Math Curriculum and Teacher Autonomy: Why there can never be a one-size-fits all approach to teaching and learning

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Abstract

The foundations of American education are rooted in basic skills and mathematics curriculum is no exception. Over time, a desire for effective teaching and maximizing learning brings the debate of how math is taught to the forefront of the discussion. With an effort to develop a formula for student success and achievement, there have been more rules, standards, and restrictions for teachers than ever before. As a result, autonomy and professionalism are dangerously at risk. This thesis provides an analysis on the history and pedagogy of mathematics curricula, the various approaches and theories behind mathematics teaching, current suggestions and methods for reform, and what they all are missing. Without professionalism and autonomy, mathematics teachers will always be stifled in their roles.

The fundamental goal of this thesis is to inform with hopes of reform. More educators, administrators, and professionals need to be aware of the consequences that result from a lack of teacher autonomy. The workshops outlines included are suggestions for implementation for use in a district where teachers desire to redefine autonomy in their classrooms, collectively brainstorm, and ultimately, grow as professionals with the common goal of maximizing student learning.

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Chapter 1

Introduction and Positionality

How did I get here? Like most young educators, I began my career bright-eyed and optimistic. I was going to use my passion and skillset to change the way my students thought about math. Blinded by my eager optimism, I never stopped to question anything. I was empowered to use my role within the current system to create meaningful change. As I began my research, my optimism began to fade. I was never going to be able to change the hierarchical structure of a public school or the Common Core State Standards. I was never going to be able to suddenly make education equitable for students of color or those living in poverty. Realistically, the only thing I could do was work within my classroom of roughly 125 students or so each year to inspire them to love math. It wasn't until my district mandated a curriculum and subsequently took away our professional autonomy that my realism shifted into pessimism. Now I couldn't even have an impact in my own classroom.

Let's back up a little. When I first began my career as a high school math teacher, I committed to a goal for myself: to change the way students perceive math. As someone who was inherently good at math growing up, but then struggled more and more with difficult math classes throughout high school, I thought I had all the answers for how math could be taught better. Every year, I tried to investigate new ways to approach a concept, new games to engage students, and ways to appeal to all styles of learners, to meet that goal. Like I mentioned briefly, a few years back, my school made a transition to a new math curriculum that is inquiry based with mandated group interdependence and our instructions from our superiors was to teach it as prescribed in the teacher guidebooks. In other words, no teacher autonomy and no direct

instruction. We were given a few days of professional development and were told to faithfully follow the detailed lesson plans from roughly three decades ago that included suggested pacing, questioning, activities, and even a bank of test questions for assessments. In theory, this may sound appealing to some teachers. No need to lesson plan anymore! In reality, what it meant was I suddenly lost my freedom to use my discretion when teaching. My expertise as an educator and autonomy to make choices for my classroom was completely stripped from me.

Prior to this change in the math department, there were still some classrooms that looked like the ones I attended years ago in high school and others that looked dramatically different. While the world has changed quite a bit since my time in high school, traditional classroom settings have not. In terms of social constructs, technological advancements, and political developments, society has changed, but our schools have mostly stayed the same. In math classes in particular, there is often the rigid model of direct instruction and practice on repeat. Or in some cases, like my school, math programs have tried to compensate and flip to the opposite end of the spectrum by implementing these "new" problem based curricula. Either way, each unique model works for only a particular type of student with a very specific learning style and teaching in this manner makes differentiation challenging.

While the "traditional" way of doing things has worked for me at times, there were other instances where it fell short. In math classrooms in particular, I was rarely the norm. I found that I was grasping material better than my peers in some classes, but at other times, I was desperately lost. I will never forget telling my math teacher senior year of high school about my plans to become a math teacher myself. Only for him to respond by asking me what my back-up plan was.

Given my age and experience, I am typically more open-minded than other teachers. Along with my goal of regularly trying new things, I also strive to appeal to all learners and show that math is not as scary and intimidating as its reputation. So many students who step foot in my classrooms are already coming with a predisposed idea of their mathematical abilities and whether or not they are capable of success. Why is that? Over time, I have come to believe that there is no "one size fits all" for learning especially when students have a negative predisposition toward the subject to begin with. So, the goal in this project is to take steps toward developing a potential solution that deviates from the typical status quo of educational research.

This thematic concern will study students in a high school math classroom. Specifically, student engagement and achievement in an attempt to answer the following questions: Are students more engaged in the content when they discover it for themselves? Do they learn more content when they are taught through direct instruction? How can student learning be the most effective and long lasting? When is inquiry-based vs. traditional curricula valuable? How do we engage students in content specifically, content they may not be interested in?

In attempting to answer these questions, I am focusing on being able to transform my students and the way they think about the world around them. I hope to raise their awareness of the importance of math in their lives and help them to develop into autonomous, self-advocating individuals. I may not be able to change the conditions of public education on my own, but I may just be able to empower my students to create change together in the future. I just need the autonomy to do so within my own classroom.

My hope is that this collection of research can become something different than just another fad in education or a suggestion for teaching best practice. To be clear, I fundamentally disagree with the notion of teaching best practices. I do recognize the inherently political sides of

everything we do, so throughout this research, I will present as many different angles and perspectives as I can when tackling the social, political, and ideological influences behind my concern. Eventually, my goal is to show students just how transformative they can be and how we as teachers can use ingredients of different ideologies to create a math that matters in our classrooms. In order to do this, I will explore a variety of teaching approaches to study which combination best engages my students and enables them to be successful in learning mathematics content.

To achieve my ultimate goal, I must first work within the system I am apart of to gain the autonomy in my classroom necessary to make these decisions for myself. This project specifically aims at the actionable steps that can be taken to convince school district decisionmakers and administrators that this will be a meaningful use of time and resources. With a newfound professionalism and trust in my own classroom, I then plan to utilize different methods of teaching to find a balance between techniques and curriculum that works for me and makes learning math more enjoyable, equitable, and effective for all learners. I also hope that through my educational program, other teachers will be inspired to use their own professional strengths and autonomy to take on similar endeavors.

The way I see it, learning is not a one-size-fits-all experience and the debates that have ensued over time are all missing the point. There is a time and a place for direct instruction just like there is a time and a place for problem based learning, collaboration, and higher-order thinking. However, I think both are necessary components to teach mathematics effectively. In order to create a classroom that highlights my strengths and works best for my students, the first step is to convince other people that there is a problem that needs to be fixed.

My thematic concern is aimed at unpacking some of the age old questions related to mathematics education and balancing various reform movements to investigate how we teach. To be clear, I am not suggesting a "right" way to teach versus a "wrong" one. Instead, my goal is to present the components of our pedagogical tools and current school system to empower teachers to demand change. The reality is, each educator has their own philosophy of how to teach and a skillset that supports it. While the ideal classroom for every teacher may not be perfect or even possible, this program is designed with hope for change in the future. With the influences of newer technologies changing the way people think, behave, and learn, it is more likely now than ever to see radically different classrooms. So many teachers today have classrooms filled with 25-30 students on 25-30 different ability levels. Teachers should be given the training to understand the nuances of various approaches to teaching then given the autonomy to make decisions for their classrooms based on their skills and their students.

There will never be one curriculum powerful enough to transform education. However, with more robust teacher education and autonomy, plus the influence of critical pedagogy, we may begin to open the eyes of our students to see the value in what they are learning in schools. What I am suggesting is that we should stay away from extremes on any end of a spectrum: politically, ideologically, and socially. If we can balance the necessary foundational skills of mathematics with the relevant but achievable problems of the future, students will begin to find value in what they are learning and see that math matters. The best way to tackle such an immense task is by combining theory and practice through action research.

Why Action Research?

With an abundance of research, approaches, technologies, and resources to consider, my goal is to connect my findings to my personal practice through an action research project. To

generalize and provide a common working definition, as Hinchey (2008) suggested, "action research is a process of systematic inquiry, usually cyclical, conducted by those inside a community rather than outside experts; its goal is to identify action that will generate improvement the researchers believe important" (p. 7). As the classroom teacher, I can use action research to initiate changes in my classrooms. In doing so, according to Hinchey (2008), I will ultimately be able "to identify how specific stimuli can be used to reliably prompt or discourage specific responses" (pp. 26-27). In short, action research will provide me with opportunities to not only try new approaches, but also give me the tools to measure and modify my instructional techniques in real time to assess the effectiveness of my own research. Ultimately, the goal in any action research project is to better understand a situation in a new context and explore ways to improve upon it.

A challenge to an action research project is that by its nature, it explores factors that cannot always be measured with a standardized assessment and explicit quantitative data. For that reason, many of the findings explored throughout this research are qualitative and related to a specific classroom environment or culture. Especially with all of the pressure surrounding standards and test scores, it is can be difficult to sell a qualitative research-based result. However, the nature of this research goes beyond test scores and will measure the way students learn, how they are engaged, and the factors that enable their success. All of which are unmeasurable in a traditional, quantitative way.

Many practitioners write about the nature and importance of action research. Denzin and Lincoln (2018) claim that by definition, "qualitative research is a situated activity that locates the observer in the world [and] consists of a set of interpretive material practices that make the world visible" (p. 3). Since it may not be possible to create results to measure a change in attitudes,

qualitative research is the ideal form of measurement. This type of research allows us to get the larger picture of a specific situation and where it is situated in a larger context because of the intimate social relationship between researcher and subject emphasize the nature of social realities of schools. Moreover, "[Qualitative researchers] stress how social experience is created and given meaning… and emphasize the measurement and analysis of casual relationships between variables, not processes" (Denzin & Lincoln, 2018, p. 8). Despite not providing concrete numerical findings, qualitative research does provide insight into social and cultural relationships and dynamics within a classroom setting. While these results may not be generalizable in all educational spheres, they are still valuable for providing explanations for certain phenomenon and suggestions for improvement and action.

Under the umbrella of action research, there are many distinguishable features between research methods and one in particular is cultural and ethical concerns. The typical students in my school are majority white, middle class individuals. This could be a limitation in my research because of a lack of diversity in my students and findings. Additionally, there have been reported issues with problem-based curriculums relative to English Language Learners (ELL) and students with reading-based learning disabilities. While we do have many inclusion-based classrooms, literacy based challenges would be amplified significantly in a school with a more robust ELL population. Lastly, there is also no doubt a discrepancy between male and female students within a math classroom that ultimately influence overall math success. I would argue, while these barriers are topics of consideration in my research, they are not at the forefront of my concerns. Frankly, any of these subjects alone could be the topic of a whole different research project. The final concern to acknowledge is the inherent sense of privilege that the students within my district experience. Many are under the impression that they have the capability to be

successful in anything. While this may sound like a positive thing, it can have unintended repercussions including additional ethical concerns. My students' perception of success is rooted in the assumption that they will always be given fair and equitable opportunities. With that said, another issue that will be addressed in this research is one that may be specific to the nature of a predominantly white, middle class school district: student motivation and attitudes toward their own learning and opportunities.

Many of my students come in to class and expect that they can be passive in their learning and even as juniors and seniors in high school, they struggle to self-advocate. They have a predisposed idea of how the year will go, what grade they will earn, and their own abilities before they have even met me. Some students look to their parents to solve their trivial day-to-day issues and struggle being held accountable for their notes, assignments, and actions. Outside of school, they juggle countless extracurricular activities and after school jobs. Many of them do this not because they need to support the family income, but to boost their resume to make them more appealing to colleges. With that attitude, students are more concerned about getting a grade than colleges want to see and seem to disregard their own comprehension or critical thinking capabilities as secondary. These issues in attitude and entitlement may be systemic and unsolvable through curriculum, but I believe they are an impactful underlying factor.

My students, like most adolescents, are situated in a very particular environment and they have yet to see beyond their fixed scope. Specifically, they don't see learning Algebra II through solving problems with their peers as something that is helpful in developing their critical thinking skills or challenging in the way they work with their others. They see math as a burden that could never be relevant in their futures. They see factors and formulas that "they'll never use again." Takacs (2003) acknowledges this struggle and claims "few things are more difficult than

to see outside the bounds of your own perspective" (p. 27). To some degree, it is understandable that they are limited in their mindset. Although the structure and sequence of high school mathematics curricula could also be another research project in itself.

While there is great opportunity to learn and generalize behaviors and observations, there are limitations to this approach. Hinchey (2008) writes "traditional educational research cannot tell any individual teacher what exactly will work best in a particular classroom at a particular moment with a specific class or student" (p. 2). Since action research is used to connect a hypothesis to teacher practice, this specific issue is also addressed through the lens of critical action research. Even though my findings may be unique to my students in our sphere of the world, my hope is that some of these findings can be generalized to supplement existing curriculums or inspire meaningful change in other elements of instruction.

