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IMPLEMENTING A COHORT MODEL FOR ALGEBRA 1, GEOMETRY AND ALGEBRA 2 AT ONE HIGH SCHOOL: A CHANGE LEADERSHIP PROJECT

Agnes Ghansah

Educational Leadership Doctoral Program

Submitted in partial fulfillment

of the requirements of

Doctor of Education

in the Foster G. McGaw Graduate School

National College of Education

National Louis University

June, 2017

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Submitted for Approval

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Approved copy on file in the Dean's office.

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Member, Dissertation Committee	Director, Doctoral Programs
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Dean's Representative	
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Date Approved	

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This document was created as *one* part of the three-part dissertation requirement of the National Louis University (NLU) Educational Leadership (EDL) Doctoral Program. The National Louis Educational Leadership Ed.D. is a professional practice degree program (Shulman et al., 2006).

For the dissertation requirement, doctoral candidates are required to plan, research, and implement three major projects, one each year, within their school or district with a focus on professional practice. The three projects are:

- Program Evaluation
- Change Leadership Plan
- Policy Advocacy Document

For the **Program Evaluation** candidates are required to identify and evaluate a program or practice within their school or district. The "program" can be a current initiative; a grant project; a common practice; or a movement. Focused on utilization, the evaluation can be formative, summative, or developmental (Patton, 2008). The candidate must demonstrate how the evaluation directly relates to student learning.

In the **Change Leadership Plan** candidates develop a plan that considers organizational possibilities for renewal. The plan for organizational change may be at the building or district level. It must be related to an area in need of improvement, and have a clear target in mind. The candidate must be able to identify noticeable and feasible differences that should exist as a result of the change plan (Wagner et al., 2006).

In the **Policy Advocacy Document** candidates develop and advocate for a policy at the local, state or national level using reflective practice and research as a means for supporting and promoting reforms in education. Policy advocacy dissertations use critical theory to address moral and ethical issues of policy formation and administrative decision making (i.e., what ought to be). The purpose is to develop reflective, humane and social critics, moral leaders, and competent professionals, guided by a critical practical rational model (Browder, 1995).

Works Cited

Browder, L.H. (1995). An alternative to the doctoral dissertation: The policy advocacy concept and the policy document. *Journal of School Leadership, 5*, 40-69.

Patton, M. Q. (2008). *Utilization-focused evaluation* (4th ed.). Thousand Oaks, CA: Sage.

Shulman, L.S., Golde, C.M., Bueschel, A.C., & Garabedian, K.J. (2006). Reclaiming education's doctorates: A critique and a proposal. *Educational Researcher, 35*(3), 25-32.

Wagner, T., et al. (2006). *Change leadership: A practical guide to transforming our schools.* San Francisco: Jossey-Bass.

ABSTRACT

This project addresses a high school that has low test scores in the mathematics department. The scores, especially of the core math courses are at or below that of the district level. I investigated into potential causes of the problems and how this could be rectified by proposing a change.

I collected some students' tests scores data of the math courses, and then conducted surveys and interviews of the teachers of these courses to gain a better insight into the problem. The results prove my previous notion that the scores were not good and that both teachers and administration would like to see a change, and are in favor of my proposal. Although my proposal seem to be an effective tool to help with the math department scores, there is a challenge that some of the teachers are not aware of the plan I am proposing and they need staff development to educate them. Also, the master schedule poses a challenge because of the magnet component of the school.

PREFACE

This is a change leadership project which explores a way to improve the mathematics scores of a high school. The math scores fall short when compared to other schools in the district. This policy provides an articulated vision for promoting effective and long-term change to a school's culture.

Since I am a high school mathematics teacher myself, this project is very important and dear to my heart to see that my students do well academically and also, that the math department as a whole have high test scores, while we compete or stand up to other high schools in our district. The stakeholders, mainly the teachers, administrators, students, parents and community will also see the importance of this policy and how it impact students' achievement scores and the school as a whole. I would like this school to be among the top 10% in the district that students will be proud to attend and the parents will have no doubt but to send their children there.

I know that many people are not open up to "change," any new thing causes anxiety and discomfort to a lot of people but I must say that I have learned that as a leader, I should let that worry me. I have to think carefully, investigate probable causes of situations and then initiate a cause of action which will be plan for the solutions. I am a leader but not a dictator. That being said, I do not just tell people what I want to be done and expect results. I do consult all stakeholders and take their views into account when proposing a new plan for instance; I need their "buy-in" as well to be carried out effectively and successfully.

Eventually, all stakeholders will realize how this plan, not only will impact student achievement levels to increase school wide, but also students will be learning skills for college and lifelong learning success. The school as well as the district will see the importance and impact this cohort model in the math department will have on the students' academic achievement and will in turn, fund resources to make this plan a reality. This project has challenged me in preparing to be a leader and to grow as a leader. The plan I proposed was not an easy one. The district do not think this could be done, but my determination to find alternate means to improve students' achievement score have driven to research on this plan and propose a change at this school.

ACKNOWLEDGEMENTS

I would like to acknowledge all those who helped me obtain data I needed for this dissertation including surveys and interviews. I could not have written this paper without their help and support and I cannot thank them enough. I will like to thank my Chair, Dr. Carol Burg, without her leadership and guidance I could not have made it. My thanks also go to Dr. Dan Buckman and Dr. Jim Scott who worked with me on my internship as well as being my professors throughout my doctoral degree. Also not to forget about my former Chair, Dr. Stu Carrier, who moved to Illinois to assume the position as an Interim Dean of College. Thank you to all professors and visiting professors who taught me at National Louis University and to my TA002 cohort members.

My sincere thanks also go to my principals who allowed me to conduct research and gave me the support I needed. I also want to express my special appreciation and thanks to my family, especially my brother, Dr. Emmanuel Ghansah, for giving me the reassurance that I can always count and lean on him. I want to thank my fellow colleagues and friends as well. Obtaining my doctoral degree is a big deal to me and so I appreciate everyone who contributed in any way throughout this journey.

DEDICATION

I would like to dedicate this Change Leadership dissertation to my late father, Mr. Jacob K. Ghansah. He was a leader throughout the positions he held as an auditor until his last position as Deputy Auditor General, before he retired. My father instilled in me and all of his children to have self discipline and pursue education to be the best we could and among the top if not at the top of our class in school. I remember when I was a little girl, before I started school, how he taught me the alphabets and I would not stop reciting them even when he fell asleep. I held the top position in my classes as I was growing up throughout my primary and secondary school years. The fear and the will in me to do well and to make my father proud, kept me pursuing and furthering my education up till now. There is nothing rewarding to me until I get my doctorate degree.

The only thing is I wish my father was here to see me obtain this milestone of my life. But wherever he is now, I hope he knows and is proud of his "baby last" child. Papa, I finally made it! You have another doctor in your Ghansah family. One of my father's favorite hymns is, "Through All the Changes Seasons of Life,…" Papa, I dedicate this Change Leadership dissertation of mine to you. Thank you for everything.

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SECTION ONE: INTRODUCTION

Identifying the Problem

Most of the students at Icosahedron High School (pseudonym) taking Algebra 1, Geometry and Algebra 2 are performing at or below the district average. The percentage of the students in Algebra 1 who scored Ds and Fs on semester 1 exam scores for 2014-2015 was about 87%, Geometry regular 84%, Geometry honors was 42%, and both Algebra 2 regular and honors with 96% scoring Ds & Fs. These low performing scores has been going on for several years so these core classes in the math department need a change to make the academic performance better; this is where my project comes in. I proposed to implement a cohort model for these three core math courses.

Learning is enhanced by long-term connections between teachers and pupils, yet students rarely have the same instructor for more than one school year as the norm in the traditional school. Successful connection-forming practices have included looping (a teacher spends two or three years with the same group of students), which takes many different organizational forms. A central feature of looping is the cohort model.

Cohort models have been a best practice for several years. The Algebra Project designed a "Math Cohort Model" for students scoring at the lowest quartile on standardized assessments. The purpose was to maintain their momentum in high school so that they would graduate with their peers in four years. The cohort model additionally provided college credit coursework in mathematics. According to the research, another aspect of this cohort model is keeping peer pressure and peer culture in control in high school by having the students and teachers together for successive years. (NSF Discovery Research, 2009). Based on this model and the need for positive change in our

approach to the core math classes with the purpose of enhancing academic performance, I resolved to lead a change process to implement a cohort model for three core math courses.

By using the principles presented in *Change Leadership: A Practical Guide for Transforming Our Schools* (Wagner, Kegan, Lahey, Lemons, Garnier, Helsing, Howell, & Rasmussen, 2006), I developed a plan that will help change these courses in the math department for the better. The plan I proposed for organizational change at Icosahedron High School (pseudonym) is to schedule students in Algebra 1, Geometry and Algebra 2 classes in a cohort model. As I have already mentioned, these core math classes at Icosahedron High School (IHS) are at or below the district level of performance. There is a big racial achievement gap, that is to say, that about 60 to 70% of white students out-perform the rest of the students, so I hope this plan would help bridge the gap as well. The "TO BE" part of the Wagner, et al (2006) 4 C's change model for organizational renewal was used in order to come with methods and ideas in which these problems will have an impact. This was done after I had identified an area that needs improvement (the "AS IS").

Problem

The context of the problem at Icosahedron High School (IHS) is that students' scores are low on these 3 math classes: Algebra 1, Geometry and Algebra 2. Our school has been trying some ways to improve students' academic performance but without great success, so I am hoping that introducing and implementing a successful cohort model could help with this problem. I would like our school's math scores to be among the top 10% in the district. At Icosahedron High School, most students enrolled in Algebra1,

Algebra 2 and Geometry are at or below the district level of performance. IHS Math department's motto is to perform at the top 5% in the district however our three main core classes which constitute a major weight in determining the school's grade fall short. Students enrolled in these classes now take an End of Course (EOC) exam known as Florida Standards Assessment (FSA), which replaced Florida's Comprehensive Assessment Test (FCAT). Because of this problem, I proposed a plan to address the issue using cohort practices. However, it has been a challenge to schedule the same group of students in about four different classes. The cohort model I proposed without major difficulties will result in the success of students test scores improvement. By ensuring this is a possibility, I had to contact the Administration and other teachers about ways to deal with that since students have not be scheduled together in different classes or successive years.

