not score statistically higher on their end of school year AP exams compared to those students who did not attend the intervention.

- Likelihood of college success is much greater if a student passes AP Exam.
  - Students who take AP classes & don’t score well still demonstrate stronger content mastery than non-AP students.
  - Research has consistently shown that students who participate in AP are more likely to attend college & be successful than those who don’t.
Implications

- More schools than ever before are expanding their AP programs
- When given the opportunity, many underrepresented students enroll in AP courses but are not always earning good grades in their courses or on their AP exams
- The need to increase AP exam scores exists due to the known benefits for students who take advanced courses
Implications

- There is still a research gap that needs to be conducted in order to further the belief that non-traditional learners being placed in AP must be done with support systems put into place.

- This will allow students to overcome skill gaps and thus encourage them to succeed to their fullest academic potential.
Study Limitations

RQ1:
- Time to gather participants
- Parental consent forms not being completed

RQ2/ RQ3:
- Unable to utilize pre-test, intervention, post-test for same students
- Comparing different students who have varying abilities and ways to study
- Exams change from year to year
- For AP Language, choice of 3 teachers which can impact the way students are taught and learn
Recommendations

- Future studies, account for limitations by using a different design model
- Mixed-methods case study, follow a specific class through their AP career
  - Participants could be surveyed throughout high school
  - Would help tailor the summer intervention to students’ specific needs
  - Post surveys could be administered to gauge participants’ level of satisfaction from the intervention
  - If the same participants could be tested & tracked, more reliability could be given to the study results
Thank You!

That's all Folks!
References


References


References