Chapter 2

Thematic Concern, Conceptual Framework, and Definitions

THEMATIC CONCERN:

The purpose of this thematic concern is to create a program that raises awareness about the deterioration of teacher professionalism and lack of educator autonomy that is plaguing our schools today. The foundations of this program will be rooted in mathematics classrooms specifically and will include an overview of the pedagogical spectrum of teaching mathematics and existing research in curricular methods. The actionable component behind this concern is a series of professional development workshops for teachers, administrators, and finally, members of the district office, curriculum development team, or school board. These workshops share a few common goals: working together to enable teachers to be autonomous in their classrooms, collectively brainstorming steps toward progress, and encouraging effectiveness in classroom instruction to maximize student learning and success.

CONCEPTUAL FRAMEWORK:

1. What are the basic educational and philosophical principles that inform this research?
2. How have mathematic curricular trends changed over time? What are the political influences that have impacted these trends?
3. What are the factors that influence student achievement in mathematics? How are these factors demonstrated in the classroom?
4. Why does mathematics curricula need reform? Why is teacher trust and autonomy the start to initiating reform?

DEFINITIONS:

Constitutive:

Constructivism	E.D. Hirsch Jr.'s defined constructivism as "a psychological term used by educational specialists to sanction the practice of "self-paced learning" and "discovery learning" (Klein, 2003, p. 7).
Profession	"Any type of work that needs special training or a particular skill, often one that is respected because it involves a high level of education" (Profession | Definition in the Cambridge English Dictionary, n.d.).
Professional	"Relating to work that needs special training or education" (Professional | Definition in the Cambridge English Dictionary, n.d.).
Pedagogy	"The art, science, or profession of teaching" (Definition of Pedagogy, n.d.).

***Operative*:**
For the purpose of this paper,
the following definitions will apply

Curriculum	A program typically adopted by a school that is a basis for informing teachers about the topics they will teach, the order they will teach them, the activities and lessons that will be adopted throughout the process. The curriculum is a basic organization of topics including order, objectives, and scope.

Professional Development For the sake of discussing teachers in-service days, we use the term professional development. These are opportunities to continue learning as professionals where ideas, resources, and research are shared while collaborating with other professionals in the district to learn and enhance one's teaching practice.

Best Practices The term "best practices" comes from the idea there exists a certain set of strategies a teacher can use to ensure a favorable outcome in the classroom. These proposed "best practices" typically come from individuals who consider themselves experts and do not have classrooms of their own. They advise teachers on idealistic approaches and often do not consider all the factors at play in a classroom. These "best practices" are proposed in conjunction with the idea of one best way to teach using a one-size-fits-all curricular approach.

Autonomy: Giving educators freedom and trust within their classrooms. This includes the ability to make decisions regarding both the curriculum and the classroom management. The assumption behind autonomy is that educators are trusted to make these informed decisions based on a knowledge of their curriculum, skillset, environment, and students.

Problem Based Learning: A pedagogical approach where students learn math algorithms through real world problems and are typically done collaboratively with other students.

Direct Instruction (traditional method): The approach where the teacher does the majority of the teaching through lectures and students learn concepts by watching then repeating basic computations to learn necessary skills.

Chapter 3

The Narrative

My Philosophy of Education

Every teacher is often asked about his or her philosophy of education and while we all serve the same basic purpose as educators, our beliefs often vary drastically. From my perspective, as someone who comes from a world of opportunity, my philosophy is a reflection upon my privilege, but in spite of it. If America is truly "the land of opportunity," why is it that opportunity is not equal for all?

The purpose of education should be to enlighten, inform, and challenge our students, but not with a hidden agenda or alternative motives. A democratic education specifically should involve freedom of choice, thought, and opinion within a space that provides equal opportunity for all citizens. Education should be more than just a transferal of information from one person to another. It should be open-ended and involve critical thinking, acknowledgement of various cultures, awareness of injustice, and ownership of opinions all while empowering individuals to engage in the world, initiate change, and ultimately, maintain a productive system that produces democratic citizens of society who are capable of challenging injustices and always progressing toward a better tomorrow. To truly be considered a free country, the individuals that make up its population should also be free—cognitively, economically, and emotionally,

In short, my philosophy is that everyone is deserving of education and opportunity. Unfortunately, that is not the reality in our schools today. Over the last few decades, with an increase in standardized testing and a growing distrust for teachers, we, as educators, lack most, if not all, of the components necessary for a meaningful education. So how can we expect to provide such an experience for our students? We are no longer allowed to make autonomous

decisions for our classrooms or curricula, we are discouraged for thinking critically or questioning our authority, and overall, we are stifled, penalized, and discouraged from engaging in the art that is teaching.

There should never be a circumstance in which teachers are delegitimized as professionals or stripped of their autonomy. Kincheloe (2002) addresses this stating, "teachers' work has become increasingly controlled from above. Public perception of teacher incompetence, has provided justification for an increasing teacher-deskilling process by educational managers" (p.34). Kincheloe (2002) also implies that the response to this deskilling is "tying teachers to pre-packaged curricular materials", which is exactly what is happening in districts like mine all across the country (p. 34). The irony behind being mandated to teach an inquiry-based curriculum is that research in support of such curricula has one specific measure of success in common: teacher autonomy. According to Hoffman and Caniglia (2009), "teacher voices are essential in policy discussions" (p. 473). Yet, we are not given the freedom to make decisions to create lessons for ourselves or supplement our existing curriculum. Additionally, Dennis and O'Hair (2010) concluded that the success of discovery-based learning is more dependent on the individual teacher's classroom than the school setting overall. Harnisch et al (2014) note that "[their] data indicates that the greater the communication, the more supported a teacher feels in her classroom; and the more collaborative the fellow-teacher team, the more likely inquiry- and/or problem-based learning is employed" (p. 498). In an educational era filled with state standards, scripted curriculums, and an overall distrust for teachers, we arrive at the underlying issue that I plan to explore and research, which will remain a fundamental theme throughout.

I hope to use my position, passion, and research to inform other educational professionals and ultimately, initiate a change in the perception of teachers starting with my district. I want to educate mathematics teachers and our administration about the research on teaching mathematics and why exclusively one approach to teaching can be damaging for our students. I want to use my research and leadership ability to regain autonomy in my classroom and to be trusted to use the resources available, combined with my personal expertise, to decide how my students will learn. I would also use this opportunity to initiate a curricular change that incorporates social justice into my classroom in hopes of making mathematics education more equitable for all students. There is constant debate surrounding the tracking system of mathematics courses, which inevitably bleeds into conversations about diversity in schools, which ultimately, becomes a systemic issue about districting, gentrification, and school funding. In the interest of brevity, the scope of my philosophy in this context will be limited to the ways in which we can teach mathematics in a more equitable way for students in terms of both social justice and differentiation.

An Ideal

My ideal classroom goes beyond what I alone am capable of achieving, but instead is a component of an ideal system of education. Technology is available, but not mandated or prescribed. The course itself is supplemented with resources and strategies for teaching, but with no assigned texts or required activities. The objectives are flexible and rooted in student interests that may change and be flexible. There is no "best practice" or correct way of teaching or learning. There is no teacher's manual or script for how to teach. The assessments are relevant to the learning objectives and never standardized for comparison. The teachers have the autonomy to use their own creative skills and professional expertise all while collaborating across curricula.

This is all purely ideological because of certain limitations within our society and educational system. Given the current fads in education and the corporations that stand to profit through schools, a classroom like the one I described barely fits within the realm of possibility. To further complicate matters, when it comes to math curricula specifically, there has been dramatic debate for more than a century. By nature, our schools have become so politically influenced to the point that both teachers and students are sometimes not even capable of recognizing the inherently authoritarian nature of both the curriculum and the system. Teachers have lost the freedom and professionalism to decide how to teach in their own classrooms and a century's old curriculum debate is seemingly no closer to a solution now than it was when it started. While there will always be issues and hurdles in education, it seems as though our current system is destined to perpetuate itself and exclude any other more sustainable options.

Our students in our classrooms today have the ability to be critical thinkers. They can also be critical pedagogues if they are given the tools to think and question in a new dimension. Our students love to question why they need to know something. Sometimes it feels like they ask just for sport to see how a teacher will respond. No matter the approach, students are frustrated because they do not deem the math content they are learning in school relevant to their everyday lives which should tell us that our curriculums are not living up to their potential. Peterson (2013) notes the "historic problems with math instruction itself: rote calculations, drill and practice ad nauseum, endless reams of worksheets, and a fetish for the right answer" (p. 10). These, Peterson (2013) argues, have contributed to "number numbness" among students and ultimately, among the general population when students become adults" (p. 10). If we continue down the path we are on, there will likely never be any meaningful change and students will be missing out on the transformative powers of mathematics.

A Mathematics Specific Educational Philosophy

In addition to having a general philosophy of education, there also exists various beliefs for how to teach mathematics that also can vary significantly between teachers. As we will unpack shortly, there is a philosophical route to the disagreement about mathematics curricula. The question is: should math curriculum involve a vast number of topics covered briefly or a limited number of topics covered in great depth? Abramovich, Grinshpan, Milligan (2019) reveal this tension. "Though the necessity of mathematical learning is common knowledge, the question on how to teach mathematics is controversial" (p. 2). Since the establishment of schools as we know them, the educational trends in mathematics oscillate between two philosophical extremes.

Currently, according to educational literature, specifically Clewell and Campbell (2004), "the tendency has been to transition away from traditional textbook-based instruction and into inquiry-based, hands-on pedagogical approaches" (p. 14). While there are strong advocates for this type of learning, it often sacrifices quantity of topics covered. Not to mention, much of the integrity of the curriculum relies on the collaboration and motivation of the students participating. Benken et al. (2015) noticed:

> Student self-perception, confidence, attitudes and beliefs, and anxiety are all linked to persistence and motivation to study mathematics. Additionally, students with positive attitudes will be more motivated to think mathematically, understand class content, and dedicate extra effort towards the course than students who possess negative attitudes toward the content (pp. 15-16).

With that in mind, is it realistic to expect equitable educational outcomes when students work together knowing they may never be balanced in their personal beliefs, attitudes, and motivation to learn? Are we relying primarily on students interaction to facilitate meaningful learning experiences?

With the advancement of technology and a pedagogical shift toward more experiential and problem-based learning, Abramovich et al. (2019) emphasize "stimulating questions, the affinity for using computers, and classical famous problems" as "important motivating tools in the study of mathematics" (p. 11). These components are often the backbone of newer curricula, but rely on the teachers delivering it to be effective. This is why having teachers invested in the curriculum is so valuable. Benken et al. (2015) share this opinion affirming educators are "essential to supporting students in developmental courses" and emphasize the use of pedagogy that "facilitates students in gaining a growth mindset and positive views toward learning mathematics" (p. 21). In short, while these newer curricula are valuable in building problem-solving skills and may be more motivating for students to learn, they are not nearly as effective without effective teachers. Clewell and Campbell (2004) echo this, but include: "the amount of professional development provided is an important factor in influencing both change in teaching behavior of teachers and change in the classroom environment" (p. 12). Without the right training, curriculum alone cannot guarantee successful outcomes. The teacher is the backbone to the learning.

While there are many educational discussions surrounding curriculum effectiveness and the impact of quality teaching, Katzenmeyer and Moller (2001) note that "asking teachers to work with scripted programs monitored by personnel external to the classroom context violates a belief in a professional model of teaching" (pp. 21-22). Additionally, Katzenmeyer and Moller (2001) suggest: "a better approach is to enlist teacher leaders within a school to support teachers who are not succeeding in their teaching" (p. 22). As schools make decisions surrounding curricular programs, the teachers in the school and their abilities to lead should be an important factor in the decision-making process. Teacher autonomy and ability has a critical influence. Just

because a curriculum is reputable or looks good on paper, does not mean it will work in all school settings with all teaching styles.

Clewell and Campbell (2004) recommend "once schools and districts have decided on a curriculum and an appropriate assessment tool, they might wish to collect their own impact data to evaluate how well the curriculum they choose is working with their own students" (p. 16). It is not enough to adapt a program and then assume it will be effective because research was done initially. For example, in his research, Steiner (2017) was able to determine conclusively that: "curriculum is a critical factor in student academic success" (p. 2). The only problem is, "to date, research on the curriculum effect has told us little about what makes a particular curriculum or genre of curriculum especially effective or not" (p. 7). In other words, while we know curriculum does have a significant impact, educational professionals have yet to determine why that is the case and what other factors are at play.

Aside from conducting thorough professional development, encouraging teachers to be autonomous in their classrooms, and providing support for teacher leaders, Schiller et al. (2010) also suggests "curriculum leaders can be proactive in using the textbook selection process as an opportunity to focus attention on quality and effectiveness in developing a coherent mathematics program with high expectations for all students" (p. 13). At the end of the day, in order for student learning to be equitable and effective, much more needs to go into a program than just a specific curriculum or textbook.