Rationale

The rationale for selecting this problem to address is to improve Algebra 1, Geometry and Algebra 2 scores at Icosahedron High School (pseudonym). I would like IHS to be a school that parents would like to send their children and students would be proud to be attending and receive college preparatory courses. I often hear teachers talking about students taking remedial courses when they get to college because they did not get a solid foundation in high school. We need to find a way to eradicate this. We, the high school teachers, often get blamed for freshmen college students not being prepared. Actually, almost every teacher blames the previous teacher if students do not do well. This happens especially in math because most courses have a prerequisite and a student cannot take the next math course unless he or she successfully passed the

previous one. Being that IHS is an urban and Title I school, I investigated into what other contributing factors caused the low score of these core math courses.

Being that IHS is an urban and Title I school, I investigated into what other contributing factors caused the low score of these core math courses. "Urban schools exist in a larger institutional environment that is unstable unsupportive, and undermining," (Payne, C., 2008, p. 122). IHS is an urban school, so we need to look at some other factors that may be causing the math scores to be low and we can make this better. This school which is also a Title I school receives funds to support compensatory education, but sometimes the type of intervention used is ineffective for the students and the school.

Furthermore, my rationale for selecting this problem as the focus of my change plan is to have a continuum and better teacher student relationship and improve the academic performance of these students in Geometry, Algebra 1 and Algebra 2. Also, by having a cohort model, there would be consistencies in classroom procedures and expectations among these classes. The students will be familiar with a teacher's expectations and so moving forward to the next level math course will produce positive results. This is important to me to see how my students and other students progress from one class to the other under the umbrella of the same group of students. My personal connection to this change plan is that I am a math teacher who almost every year, teaches a core math course. Teachers of core math courses are under scrutiny because students in these classes take the Florida Standard Assessments (FSA) as the End of Course (EOC) exams and their scores help determine the yearly school grade. So that being said, I

always find ways to make sure that my students do well and their scores are within the school or district average level of performance.

Being a math teacher myself, I can relate to this situation**.** It is disappointing to know that your hard work is not paid off when the tests scores come back and not good. I love teaching one of the core math courses and I would like to have my scores as well as the scores of this school to exceed that of the district. Once a while, my score would be higher than the district, especially the Formative Assessment but not that high during the semester exams or the End of Course exams. My plan when executed properly will help the students' body, teachers, administration, parents and the community. The wellbeing of the school is at stake and every stakeholder is invested in this.

Goals

The intended goals of my change plan is to try and schedule and set up students in Algebra1 and the same (or majority) group will continue onto Geometry and then to Algebra 2. It will be much easier to target the traditional students who are mostly in the regular classes as opposed to the magnet students who are normally enrolled in the honors classes. The reason is that IHS is a 2-in-1 school, meaning that it is a traditional Title one school for neighborhood students, but also has a magnet component attached. The magnet component is Fine Arts. Students audition to be accepted into the magnet program. Thus saying, there are certain fine arts courses (such the harp class – with a part-time teacher) that are only offered during a certain period of the day so the math courses would have to be scheduled around those courses. This could make it difficult to have the same set of students from a class to continue together. In order to help with

scheduling conflicts, I propose that these core classes be offered at certain time of the day, say in the mornings and then offer the magnet courses in the afternoons.

Furthermore, my goal is to have groups of students to have opportunities to participate in locally developed and designed after-school and summer institutes and also take math together and in daily periods of time and by using instructional materials. I hope to have local community group support the new change plan. This plan will allow students to receive group or psychological support from the Guidance and other Counselors. Being that the core math scores are not at the level the school should be, the cohort model would be a way to monitor the students closely and to provide assistance as needed to be successful. These students will attend classes together and will be a way for them to encourage one another and get information from their fellow classmates in the cohort in the event a student is absent or do not understand material being taught. Teachers of these math cohort classes class also collaborate when they meet during Professional Learning Communities (PLCs).

Setting

Icosahedron High school's multi-ethnic population consists of students who are 45.5% black, 28% white, 21% Hispanic, 7% multiracial, 4.5% Asian or American Indian, 15% of the students with disabilities (SWD), and 9% English Language Learners (ELL). This school is a Title I school with majority of the students on free and reduced lunch and low socio-economic status. We have at-risk-risk students who have low level of academic performance and a racial achievement gap of 60 to 70% of the white students out-performing the rest of the students.

About 60% of students enrolled in Algebra 1, Geometry and Algebra 2 mathematics classes at IHS are at or below the district level of performance. The breakdown of theses core classes are as follows: Algebra 1 with ninety-seven (97) students tested, Intensified Algebra 1 with one hundred and twenty-six (126) students tested (totaling Algebra 1 with two hundred and twenty-three students tested), Geometry regular with one hundred and ninety seven (197) students tested, Geometry Honors with one hundred and forty-three (143) students tested, (totaling Geometry course with three hundred and forty (340) students tested), Algebra 2 regular with two hundred and nineteen (219) students tested, Algebra 2 Honors with one hundred and fifty-nine (159) students (totaling Algebra 2 three hundred and seventy-eight (378) students tested). So in all, there were about nine hundred and forty-one (941) students in the core math Algebra 1, Geometry and Algebra 2 who were tested on the exams.

Conclusion

I have hope and aspiration that implementing a cohort model for core math courses in the department would bring better changes. It is about time that this school is considered to be among other top competitor schools in the district parents will be proud to send their children to. After addressing these problems, shortcomings and having protocols in place, it is my hope that Icosahedron High School will show improvement in our students' standard scores and school grade.

SECTION TWO: ASSESSING THE 4 C'S (AS IS)

This section considers the general context "As-Is," and will focus on the culture and climate at IHS. To help me correct the problem at stake, I conducted surveys and interviews of teachers and administration of this school. I watched out for any leadership styles and biases that can help me to comprehend better what the problems is at the school and to become a better leader. According to adaptive leadership experts, "The first step in taking any adaptive challenge is to get on the balcony so you see how your organizational system is responding to it," (Heifetz, Linsky, & Grashow, 2009). Following their advice, I decided to take the time necessary to assess the problem and find measures that would help me to see the whole situation more clearly before taking action.

Context

The context of the problem that compels me to try to implement this cohort model is that most of these students in the core math classes are-risk-students and have low level of performance, academically and sometimes even socially. They are also from low socio-economic status and mostly are on free or reduced lunch. There are classroom materials some these students need but their parents cannot afford. These issues and problem could better be addressed if they are in this cohort model. There is also a racial achievement gap among these students in the math department that causes me concern. Our lowest bottom quartile or lowest performers are usually the African-American students while the top students are usually the Caucasians. I need this cohort plan to help all these struggling students and also to "track" their performance as well as attendance as they move together to the next math classes.

Culture

The culture of this school is that most teachers teach in isolation. The math department is no exception and I think that forming this cohort model will eliminate some of this problem. The teachers will have to engage routinely in PLC's to discuss teaching strategies and best practices that other math teachers are using that help. Not only do we need to teach within our own department, but we need cross-curriculum teaching and find out about how these students are performing in other classes besides math and what measures those teachers are using to "reach" those students.

In addition, teachers need to continue to attend professional development and trainings to get better at curriculum delivery. We have some teachers who may be knowledgeable of the content but unable to express and teach in a way that the students could understand, and so the students do not learn well and hence fail or do poorly on the exams. My plan will also ensure that we recruit highly qualified teachers to teach these math cohort classes in order to show student academic success and improvement on the test scores.

Conditions

The conditions of this school and department pose problems for scheduling the same group of students to be together in the next year's math class, and the next. This is because of the problems I discussed earlier of the magnet component whereby certain major courses needed are only offered at certain times of the day so the math and other classes have to be scheduled around them. There may be problems getting enough teachers and students to continue together. About 10 years ago, there was a math teacher at IHS who attempted a similar concept but could not continue because the high school

master schedule is a challenge. More recently, during the 2015 school term, the cohort idea was reintroduced at the school but not in a consistent manner. That is another reason why there is a need for this change of plan. There are some inconsistencies among teachers' procedures and expectations in class that leads to disconnections of purpose and effort. With an organized, consistent cohort model in place, the students will become familiar with consistent expectations in the classes they have together and as they progress to the next math course.

Competencies

There are some math teachers who are not comfortable or capable in teaching the next higher-level math courses. Even though a teacher may have a degree or be certified to teach high school level math courses, there are some courses that the teachers may not be that comfortable, confident or experienced teaching and this is will affect the competency of the program or policy. This roadblock to progressive cohort student group scheduling poses a problem for sequential teacher looping for carrying out the design of grouping math classes. There are gaps in both teacher capacity as well as student capacity to overcome learning deficits. According to Kegan and Lahey, (2009, p. 2), "One of the central learning problems of the twenty-first century is closing the achievement gap." Closing the achievement gap is notion that has been discussed for as long as I can remember while teaching. The achievement gap can be closed. I have attended professional development and other workshops where motivational speakers have great ideas to do so, but in reality, it is difficult to do as a teacher and administrator. In the case of my planning to implement cohorts as a support mechanism to promote student learning gains, I face other daunting issues such as teacher preparation in the core

content area of mathematics. Nevertheless, as stakeholders, teachers and administrators continue to implement best practices as well as we can. The need for continuing to build competencies of staff has been made increasingly clear to me during the change planning process.

Conclusion

I believe that successful planning of master schedules can be done to allow a cohort group of students to continue onto the next math class together as a means of continuity and support for them as they experience a consistent, organized methodology of instructional and content presentation for either the same teacher or a group of teachers working in collaboration. There is a great need to ensure that all math teachers receive sufficient training and knowledge in the math content to provide the capacity for cohort implementation. It will be also helpful to have teachers who have prior experience in teaching Algebra 1, Geometry and/or Algebra 2 as well as new teachers having the opportunity to participate in teacher team member orientation training. Furthermore, program will have a greater capacity for success if math teachers are comfortable and capable of teaching each progressively higher level math course so that they may stay with their student cohort. By so doing, I believe that Icosahedron High School will likely be at or above the district level in academic performance in the mathematics content area.

SECTION THREE: RESEARCH METHODOLOGY

After I analyzed the As-Is that existed at IHS, and after I identified the problems associated with student performance, I determined what the contributing factors for each of the 4C's. My research methodology takes into consideration both quantitative and qualitative data. Although I prefer quantitative analysis of data because numbers make more sense to me, and also due to the fact that I am a mathematician, I collected qualitative data as a powerful means of exploring additional data. I conducted surveys and interviews to gather data about the math teachers and administrators' experiences and perceptions of this matter.

