

# Dana Krilich

## Colloquium Defense

### April 22, 2017

OLIVET NAZARENE UNIVERSITY  
ED.D ETHICAL LEADERSHIP

DR. JEFF WILLIAMSON, ADVISOR  
DR. KIM HUMERICKHOUSE, READER

*Increasing Student Achievement  
In Advanced Placement Courses  
with Specially Designed  
Support Systems*



# *Intro to AP*



- ▶ 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



	CLASS OF 2003	CLASS OF 2013	Increase
Total AP Examinees	514,163	1,003,430	489,267
Total AP Low-Income Examinees	58,489	275,864	217,375
Total AP Examinees with Only Scores of < 3	182,429	395,925	213,496
Total AP Examinees with at Least One Score of 3+	331,734	607,505	275,771

► Source: AP Report to the Nation: 10<sup>th</sup> 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)

# *Problem Statement*

- ▶ 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.



## *Problem Statement continued ...*

- ▶ 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?



# *Research Design: RQ1*

- ▶ 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

*Study Skill Pairwise Comparisons for the CLSSI*

Pairwise Comparisons			
Study Skill	Study Skill	Mean Difference	Sig.
Textbook Reading	Note Taking	-0.41	0.00
	Memory	-0.38	0.00
	Test Preparation	-0.30	0.00
	Concentration	-0.46	0.00
	Time Management	0.41	0.01
Time Management	Note Taking	-0.82	0.00
	Memory	-0.79	0.00
	Test Prep	-0.71	0.00
	Concentration	-0.87	0.00



# *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 deliberately





## *Brain Camp Day 2 & 3*



## *Brain Camp Day 1*



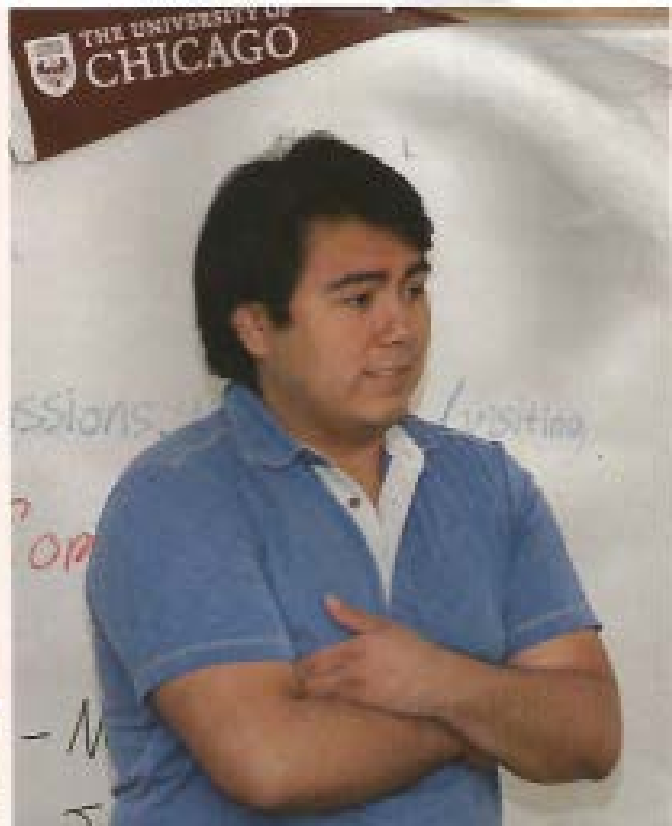
### *Specific Study Skill Sessions*

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?

# *Research Design: RQ2 & RQ3*

- ▶ 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
  - 1<sup>st</sup> & 2<sup>nd</sup> 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 1<sup>st</sup> & 2<sup>nd</sup> semester)

## RQ3:

- ▶ 2 independent  $t$ -tests
  - ▶ Experimental Group AP Exam scores vs. Control Group AP Exam scores



# Findings RQ2

## *AP Language and Composition Final Exam Scores*

		Control Group	Experimental Group	t	Sig.
First Semester	Grades	2.49	2.68	-0.84	0.40
Second Semester	Grades	1.98	2.24	-1.22	0.004

## *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*

		Control Group	Experimental Group	t	Sig.
First Semester					
	Grades	2.71	2.95	-1.02	0.53
Second Semester					
	Grades	3.34	1.94	5.17	0.94

## *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 RQ23

## *AP Exam Scores*

Subject Exam Scores	Control Group	Experimental Group	t	Sig.
AP Language and Composition	2.14	1.94	1.18	0.44
AP U.S. History	1.98	2.47	-1.50	0.72