All things considered, it is increasingly difficult to design a metric to measure factors like teacher autonomy or fidelity with curricular programs. We can all agree that curriculum is critical to the success of mathematics learning and the teacher is essential to the success of the curriculum. So, if teachers are so important, why does a curricular program take priority over

educational professionals? Moreover, what impact does curriculum even have in the first place? When it comes to a discussion about curriculum, it seems as though the focus is more on the curriculum itself than it is on teachers delivering it. Steiner (2017) urges the schools to prioritize research surrounding curriculum and as a result, serious educational reform (p. 11). At the end of the day, the focus should be the teachers who have the influence in the classrooms and the curriculum should come second.

The History of Mathematics Curriculum

As long as there has been formalized mathematics curricula, there is disagreement about what they should look like. While there are countless circumstances that define mathematics education as we know it, this historical analysis will begin in the early 1900's and include events over the last century that highlight the detriments of this indecision. The origins of high school mathematics curricula and pedagogy stem from a dense history dating back to the beginning of formalized education. Reys and Reys (2010) identify the six conflicts in mathematics curriculum that surface in various conversations over time. This includes:

1. Pure versus Applied Mathematics
2. Deduction versus Induction versus Statistical Inference
3. Algorithms versus Creative Problem Solving
4. Culture Free versus Culture Development
5. Fluency versus Flippancy
6. Hard versus Easy (pp. 29-31)

Historically, one or more of these disputes is almost always the driving force behind curricular changes. What makes this history so dense and unique is that it has been centered around conflict for well over a century. The foundation of the argument revolves around finding a delicate balance between content and instruction. Klein (2003) observes "the choice of a pedagogy can naturally limit the amount of content that can be presented to students" (p. 2). He also notes that if content drives the teaching, there are many limitations on pedagogy. So, we are at a

crossroads. There is no perfect way to balance the two. One must precede the other, which leaves consequences and limitations for the latter. Noting this, educational theorists have made a living publicizing their research and opinions on the topic to serve as prescriptions for high schools and advising what they think is the best approach. Because of this, trends in mathematics education have oscillated dramatically on this pendulum of ideologies trying to find a one size curriculum for all math students. The disagreements emphasize different derivatives of the same pedagogical ideas and the dichotomy that results is still relevant in present day.

The early years of this analysis begin with a disagreement about equity and relevance. Should math be designed for all? Should math curriculum be exclusive to topics applicable in the real world? By midcentury, there is a temporary point of agreement: the United States is not where it needs to be in mathematics to be a global leader. But quickly another question arises: how can math curricula accomplish that? In the years that follow, there is a pedagogical shift in an attempt to increase rigor, which is quickly replaced by an interest in problem solving skills and consistency. Within a few short years, conflict arises again with similar themes of equity and accountability for both teachers and for students. This brings us to present day where each of these individual debates are still topics of discussion and a compromise seems to be far from reach. Each of these inherently political events had implications for math curricula and this analysis will begin to explore how these moments impacted each other and still influence math curricular decisions today.

The Early Years (1920-1957)

Our story begins at the dawn of the 20th century. According to Schoenfeld (2004), at the time, fewer than 7% of adolescents were enrolled in high school throughout the United States. Schoenfeld (2004) also explains that the general curriculum was made up of skills that students

would use in the real-world including reading, writing, and arithmetic. As more students enrolled in schools, the subjects being taught evolved but were quickly placed under scrutiny. Specifically, this included math beyond basic arithmetic operations. This prompted the National Education Association (NEA) to assemble a committee that would begin studying the problems mathematics education was facing. At this point, the NEA had been in operation as the exclusive voice of public education since 1857. They worked tirelessly to address societal and educational issues while improving teaching conditions. By the time of this committee, responsibility on teachers was growing, curricula were expanding, and the NEA itself was in a transition. They had grown too large to be run by a small group of leaders and were beginning to discuss ways to democratize representation (National Education Association, 2006). William Heard Kilpatrick was designated the chair of the NEA's committee on curriculum. A student of John Dewey, Kilpatrick was an education professor at Columbia University. In 1920, with the NEA officially considered a Representative Assembly of delegates, Kilpatrick published his report titled *The Problem of Mathematics in Secondary Education* detailing his conclusion that high school mathematics in its current design is only realistic for a small percentage of students. Kilpatrick argued instead that high school math should only include topics that were relevant beyond the classroom (Klein, 2003). The publishing of this report symbolizes a defining moment for progressivist education in mathematics and the first type of conflict: pure versus applied mathematics.

It should come as no surprise that a report this controversial came under scrutiny and faced resistance prior to even being published. According to Klein (2003), David Eugene Smith, a mathematics professor at Columbia, observed that the committee included no mathematicians and noted that there was no evidence that a math committee meeting ever took place. In that

same year, the National Council of Teachers of Mathematics (NCTM) was founded at the request of the Mathematical Association of America (MAA) as a response to the report. According to NCTM (2020), *Looking Back, Moving Forward*, the founding mission of the MAA in 1915 was "to advance the understanding of mathematics and its impact on the world." The NCTM was established just five years later with representation of 127 mathematics teachers over 20 states. According to Klein (2003) their mission was similar: "the organization would 'keep the values and interests of mathematics before the educational world'" (p. 2). The overarching goal of both groups was to merge the efforts of both the high school and college mathematics communities, consolidate resources, and form one national voice for the profession. The beginnings of two sides and subsequently two arguments were starting to develop.

Over the course of the next few decades, many reports were published emphasizing pedagogies and priorities related specifically to the nature of math content and which should be the cornerstone of a curriculum. This includes: Psychology in Math in 1922 with an emphasis on extensive practice of isolated skills, the 1923 Report titled *The Reorganization of Mathematics in Secondary Education*, *Curriculum Paths* that consists of curriculum outlines and the introduction of a tracked education system, and several others in the Mathematics Teacher, a publication that had been acquired by the NCTM in 1921 (NCTM, 2020). During both World Wars in the decades that followed, the NEA in particular was actively involved in funding to help growing school districts and lobbying for the G.I. Bill of Rights to help soldiers returning from war (NEA, 2006). By the beginning of World War II, 75% of adolescents were enrolled in high school (Schoenfeld, 2004). While the student body was growing significantly larger and more diverse, there was public criticism that students were less prepared. At the conclusion of the second World War, the baby boom from a few years prior added millions of students to public

schools and many Americans believed that more technical and mathematical skills were becoming increasingly necessary. Over the years that followed, NCTM joined forces and became a department of the NEA in 1954, calculator processors made their debut in schools in 1955, and countless additional reports were published with recommendations about math curriculum that had little lasting effect (Herrera & Owens, 2001, p. 84). It wasn't until October 4th, 1957 that everything changed.

Global Competition (1957-early 1970's)

At approximately 7:28 PM, the Soviet Union successfully launched the world's first artificial satellite into space where it orbited the earth in roughly 98 minutes (Garber, 2007). While this event is commonly known as the start of the Space Race, it was also a point where attitudes toward curriculum shifted dramatically and the debate surrounding curriculum was not only about what should be taught, but included discussions on how it should be taught. Suddenly American schools were called into question. Citizens were concerned about national security and subsequently, quality of math and science education. Within just a few short months of this humiliating event, the United States passed the National Defense Education Act which proposed an increase in the number of science, math, and foreign languages in school curriculums. With that being said, this incentive was not brand new. Two years prior to the Sputnik launch, the College Entrance Examination Board (CEEB), known today as the College Board, had established a commission on mathematics with representation from high school teachers, university mathematicians, and university mathematics educators. Their goal was to gather a diverse group of professionals who would work together to redefine the recommendations for high school mathematics in order to better prepare students for higher education beyond high school. They finalized their report in 1959, just two years following the iconic launch, which

called for preparation for calculus to begin in high school for the first time. Coincidentally, and potentially influenced by this report, the NCTM established the Secondary School Curriculum Committee and developed their own recommendations for curriculum. Many historians point to this series of events as the reason calculus is taught in high schools today.

Throughout the duration of the 1950's, both pre and post Sputnik, progressive, student-centered education had fallen out of favor and after the iconic launch, what came to be known as "new math" took its place. According to Klein (2003), new math curricula "emphasized coherent logical explanations for the mathematical procedures taught in the schools" and was one of the first times that curriculum influenced by mathematicians was dominant (p. 4). New math curricula were designed with the Soviet Union engineers in mind and were an attempt to help the United States compete on the international stage. They emphasized rigor, an understanding of mathematical reasoning and structure, abstract ideas, and generally a higher level of math than had ever been seen before in schools. Like the many mathematics ideas that came before it, the new math movement was quickly criticized and short lived. As early as 1962, both mathematics and education magazines were publishing criticisms of new math programs and the debate from previous decades got even more dense. The conversation moved beyond just pure versus applied mathematics, but also included the second dimension: Deduction versus Induction versus Statistical Inference. By the early 1970's, new math was considered a failure and curriculum shifted "back to basics" with an emphasis on skills and procedures.

The decade where new math curricula was in favor and the decade that followed were both volatile times in politics. Phillips (2014) observes that trust for the government dropped from 76% in the mid 1960's down to less than 25% by the end of the 1970's. He also points to events such as the Watergate scandal, the Vietnam War, racial strife, and economic stagflation as

leading to "a rapid decline in the public's opinion of the governmental initiatives" (p. 473). He uses this to explain why many government led curricula and other policies were less effective during this time. In terms of education specifically, the Elementary and Secondary Education Act of 1965 was passed to distribute funding to various school districts and was designed to assist low income schools in particular. This was one of the first instances of formalized, objective testing designed to evaluate student achievement in order to appropriately distribute government funds. Klein (2003) notes that "the majority of states created minimum competency tests in basic skills … and almost half of them required students to pass these tests as a condition for graduation from high school" (p. 5). By 1970, according to Abbot et al. (2010), 77% of Americans were graduating high school (p. 13). With more and more students in schools, the learner-centered, experience-based education movements from decades prior were beginning to gain momentum again and were being treated as profound and revolutionary. These events and circumstances all set up a perfect storm: civil rights, political conflict, uncertainty in government, and global competition were setting the stage for what is arguably one of the most influential decades in the history of education.

Preparation for the Standards (early 1970's – 1989)

As new math faded into history, discussion about curriculum started to include questions of what we teach and how we teach it within the same conversation. This adds the third dimension of curricular debate: Algorithms versus Creative Problem Solving. Inspired by cognitive research, by the late 1970's and early 1980's, problem solving had become an important theme and desired component of mathematics curricula (Woodward, 2004, p. 20). Several sources at the time reported that students still struggled with this and implied that math performance was, yet again, not where it needs to be. Researchers claimed that the quality of

mathematics and science instruction had been deteriorating since the new math era. Many even blamed new math for these shortcomings.

By 1980, NCTM published a report titled: An Agenda for Action which yet again, included recommendations for curriculum and emphasized that the goal of mathematics education should ultimately be problem solving skills. Historians point to this document as a prelude to the standards that would come to take over at the end of the decade. Hayes (2008) provides a succinct explanation for what is meant in an educational context for the term standards: "that for every subject being taught, there should be a careful articulation of what students should know and be able to do in that academic discipline" (p. 13). This would be a uniform way to determine whether children are learning. An Agenda for Action advocated for technology and argued that students do not need long hand-written calculations like they did in the past since they now had access to calculators and other technologies. This would enable students to spend more time building upon problem solving skills. The report's biggest controversial recommendation was to reevaluate the role of calculus in high schools. Despite much enthusiasm from its creators, the report received minimal attention on a national scale. Instead, it was almost completely overshadowed in 1983 by what Woodward (2004) calls "the most important document of the last quarter of the 20th century in the United States" (p. 20).

A Nation at Risk was produced in 1983 by the National Commission on Excellence in Education, which was appointed by Terrell H. Bell, the Secretary of Education in 1981. This report described math in high schools as a "curricular smorgasbord" and painted a picture of American schools as failing. The title implied that these shortcomings of American schools meant that other countries would surpass the nation in science, mathematics, and technology. The report also claimed that enrollment in remedial math courses in public colleges had

increased dramatically while leaders in the military and businesses were unhappy with the costs associated with the education and training for recent graduates. The report addressed an overall concern for public education including, but not limited to: the role of assessment in accountability for students and teachers, teacher training and shortages, and the quality of textbooks (National Commission on Excellence in Education, 1983). A Nation at Risk, as described by Woodward (2004), was critical of the recent curricular shift back to basics and in combination with other policies, was a driving force behind much of the math reform movements to come (p. 20).

In the years that followed A Nation at Risk, several initiatives were developed to take action. The National Research Council (NRC) established the Mathematical Sciences Education Board in 1985 as a way to devote attention to the issues of mathematics instruction. The NCTM responded by creating the Commission on Standards for School Mathematics in 1986 and by 1987 President John Dossey (of NCTM) appointed a team of 24 writers to produce the "standards" and a draft of those standards were released a year later (Schoenfeld, 2004, p. 265). By 1989, the NRC published a report titled Everybody Counts, which was different from ones published previously because it did not recommend specific content or topics. Instead, it focused on conceptual versus procedural learning and emphasized learning experiences and active participation in the construction of knowledge (Herrera & Owens, 2001, pp. 89-90). Shortly thereafter, the NCTM Standards made their debut.