Research Design

To gain insight into this change leadership plan, I used the following processes and procedures: The types of data I gathered were District Formative Assessment A, End of Course (EOC) and Semester 1 Exams tests scores of about 570 students who perform at or below level in Algebra 1, Geometry and Algebra 2. I collected data from my school's Assistant Principal for Curriculum (APC) and Mathematics Department Head. These are the typical tests administered for all core math courses now in this school district. This data helped me to understand how the school was performing compared to the district and why the need to implement this change. The AS-IS shows the school has a lot of work to be done as far as improving the test scores in these math courses.

Participants

The participants will be math teachers and administrators of the school, primarily those who teach Algebra 1, Geometry and Algebra 2. The teachers and administrators will be contacted if they will be interested and willing voluntarily to participate in a

survey and possibly an interview afterwards. Participants will be up to twelve teachers in the mathematics department of my school. These are both adult female and male teachers, ages 22 to 60, and up to up to 3 adult administrators of that school, ages 22 to 60. These participants were chosen because they were the teachers teaching or have taught the three core math courses being discussed as well as Curriculum Principals so they were able to provide better feedback on the plan to be implemented.

Data Collection Techniques

I collected students test scores, conducted teacher and administrative surveys and teacher interview. I then looked at the results of the test scores to make meaning of that, as well as the surveys for any common or unique themes. Since there was only one teacher interview conducted, I had no others to make any comparisons but I just commented on what was discussed.

***Surveys*.** There were two kinds of surveys – one for teachers (see Appendix C), and the other for administrators (see Appendix D). There were twelve teachers in the mathematics department, so I surveyed up to nine teachers because I focused primarily on those who teach or have taught Algebra 1, Geometry and Algebra 2. I also surveyed one of the Assistant Principals for Curriculum, and the Head of the Guidance Counselors.

Interviews. My initial plan was to conduct some interviews, for about 30 minutes with a possible second, follow-up interview lasting 30 minutes. I wanted to interview some key potential teachers and administrators who were interested or had some information to share with me that would be helpful. I wanted to interview up to 12 teachers in the math department (see Appendix E): primarily the teachers who teach Algebra1, Geometry and Algebra 2. Even though I wanted to there was no administrator

interviews conducted. During the interviews, I observed the body language and other facial expressions and comments that will be made.

Data Analysis Techniques

Surveys. For each of the survey I received, I made a check part of the survey. For the response or open-ended survey questions, as well as for the interview data, I analyzed that data for emergent themes among and between participants, and noted similarities, differences, as well as unique but relevant or important themes**.**

Interviews. Since there was only one teacher interview conducted, I could not make any data for emergent theme, nor noted any similarities, differences, but just commented on what was discussed during the interview.

Student Data. I created statistical data charts and graphs to explain or analyze the results. The types of data I gathered were students' District Formative Tests, and District Semester Exam scores. These data are needed for this project to show that the department's math scores in these areas are at or below that of the district's average scores.

Ethical Considerations

There is no risk to participants beyond that of everyday life. However, to ensure the anonymity of the adult participants and student data, I did not use their real names and kept the data confidential by keeping it in a locked cabinet in my home and on a password protected computer drive, to which only I have access. The potential benefit is that this study might reveal the strengths and areas for improvement in how we run the mathematics program at my school

The Federal Regulations at 46.116 describes eight elements required in each consent document. According to Section 116 (46.116) of the federal regulations gives the general requirements for informed consent. The section reads, in part, "...no

investigator may involve a human being as a subject in research covered by this policy unless the investigator has obtained the legally effective informed consent of the subject..." I used a checklist to help me in my evaluation of the informed consent documents (see Appendix G Informed Consent – Survey and Appendix H – Informed Consent - Interview) accompanying each protocol to assure that those required elements were included as I conducted my surveys and interviews. I provided each participant with two copies of the informed consent form – one to sign and one to keep. I explained the document and answered any questions that may have, before I asked for their participation.

Conclusion

According to Wagner, Kegan, et al. (2006), "Qualitative data is powerful in illuminating and communicating key insights. By seeing the faces and hearing stories, hopes and opinions help to understand things much better and seeing things in three dimensional (3-D) than in just one" (page 146). As a Geometry teacher, I can relate to this analogy of seeing and understanding things from a 3-D perspective. As a leader and future educational leader, I plan to articulate a deeper understanding and urgency that relate to both the needs for enhancing student leaning and achievement and teaching of all students.

SECTION FOUR: RELEVANT LITERATURE

Introduction

The cohort model is based on collective work and progress in an academic environment. Students in an education program that follows the cohort model move through the course series collectively. This model of education is believed to benefit students by providing mutual academic and logistical support to help students succeed. Students in programs that follow the cohort model have the ability to develop camaraderie with their peers that students in traditionally formatted courses do not always have. The cohort model also promotes the development of personal ties.

The cohort model is usually seen in colleges for students pursuing various educational degrees. The model is becoming more common in degree completion, bachelor, master and doctoral programs. However, model is seen in some K-12 schools commonly known as "the wheels," whereby a group of students in a particular grade level is scheduled together in the same as classes and with the same group of teachers.

My project is formulated on the successful implementation of a cohort project titled, The Algebra Project, which was first tried in the LK-12 setting at Lanier High School in Jackson, MS. The National Science Foundation (NSF) awarded a 5-year, $4 million dollar Discovery Research award for an expansion at four other school sites (NSF, 2009). The project purposed to "Test its cohort model for preparing students for college mathematics who are currently performing in the lowest quartile in mathematics" (NSF, 2009). The successful outcome of this project has inspired me to pursue a change project at my school characterized by consistency of effort and coordination of best practices of cohort strategies.

The author Lew Smith, in one of his books, investigates eight schools for seven years and thoroughly examines everything those schools went through. The schools drastically and significantly changed from very bad to great in academic performance among a few. Change is a challenging concept. There have always been problems with schools concerning poor test scores, students not being well prepared for college or the real world, the teaching of students considered to be poor quality, or that the public does not have confidence in schools (Smith, L., 2008, p. 4). This is true with the change policy that Icosahedron High School is implementing. We have to make sure that all stakeholders are on board and they have the similar vision and value of this program

Another problem for students failing a course or class could be attributed to teacher's grading policies. This is to say that if a teacher has one big major test or project and a student fails to do or complete it or just does not turn in, he or she could ultimately fail the course. Changing the grading policy could be a challenging leadership task but is worth doing (Reeves, 2009, p. 102). Now with Icosahedron High School implementing the cohort model in the math core classes, all of the teachers in that cohort group will have the same or similar grading policy which will be agreed upon or discussed in that case, a student will not just fail a class due to how one teacher sets up the grading policy.

We do not have to conduct schools like a business. According to author Jim Collins, business thinking is not the answer (Collins, J., p.1). We should not think of students like we are in a factory or some business place. Most businesses are not great but average or just good, so we do not want our schools to be just okay or mediocre. Education is far different from that and we should not conduct schools as such.

Icosahedron has to be among the top 10% in the district as far as the math scores are concerned, so the school leaders should look into that situation. We need to build and display a culture of discipline in our schools and especially, the math department, which will in turn build a culture or principle of greatness not a culture of business (Collins, J., p.1). There are a lot of qualities and efforts that are needed to implement change. But once the change is implemented, that is not the end. We need to be able to sustain change. Leaders need to now focus their times and resources to accomplish this which is not easy. We should not just look forward to the short-tem effectiveness but the long haul (Reeves, 2009, p.123). Icosahedron hopefully will have a task force or a committee who will review how the cohort model is doing – fidelity check on the progress and sustainability of the cohort model in the math department.

Boyatzis's Intentional Change Theory has 5 components, namely the "ideal self, the real self, learning agenda, experimenting with and practicing new habits, and finally, developing and maintaining close and personal relationship," (Boyatzis &McKee, 2009, p. 88). As I was went through discussing the cohort model change for the department, I put myself in the situation, reflecting on how it will be like teaching at Icosahedron as I am a math teacher myself. I tried to make this project personal as much as possible. I am passionate about this project change as I find myself going through the process of change and how I would handle if it was not a project but I was in that school going through with the rest of the teachers and staff. I had to go through the emotions what it would feel like and how I felt reflecting on this change leadership project.

Crean Lutheran High School in California is not just a Christian-centered school but also academically excellent. This school offers three prestigious cohort programs in

the field of medical, business and engineering. This is the first time I ever heard of such thing in high school especially, a Christian school and I must say, I am impressed. These cohorts are for students who do exceptionally well academically and want to learn from professionals and tour some specific industries but at the same time, keep growing in their Christian faith. Students, who get accepted into one of these cohorts programs conduct research independently, attend lectures by the professionals, and complete several hours of internship. The students will receive special distinction in their diploma when they complete all four years in their cohort program. (CLSHS, 2017). I must say that I am very impressed and this type of cohort setting and expectations sounds more to me like a college setting than a high school. These cohort programs that school are well designed and implemented successfully. This is by far, one of the best cohort programs, if not the best cohort programs I have researched on at the high school level. I hope Icosahedron High School can take some notes from this school while and when implementing the cohort program in the math department.

Watertown High School in Connecticut has honors cohort program and freshmen cohort program for the incoming class of 2020. Starting with the class of 2019, each freshman will be assigned to a workshop counseling course where they will be exposed to information need for them to be successful in their 4-year high school career (WHS, 2017). About a couple of years ago, Icosahedron tried to implement freshmen academy over the summer but this was not successful mainly because the school has a magnet component and difficult to schedule all freshmen together. The students in the traditional program would have better chances of being in the freshman academy program but it was not followed through. Moreover, the teacher and principal who were instrumental in

having a freshmen academy received other job offers so they no longer work at the school. The idea of having a freshmen academy was not revisited after they left.

Definition of Terms

Eleanor Drago-Severson's research findings support the efficacy of the cohort methodology. She found that the students' membership in a cohort characterized "as tight-knit, reliable, common-purpose group - was very important, in different ways," (Drago-Severson, 2009). Drago-Severson identifies the effectiveness of designing the cohort model around collective work and progress in an academic environment (2009). According to Drago-Severson, a "cohort is a group of students who move through a program together" (2009). Looping is a common practice in education. The concept is based on students staying with a teachers for two or more years; looping seems to further the idea of the cohort in that even further support and continuity is provided to the group of students.

