

The Black Male Student:
Early Indicators
of
Algebra 1 Failure

Colloquium

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PROBLEM STATEMENT

- ❑ Poor international mathematics performance testing by American students has been documented as early as the 1960s (Mayfield & Glenn, 2008).
- ❑ Documentation of poor achievement via the achievement gap:
 - ❑ Black and White students
 - ❑ 1965
 - ❑ Large scale surveys with national samples
(Hedges & Nowell, 1999)

PROBLEM STATEMENT CONTINUED

- ❑ An unacceptable number of Black males between the ages of 14-16 years of age continue to fail algebra 1 mathematics at the high school level.
- ❑ The failure of algebra 1 mathematics at the high school level often has lead to a lower curriculum track assignment for the Black male student.
- ❑ The new track assignment is absent access:
 - STEM (Science Technology Engineering & Mathematics)

(Riegle-Crumb & Grodsky, 2010; Ballon, 2008)

PURPOSE STATEMENT

- The purpose of this quantitative study was to identify those factors that contributed to the high failure rate among Black males 14-16 years of age enrolled for the first time in a high school algebra 1 course taught in an urban public school in order to find ways to navigate around these barriers inhibiting Black male success in algebra 1 and thereby increase the college acceptance rate for matriculating Black males.

LITERATURE REVIEW

- Among 4th grade males, Black males enter school with:
 - Lower math
 - Lower reading
 - Lower vocabulary skills

- Specific interest has been placed on the low academic performance of the Black male when compared to other ethnic groups

(Kafele, 2012; Whitting, 2006; Sandowski, 2006)

LITERATURE REVIEW CONTINUED

- ❑ African American youth have unique issues that present barriers to success in their academic performance (Sommers, Owens, & Pilawsky, 2008)
- ❑ Not all Black males get the opportunity to take Algebra in middle school (Davis, 2014).
- ❑ Eunsook, Sas, Sas. J. (2006).
 - Efficient note taking
 - Actual problem Solving

8th Grade Black male math performance on National Assessment of Educational Progress (NAEP) from 1990 and 2015

	1990		2015	
	NAEP Score	Black Male Achievement Gap	NAEP Score	Black Male Achievement Gap
Black	188	-----	260	-----
Hispanic	201	+20	270	+10
White	220	+32	292	+32
Asian	225	+37	306	+46

(Adapted from NAEP 1990 and 2015)

RESEARCH QUESTION #1

- What differences exist, if any, in the learning styles between those students that passed algebra 1 and students who failed algebra 1 during first semester of the 2016-2017 school year?

RESEARCH QUESTION #2

- What differences exist, if any, in the mathematics self-efficacy among students who passed algebra 1 and those students who failed algebra 1 during the first semester of the 2016-2017 school year?

RESEARCH QUESTION #3

- What were the early predictors, if any, between the preferred learning styles, math self-efficacy scores, and the standardized test performance scores of participants 14-16 years of age who passed algebra 1 and participants who failed algebra 1 first semester of the 2016-2017 school year.

STUDY SIGNIFICANCE

- To assist those students who still struggle
- For math instructors
- To contribute to the conversation concerning mathematics
- Participant benefits
- To start new conversation about pedagogical change

DESIGN

- ❑ Quantitative
- ❑ Relationships in a statistical way
- ❑ Chi Square analysis for RQ #1 and RQ #2
- ❑ 2 groups with nominal data
- ❑ 2 sample *t*-test for RQ #3

(Leedy & Ormond, 2013)

PARTICIPANTS

- 2 groups identified for the study.
 - Student's who passed algebra 1 during 1st semester of the 2016-2017 school year
 - Students who failed algebra 1 during 1st semester of the 2016-2017 school year

INSTRUMENTS UTILIZED

- ❑ Learning Style Inventory
- ❑ Math Self-Efficacy Scale
- ❑ Both measurements given to participants on the same day
- ❑ Total time required 1hr 5min.

FINDINGS RQ #1

- What differences exist, if any, in the learning styles between those students that passed algebra 1 and students who failed algebra 1 first semester of the 2016-2017 school year?
- RQ #1 – No statistically significant relationship was identified.
- Specifically, ($\chi^2 (4, N= 41), p = .498$) represents the results from the Chi Square analysis

FINDINGS RQ #2

- What differences exist, if any, in the mathematics self-efficacy among students who passed algebra 1 and those students who failed algebra 1 first semester of the 2016-2017 school year?
- RQ #2- No statistically significant relationship was identified.
- Specifically, ($\chi^2 (30, N = 42) = , p = .312$) represented the results from the Chi Square analysis.

FINDINGS RQ #3

- What were the early predictors, if any, between the preferred learning styles, math self-efficacy scores, and the standardized test performance scores of participants 14-16 years of age who passed algebra 1 and participants who failed algebra 1 first semester of the 2016-2017 school year.
- RQ #3 No statistically significant relationship was identified.
- Specifically, $t(40) = .19, p = .56, t(41) = .21, p = .248,$ and $t(41) = .01, p = .858$ were the results generated from the t-test analysis.

CONCLUSIONS

- A relationship does not exist between preferred learning styles and math success for urban Black males who passed or failed high school algebra 1
- A relationship does not exist between the math self-efficacy scores and math success for urban Black males who passed or failed high school algebra 1
- A relationship does not exist among the preferred learning style, math self-efficacy, and standardized test scores between urban Black males who passed or failed high school algebra 1

CONCLUSIONS CONTINUED

- In tandem:
 - Preferred learning styles
 - Math self-efficacy
 - Standardized test performance
 - Do not make for suitable predictors of high school algebra 1 failure.

- The existence of the negative phenomena remains

IMPLICATIONS

- ❑ An Investigative step has been established
- ❑ Practitioner Behaviors must change
- ❑ An explanation for the phenomena has not been identified
- ❑ Acknowledgement that other variables to algebra 1 failure exist

LIMITATIONS

- ❑ At this time, the sample size of the participant group may not be as robust as the researcher would like.
- ❑ Pen to paper examination
- ❑ End of the day participant assessment
- ❑ More extensive use of technology

RECOMMENDATIONS

- ❑ Recognition and acceptance of a negative phenomenon in mathematics concerning Black males.
- ❑ Future research should be both quantitative and qualitative
- ❑ Future research should be in partnership with large urban district
- ❑ Future participant groups should be > 2000

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