The Standards (1989)

At this point, the fourth dimension of curricular debate was working its way into the conversation: Culture Free versus Culture Development. With tension between questions of what to teach and how to teach that still persisted, a new component was emerging: who to teach. The

debate now included the idea of equity. The NCTM Standards of 1989 were divided into four sections, three for content and processes over three grade level groupings and one for both student and program evaluation (Schoenfeld, 2004). The Standards set goals for society like "mathematically literate workers, lifelong learning, opportunity for all, and an informed electorate" (NCTM, 1989, p. 3). In other words, these standards emphasized an understanding of the value of mathematics through experience that was related to student lives. According to Nesmith (2008), the idea was, with an understanding of mathematical ideas, they could better communicate and reason to find the correct answers.

The Standards also outlined goals for students, which included: "that they learn to value mathematics, that they become confident in their ability to do mathematics, that they become mathematical problem solvers, that they learn to communicate mathematically, and that they learn to reason mathematically" (NCTM, 1989, p. 5). While these objectives seem vague in nature, they were a direct challenge to traditional curricula because they focused on equity and supported the idea that learning math was possible for all students. Additionally, the Standards promoted a strong emphasis on calculators and reinforced progressivist themes of student centered and discovery learning through real world problems. The term constructivism made its debut during this time and was adapted to describe this philosophy of learning. Klein (2003) summarized E.D. Hirsch Jr.'s definition of constructivism as "a psychological term used by educational specialists to sanction the practice of "self-paced learning" and "discovery learning" (p. 7). The Standards echoed the views described in An Agenda for Action, but were more detailed than ever before. By 1990, NCTM elected their first African American president: Iris M. Carl (NCTM, 2020). This new leader coupled with the civil rights struggles of decades prior highlight the importance of equity for all people regardless of ability, gender, race, or any other

feature that had once been ignored as a part of the conversation. While the Standards had many positive components for equity in education, they also received a great deal of criticism.

California was one of the first states to adopt the Standards and by 1992, the California Department of Education published the Mathematics Framework for California Public Schools (Schoenfeld, 2004). Within a just few short years following this statewide adoption, several parental rebellions took place criticizing the new curriculum. According to Klein (2003), "no state had so great a national impact as California on mathematics education during the 1990s" because of their quick endorsement followed by almost immediate critique and abandonment of the standards (p. 13). By this point, both of the trending "whole language" and "whole math" movements had been deemed as curricular failures according to critics in the state of California. As a result, the state rewrote their own standards by removing pedagogical directives and correcting errors. The NCTM responded disapprovingly. This conflict represents just one state's response to the standards and exemplifies why this period of disagreement became so notorious. Across the nation, for the duration of the 1990s, there were significant disagreements coming from both sides of the mathematics education argument eerily familiar to those who experienced the new math curricula from a few decades prior. Herrera and Owens (2001) point out that despite the differences between new math and the standards, both reform movements had strong counter movements toward more traditional mathematics instruction. It was the degree of growing opposition and the continuation of unresolved disagreements that defined the upcoming time period. Despite decades of argument and division, the battle between traditional teaching and progressivist teaching at this time became known as one of the greatest conflicts in the history of mathematics curriculum: The Math Wars.

The Math Wars and Beyond (1989-2010)

Schoenfeld (2004) outlined what he considered the "underpinnings of the math wars" by claiming the dispute is over "who gets to learn mathematics, and the nature of the mathematics that is learned" (p. 255). On one side of the conflict you have the advocates of reform including the NCTM. Their opinion regarding best practices involved inquiry, problem solving, and collaboration for all students. On the other side, were the majority of parents and proponents of a more traditional approach to teaching, which asserts that students must have a basic, foundational understanding of concepts before they can discover anything worthwhile. These same critics of the newer reform movements noted of the group of 24 members who compiled the standards, only two were K-12 teachers and none were mathematicians. They also saw the Standards as a threat to social order (Schoenfeld, 2004). This argument brings the fifth component of controversy to the discussion: Fluency versus Flippancy. Both sides seemed to agree that problem solving should be somewhere in curriculum, but disagreed where it should be. Do students need to demonstrate fluency prior to problem solving? Or can their initial understanding be flippant and grow deeper through problem solving?

It was during this time in the late 1980's and early 1990's that technology was booming and the world was rapidly changing which further increased advocacy for innovation and more advanced technology. The same year as the Standards debuted, the US air force launched the first GPS satellite into space and the Berlin Wall was demolished. By 1991 the World Wide Web was born and by 1994 Amazon was established. Shortly after the inception of the Standards, it was concluded that the high stakes testing that was being administered nationwide to evaluate students and schools was not in alignment with the initial proposed standards. As a response, several new initiatives took place including: the Curriculum and Evaluation Standards for School

Mathematics (CESSM) of 1989, the Professional Standards for Teaching Mathematics of 1991 and the Assessment Standards for School Mathematics in 1995. By 1997, most state governments were adapting textbooks that responded and were aligned to the NCTM standards. It wasn't until January of 1998 that the conflict of the Math Wars finally erupted.

Schoenfeld (2004) implied the severity of the conflicts that ensued during the math wars when asking:

> How could things get to the point where U.S. Secretary of Education Richard Riley felt compelled to address the annual Joint Mathematics Meetings in January of 1998 and to plead for civility and respectful behavior in what had become a knock-down-drag-out battle between advocates of "traditional' and "reform" mathematics? (p. 254)

You would think there was some dramatic event that prompted a disagreement of this magnitude, but Herrera and Owens (2001) summarized the origins of the conflict by observing: "there was no Sputnik launch to ignite this reform, but rather a perceived falling behind in worldwide technological and economic standings" (p. 88). Having already been humiliated just a few decades prior by failing to be the first country to space, the United States was determined to become a world leader in education. This theme will continue to be prevalent in policies for years to follow. In 1994, the Educate America Act was signed into law, which established the National Education Goals, "including that U.S. students would become first in the world in math and science achievement by the year 2000" (Rebarber & McCluskey, 2018, p. 5). The problem with all of this was, professionals in the field could not agree how to go about becoming a world leader in education in the first place. A more plausible, less dramatic event was likely the pinnacle of the infamous math wars: the introduction of several new mathematics textbooks with significantly less content that had ever been seen before.

According to Klein (2003), in 1999, following the address at the notorious Joint Mathematics Meeting:

> The U.S. Department of Education recommended to the nation's 15,000 school districts a list of math books, including several that had been sharply criticized by mathematicians and parents of school children across the country for much of the preceding decade. Within a month of that release, 200 university mathematicians added their names to an open letter to Secretary Riley calling upon his department to withdraw those recommendations. (p. 1)

This series of explosive conflicts at the end of the century were the height of the "wars" and forced the NCTM to brainstorm some sort of resolution. By April of 2000, NCTM released the Principles and Standards for School Mathematics (PSSM) that responded to criticisms of years prior claiming they "worked to update, refine, and clarify the standards documents in an effort to (simplify) the reform message by presenting only five content standards that extend across all grade bands" (Herrera & Owens, 2001, p. 90). While this was hardly a compromise, the response deescalated the conflict and made way for another big governmental initiative that again, would change everything.

At the beginning of the 21st century, the conversation shifted again to include the sixth and final component of curricular debate: Hard versus Easy. With the new millennium, a new sense of urgency for quality instruction, equity, and accountability was back at the forefront of United States' interests. In 2002, the No Child Left Behind Act (NCLB) launched, changing the meaning of standards. According to Hayes (2008), the purpose of the law was to ensure that all students were learning and performing at grade level in basic subjects (p. 18). In a dramatic shift from prior years, states were now required to adopt their own standards, but the law also included that all states would be held accountable through mandatory standardized tests and included consequences for schools for consecutive years of inadequate progress. One of the primary goals of NCLB was to increase accountability for schools since billions of dollars had been received from the 1965 Elementary and Secondary Education Act each year and had not necessarily increased test scores especially for poor, nonwhite children (Hayes, 2008, p. 20).

This brings the questions of both sides of the curricular debate: Should mathematics continue to be something that is difficult for so many students? Or should things be easier so students can meet arbitrary goals outlined by government policy?

One of the shortcomings behind this shift to eliminate national standards was that the act now mandated testing in schools for grades three through eight, but individual states set their own standards. This paradox made it nearly impossible to compare students both nationally or internationally. By 2006, just a few years into NCLB, President George W. Bush appointed the NCTM President to be a member of the National Mathematics Advisory Panel, who produced the Foundations for Success in 2008. At this point, it would seem as though the major figureheads in mathematics reform and the government are on the same team in support of public education. Meanwhile, the National Mathematics Advisory Panel creates a report citing the official end of the math wars. They include recommendations on curricular content, process, instructional practices, assessment, and future research (NCTM, 2020). Throughout the early years of NCLB, additional shortcomings of the act were acknowledged and by 2010, "for the first time in its history, the United States would come together to create consistent, rigorous education standards and stop letting so many school children fall behind academically" (Goldstein, 2019, para 1). The Common Core made its debut.

The Present and the Future (2010-present day)

The Common Core was a reform movement designed to reintroduce a unified standard for what is taught in schools to better be able to compare students across state and national lines. With more and more students moving onto higher education after high school, there was also an increased public interest in student preparedness. According to About the Standards via the Common Core (n.d.), "the standards were created to ensure that all students graduate from high

school with the skills and knowledge necessary to succeed in college, career, and life, regardless of where they live" (para. 2). Because it was developed so recently, it is likely the largest initiative that is influencing education today. One of the more controversial components for mathematics of the Common Core Standards includes a greater focus on fewer topics. Instead of teaching a lengthy list of concepts at a quick pace, the Common Core advocates for less topics and a deeper understanding. This is a philosophy shared with both constructivist and progressivist ideas and one that mathematicians argue is detrimental to mathematics education. So clearly, there are still components of controversy and debate alive and well in more present day educational reform.

Aside from that critique held by mathematics educators, the Common Core has a larger shortcoming for schools generally. Many argue, there is so much pressure for schools to do well on standardized tests that non-tested subjects are often cut. Just a few years after the initial roll out, as many as 20 states repealed or revised their Common Core programs (Goldstein, 2019). Despite being yet another policy fiercely criticized, advocates of Common Core still defend the merits of the program and claim that, with more time, it has the potential to be successful.

Summary of the Historical Context

There are several iconic events in the history of mathematics education that are argued to have changed the scope and trajectory of how we teach mathematics. Beginning with the launch of Sputnik, followed by the New Math curriculum that dominated mid-century, the publishing of A Nation at Risk, NCTM's Standards, the Math Wars that ensued, No Child Left Behind, and most recently, the Common Core. With a foundation and context for understanding curriculum tides over the years, it is important to dig deeper into what goes on inside the classroom to

highlight the consequences that various pedagogies have on the content, teachers, and ultimately, the students.

How we teach: The Spectrum of Instruction

Given the spectrum provided in the historical context, with a teacher centered traditional approach on one side and a learner centered discovery environment on the other, the ideas of depth and breadth of topics become the forefront of the discussion. When the teacher is the center of the classroom, more material can be covered in a shorter period of time. Conversely, when the student is the center, the material is more meaningful to them and they come to understand the concepts more thoroughly. Both approaches have their own shortcomings and limitations too.

Traditional Direct Instruction

On one end of the spectrum, traditional mathematics is rooted in behaviorism and thinking of math as a form of discipline. A typical day in the classroom of a "traditional" math teacher includes a review of previous material and homework problems, then a teacher led demonstration of new skills, followed by independent work that imitates the demonstrations from the teacher. There are many positives to this traditional approach. One of the known positives of this methodology is the rigor of the content. This includes both quantity and quality of mathematics skills. Klein (2003) points out that "without strong foundations in algebraic skills and ideas, the doors to subsequent meaningful mathematics courses will be closed" (p. 17). In other words, students must first have a solid understanding of basic skills that precede higher order mathematics in order to be successful. The quality is also worth mentioning because the expert is at the forefront of the learning, which is believed by many to be critical to student learning and knowledge transfer. There are algorithms and systematic approaches to solving

problems and student misconceptions can be addressed right away. With that being said, there are also many shortcomings to this approach.

Many modern educational theorists and practitioners disagree with the traditional method because of its deficits. According to Nesmith (2008), "only those students capable of absorbing, accumulating, and regurgitating received items of information in this manner excel in traditional mathematics classrooms" (p. 1). Some may argue that the nature of these more traditional curricula favor the learning styles of white males. Additionally, Peterson (2013) argues that "a text-driven, teacher-centered approach does not foster the kind of questioning and reflection that should take place in all classrooms, including those where math is studied" (p. 4). If the teacher is constantly delivering instruction of concepts, will students ever be able to reflect on the material they are learning? Will they develop the capacity to apply the concepts in real world contexts? When math becomes something rigid and detached from the students' lives, has it lost its meaning completely? Peterson (2013) also claims that "[students] learn that math is not connected to social reality in any substantive way" (p. 10). In other words, through a traditional approach of mathematics, the priority is quantity of topics covered over anything else. So while there are benefits in terms of the breadth of concepts and evidence of strong foundational skills, there are also many critiques of a purely direct instruction approach to teaching mathematics. How will we inspire the next generation of mathematicians when the practicality is divorced from the mathematics concepts and skills?