Professional Learning Community (PLC)

PLC is a group of people usually with a common theme meet to discuss and come up with some solutions and area of focus. For an example, in the mathematics department we have PLCs for Geometry, Algebra1, Algebra 2 and Upper Level courses and AP courses. On every Monday morning, before school starts, each PLC meets. The discussion is usually led by a the team leader (rotated each year as needed), to discuss various things such as instructional focus, and professional development needed, Common Assessments, best practice a teacher used and shares with group, academic remediation or behavior concerns, etc.

Conclusion

Most of the cohort models are in higher education settings, however, but I managed to finally find some research pertaining to cohort model of instruction in K-12 setting. By so doing, I believe that teachers in the cohort group would form better professional learning communities (PLCs) to discuss the students in their cohort. This will eventually serve the students better, and thus, improve the academic performance.

SECTION FIVE: DATA ANALYSIS & INTERPRETATION

Findings

Since this research pertains to Algebra 1, Geometry and Algebra 2, I tried to make sure that these teachers were contacted to participate. Almost every teacher in the math department has taught at least one of these math content areas so I was looking forward to getting some feedback from them. Since I am out of the equation, that left 12 teachers to contact; however there were two other math teachers who did not have any contact or experience in teaching this content or out on a leave of absence, so technically I contacted 10 math teachers as well as three administrators (Head of Guidance Counselor included) for this research study.

Surveys

Teacher Survey

I received five (5) teacher surveys back from the ten (10) that were given out which is a response rate of 50%. In response to teacher survey (Appendix C) question #1 which stated, "I am familiar with the cohort model," 60% disagreed and 40% agreed. Even though this was a small sample size, it shows that most teachers were not familiar with a cohort model of teaching. This made me realize that before this model could be implemented, the teachers will have to be trained as to what and how to teach in a cohort model. This is an unfamiliar term especially in high school compared to colleges and universities.

To the second question on the teacher survey which stated, "The cohort model of education benefits students by providing mutual academic support to help students succeed," 60% agreed and 40% had no opinion. This again can be explained from the

first question that teachers are not familiar with what a cohort model is and so they cannot comment if this model is beneficial or not in providing educational support.

In response to the 3rd question, "The common goal of starting and completing a mathematics cohort together encourages students to work collectively," 80% agreed and only 20 % (one person) had no opinion on this matter. It shows that teachers are in favor of seeing students completing their work and think a cohort model could help. This result means that even though the teachers are not familiar with cohort model, they understand and agree to some extent that the students will be working collectively together and encourage one another to get their work done.

In response to the 4th question, "Since students' progress together and have the opportunity to work collaboratively, they build bonds and relationships that may not be possible in other settings," again, 80% agreed and only 20 % (one person) had no opinion on this matter. This shows that teachers feel that students working collaboratively build bonds and relationships. It could also be that the definition of cohort model at the top of the survey also helped some teachers in answering some of these questions that pertain to students bonding or working collectively together.

In response to the 5th question, "I think that students gain support from meeting with others in the cohort model who wish to extend their knowledge and skills," 40% strongly agreed, another 40% agreed and only one person, 20% had no opinion. This statement seems to be favorable among the teachers who took the survey. With a combined score for agree and strongly agree, which is a total of 80%, I could say that this statement is highly favorable among the teachers who took the survey. In other words,

they agree that the students will gain support from one another to help with the skills needed to succeed when they are in a cohort model.

In response to the 6th question, "I am interested in teaching Algebra1, Algebra2 or Geometry in a cohort model," 20% disagreed (one person), 40% agreed and again one person 20% had no opinion. This shows that some of the teachers are in favor of or interested in teaching one of these math courses in a cohort setting. Since this is a new plan to be implemented and not it is done in almost any high school around, I could see how some of the teachers were apprehensive in teaching a core math course in a cohort model. If I was not doing this research project myself, and I was not aware exactly what is being asked or discussed, I would not say I was interested in doing so.

In response to the 7th question, "I think a cohort model for Algebra1, Algebra 2 or Geometry will increase student achievement," 60% answered agree and 40% had no opinion of this statement. One of the respondent commented on the no opinion as "it depends." Well, once again, this is a new plan never been done before and maybe in any other school around, so the person who commented maybe has some reservations but could have been more sure if maybe there was some data to support it.

There remaining two questions were open ended, 4 out of the 5 respondents wrote something, so I will write what each respondent wrote: In response to the 8th question, "What is your greatest accomplishment, success or benefit you have had when teaching Algbera1, Algebra2 or Geometry and why?" The common theme of the responses was that teachers feeling happy as their students passing their math courses and able to graduate from high school.

In response to the 9th question, "What obstacles or issues do you foresee in the implementation of cohort model in the math department?" The common theme was that due to the magnet component of the school, the scheduling could be an issue.

From the responses, it seems like the teachers like the cohort model or they feel it could help students but the reservation is scheduling conflicts and how to get the "right" students and teachers in those courses. Also, before this is carried out at the school, the teachers will have to become familiar with teaching in a cohort model because one respondent responded no opinion to all the questions. As stated before, this is a new plan never done before and a lot of teachers may not be familiar with it especially in high setting. So in such a case, the teachers will need to be given extensive training on what to expect, what exactly a cohort model of teaching looks like, and other teaching strategies needed to make the plan a success.

Administrator Survey

I received three of the administrator surveys. The Administrator Survey questions were just like the teacher survey but the difference was that the questions pertained to how administrators will schedule or implement the cohort model classes instead of the teachers teaching the math courses in the teacher survey questions. Just like the teacher survey, I will comment on each question on the survey.

In response to administrator survey (Appendix D) question #1 which stated, "I am familiar with the cohort model," both of the respondents strongly agreed which is 100% on that response. Even though this was a small sample size, it shows that the administrators are very familiar with a cohort model. Since the administrators who took

the surveys all responded strongly that the familiar with cohort mode, it is a good sign and also the fact that they are the ones also instrumental in making this plan a reality.

To the second question on the administrator survey which stated, "The cohort model of education benefits students by providing mutual academic and logistical support to help students succeed," again both of them agreed which is 100% agreement. Since the administrators are familiar with what a cohort model is, it follows that this statement will be favorable as well.

In response to the 3rd question, "The common goal of starting and completing a cohort program together encourages students to work collectively," once again, 100%, both of them agreed. It shows that the administrators are in favor of seeing students completing their work and think cohort model could help. Just as stated before that the administrators are familiar with what a cohort model is, it follows that this statement will be favorable as well.

In response to the 4th question, "Since students' progress together and have the opportunity to work collaboratively, they build bonds and relationships that may not be possible in other settings," this statement had a split response: 50% agreed and 50% disagreed. This shows that the two administrators are torn between the responses and feel students could build bonds and relationships with or without being in a cohort model classes. A split decision or answer always poses more questions. I wish there was a space for remarks so they could have explained their reasoning.

In response to the 5th question, "I think that students gain support from meeting with others in the cohort model who wish to extend their knowledge and skills," again both of them agreed which is 100% agreed. This statement by the way, sort of stems

from what a cohort model is, and by the administrators being supportive or knowledgeable, it is no surprise that all of them will be in agreement.

In response to the 6th question, "I am interested in scheduling teachers to teach Algebra1, Algebra2 or Geometry in a cohort model," again both of them agreed which is 100% in agreement in scheduling math teachers to teach in the cohort model. This means that both administrators like the idea and will be willing to schedule math teachers for this model.

In response to the 7th question, "I think a cohort model for Algebra1, Algebra 2 or Geometry will increase student achievement," this statement had a split response of (one person) 50% agreed and the other 50% having no opinion. I think after implementation of this plan and with student data, this could have a different meaning or answer. It is not easy to answer a question to a problem never seen or done before at the school or nearby.

There remaining two questions were open-ended, both of the administrators wrote comments, so I have summarized what each respondent wrote to find any common theme or unique ideas. In response to the 8th question, "What is your greatest student accomplishment, success or benefit for studying Algbera1, Algebra2 or Geometry and why?" , the administrators answered that when the students pass the course and graduate from high school. This is to mean that the administrators would feel that by students passing a course and graduating from high school is one of the greatest accomplishments and would make them feel they have accomplished what they set to do.

In response to the 9th question, "What obstacles or issues do you foresee in the implementation of cohort model in the math department?" I gathered from the responses that this cohort model could be a challenge to implement effectively especially due to

classroom management. If students are disruptive and noncompliant, this could cause the class to be unsuccessful. It could also be difficult for teachers unless they are highly qualified and trained due to a high level of differentiated instruction that has be to be done. Since IHS is a school with a magnet component, it is not easy to schedule students together and the master schedule could pose a challenge.

In conclusion, from the responses, it seems like the administrators are very knowledgeable of cohort model of teaching. They were even interested in scheduling math teachers for this model. However, they have some reservations such as scheduling conflicts and the dynamics of having the students "right" students and teachers in those core math courses.

Interviews

Even though I received quite a few consent forms to interview, I was only able to conduct one teacher interview. I concluded that the teachers were too busy at the beginning of school year in August to allow the time to work with me (until the end of the semester in December). I was not able to conduct any interviews for administrators. I was only able to interview one male math teacher which took place after school hours and off campus. The teacher as very passionate about this cohort model which led to a lot of side bar conversations, continuous elaboration and other information I did not asked which caused the interview to last for over an hour. This was fine with me as I got detailed information and so there was no need for a second interview. Besides, all the teachers seem to be very busy. The first interview question was "How many years of teaching experience do you have?" The second part was "How many years have you taught at this school?" The interviewee has a long teaching experience over 20 years and

at the school for about 15 years. He also talked about his teaching experience at the college level prior to teaching at the school .

The 2nd question was, "What math courses do you currently teach and have you taught it in the past?" The teacher's response was currently teaching AP Calculus AB, PreCalculus and Algebra2. In the past, taught all courses except AP Statistics. This teacher is very experienced and very knowledgeable of several math contents. This teacher was well-rounded and familiar with almost all of math courses taught in high school.

The 3rd question asked was, "Do you teach Algebra1, Geometry or Algebra2 and if so, which one is your favorite or prefer to teach and why?" The teacher answered was currently teaching Algebra 2, did not really have a favorite or preference but would choose Algebra 2 because felt the curriculum was better but also liked the experience he once had with the Geometry students. The teacher does not mind teaching any of the core courses but would choose Algebra 2 since the curriculum is perquisite to the other math course he teaches and can better prepare the students for the upcoming courses.

This teacher was very passionate about what he teaches that sometimes talked about some information before I got to ask that question or the comments he made were for another question to be asked later and so they were already answered. So he discussed something which actually goes with question 5 before we discussed question 4. Because of that summarized his responses under both Questions 4 and 5 since he went back and forth, and, actually, his responses cover both.