## *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: RQ23*

- ▶ 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





*That's all Folks!*

*Thank You!*

# References

- ▶ Ackerman, P. L., Kanfer, R., & Calderwood, C. (2013). High school advanced placement and student performance in college: STEM majors, non-stem majors, and gender differences. *Teachers College Record*, 115(10), 1-43.
- ▶ AP Report to the Nation: 10<sup>th</sup> Annual AP Report. (2014, February 11). Retrieved from <http://apreport.collegeboard.org/>
- ▶ Barnard-Brak, L., McGaha-Garnett, V., & Burley, H. (2011). Advanced placement course enrollment and school-level characteristics. *NASSP Bulletin*, 95(3), 165-174. 174. <http://dx.doi.org/10.1177/0192636511418640>
- ▶ Chajewski, M., Mattern, K. D., & Shaw, E. J. (2011). Examining the role of advanced placement exam participation in four year college enrollment. *Educational Measurement: Issues and Practice*, 30(4), 16- 27. <http://dx.doi.org/10.1111/j.17453992.2011.00219.x>
- ▶ Congos, D. (Ed). (2011). *Starting out! College: Proven strategies for academic success*. Columbus, Ohio: McGraw Hill.

# References

- ▶ DeRose, D. S. & Clement, R. W. (2011). Early identification of students predicted to enroll in advanced, upper-level high school courses: An examination of validity. *ERS Spectrum*, 29(2), 39-48
- ▶ Dougherty, C., Mellor, L., & Shuling, J. (2006). *The relationship between advanced placement and college graduation*. Austin, TX: National Center for Educational Accountability.
- ▶ Hallett, R. E., & Venegas, K. M. (2011). Is increased access enough? Advanced placement courses, quality, and success in low-income urban schools. *Journal for the Education of the Gifted*, 34(3), 468-487.
- ▶ Judson, E., & Hobson, A. (2015). Growth and achievement trends of advanced placement (AP) exams in American high schools. *American Secondary Education*, 43(2), 59-76.
- ▶ Kerr, R. (2014). "Advanced classes? They're only for white kids": How one Kansas school is changing the face of honors and advanced placement courses. *Action in Teacher Education*, 36(5-6), 480-489.  
<http://dx.doi.org/10.1080/01626620.2014.977748>



# References

- ▶ Klopfenstein, K., & Thomas, M. (2009). The Link between advanced placement experience and early college success. *Southern Economic Journal*, 75(3), 873-891.
- ▶ Lee, S., Olszewski-Kubilius, P., & Peternel, G. (2010). The efficacy of academic acceleration for gifted minority students. *The Gifted Child Quarterly*, 54(3), 189-208. <http://dx.doi.org/10.1177/0016986210369256>
- ▶ Li, Y., Alfeld, C., Kennedy, R. P., & Putallaz, M. (2009). Effects of summer academic programs in middle school on high school test scores, course-taking, and college major. *Journal of Advanced Academics*, 20(3), 404-436, 546, 549-550.
- ▶ Mattern, K., Shaw, E., & Xiong, X. (2009). The relationship between AP exam performance and college outcomes (Research Report No. 2009-4). New York:
- ▶ Mcalister, S. E. (2013). *Open enrollment in advanced placement course: Experiences of traditional and non-traditional students* (Doctoral dissertation). Retrieved from [http://ecommons.luc.edu/luc\\_diss/534](http://ecommons.luc.edu/luc_diss/534)



# References

- ▶ Matthews, P. H., & Mellom, P. J. (2012). Shaping aspirations, awareness, academics, and action: Outcomes of summer enrichment programs for English-learning secondary students. *Journal of Advanced Academics*, 23(2), 105-124. <http://dx.doi.org/10.1177/1932202X12439197>
- ▶ Salkind, N. (2012). *Exploring Research* (8th ed.). Boston, MA: Pearson Education, Inc.
- ▶ Scott, T. P., Tolson, H., & Yi-Hsuan, L. (2010). Assessment of Advanced Placement participation and university academic success in the first semester: Controlling for selected high school academic abilities. *Journal of College Admission*, 208, 26-30.
- ▶ Tomlinson, C. A., & Jarvis, J. M. (2014). Case studies of success: Supporting academic success for students with high potential from ethnic minority and economically disadvantaged backgrounds. *Journal for the Education of the Gifted*, 37(3), 191-219.
- ▶ Zarate, M. E., & Pachon, H. P. (2006). *Equity in offering advanced placement courses in California high schools 1997-2003: Gaining or losing ground?* Los Angeles, CA: The Tomas Rivera Policy Institute.