Discovery Based Collaborative Instruction

To combat a traditional approach dramatically, on the other end of the educational spectrum is discovery learning rooted in constructivism. This includes the belief that student learning is more effective when students discover the material and connections for themselves.

The assumption with this approach is that students are learning as more than just passive recipients of mathematical knowledge. Abbott et al. (2011) explains that "students come to understand through an internal process of grappling with problems and making sense of them" (p. 23). Through this manner, they gain the confidence to discover the world with supervision and guidance of a teacher. Klein (2003) writes about a student-centered environment as a place where the teacher should be "a guide on the side and not a sage on the stage" (p. 1). These discovery curricula are also an attempt to rebalance who flourishes in a mathematics classroom. Researchers have pointed out that minority students and women thrive in an environment centered on collaboration and creating meaning behind the math. Furthermore, Klein (2000) notes that in this learner-centered environment, "direct instruction is systematically discouraged in favor of group work. Teachers are told that as "rules of thumb," they should "never carry or grab a writing implement" and they should "usually respond with a question" (p. 3). This is the point where this approach falls out of favor for teachers. Many experts argue that in order for students to effectively explore and understand the meaning behind a discovery activity, they must first have the foundational skills necessary to complete it. In reality, students often get frustrated with this approach. They want to learn, but from their perspective, the teacher is withholding an answer and instead is asking a string of seemingly irrelevant questions for the sake of the student "discovery."

Inevitably, there are additional shortcomings to a purely discovery-based approach. While it may seem like a positive thing that most work is done in group setting to encourage discovery and collaboration, it may not be that simple. Group dynamics are a difficult thing to manage. Not to mention one teacher running feverishly around a room to answer similar questions of their 6-8 groups of students is not a sustainable approach to teaching. In theory,

group work supports the philosophy that students are more capable when they work together. In reality, this comes with many other complications. In his study on middle school pre-algebra students, Ferguson (2010) emphasized an importance of ability grouping, group desks, adequate time and resources in order for the approach to be successful. These components are not only scarce in public schools, but also an impossibly difficult game of Tetris to navigate how to group students for success. Which begs the question, should student success in math be dependent on the teacher's groupings?

When it comes to the activities themselves, many of them are aimless in nature and not actually relevant to the students. There is an overt emphasis on calculators that undermine basic arithmetic, proficiency with fractions, and a foundation of algebraic skills. Even as students arrive at the solution, they often go about the answer by guess and check or other arbitrary methods and as a consequence, never develop standard algorithms that can be repeated in different contexts. Klein (2000) argues that the unstructured holism that comes with a progressivist approach is replacing the systematic development of mathematical skills. This is analogous to many other skills we develop over our lifetimes. For example, no musician would argue you must first compose a piece of music before you learn to play a scale. Or that you should play your first basketball game in the NBA without practicing free throws or other drills. So why is it that so many people challenge and debate the value of prerequisite skills in mathematics learning?

A Balanced Approach

Most math teachers will argue that learning is a process that relies on an appropriate foundation of concepts to build understanding from previous skills including how the concepts are interconnected. This is why you have to pass Algebra and Pre-Calculus before you go on to

take Calculus and other advanced math courses. So if that is the case, why even debate these two extreme approaches as the only viable options? If history has taught us anything, neither of these methods exclusively is going to produce both desired outcomes. Abbott et al. (2011) summarize the debate well: "one side claims that another's textbooks produce nothing but confusion; another side claims that the others offer nothing but meaningless drill with no useful applications" (p. 22-23). It seems like this never-ending battle in methodologies seems to miss the point entirely. Neither method alone is enough to meet the needs of all learners. Abbott et al. (2011) explains the core issue in philosophy between all of these extremes is the idea of equity and opportunity. Is it possible to have an education that is equitable for all students? Somewhere between these two ideologies must lie a compromise. Some educational leaders would propose a hybrid approach with influences from both sides. When students are encouraged to problem solve, they are learning with the rigor of a traditional classroom, but the practicality of solving real life problems. A combined approach increases both reasoning skills and depth of knowledge. But with that being said, it is not that simple. In order to build a curriculum that appeases both sides, there are additional factors to consider that make up student learning beyond just the textbook or curricular approach.

Looking at the Research

After considering the historical context and the spectrum of teaching methodologies, the venture to build a balanced curriculum begins. How can we teach in such a way that includes an appropriate mix of direct instruction and constructivist techniques? It turns out, the answer may not even be that simple. There are so many factors that influence student success and achievement within the classroom that need to be unpacked to even begin to put together a

framework for teaching mathematics. How do these factors influence curriculum building and teaching?

Motivation and Persistence Including Intrinsic and Extrinsic Motivation

The first factor to consider is student motivation. In the interest of consistency, motivation will be considered "something that energizes, directs, and sustains behavior" (Ormrod, Anderman, & Anderman, 2017, p. 360). Without student motivation, it does not matter what approach is used, what textbook is put in front of the students, or what fancy technology tools teachers are using. Included under the broad topic of motivation is a major distinction between intrinsic and extrinsic motivation. According to León, Núñez, and Liew (2015) intrinsic motivation is "doing something because it is inherently interesting or enjoyable" while extrinsic motivation is "doing something because it leads to a reward" (p. 156). It is assumed throughout educational research that students who are generally motivated to achieve will ultimately be more successful. Ormrod et al. (2017) suggest that "learners are simultaneously motivated by both intrinsic and extrinsic factors" (p. 363), which is why it is desirable to study students and the specific factors that enable success. When we can better understand our students, we will be better suited to design a flexible curriculum that works for them.

Some studies have focused on the idea of self-determination as a motivating factor. Ormrod et al. (2017) suggest that self-determination is important because it addresses reasons students engage in certain activities with an emphasis on a need for competence, autonomy, and relatedness (p. 368). In their study, León et al. (2015) start by summarizing research in autonomy and learning stating that they can predict learning strategies, are linked to exam performance, and promote deeper processing of content.

León et al. (2015) examined 1412 students across five high schools in Spain and investigated the compound effects of effort regulation and motivation on classroom achievement specifically in STEM classrooms. They explain effort regulation to be "students' ability to exert effort and persist even when doing so is not easy or fun" (p. 157). The concept of effort regulation is particularly important in a mathematics classroom because the course content is often perceived as uninteresting or irrelevant. The researchers were interested specifically in potential links between the influence of autonomous motivation on deeper-processing and effort regulation on math grades. Their population sample was mixed between urban and rural schools in predominantly middle class neighborhoods and was collected using self-report measures gathered in two waves of collection. Overall, they confirmed all of their hypotheses except they did not find that a deep-processing of mathematics content was a predictor of math achievement (León et al., 2015, p. 159).

In terms of their successful conclusions, León et al. (2015) found that a classroom environment that supports autonomy was most effective in preparing students for deep processing and mastery learning. Their research also supported that effort regulation mediates the link between autonomous motivation and math achievement. (p. 160) In other words, students who were willing to persevere through challenging curricula were more motivated and achieved at higher levels on mathematics assessments. From their research, they suggest "it is the degree to which students feel that they have autonomy in their classroom environments that determines their autonomous motivation" (León et al., 2015, p. 157). With that in mind, it is easy natural to assume the same could be said about autonomy in teachers, but we will get to that later. In short, classroom activities, assignments, and assessments that offer meaningful choice

and emphasize a strong sense of a purpose will stimulate autonomous motivation and ultimately promote students to persist through difficulties and ultimately, be more successful.

In another study, Froiland & Davison (2016) analyzed self-determination theory as it relates to expectancy-value theory, claiming these theories work together to predict educational outcomes. In their longitudinal study on the influence of parents, peers, and motivation, Froiland et al. (2016) found that "parent expectations have stronger direct effects than student expectations on math intrinsic motivation, math course-taking, and math achievement" (p. 252). In other words, parents have more impact than the student on how the students are motivated, which courses they take, and how well they achieve.

The population for this study was 18,623 students based in the United States over a two and a half year time period. The study was composed of self-report questions and is significant because of its length of time, sample size, generalizability, and integration of variables that that have rarely been studied in concert (Froiland et al., 2016, p. 254). Their research assumes that students will lose intrinsic motivation for math as they progress through high school and their goal was to identify the influences of student motivation.

Their study had many significant findings to support the following conclusions: intrinsic motivation predicts math achievement and which courses a student would take, parent expectations predicted higher intrinsic motivation and had positive direct effects on achievement, and peer interest also predicted intrinsic motivation and had an indirect effect on achievement. In short, the combination of intrinsic motivation and positive expectations had substantial contributions on students' math achievement. (Froiland et al., 2016). Despite their purposeful, designated control variables, they suggest intervention studies are needed to say conclusively that "parent expectations, student expectations, peer interest, student intrinsic motivation, and

course-taking can be elevated to synergistically improve math achievement scores among high school students" (Froiland et al., 2016, p. 258) and also identified prior achievement as a necessary variable to control.

Given the research findings on student motivation and autonomy, we begin to unpack an important take away for curriculum building that is often left out: the students. Practitioners who build curricula spend so much time arguing over pedagogical approaches and agonizing over details and research that they often miss the most critical component. If we know that all students learn differently and are motivated in different ways, how can we also expect them to be successful using the same approach? The research reveals a critical point: all curricula should begin with a foundational understanding of the students. Since our students change every year, we have to modify the curriculum annually too.

Teacher Controlled Factors

Other studies have shifted the focus from students within the classroom to teachers to analyze practices that contribute to students' motivation to achieve. For example, Beesley, et al. (2018) explored the role of the teacher in encouraging and engaging students. These researchers were inspired by Trumbull & Gerzon (2013) to provide high-quality professional development that is "intensive and ongoing, connected to practice, collaborative, content-focused, adapted to local context, active, systematically supported, and coherent" (Beesley et al., 2018, p. 6). The researchers provided support for teachers beyond a one-time isolated workshop, which included nine meetings over the course of a school year to achieve their goals. Their study took place over two consecutive school years in seven middle schools in Colorado with a total of 47 mathematics teacher participants (Beesley et al., 2018, p. 8). The teachers in this study were focused on using formative assessment to monitor student progress and modify instruction. Some strategies they

used included: ungraded practice quizzes, establishing clear learning goals, differentiating based on mastery, teaching students how to provide peer feedback, and arranging the classroom in centers (Beesley et al., 2018, p. 12). Their quantitative findings were not statistically significant during the training year, but they noticed observable, qualitative progress. Some of this progress includes: students were more likely to seek clarification of objectives, they worked together more supportively, provided more informed peer feedback, and engaged in more complex problem solving. The researchers recommend additional studies to measure quantitative data for multiple years following the initial training year to hopefully identify statistically significant, quantitative progress.

When considering classroom instructional practices, Ku, Ho, Hau, and Lai (2013) were interested specifically in critical thinking or as they call it, "a unifying goal of modern education" (p. 251). They wanted to investigate the potential of mixing instructional methods to motivate students to engage in critical thinking. Their study compared three unique modes of instruction with varying degrees of balance and sequence of direct instruction mixed with inquiry learning. They studied 651 grade 12 students over a total 18 hours of coursework in a two-week time period (Ku et al., 2013, pp. 255-259). In summary, according to Ku et al. (2013), their study "highlighted the benefits of adopting more than one instructional approach to teach critical thinking. The inquiry-based and the direct instruction should not be made exclusive in the classrooms" (p. 263). This finding is particularly relevant because it supports variation in classroom instructional methods and emphasizes the "ineffectiveness of having students explore and discuss problems without providing any guidance" (Ku et al., 2013, p. 263). While they had success with mixing instructional methods, the researchers warn of a common assumption claiming: "it is important to note that the direct and the inquiry-based instructional approaches

should not be seen from an either-or perspective; they should be discussed with the aim of maximizing student learning" (Ku, Ho, Hau, and Lai, 2012, p. 265). As we have seen over the history of mathematics curricula, it is common for educational theorists to generalize and claim one side of the spectrum or more recently, prescribe a certain one-size-fits-all approach. Ku et al. (2013) urge practitioners not to do so with their results. Finally, the researchers also highlighted some unexpected findings in terms of assessments. They claim multiple choice questions are not an effective tool to measure critical thinking and instead, critical thinking assessment should be done through open-ended formats. The authors also warn that measuring critical thinking ability in the form of one single assessment may not provide all relevant aspects of a student's ability and they would recommend additional assessments in future studies.

Even the most effective curriculum is only as great as the teacher who is delivering the content. Without the necessary professional development keeping teachers informed about new techniques and trends in education, any well researched and developed curriculum could easily be deemed ineffective. While the primary focus should be on how we can meet the needs of students, the teachers themselves must also be considered.