Question 4 was, "What do you know about cohort model and what experience or information can you share?" and Question 5 was, "Would you be interested in teaching

Algebra1, Algebra2 or Geometry cohort model and why/why not?" The teacher answered that he was very familiar with the cohort model. He explained that though was not called cohort model, he sort of taught in a similar setting, and not all students end up together in the next class. The year prior to my interview, he taught some students from Pre-Calculus class who are now in his AP Calculus class. Some years ago, he taught a group of students (all males) in a Liberal Arts Math (LAM) class. This is a remedial math class for students who did not do well in Algebra1. These group of students, he mentioned were "rough around the edges" but he managed to "shape" them. He had the privilege of teaching these students for the three consecutive years – so it was like a cohort and looping at the same time. There were some students who ended up in that class or dropped off but a majority of them followed him from LAM, to Geometry and to Algbera2. Some even followed further to his PreCalculus but others couldn't keep up. He said those were some of his memorable teaching years of experience. The culture in the classroom was great and the students had a better handling of materials and expectations. His students also showed a lot of gains and said to check out his gains. His eyes got big and full of passion and joy as he talked about those years. To make meaning of the responses here is that teacher has shown that he's been successful with his students and believes the cohort model and could work.

We also discussed questions 6 and 7 together during the interview so I will combine those here as well. Question 6 asked, "How easy do you think it will be for this school to implement a cohort model in the math department? Please elaborate," And Question 7 asked, "What obstacles or issues do you foresee in the implementation of cohort model in the math department? His responses to these questions are as follows:

The Magnet School is a concern and complicated to have in this school. The scheduling of the major magnet classes offered like band, orchestra, and art will make it difficult. He suggested trying the cohort model with the traditional students – there is more propensities to succeed with the magnet students. He also suggested that maybe have the cohort math classes in the mornings, periods 1, 2, 3 and 4 and then schedule the major magnet classes in the afternoon for periods 5, 6, 7, 8 but may still be a challenge. This is a comment and recommendation to help with schedule conflict because of the magnet component of the school. He was making recommendation as to when certain courses could be offered.

For the next question 8, "What are some of your students' success rates or performance compared to others in this school and/or in the district?" He really bragged and was proud of his students' success rates. He said he's had the highest scores compared to his colleagues at the school who teach the same courses and even highest in the county most the time. Some of these are his AP Cal scores have been the highest in the district (only class and only teacher teaching at this school). The AP students have the potential of passing prior to taking the tests. Same for Advanced Topics in Math (ATM) – most of his students' assessments outperform others in the school and district. His Algebra2 semester exam scores and Geometry a couple years were higher at this school and in the county. The Algebra 2 FSA scores for the students of this teacher were not available. This teacher basically has a high students' success rate and was happily discussing these highlights. A lot of students maybe intimated when they first enter his class but later, with determination and hard on the students' part and this teacher's guidance, the students are successful. He comes highly recommended by all of people.

In response to question 9, "What can you say about the belief that a cohort model of education benefits students by providing mutual academic and logistical support to help students succeed?" The response he gave was very lengthy. He said that there is no substitute for good teaching. Cohort may not work unless we test try. We need to look at data at the end of semester and decide with a teacher for 3 to 4 years. Cohort needs support not just department but from administration. I asked if cohort to be successful is due to teachers and students placed in there. He said he thinks to some extent but not necessarily due to fact that he did not pick those students back from LAM class but was successful. Most of the students had bad discipline problem but he being strict and mean made the difference as well. He gets students he sometimes tell him that no one required him/her to take notes in math class so for 2years before he usually gets them, some or surprised that they have to take notes in his class. He ended on that question also by saying to give teachers who are willing to teach in the cohort classes and for "X" amount of years. Well the cohort model is something that this teacher believes and has high aspiration for. As long as a teacher is dedicated and willing to put in effort to reach the students, it should not a problem whether the students have bad behaviors or discipline problems.

For this multiple 3-part question #10, will discuss them separately although his answers were intertwined. Question #10 asked: a. Overall, how do you find your teaching experience at this school/math department? He responded to question this question by saying that "working progress in terms of the math department in general but in terms of Algebra 1, Geometry and Algebra 2, successful. Part b of the question was, "What word or phrase would you use to describe your teaching experience in Algebra1, Algebra2 or

Geometry?" The one word or phrase he used was "success, rewarding." For part c, "What is your greatest accomplishment, success or benefit you have had when teaching Algbera1, Algebra2 or Geometry and why? " He answered by saying that moving the Geometry student to Algbera2 and more so with his LAM class students up to Algebra 2 honors and graduate. He said that students taught him how to teach, they taught him to go home and plan. " This was a teacher who came from college environment but has been able to make it in public high school. Students want discipline and want to learn.

In response to our last question 11, "What other ways do you think could be done to improve this department's math scores?" His responses were as follows: There should be more self-accountability and more evaluation and monitoring of fellow department members, the Department Head. Teachers have to be receptive so that more changes can happen. He also said that the administration can help and support and evaluate. He ended with a phrase and I quote, "attitude is a positive reflection of positive administration." His reaction was that to have a successful program, a lot of things start from the administration and their support.

Student Data

I collected student test performance data from 941 students enrolled in Algebra 1, Geometry, and Algebra 2 District Formative Assessments, and as well as 813 students' scores from District Semester 1 Exams for Algebra1, Algebra 2 and Geometry for the 2014-2015 school year. The Florida Standards Assessment FSA End of Course (EOC) Exams were delayed and were not released by the time I had to conduct and collect data for my research, so those data are not included. Since these are FSA/EOC courses, they do not take the district semester2 exams. The FSA scores are their exam grades.

Each math course was broken into two different classes: Algebra 1 has Agile Algebra 1 and Intensified Algebra 1 (which consists of Algebra 1A and 1B with pre-Algebra materials). The Geometry and Algebra 2 both have the regular and honors components.

For the Agile Algebra 1 class, out of a total of 91 students who took the Formative Assessments, no one scored an A. There were only 3 students (3.3.%) who scored a B, only 8 students that is 14.29% scored a D and the rest of 67 students scored F (73.63%). Once again, Algebra 1 students are not doing well at IHS.

For Geometry regular class, out of 158 who took the test, only 2 students scored and A; that is 1.27%. For grade B, there were 5 students which is 3.16%. 18 students scored a C (11.39%), 24 students (15.19%) scored a D, leaving the rest of 109 students (68.99% scoring an F. Once again, another course math class not performing well on district test.

Geometry honors classes were a bit different compared to the scored we have seen so far. Out of 141 students who took the test, 11 scored an A (19.15%), 16 scored a B (21.99%), and for grade of C, there were 23 students which is 16.31%, Grade D had 23 students (16.31%) and the test of 37 students (26.24%) received an F. There is still room for improvement, Geometry honors, so far better than the other classes but since this is a different test, it cannot be compared this way.

Algebra 2 regular classes, out of 179 students who took the test, no one scored an A or B on the Formative Assessment. For the grade of C, there were only 5 students, which is only 2.79 %, is for grade D, only 7 students which is 3.91% and surprisingly, the

rest of the students, that is 167, failed (93.30%). This is the worst achievement levels of all the classes yet. Clearly, an intervention is needed.

Then for Algebra 2 honors classes, out of 124 students tested, there was no A grade, with only 2 students scoring B and 2 only students C which is a 1.61%. For grade of D, there were 22 students (14.74%) and the rest of 98 students (79.03%) scored an F. The Algebra 2 honors students performed slightly better than the regular Algebra 2 but there still work to be done there.

It must be noted that both honors and regular classes take the same type of Formative Assessments, as well as the Agile and Intensified Algebra take the same Algebra 1 test on the Formative Assessments.

Table 1 shows the Formative Assessment of 2014-15 school year test performance of students at Icosahedron who took the Algebra 1, Geometry and Algebra 2 with each separate class explained above. Grade A is a score between 90%-100%, B is between 80%-89%, C is between 70% - 79%, D is scores between 60%-60% and F grade is anything below 60%, that is, from 0-59%. For Intensified Algebra1, out of 120 students who took the Formative Assessment Test, no one got an A. For the grade of B, there were only 5 students so that is 4.17%. For C grade, only 13 students which is 10.83%, 26 students, meaning 21.67% scored D. The rest of the students, which is 76 students (63.33%), scored F. Clearly, this shows Algebra 1 class members are not doing well. There is a lot of work that needs to be done with the Algebra 1 students to be successful.

Table 1. Student Formative Assessment Results at Icosahedron High School 2014-2015. Results indicate test scores for different core math courses grouped into Grades A through F shown as "number of students obtained that grade = percentage."

Math Classes	Grade A (90-100%)	Grade B (80-89%)	Grade C (70-79%)	Grade D (60-69%)	Grade F (0-59%)
Intensified Algebra	0	5 = 4.17%	13 = 10.83 %	26 = 21.67%	76 = 63.33%
Agile Algebra1	0	3 = 3.3%	8 = 8.79%	13 = 14.29%	67 = 73.63%
Geometry regular	2 = 1.27%	5 = 3.16%	18 = 11.39%	24 = 15.19 %	109 = 68.99%
Geometry Honors	27 = 19.15%	31 = 21.99%	23 = 16.31%	23 = 16.31%	37 = 26.24%
Algebra2	0	0	5 = 2.79%	7 = 3.91%	167 = 93.3%
Algebra 2 Honors	0	2 = 1.61%	2 = 1.61%	22 = 17.74%	98 = 79.03%

The Semester 1 exam data for the 2014-2015 school year provides achievement data for Intensified Algebra 1. Out of 126 students who took the District Semester 1 exams, no one got an A. For the grade of B, only 4 students so that is 3.17%. For C grade, only 18 students which is 6.35%, 25 students, meaning 19.84% scored D. The rest of the students, which is 89 students (70.63%), scored F. Clearly, this shows Algbera1 is not doing well. More than half of the students are failing meaning that students are not doing well in Algebra1.

Agile Algebra 1, out of a total of 97 students who took the semester exam, this time, 2 people scored an A (2.06%), but none scored a B. For grade C only 14 students which means 14.43%, and 18 students (18.56%) scored a D and the rest of 63 students scored F (64.95%). Once again, Algebra 1 students are not doing well at IHS.