Balancing Problem Solving and Direct Instruction

Several studies have been completed with similar goals of comparing instructional methods and their effects on student motivation to achieve. The next study compared different approaches and combinations of guided and unguided student problem-solving with direct instruction. Loibl and Rummel (2014) tested their hypotheses by performing two different studies on 279 tenth graders from six different schools in Germany. They concluded that student problem-solving prior to teacher instruction was beneficial for conceptual knowledge but in contrast, they found that students who learned through teacher instruction first followed by

problem solving independently were more successful in procedural skills. This conclusion ultimately inspires the philosophical question, which is a more desirable outcome?

When unpacking some of the inadvertent effects found in their research, Loibl et al. (2014) explain, "the goal of the problem-solving phase prior to instruction is not the discovery of the canonical solution, but rather to motivate students to persist in inventing solution approaches, thereby activating prior knowledge and intuitive ideas" (p. 323). In other words, the extent of students' prior knowledge is now another indicator to consider for success. This distinction here is important because there are many curricula and approaches that rely on problem-solving, but fail to supplement the discovery element with direct, procedural instruction. This brings up questions regarding prior knowledge. Are students who have gaps in their foundational understanding being set up to fail? Are they more likely to be successful if they have a better recall of previous topics? In theory, since mathematics skills builds upon each other, a firm understanding of foundational knowledge is crucial, but is that the reality for students in math courses? The researchers failed to investigate how incorrect prior knowledge could impact the result of student directed problem-solving. While they were able to produce some promising information in regards to student problem-solving when students had correct prior knowledge to build upon, this control factor does act as a limitation for the research. In summary, Loibl et al. (2014) claim their research "suggests a fundamental difference in the cognitive processes underlying guided discovery learning and problem-solving prior to instruction." (pp. 323-324). While their studies alone are not significant enough to make that generalization with confidence, additional research focuses on the impact of prior knowledge and achievement.

The Influence of Prior Knowledge

Other research has focused on the connections students should make between topics and the transfer from prior-knowledge to new learning. Understanding the impact of previous courses on new material is crucial to help build not only a lesson or a unit within a subject, but also the transitions between courses. For example, Sidney and Alibali (2015) start with the basic assumption: "people learn new information in the context of their own prior knowledge" (p. 160). They discuss transfer of material the ways in which it can go wrong by either not identifying and transferring the material at all or transferring incorrectly. It can be assumed that it is in a teacher's best interest to avoid incorrect transfer so they do not need to spend more time than necessary teaching concepts multiple times. Sidney et al. (2015) stress that learners need specific instructions and may be more proficient in adapting knowledge and making connections when they understand material conceptually (p. 162).

The goal of their study was to examine the analogue used to learn mathematics and "whether [students] need explicit links to adapt their prior knowledge" (Sidney et al., 2015, p. 164). Their study included a sample of 100 children going into sixth grade in the midwestern United States and included a pretest, an analogue worksheet, a lesson, and a posttest. Sidney et al. (2015) found that "drawing on structurally similar prior-knowledge domain proved to be better for new learning in the target domain compared with drawing on a surface-similar prior knowledge domain" (p. 175). In other words, it can be concluded that students are more successful with new topics when what they are learning is connected to similar prior-knowledge that is identical in structure.

One important takeaway from their research is a discussion on implications for educational practice. Sidney et al. (2015) conclude that prior-knowledge connections promote

more meaningful learning and conclude "teachers and instructional materials should take care to support specific, useful comparisons by guiding attention to important structural features" (p. 178). While instructional methods can have a significant impact in our classrooms, they become even more effective when students have a baseline of relevant prior-knowledge.

Knowledge Transfer's Impact on Critical Thinking

All things considered in terms of instructional strategies and prior knowledge, it is important to also consider students who have learning disabilities since they are increasingly included in regular education classrooms. In her study on 20 learning disabled middle school students in Vancouver, Canada, Hutchinson (1993), found success teaching algebraic problem solving to students with a history of a "significant discrepancy between ability and achievement" in mathematics (p. 37). In this study, students received instruction on how to strategically solve algebraic word problems and were assessed on their ability to transfer what they learned. Data was collected at five different times including a pretest, during instruction and again six weeks after the conclusion of testing.

Among her conclusions, the most relevant to my research is that "[learning disabled] adolescents need explicit instruction in representation and solution" (Hutchinson, 1993, p. 49). Her study supports the hypothesis that teaching algebraic problem solving through two phases of instruction and representation is an effective way to help students with learning disabilities be successful in mathematics. Hutchinson (1993) also found that students maintained their knowledge of problem solving six weeks after the research was completed. This supports the notion that the more problems a student was exposed to, the more successful they were.

While her findings were significant, this research is limited because it focused specifically on learning disabled students and it may not be generalizable to show that a general

high school population would also benefit from explicit, direct instruction. Hutchinson (1993) proposes completing additional research to generalize her findings beyond her very limited, chosen population. While not specifically addressed, her findings also may imply that students with learning disabilities may not be as successful as their regular education peers in inquiry-based environments. In short, when it comes to student success in mathematical problem solving, practice is what makes permanent.

The Impact of Assignments Outside of the Classroom

If it is assumed that more practice with mathematical concepts promotes higher mathematics achievement, it is necessary then to consider the significance of homework. Maltese, Tai, and Fan (2012) were interested in the impact of homework, specifically work completed outside of class time, and if the time spent on completing those assignments had a significant impact on academic achievement. They note that they must consider the underlying goals of homework in order to evaluate its impact. According to their research, the majority of homework assignments have one of two purposes: to practice previously learned concepts, or to prepare for new material. Surprisingly, according to Maltese et al. (2012), "little consensus exists about the effects of homework on student learning" (p. 54). Their research is aimed at providing insight to determine the effectiveness of homework on student achievement. They studied both math and science data come from 7,120 and 10,910 students consecutively comparing homework to final grades and standardized tests including the SAT.

One important distinction researchers make early on is the emphasis on time spent on homework instead of quantity of homework. They wanted to see if there were progress in terms of improvement in grades or standardized test scores. They found a stronger relationship with standardized tests and hypothesized this was because "grades are a conglomeration of scores

reflecting both effort and achievement, and the form of homework items may prepare students for completion of standardized test items – and it is this practice that leads to higher scores" (p. 66). Overall, their results were mixed based on the nature of their groupings, which varied in terms of course taken, demographics, gender, year, and other factors.

Maltese et al. (2012) claim there are questions that remain unaddressed when it comes to research in homework effectiveness including: "When is homework worth the time? Is more time on homework associated with better grades in a given class? Is more time on homework associated with higher test scores?" (p. 65). Researchers suggest reconstructing homework so it focuses on deeper engagement with the content claiming "there is under-realized potential in using homework to effectively impact student learning" (p. 66). The researchers also recommend asking more teachers to articulate the role homework plays in student learning.

School Environment and Culture

Another element that may contribute to student motivation to achieve academically goes beyond what is done in the classroom itself and considers the environment of the entire school. In their research, Bryan, Moore-Thomas, Gaenzle, Kim, Lin, and Na (2011), are interested in how school bonding can impact high school seniors' academic achievement. More specifically, their goal is "to bridge the gap between the many terms used in the school bonding literature to examine the link between adolescents' bonds to school and their academic achievement" (p. 467). Their longitudinal study followed 10,426 high school students who attended public, private, and Catholic high schools in the United States starting in tenth grade through their senior year (Bryan et al., 2011, p. 469). Their findings were significant in all the components they studied.

First, they found that students who felt a stronger attachment to their school community had improved achievement. They hypothesized this was connected to the finding that students who spent more hours per week on extracurricular involvement also had positive effects on academic achievement. In short, students who were more involved subsequently felt more attached to their community, and therefore because of this, had higher rates of academic achievement.

Another factor they considered was the rules of the school and found that stricter rules correlated with higher dropout rates and lower achievement scores. The researchers connected this with a similar finding that noted student's beliefs about the school rules and their perceived fairness. They found that zero-tolerance policies specifically had negative effects on students' attitudes toward fairness. In short, more rigid the rules did not mean more academic achievement and often signified the opposite.

The researchers also found positive links between students' sense of safety and attachment to teachers as indicators of academic achievement. Given the findings from this study, the researchers propose "strategies should focus on creating or strengthening all aspects of school bonding" (Bryan et al., 2011, p. 475). They suggest partnering with parents, providing support to new students, working actively to get students involved, and creating a strong sense of community whenever possible.

Technology and Classroom Engagement

Finally, since we are discussing learning in the 21st century, it would be inappropriate to consider the topic of student engagement without recognizing the impact of technology. In recent years, many teachers have turned to new resources to try to encourage collaboration, motivate students, and ultimately, improve achievement. According to Keppler, Weiler and Maas (2014),

"technology in the classroom positively impacts student learning, including understanding and achievement, and increases affective attributes… [technology] can create dynamic learning environments: and bolster efforts to differentiate instruction" (p. 278). However, we are all too familiar with what happens in theory not always being the best predictor of what happens in practice.

In general, there is a great degree of effort directed toward adapting classrooms constantly. Teachers who have successfully used technology in collaborative settings found that "[students] said that they enjoyed working with a team toward a common goal" (Zakrzewski, 2016, p. 483). Other teachers use an inquiry-based approach through real world problems within the technology in their classrooms to motivate students to "[apply] academic content and [get] students motivated" (Lueth, 2013, p. 14). A common theme amongst teachers who use technology is that it gives students "opportunities to tinker with mathematical objects just as they might tinker with mechanical objects…" which would enable them to "develop a sense for the machines and process of mathematics" (Cuoco & Goldenberg, 1996, p. 17). With that being said, the way technology is implemented in any given classroom can vary. Some embrace technological advancement while others resist dramatic change. Many educational pedagogues see technology as an opportunity and emphasize a number of tools to encourage collaboration and success.

Specifically, math curriculum can be enhanced with digital manipulatives, like Desmos, a free online graphing calculator (www.Desmos.com), use iPads as presentation tools for student presentations, or utilize Google tools for a digital home base for their course. No matter how it is done, "opportunities for including STEM content have never been greater— and project-based learning has found a firmer foothold because it engages students" (Lueth, 2013, p. 14). Teachers

who have had success with technology often reflect and question why they had not tried implementing it sooner. Cuoco et al., (1996) stresses that curriculums need to be restructured so that through technology, students can experience "the thrill of mathematical research" (p. 32). All things considered, one of the biggest critiques of a technology focused, collaborative classroom environment is that exploring and discovering concepts takes more time. So giving students the time to discover cuts into the quantity of topics a teacher can cover within the allotted class time, which can be a larger issue from an administrative perspective. Not to mention the issues of accessibility and opportunity when it comes to technology in classrooms.

To combat the issue of topics covered, teachers have taken more dramatic efforts to change the way learning happens within the classroom and redefine the existing structures to integrate technology through a flipped classroom model. The premise of a flipped classroom is that students get the direct instruction of topics for homework each night, typically through a video, then have a basis or foundation of knowledge to build upon during more engaging classroom activities the following day. The "format [of a flipped classroom] promotes student engagement and course satisfaction" and allows educators to "enable the effective use of in-class time without sacrificing course coverage" (Lo, 2017, p. 624). This model requires student access to technology at home and in the classroom, often done in a one-to-one technology initiative with iPads, Chromebooks, or other portable devices. The flipped classroom approach also requires the teacher to have a deeper understanding of the technological resources they are utilizing, which can be challenging to educators, especially ones who have had success in their careers in the absence of any technologies.

There is an interesting paradox to be explored. School districts are willingly jumping onto the technology bandwagon and equipping their teachers with the latest and greatest resources.

Yet, according to Wachira and Keengwe (2010), a survey of teachers show "consistent declines in the classroom use of technologies" (p. 17). Some reasons for this may include lack of interest, time, or training (p. 18). Whether teachers are on board with new technology or not, one of the latest trends in education is to integrate these devices into schools. So as teachers juggle the new applications and devices being thrown at them, they are simultaneously faced with another daunting issue: standardized tests and state standards.

Instead of having the freedom to explore and experiment in their classrooms, teachers are forced to implement cookie-cutter Common Core inspired curricula to increase standardized test scores. More and more efforts are being taken to make teaching into a science instead of an art. With this transition, has gone the ability to make the informed decision based on our knowledge of our students to determine what will work in our individual classrooms. During a case study specifically on technology integration, researchers concluded, "when teachers are asked to deal with the shift to standards-based teaching, being asked simultaneously to integrate a bewildering array of technology to support this new direction greatly compounds their paradigm problems" (Mitchell, Bailey, Monroe, 2007, p. 88). In other words, it may be impossible to implement these rich, technology based lessons in an authentic manner while balancing rigid state standards.

What the research tells us about the best method

According to Dennis and O'Hair (2010), the three basic principles of authentic achievement include: "construction of knowledge, disciplined inquiry, and learning that is of value beyond school" (p. 5). This criteria for an inquiry-based classroom environment is coupled with collaborative learning to enable students to learn concepts by working together productively. Saleh and De Jong (2004) explain that collaborative learning "refers to a pedagogy

in which students of equal status work together in small groups toward a common goal“ (p. 105). This style of learning provides one of the pillars for the foundation of the constructivist curricula.

Many studies have been done in attempts to investigate student success using various instructional models beyond a structured, specific curriculum. An eight year study in math and science classrooms (2014) addressed formative assessment, collaboration, community, technology integration, and inquiry learning as the primary themes across their research. They concluded, “Underlying these themes is the fundamental fact that the teaching-learning cultures at both higher education and K-12 levels were learner-centered” (Harnisch, Comstock, Bruce, 2014, p. 497). In other words, much of the success in classrooms can be attributed to a combination of productive collaboration and systematic inquiry in a space where the student is the focus of the classroom. Ebby, Ottinger, and Silver (2007) found similar results that also suggests similar successes: “Classroom inquiry is generative; because it does not have a specific endpoint, it leads to further learning” (p. 186). Despite finding success within problem-based methods of teaching, these researchers were not finished investigating the dynamics at play within these classrooms. They also explored other factors that could be contributing to classroom success beyond the discovery learning philosophy.

Much of the research that has found success using an inquiry-based teaching approach also overwhelmingly attributes that success with teacher autonomy. A survey of educators that winners of the prestigious Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) claim they “have incorporated inquiry and conceptual modes of instruction, and have more frequently used teacher-created rather than textbook-centered activities in their classrooms.” (Hoffman, et al., 2009, p. 470). With the teacher in charge to create, they will be more invested and reflective in their teaching. Any teacher given a textbook

created lesson is inevitably going to be detached from their work. Several researchers who found an increase in achievement shared this understanding of a teacher's role. In writing on classroom success, Ebby, et al. (2007) mention that, "when teachers engage in inquiry in the classroom, their learning is embedded in the context of classroom practice: they develop knowledge of practice, and they develop a sense of autonomy as creators of knowledge rather than as receivers of knowledge from experts" (182). Even teachers are learners and the best teachers are the ones who make active efforts to improve their practice. Hanisch et al. (2014) found there was a significant increase in teacher confidence when they felt supported in sustainable communities of practice through their continued professional development. In short, the educators who felt they were treated with autonomy and respect were ultimately the ones who had more student success. Overall, there has been a shift in mindset and countless researchers have found an increase in engagement and achievement in an inquiry-based, learner-centered classroom. However, those same classrooms were also lead by confident teachers who were well supported and trusted to create materials, take risks, and discover for themselves what worked for their students.

Research Conclusion

In summary, this research was chosen in a way to highlight methods and approaches that may enhance achievement motivation in different contexts related to mathematics classrooms. They included an emphasis on autonomy and choice for students, the positive impact of parents or peers, the necessity of mixed methods of instruction, the significance of prior-knowledge, the importance of meaningful homework, collaboration within the school community, and how technology can enhance instruction. Given this research, it could be advised that a math curriculum addressing these components would be the ideal as a way to teach students mathematics. Specifically, such a classroom would include the following elements: choice and

autonomy, positive influence of peers and parents, formative assessment to monitor progress, mixed methods of instruction, repetitive practice of important concepts, a solid foundation of prior-knowledge, effective use of homework, a positive school culture, and thoughtful implementation of technology. Ultimately, students who are motivated to achieve will be more successful than those who are not. With that being said, experimental technologies and methodologies still present some issues for educators and there have been many setbacks that limit the effective integration of technology from being as successful as it could be. While technology is being used to enhance instruction, it is not meant to replace it. Instead, various technologies have the capability to enable student inquiry and reproduce discovery of concepts in a more authentic way.

Within these proposed suggestions and attempts at creating a balanced curricula, there seems to be a common goal: to teach all students equitably and to create a program that works for everyone including the teacher. It isn't until we look between the lines that we realize how unrealistic that goal can be. Given all the different students across the country, or within a certain state, individual districts, and even within our classrooms, why is it that we are striving to create a curriculum that is designed to work for all students? Is it even possible? The more we unpack the densities of curriculum, the more questions come into focus. Specifically, why?

Why we teach and why we need Reform

So we arrive at a predicament. With what we teach and how we teach under constant debate, the "why" is even more important. If you asked most teachers why they teach, they likely have a story similar to mine. They wanted to make a difference, help students, and create a meaningful change in the world. Depending how jaded they have become since then, their answer may have changed, but I would bet that almost every teacher is in it for their students.

With that being said, if you asked those same teachers about the political nature of education or how they feel about critical pedagogy, they may not have an answer or they may argue that politics is removed from education. This is why more teachers should consider the teachings of Paulo Freire. According to Freire, revolution begins with recognizing the system we're trapped in and working with an understanding of critical pedagogy to initiate a change.

Paulo Freire (2009), an arguably radical educational theorist, writes on freedom, education, and exploitation through the lens of his personal experiences that have shaped his worldview. He discusses the concept he calls "conscientização" (which translates to critical consciousness from Portuguese) and how it "reveals [our] own fear of freedom" (p. 35). Critical Pedagogy is a term associated with Freire as a way to achieve this critical consciousness. According to Spring (2008),

> Critical pedagogy is both a method for maintaining a democratic state and the means by which the school becomes a democratic public institution. As an instructional method, critical pedagogy gives a voice to all participants. In general, the goal is to help people understand why they think the way they do. (p. 25)

Many educational theorists agree with Freire and write on the notion of critical pedagogy and how it is a necessary component of revolution. Bigelow (1990) adds that critical pedagogy "should highlight times, past and present, when people-built alliances to challenge injustice." (p. 445). Critical pedagogy is more than just a theoretical concept that is not attainable in the "real world." He believes an emphasis on historical events can also lead to empowerment of individuals. Many also agree, in order to make opportunity more of a common assumed right, the change must start within the deeply ingrained social structure. A new, radical critical pedagogy that challenges the perceived norms and enlightens people to create change. McLaren (2001) claims that education is the first tool in solving problems like unemployment and poverty that were caused by economic globalization. He says, "create the conditions for the development

of a revolutionary consciousness among the working class in general and teachers and students in particular" (p. 147). A reoccurring theme when addressing the grand issues of society all begin with a change in the way that society is educated.

Another common ideal Freire addresses is what he calls praxis. He defines it as a way to describe human activity and dialogue that consists of action and reflection (p. 125). McLaren (2001) elaborates on how praxis can be a way to fight for change. "A successful revolutionary praxis must occur as the culmination of historical processes in which various social movements with different interests develop an understanding of each other's often conflicting experiences as the victims of societal oppression" (pp. 147-148). From his perspective, the only way to overcome oppression is for multiple victims to gather as a combined group of people who require liberation. Freire (2009) agrees stating, "This, then, is the great humanistic and historical task of the oppressed: to liberate themselves and their oppressors as well" (p. 44). It is not enough to educate oneself about the importance of critical pedagogy, but to also educate the ones who hold the power how to recognize the injustices and flaws in our system.

Critical pedagogy itself acts as a new lens in which people can ask critical questions about the politics, culture, and intention of education. When asked about these elements of critical pedagogy without context, the questions seem trivial. Most would agree the obvious answer to a question like: who deserves an education, would be simple: everyone deserves an education. However, as educators and others begin to look more critically at these same questions, we begin to unravel the dense, inherently political side of education. Does our current educational system truly educate everyone the same way? Or are there some people at a disadvantage for one reason or another? Another example is a question like: what are the goals of education? It may seem innocent in nature, but it uncovers additional questions like who sets

these goals, why are these the goals, and why are we as teachers complacent in enforcing these goals? With increasingly dense questions of education, we are being forced out of our comfort zones to imagine alternatives. What would a school day look without bells? Without standardized tests? With more student choice? Without the teacher standing at the front of the classroom? Critical pedagogy rejects the notion of a knowledge transfer from teacher to student, the factory bells in schools, and many of the norms we have become accustomed to. Recognizing the need for change is only the beginning of critical pedagogy. While critical pedagogy always involves critical thinking, critical thinking doesn't always include critical pedagogy. And for that reason, we cannot simply just emphasize how our students think about math and the world around them.

All things considered, there needs be a significant change to our society and our schools if we are ever going to embody the ideals of Freire. That change however, is rather daunting. Do teachers really have the power to change economic, political, and social spheres that were put in place in such a way that they perpetuate themselves? Bigelow (1990) summarized the issue well:

> The fact is that education will not be *the* engine of social change. No matter how successful we are as critical teachers in the classroom, our students' ability to use and extend the analytic skills they have acquired depends on the character of the society that confronts them. (p. 447)

In other words, if there is ever going to be a grand movement of social change, it has to start with a societal revolution and an acknowledgement of our own oppression. While teachers have some power to change the way students think, they alone will not be enough to create a genuine, lasting revolution. Which brings to light the question, "to what extent are we complicit in our own oppression?" (Bigelow, 1990, p. 444). The answer to that question involves a precise collide between educational theory and practice.

While society may not have figured out what exactly revolution looks like, it is easy to agree with Freire's warnings about the way today's students are taught: "the more completely [students] accept the passive role imposed on them, the more they tend simply to adapt to the world as it is and to the fragmented view of reality deposited in them" (p. 73). America's students are the future of society and it is only through their influence that there will ever be a change. To inspire that change, teachers must themselves be inspired to create a revolution in order to improve their current practices in education and challenge a powerful political authority. When speaking of this daunting task of revolution, Giroux (1988) gives educators hope for the future of education: "as difficult as this task may seem to social educators, it is a struggle worth waging. To do so otherwise is to deny social educators the opportunity to assume the role of transformative intellectuals" (p. 128).

When considering math curriculums specifically, it could be argued that Freire would lean more toward a discovery approach to teaching mathematics, but would also understand the necessity of having foundational skills to support the discovery and problem solving. In his writing, Freire (1998) says that "to teach is not to transfer knowledge but to create the possibilities for the production or construction of knowledge" (p. 10), which indicates that he would disagree with a strictly traditional approach. He promotes curiosity in learning that is "critical, bold, and adventurous" (p. 18), which may suggest that he would not be in favor of pre-written activities derived by any discovery curriculum. Freire (1998) often emphasizes experiences of students and educators. He asks: "why not establish an intimate connection between knowledge considered basic to any school curriculum and knowledge that is the fruit of the lived experience of these students as individuals?" (p. 16). In this sense, Freire would likely argue that debating over existing math curricula in an attempt to create a more balanced new

curriculum is missing the point entirely. I believe he would be in support of teaching based on students as individuals and not argue over arbitrary curricula or some spectrum of ideologies. He would argue for freedom and responsibility in our students over obedience and passivity. He even argues for his own definition of a perfect curriculum that is perfectly flexible.

The underlying implications of math curricula of any time are a hidden dimension of consumerism and politics. Peterson (2013) writes: "the not-so-subtle message is that math is basically irrelevant except for achieving success in future math classes, becoming a scientist or mathematician, or making commercial transactions" (p. 10). This should be concerning to parents, teachers, and community members. What we are teaching our future generations of the world is that math is only relevant in a basic capitalist commerce exchange or on a very high level in graduate studies. We have completely neglected to emphasize the practical applications that fall between these two extremes. As a consequence, students are learning that they do not have to think critically for success. Given our capitalist society that thrives on an over production and consumption of goods, it makes you wonder, is that the point? Are we training our students to be consumers and not critical thinkers?

We need reform in education because our arguments surrounding content and pedagogy are missing the point. Our students are no longer active participants eager to learn, but they have furthermore been trained to believe that school is a means to a career which is ultimately a means to acquire wealth. We have turned the future of our world into passive capitalists that are only interested in serving their own best interests. Meanwhile, as teachers, we have become so inundated with new theories, approaches, and shiny technology that we've been distracted from our own complacency and our inability to challenge our worlds. Freire (1998) emphasizes the importance of learning for all people. He said "there is no teaching without learning" (p. 9) and it

makes you wonder, what are we learning as teachers? Or have we become so focused on the tedious elements of teaching and sacrificed a greater purpose?

The Role of the Teacher

Ideally, the best way to educate in a democratic society includes a combination of freedom and critical thinking, but in the presence of an open-minded authority, like a teacher. According to Bigelow (1990) a teacher is "an agent of transformation" (p. 437) and they have the power to create change starting in their classrooms. He elaborates—"teachers are political agents because [they] help shape students' understandings of the larger society" (Bigelow, 1990, p. 445). If students are ever going to be enlightened by the inequality in the world and inspired to create a revolution, it all starts with teachers. Not the type of teachers who are powerless to their administrators and tied to state standards, but the ones who are truly liberated and empowered themselves.