For Geometry regular class, out of 197 who took the test, this time, no one scored an A or a B. For grade C, there were students (3.55%), 18 students (9.14%) scored a D, leaving the rest of 172 students (87.31%) scoring an F. Once again, another course math class not performing well on district test. With about 96% of the students scoring Ds and Fs, this is a not good. It does confirm that the students are performing below level. Therefore, serious interventions are needed.

Geometry honors classes were a bit different compared to the scored we have seen so far. Out of 143 students who took the test, 3 scored an A (2.10%), 7 scored a B (4.90%), and for grade of C, there were 31 (42.66%) received an F. There is still room for improvement, Geometry honors, so far better than the other classes but since this is a different test, it cannot be compared this way. Well from the results, the Geometry honors students outperformed the students in other math core courses but since they are different types of courses, I cannot really compare apples with oranges. But I may say the amount of work needed to increase their math scores will not be that intensive among the geometry honors students.

Algebra 2 regular classes, semester exam just like the Formative Assessment. For the grade of C, there were only 3 students, which is only 1.37 %, for grade D, only 11 students which is 5.02% and surprisingly once again like on the Formative Assessment, the rest of the students, this time, 205, failed (93.61%). This is the worst classes yet. Clearly, an intervention is needed. Students in the Algebra 2 regular classes need the most work. I can say from experience that the gap between Algebra 1 and Algebra 2 (with Geometry course between) courses lot of the students to forget what they learned back in Algebra 1 since Algebra 2 is a continuation of Algebra 1.

Then for Algebra 2 honors classes, out of 159 students tested, there was no A grade, with only 4 students scoring B which is 2.52% and 9 only students (5.66%) scoring C. For grade of D, there were 29 students (18.24%) and the rest of 117 students (73.58%) scored an F. The Algebra 2 honors students performed slightly better than the regular Algebra 2 but there is still work to be done. Algebra 2 honor and regular is the same type of course with the honors a little challenging and supposedly having students who perform at a higher standards. The score were not that great either so still need work and room for improvement.

Table 2. Semester1 Exam Results at Icosahedron High School 2014-2015.
Results indicate exam scores for different core math courses grouped into Grades A through F shown as "number of students obtained that grade = percentage."

Math Classes	Grade A (90-100%)	Grade B (80-89%)	Grade C (70-79%)	Grade D (60-69%)	Grade F (0-59%)
Intensified Algebra	0	4 = 3.17%	8 = 6.35 %	25 = 19.84%	89 = 70.63%
Agile Algebra1	2 = 2.06%	0	14 = 14.43%	18 = 18.56%	63 = 64.95%
Geometry Regular	0	0	7 = 3.55%	18 = 9.14 %	172 = 87.31%
Geometry Honors	3 = 4.90%	7 = 4.908%	31 = 21.68%	41 = 28.67%	61 = 42.66%
Algebra 2	0	0	3 = 1.37%	11 = 5.02%	205 = 93.61%
Algebra 2 Honors	0	4 = 2.52%	9 = 5.66%	29 = 18.24%	117 = 73.58%

From the data collected, it is clear that a lot of work needs to be done in the math department especially the core math courses. The tests scores were very low across all three major courses, namely, Algebra 1, Geometry and Algebra 2. All these three main core courses come with FSA EOC exams that students must take as their final exams.

Algebra 1 and Geometry are also graduation requirements and students need to pass before they can graduate from high school.

Interpretations

Student Data

The Formative Assessments given results were slightly better than the semester exams with Geometry Honors slightly better than Algebra 1 and Algebra 2 test scores. The percentage of students obtaining grade A are very few and some cases, none at all. There are lots of students making Ds and Fs which do not reflect well. I was a bit shocked at some of the test results where there were no As or the percentages of the Fs was very high. I know the scores needed improvement but did not know it was that bad.

Surveys

From the surveys, I found out that some teachers were not aware of what a cohort model of teaching is or what will entail in high school setting. As a result of that, one of the teachers could not give any opinion on any of the questions. He/she stated that need the teachers will have to have training on the cohort model to have a better understanding before they could teach in that setting. Those who were aware of the cohort model, were in favor of either teaching (the teachers) or implementing or scheduling classes (the administrators). However, the caveat was the magnet component of the school posing a problem of scheduling some of the math courses needed due to conflict that would arise.

Interviews

Since I was able to conduct only one teacher interview, the findings from our discussions are from only one source and may not be a fair judgment. However, I must say that the interviewee was very passionate and in favor of having a cohort model in the math department and would very much want to teach in that setting. He felt that from

past experience, some group of students he had taught and ended up being together in the next math courses together did very well academically and behavior also improved. The students were able to motivate and encourage one another to do their best and he was able to keep an eye on them as he happened to be their next level of math course teacher as well.

Conclusion

The results mean that the scores of the student achievement levels associated with the math department's core classes are not good. The tests scores of the Formative Assessments being slightly better than the semester exams could be because the Formatives are taken earlier in the semester in October so the materials learned are not that many. By the time the students take the exams (at the time of the data collection) in January, students have learned quite more materials and the winter or Christmas break before the exams not help either. Currently, the first semester is being changed back to many years ago (10-17 years ago) where the exams are administered in December before the students go on winter break.

Furthermore, the Geometry Honors tests scores were fairly better than the Algebra1 and Algebra2 tests scores. From my past experience of teaching experience, students do not recall a lot of the materials taught and learned back from Algebra 1 when they go to Algebra 2. The Geometry course offered for students to take between Algebra1 and Algebra 2 cause students to forget some materials and find Algebra 2 to be difficult and challenging. This is something I wish I could change but it is a state mandate, however, some Inter baccalaureate (IB) schools offer Algebra 1, and then followed by Algebra 2 before Geometry. A lot of work needs to be done to bring our

student achievement levels up. I believe that one effective way of accomplishing this end is to implement a cohort model of progress accountability so that instructors are able to maintain careful monitoring of student progress as if under a "microscope" as the students as a group progress through the benchmarks of skill development in the math course.

SECTION SIX: A VISION OF SUCCESS (TO BE)

The success of my vision of this change leadership plan will be made into reality as a "To Be" as Icosahedron High School (IHS) is at or above district level of performance in the core mathematics courses; namely, Algebra 1, Geometry and Algebra 2. When the problems have been resolved my 4Cs "to be" chart (*see Appendix B*) will have nothing but visions of the future success. All of the four Cs, that is, the context, culture, condition and competencies will have a better outlook than what they were before ("as-is"). The following are what the vision would look at IHS.

Context

The future vision for IHS is to have no at-risk students and high performing level of students. The students will also have high socio-economic status. The future outlook will be to no racial achievement gap. We have found ways to reach our black students to be successful and have the self confidence that they could do so. My vision will be that by walking into some of these especially the core math courses, one could not tell which math class was honors and which ones were regular standard classes. Our black and Hispanics should no longer feel intimidated and have self-confidence to be in honors and AP courses. This should be the case in the future vision of this school.

Conditions

The conditions of the future success of IHS will have schedules that allow the same group of students in about four different math classes. The math department at the school will have and be taught in a cohort model. The teachers teaching in this model will be provided with targeted and effective professional development whereby the teachers will take advantage of and attend in order to be an

effective teacher. By developing a cohort model, there will consistencies in classrooms as far as procedures and expectations among teachers.

Competencies

All new math teachers at IHS will receive sufficient training and knowledge of cohort model as well as the math content knowledge they are teaching. IHS shall recruit teacher with prior teaching experience in Algebra1, Geometry and Algebra 2 or they are provided with orientation training on teaching methods on how to effectively teach these courses. Furthermore, we would hope that math teachers are comfortable and capable of teaching the next higher level math courses in order to carry out this plan successfully.

Culture

The future culture at IHS will be a collaborative problem-solving method of teaching, where there will also be teaching across disciplines. There will also be learning orientation whereby teachers, especially the new ones, will have mentors or "buddy system" to help teachers and other colleagues grow so that they can build and sustain high-achieving academic results.

SECTION SEVEN: STRATEGIES AND ACTIONS FOR CHANGE

When I first moved to this state and started teaching, anyone who walked into my classroom could tell which math class was honors and which ones were regular standard classes. I had only one black student in my Algebra 2 honors class the first year I taught here, and my regular classes mostly blacks, then Hispanics, and barely any whites in those classes. There are definitely some strategies and actions that are needed to bridge the "As-is" and the "To-be" of IHS. The former are shortcomings or current problems that hinder the success and the latter is more of the future vision if nothing was wrong. Needs and wants are usually not the same thing but we can try to find a common ground between the two.

Context

It will be ideal not to have at-risk students and or students with low socio-economic status but the reality is that there would still be at-risk students with low socio-economic status at IHS. We cannot change their family background but we can work around these students to be successful at school. With the level of academic achievement increased and performing higher than before, the students will no longer be considered at-risk students though they may have entered IHS that way. I would also find ways to bridge the racial achievement gap. Although there are lot of minorities in our regular traditional math courses compared to the honors and AP courses, the difference is not as profound as 10 to 17 years ago when I first taught at the school. We have to find a way to reach our black students to be successful and have the self-confidence they could do so. The former principal reached out and I also encouraged several black and Hispanic students to take the leap of faith to register for some honors and AP courses. I have also

spoken to their parents and Guidance Counselors and made some recommendation for some students who have demonstrated they can do the work to be in a higher level of math courses.

Conditions

I found a way to resolve the problem of not being able to schedule the same group of students in about four different classes. Majority of the scheduling problems was due to the magnet component of the school and some of these fine arts classes which sometimes took precedence over the core math and other courses. One of the ways to alleviate that is to schedule the magnet courses during the end of the day and to make room for the core math courses in the morning, hence avoid schedule conflicts. Furthermore, by offering professional development and support for our teachers, they will be in unison when they teach in a cohort model by having consistencies in their classroom procedures and expectations.

Competencies

Another strategy and action for change is to ensure that we recruit or hire teachers with some prior teaching experience or know the content materials to teach Algebra 1, Geometry and Algebra 2. Geometry, even though could be taught at the 8^{th} grade level, many teachers in high school are not familiar with the materials and are not prepared well to teach the students to be successful. We should not just "throw" a teacher in the classroom with the book and leave them in the hands of the students. They need to receive additional and sufficient training in the content area throughout the teaching career. The next step of hurdle o cross and bridge the "as-is" with the "to-be" is to make

sure we have math teachers who are comfortable and capable of teaching the next higher level of math courses.

Culture

I tried to change the culture of the math department in that teachers will no longer teach in isolation. This has been the practice for many, many years and difficult to break this chain. However, by offering professional development and curriculum delivery orientations, there would be collaborative problem solving method of teaching across disciplines. I also proposed a way for teachers, especially the new ones to have a mentor or fellow buddy person in the department besides relying on the department head for everything or figuring things out on their own. There were no teacher mentors when I started teaching and was not easy maneuvering my way through day by day. This kind of support helps colleagues to grow and sustain high-achieving academic results for our students.

Conclusion

Although our dreams and reality could be different, we could have a balance and bridge between the two. By looking at what the school is facing currently and what we envision for the future, we could find strategies and methods to change some things for the better. Our students are our future generations and leaders of tomorrow and we should make sure that they receive the best education they could get. Therefore, I believe this cohort model in the math department could be a way to have our students in the core math courses increase their tests scores and compete among other schools in the district.

REFERENCES

Boyatzis, R., McKee, A., (2009). *Resonant leadership*. MA: Harvard Business School Press.

Collins, J. (2005). *Good to great and the social sectors*. San Francisco, CA: Elements Design Group.

Crean Lutheran Christian High School: Proclaiming Jesus Christ through excellence in education (2017). Retrieved from: http://www.clshs.org/apps/pages/index.jsp?uREC_ID

Drago-Severson, E. (2009). *Leading Adult Learning*. Thousand Oaks, CA: Corwin Press.

Heifetz, R. A., Linsky, M., & Grashow, A. (2009). The practice of adaptive leadership: Tools and tactics for changing your organization and the world. Cambridge, MA: Harvard Business Press.

Kegan, R., and Lahey, L. (2009). *Immunity to change*. Boston, MA: Harvard Business Press.

NSF Discovery Research. (2009). The algebra project: AP high school cohorts. Retrieved from: www.algebra.org/news/2009/11/16/ap-high-school-cohorts-nsf-discovery-research.

Payne, C. (2008). *So much reform, so little change: The Perspective of failure in urban schools*. Cambridge, MA: Harvard Education Press.

Reeves, D. (2009). *Leading change in your school: how to conquer myths, build commitment, and get results*. Alexandria, Virginia: ASCD.

Smith, L. (2008). *Schools that change: Evidence-based improvement and effective change leadership* (1st ed.). Thousand Oaks, CA: Corwin Press.

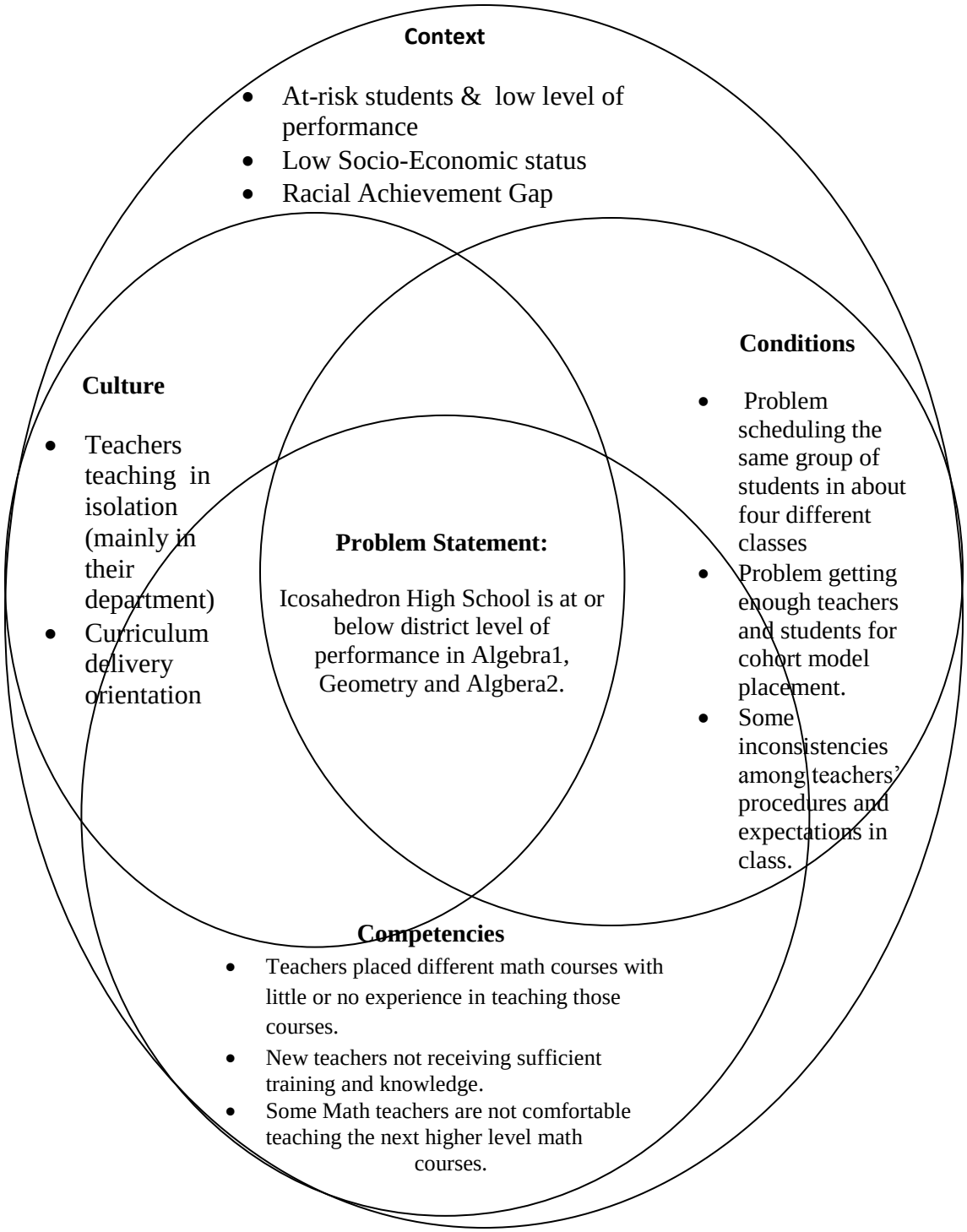
Wagner, T., Kegan, R., Lahey, L., Lemons, R., Garnier, J., Helsing, D., Howell, A., & Rasmussen, H. (2006). *Change leadership: A practical guide for transforming our schools.* San Francisco: Jossey-Bass.

Watertown High School honors cohort program. Retrieved from: http://whs.watertownps.org/information/honors_cohort_program

APPENDIX A

The 4-C's (As-Is Analysis) Chart

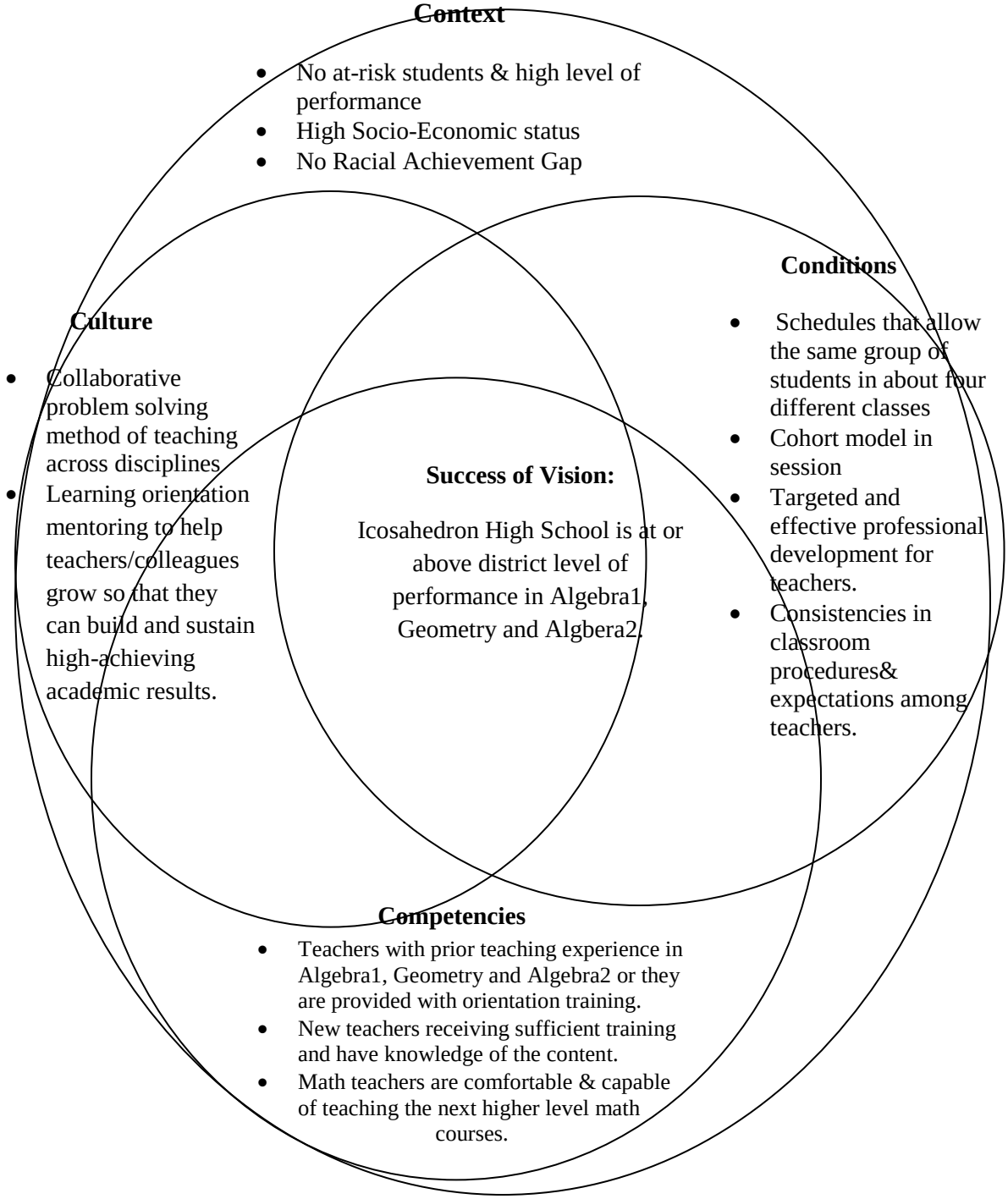
Baseline AS IS 4 **C's: The Implementation of a Cohort Model for Algebra 1, Geometry and Algebra II at Icosahedron High School (IHS).**



APPENDIX B

The To-Be (Vision of Success) Chart

Vision TO-BE 4 C's: **Successful Implementation of a Cohort Model for Algebra 1, Geometry and Algebra II at Icosahedron High School (IHS).**



APPENDIX C

Implementing a Cohort Model for Algebra1, Geometry and Algebra 2 at one High School.
Research Study by Agnes Ghansah, Doctoral Student at National Louis University.

Teacher Survey

To what extent do you agree or disagree with the following statements regarding the instruction and outcomes of implementing a cohort model in the math department?

Cohort is a group that shares the same characteristics among its members. According to wiseGEEK website on line, a cohort model is "based on collective work and progress in an academic environment. Students who follow the cohort model move through the course series collectively." According to Merriam-Webster dictionary, a cohort is defined as "a group of individuals having a statistical factor (as age or class membership) in common in a demographic study. Example, a *cohort* of premedical students."

	Strongly Disagree 1	**Disagree 2**	**Agree 3**	**Strongly Agree 4**	**No Opinion**
1. I am familiar with the cohort model.					
2. The cohort model of education benefits students by providing mutual academic support to help students succeed.					
3. The common goal of starting and completing a mathematics cohort together encourages students to work collectively.					
4. Since students' progress together and have the opportunity to work collaboratively, they build bonds and relationships that may not be possible in other settings.					

	Strongly Disagree 1	Disagree 2	Agree 3	Strongly Agree 4	No Opinion
5. I think that students gain support from meeting with others in the cohort model who wish to extend their knowledge and skills					
6. I am interested in teaching Algebra1, Algebra2 or Geometry in a cohort model.					
7. I think a cohort model for Algebra1, Algebra 2 or Geometry will increase student achievement.					

8. What is your greatest accomplishment, success or benefit you have had when teaching Algbera1, Algebra2 or Geometry and why?

9. What obstacles or issues do you foresee in the implementation of cohort model in the math department?

If you agree to the interview portion, please email at aghansah @my.nl.edu.
Upon your consent, you will be interviewed for about 30 minutes with a possible second, follow-up interview lasting 30 minutes.

Thank you for your time.

APPENDIX D

Implementing a Cohort Model for Algebra1, Geometry and Algebra 2 at one High School.
Research Study by Agnes Ghansah, Doctoral Student at National Louis University.

Administrator Survey

Current Position: Circle one

1. Principal
2. Assistant Principal
3. Guidance Counselor

Other: _____

Cohort is a group that shares the same characteristics among its members. According to wiseGEEK website on line, a cohort model is "based on collective work and progress in an academic environment. Students who follow the cohort model move through the course series collectively."

According to Merriam-Webster dictionary, a cohort is defined as "a group of individuals having a statistical factor (as age or class membership) in common in a demographic study. Example, a *cohort* of premedical students."

To what extent do you agree or disagree with the following statements regarding the instruction and outcomes implementing a cohort model in the math department?

	Strongly Disagree 1	**Disagree 2**	**Agree 3**	**Strongly Agree 4**	**No Opinion**
1. I am familiar with the cohort model.					
2. The cohort model of education benefits students by providing mutual academic and logistical support to help students' succeed.					
3. The common goal of starting and completing the program together encourages students to work collectively.					
4. Since students' progress together and have the opportunity to work collaboratively, they build bonds and relationships that may not be possible in other settings.					

	Strongly Disagree 1	Disagree 2	Agree 3	Strongly Agree 4	No Opinion
5. I think that students gain support from meeting with others in the cohort model who wish to extend their knowledge and skills					
6. I am interested in scheduling teachers to teach Algebra1, Algebra2 or Geometry in a cohort model.					
7. I think cohort model for Algebra1, Algebra2 or Geometry will increase student achievement.					

8. What is the greatest student accomplishment, success or benefit for studying Algbera1, Algebra2 or Geometry and why?

9. What obstacles or issues do you foresee in the implementation of cohort model in the math dept.?

If you agree to the interview portion, please email at aghansah @my.nl.edu.
Upon your consent, you will be interviewed for about 30 minutes with a possible second, follow-up interview lasting 30 minutes.

Thank you for your time

APPENDIX E

The Implementation of a Cohort Model for Algebra 1, Geometry and Algebra II at one High School
Research Study by Agnes Ghansah, Doctoral student at National Louis University

Teacher Interview Protocol

Cohort is a group that shares the same characteristics among its members. According to wise GEEK website on line, a cohort model is "based on collective work and progress in an academic environment. Students who follow the cohort model move through the course series collectively."

According to Merriam-Webster dictionary, a cohort is defined as "a group of individuals having a statistical factor (as age or class membership) in common in a demographic study. Example, a *cohort* of premedical students."

1. a. How many years of teaching experience do you have?

   b. How many years have you taught at this school?

2. What math courses do you currently teach and have you taught it in the past?

3. a. Do you teach Algebra1, Geometry or Algebra2?

   b. If so, which one is your favorite or prefer to teach and why?

4. What do you know about cohort model and what experience or information can you share?

5. Would you be interested in teaching Algebra1, Algebra2 or Geometry cohort model and why/why not?

6. How easy do you think it will be for this school to implement a cohort model in the math department? Please elaborate

7. What obstacles or issues do you foresee in the implementation of cohort model in the math dept.?

8. What are some of your students' success rates or performance compared to others in this school and/or in the district?

9. What can you say about the belief that a cohort model of education, benefit students by providing mutual academic and logistical support to help students succeed?

10. a. Overall, how do you find your teaching experience at this school/math department?

    b. What word or phrase would you use to describe your teaching experience in Algebra1, Algebra2 or Geometry?

    c. What is your greatest accomplishment, success or benefit you have had when teaching Algbera1, Algebra2 or Geometry and why?

11. What other ways do you think could be done to improve this department's math scores?

Thank you very much for your time.

APPENDIX F

INFORMED CONSENT

Individual Participant Survey

I am asking you to participate in a research study conducted by me, Agnes Ghansah, doctoral student at National Louis University, Tampa, Florida. The study is entitled The Implementation of a Cohort Model for Algebra 1, Geometry and Algebra II at One High School. My proposal is to implement a cohort model in the math department for these three critical areas which are also the core math and college-bound courses needed in high school. I would like to see Icosahedron High School math scores to be among the top 10% in the school district. I hope this plan would increase student academic performance and would help bridge the achievement gap.

Participants should expect to receive a survey packet, including a printed survey to be completed and returned using specific instructions as included, as well as an informed consent form to be signed and returned indicating your willingness to participate. All information collected reflects your opinion and experience with students and the program.

With your consent, you will complete a two-page written survey, noting at the end if you agree to be interviewed. If you agree to the interview portion, then later, upon your consent, you will be interviewed for about 30 minutes with a possible second, follow-up interview lasting 30 minutes.

Your participation is voluntary and you may discontinue your participation at any time without penalty. Your identity will be kept confidential by the researcher and will not be attached to the data. Only the researcher will have access to all which I will keep in a locked cabinet or on a password protect computer drive at my house, which only I have access to. Your participation in this study does not involve any physical or emotional risk to you beyond that of everyday life. While you are likely to not have any direct benefit from being in this research study, your taking part in this study may contribute to our better understanding of student needs how to improve the Algebra1, Geometry and Algebra2 scores at our school. While the results of this study may be published or otherwise reported to scientific bodies, your identity will in no way be revealed.

In the event you have questions or require additional information you may contact the researcher: Agnes Ghansah, National-Louis doctoral student, phone: 813-272-3422; email: aghansah@my.nl.edu.

If you have any concerns or questions before or during participation that you feel have not been addressed by the researcher, you may contact Dr. Carol Burg, email: cburg@nl.edu, phone: 813-397.2109, address: 5110 Eisenhower Blvd. Suite 102 Tampa FL 33634; or EDL Program Chair (Dr. Norm Weston, NWeston@nl.edu; 1.233.2287; or the NLU's Institutional Research Review Board: Dr. Shaunti Knauth, NLU IRRB Chair, shaunti.knauth@nl.edu, 224.233.2328, National Louis University IRRB Board, 122 South Michigan Avenue, Chicago, IL 60603.

_____
Participant Name (Print)

_____ _____
Participant Signature Date

_____
Researcher Name (Print)

_____ _____
Researcher Signature Date

APPENDIX G

INFORMED CONSENT

Individual Participant Interview

I am asking you to participate in a research study conducted by me, Agnes Ghansah, doctoral student at National Louis University, Tampa, Florida. The study is entitled Implementation of a Cohort Model for Algebra 1, Geometry and Algebra II at One High School. My proposal is to implement a cohort model in the math department for these three critical areas which are also the core math and college-bound courses needed in high school. I would like to see Icosahedron High School math scores to be among the top 10% in the school district. I hope this plan would increase student academic performance and would help bridge the achievement gap.

With your consent, I would like to interview you. If you agree to the interview, I will interview you for about 30 minutes with a possible second, follow-up interview lasting 30 minutes. Upon request, you will receive a copy of your transcribed interview at which time you may clarify information.

Your participation is voluntary and you may discontinue your participation at any time without penalty. Your identity will be kept confidential by the researcher and will not be attached to the data. Only the researcher will have access to all transcripts, taped recordings, and field notes from the interview(s) which I will keep in a locked cabinet at my house or on a password protect computer drive, which only I have access to. Your participation in this study does not involve any physical or emotional risk to you beyond that of everyday life. While you are likely to not have any direct benefit from being in this research study, your taking part in this study may contribute to our better understanding of student needs and how to improve the Algebra1, Geometry and Algebra2 scores at our school.

While the results of this study may be published or otherwise reported to scientific bodies, your identity will in no way be revealed.

In the event you have questions or require additional information you may contact the researcher: Agnes Ghansah, National-Louis doctoral student, phone: 813-272-3422; email: aghansah@my.nl.edu.

If you have any concerns or questions before or during participation that you feel have not been addressed by the researcher, you may contact Dr. Carol Burg, email: cburg@nl.edu, phone: 813-397.2109, address: 5110 Eisenhower Blvd. Suite 102 Tampa FL 33634; or EDL Program Chair (Dr. Norm Weston, NWeston@nl.edu; 1.233.2287; or the NLU's Institutional Research Review Board: Dr. Shaunti Knauth, NLU IRRB Chair, shaunti.knauth@nl.edu, 224.233.2328, National Louis University IRRB Board, 122 South Michigan Avenue, Chicago, IL 60603.

_____

Participant Name (Print)

_____ _____

Participant Signature Date

_____

Researcher Name (Print)

_____ _____

Researcher Signature Date