All around, the "system" of education is all too controlling, powerful, and influenced by politics. Even teacher education programs are reinforcing the diluted role of a teacher which in turn, is perpetuating the deeply flawed norms of the current reality in schools. According to Giroux (1988), "teacher training programs that emphasize only technical expertise do a disservice to both the nature of teaching and to their students" (p. 123). Educating should be an art filled with reflection and autonomy. Instead, growing efforts have been taken to reinforce the existence of best practices— one way of doing things, cookie cutter curricula filled with standards and scrips, and a removal of the teacher's ability to make decisions for his or herself. Even attempts at compromise include a one-size-fits-all approach to both teaching and learning with complete disregard for the individuals who exist in either role. Spring (2008) warns the repercussions of this. He claims that standardized curriculums, strict school regulations, and

standardized tests that are used to control what students learn are ways for the government to teach students how to obey authority and ultimately, perpetuate the authoritarian leadership structure in place. Giroux (1988) proposes a solution to the disenfranchisement of teachers. He claims that once society starts "viewing teachers as intellectuals we can begin to rethink and reform the traditions and conditions that have prevented teachers from assuming their full potential as active, reflective scholars and practitioners" (p. 126). He urges that recognizing the current crisis in education begins with acknowledging the distrust for educators and beginning to advocate for reform. Teachers must "organize effectively and establish a collective voice in the current debate" (Giroux, 1988, p. 122). In doing so, teachers may begin to spark a meaningful revolution.

Freire (2009) in particular writes about the notion of being a perceived "good" teacher by bombarding students with as much content as possible. He bashes this idea and claims that mechanically memorizing the narrated content "turns [students] into "containers," into "receptacles" to be "filled" by the teacher. The more completely she fills the receptacles, the better a teacher she is" (p. 72). He insists that a "liberating education consists in acts of cognition, not transferals of information" (p. 79). Meanwhile, educational theorists from all spheres have commented on the notion of educating through inquiry. Mueller (2011) advocates for this approach: "If a child is to grow to challenge received truths and think for herself as an adult, then she must, while young, learn in a way that encourages her to practice individual inquiry and challenge authority" (p. 21). Monchinski (2001) also writes in support of this style of educating and includes additional factors necessary for success:

> Much smaller classes are necessary with people working together to find answers collectively. Socialist education should do away with hierarchy as much as possible, except those hierarchies that arise naturally out of someone being good at a particular something and knowing more than others about it. (para. 36)

In the current educational sphere, a hierarchy system is worshipped, but the goal of this system is flawed, which is why the current nature of a democratic political structure has remained all-powerful. On the other hand, Spring (2008) warns: "Learning through discovery was considered an ideal method for inculcating Party doctrines in students" (p. 37). He believes that the underlying goals of inquiry is to promote a socialist education, which may be just as limiting as a democratic education. All perspectives considered, the goal of a democratic education should be more about generating independent, free thought from students and that starts by giving back educators the influence they once had. While there may be some need for caution, one thing for sure is that it is more likely for students to generate independent thought in an environment where critical thinking is encouraged rather than a sphere that celebrates strictly a transferal of information.

The solution to political injustice, oppression, discrimination, and Authoritarian rule begins with education. In order to have an effective revolution that has the ability to create real change, the shift in mindset must begin with the people in a position of power. This does not mean the policy makers, administrative teams, or schoolboards. It begins with the people that are in the position to stand in front of a diverse body of students and challenge them to think differently. Giroux (1988) is hopeful. He claims, "transformative intellectuals need to develop a discourse that unites the language of critique with the language of possibility, so that social educators recognize that they can make changes" (p. 128). Teachers deserve the autonomy to make decisions pertaining to their classrooms with the best interest of their students in mind. Spring (2008) said it best when discussing his goal of education: "the goal is to help the student see truth—not to teach truth" (p. 6). Which makes you think, by pushing content based

standards, are we truly enabling students to become independent thinkers, or are we wheels in a system who wants to make sure that never happens?

The problem here is that there are just as many questions as there are answers and it is easier to be critical of previous attempts at a solution than it is to develop a new solution from the start. On the surface, it appears as though a new curriculum could be developed that includes a balance of a little bit of everything: a traditional approach to build basic skills, a collaborative component to motivate students, problem-solving to encourage critical thinking, and a supportive, autonomous teacher to deliver this ideal curriculum. However, even that goal still misses the point. The perfect curriculum as a standalone entity does not exist. There is no one size approach to educating a diverse and ever-changing student body. The problem itself is the never-ending attempts at creating such a thing. So instead of spending any more time reshuffling existing frameworks or creating another "best practice," we need to shift our efforts and open our minds to a solution that exists outside the box.

Chapter 4

Design

Introduction to the Program

In the eyes of the public and at a national level, teachers have the reputation of being untrustworthy and ineffective. While society claims to value the importance of education, the policies and practices of state mandates, standardized tests, and tightening restrictions on teachers tells a different story. The ultimate goal, outside of the scope of this program, goes beyond the educational stakeholders at a district level and aims at reshaping the way society views teachers. In the meantime, the target audience is the teachers, to raise awareness of why this problem is so important, the administrators, for them to share the sense of urgency in reform, and finally, to appeal to the school board and community members who have the ability to make decisions that can initiate change for teachers and eventually, our students.

Throughout the development of my program, the goal was always to reach students to provide them the best learning experience possible. It is discouraging to know how many of them have an innate aversion to math, believe they will never be good at it, and struggle to be successful learning these valuable mathematical skills. It was disheartening and defeating to see students struggle with a curricular program that did not meet their needs and perpetuated a sense of failure. Informed by my research, I discovered that the problem was not the specific curriculum my district chose, but the fact that I felt stifled in my ability to teach. In attempting to develop a solution to the problem, I realized that generating an alternative curriculum designed for myself could unintentionally replicate the current problem if I was using my new curriculum in the wrong way. As I dug deeper, I realized, the problem is not curriculum, but the lack of

autonomy within a curriculum. So, in order to provide a better learning experience for my future students and as many other students as possible, this program was developed to reach teachers first. By working through the educational hierarchy and helping certain individuals recognize the need for reform, the students will eventually be the ones who benefit. At the end of the day, 71% of teachers claim that the reason they teach is a desire to work with students (Sadker & Zittleman, 2016, p. 4).

Purpose

The purpose of this professional development program is to educate teachers, administrators, and ultimately, the school board about the value of teacher autonomy and how it can improve mathematics education and student achievement. The goal is that through this educational experience, we raise awareness to the importance of teachers as professionals and invigorate a sense of solidarity among educators. In order to have the largest potential for impact up the educational hierarchy, this program will begin by involving teachers at the ground level and using their expertise and suggestions to build proposals for next steps of implementation. The end result will be an enhanced classroom experience that will ultimately benefit our students and school community.

This curriculum will include an outline and overview of several components. The first component is the most detailed: a call to action presentation for other mathematics teachers over the span of a full day of professional development. The second and third components are suggestions and overviews of presentations designed for administrators and individuals who are not teachers including: members of upper administration, a school board, or other educational stakeholders. In completing this program, the end result is to bring attention to the importance of re-professionalizing the teaching career through an invigorated sense of trust, to have a loosening

of restrictions, and ultimately, to give teachers back the autonomy they deserve. While this program is specific to high school math teachers and curriculum, it could be easily adapted to include other content or age groups.

I chose to create professional development programs because I thought that would be the best way to inform teachers about the problem and that together, we could collectively brainstorm solutions. I wanted to involve the administrators because I believe a presentation to a school board would be better received if the authority figures of the school were behind the idea in the proposal and provided a different lens to analyze the problem and potential solutions.

My target audience are those individuals who have the authority to make changes within school structures and influence curricular decisions at a district level. While some may argue you could just choose to ignore curricular directives and do what you want anyway, I believe these individuals are important. The hope is that in the future, the curricular decisions made may be more informed and beneficial to teachers. In order to get a school board's attention though, I want to first involve other teachers for strength in numbers. Once I have a group of invested mathematics teachers who share my frustrations, we will collectively work our way together to reach the decision-making individuals.

This audience is important because it creates the most potential for a meaningful change. Had I focused on a smaller group like designing a curriculum specifically for my classroom, my influence would be limited to the number of students I teach within a certain year. By increasing my group to include only teachers without the support of administration, there may be more awareness of the issues, but there would still be several limitations. Even if I inspired some teachers to adapt their own personal curricula within their classrooms, there would still be teachers who would not participate for a litany of reasons including, but not limited to: lack of

education about alternatives, fear of job position, or lack of time. The only way to initiate a change that could have a positive impact for years to come is by aiming for the decision making individuals at a district level to remove restrictions and create a new sense of trust district-wide.

After being exposed to the program and learning more about the importance of autonomy, teachers will be more informed about the harms and limitations of the current structures and also inspired by what they could do with more freedom in their classrooms. In learning about curricular alternatives, a teacher attending my presentation will feel a sense of liberation and will feel excited to rediscover their creativity and passion in their classroom. After proposing our idea to administrators, they will also come to feel a rejuvenated understanding of how important it is to treat teachers as professionals and the benefits that doing so will have on students and school culture. Ultimately, any participants in my program should feel inspired by potential and optimistic about what classrooms could look like in a world where teachers are trusted, autonomous professionals.

Finally, it is valuable to acknowledge the frame factors that will present the most challenges to implementing my curriculum. The first issue is the issue of time. When will there be time to gather groups of teachers to initiate the first program? Our district requires us to hold monthly department meetings, we are given some say in several our professional development in-service days, and have a several opportunities to present information from teacher to teacher. In a different scenario, finding this time may be more difficult.

Another hurdle could be economic. It is no surprise that districts spend incomprehensible amounts of money on curriculum development, implementation, and resources, which will be somewhat discouraged in my proposal. My presentation advocates for teacher freedom to use what resources they see fit within their classrooms, encourages teacher collaboration, teacher led

professional development, and less influence from "experts." Having teacher choose their own curriculum and materials could initially incur additional costs to the district and while it may seem like a waste of money to discontinue curricular programs, textbook licenses, and other resources before they expire, the economics of a more flexible curriculum could actually save districts money in the long run.

The last factor to consider that may present issues are the parents and public perception of teachers. At this point, it is more common for people outside the profession to distrust teachers than it is to have confidence in them. To avoid this, it may be helpful to have an additional presentation prepared for community members and parents who fear inexperienced teachers or ones who are perceived as less creative or competent. That being said, the root of distrusting teachers branches far beyond the influence of any individual school district. A supportive administration could go a long way into tackling and discussing parental concerns in support of the cause.

Content and Method

The content of this program is a series of workshops that will cover the essential topics of teacher autonomy, professionalism, and choice within the classroom. The driving force behind these topics is to positively impact students and their achievement in math courses. The first component of the program is a full day professional development for teachers that includes research, a historical context, and opportunities for collaboration. The next is for administrators to help raise awareness of the issues beyond the classroom and how a re-professionalization of teachers can positively impact school culture, student achievement, and teacher turnover rates. With a group of dedicated teachers and administrators, the last step of the program is to develop a proposal for the school board that would loosen curricular restrictions on teachers and plans for

how professional development can be restructured to help support teachers under this new plan. The program proposal also includes potential teacher-led research topics to consider in future professional development assuming success in the implementation of the initial program itself.

In order to have the most powerful educational impact, there will need to be some direct presentation of research and resources, but there also must be opportunities for collaboration and conversation to reach these goals. While there will be examples of these strategies, they will never be prescriptive in nature and will be open-ended to encourage a rediscovery of creativity and the beginnings of redefining a professional voice for teachers. The hope is that enough individuals will be present in these sessions that each session itself will be unique and help lay the foundation for the next set of presentations. A larger goal is that this curricular program will also eventually go beyond mathematics teachers and could be applied in other content levels.

In terms of the activities themselves during the professional development program, there will be surveys, case studies, research articles, personal assessment quizzes, and presentations to make the point of the program while also being easily transferrable from the perspective of mathematics curriculum to apply in other contexts. Participants will be asked to think critically about the role of teachers in their own lives and emphasize the importance of exceptional teachers. Throughout the program within the opportunities for discussion, the hope is that participants will begin thinking outside the traditional classroom norms including questions like: "What would you teach if you didn't have standards or set curriculum?, How would you assess if you were given the freedom in your practice?" A huge takeaway of this presentation should be for the participants to agree that teachers are valuable beyond just being a body in a room who robotically recites instructions, objectives, and data. By sharing experiences with other teachers, the hope is that the presentation will inspire a sense of urgency that these issues need to be

addressed. Along each level of the curriculum, the plans get less and less detailed in hopes that participants in previous programs have additional suggestions for implementation of next steps.

Finally, there should be some factors considered in terms of the content and methods of this curricular program. The first, is that as the presenter, you will need to find a delicate balance between being prepared in different facets in case the teacher participants are not as engaged and responsive initially without turning the workshop into a monologue or idyllic lecture. Individuals may be inspired by the open-endedness in some contexts, but may also need a head start to get moving. Additionally, you run the risk of doing the entire presentation to teachers and not having anyone jump on board to help with planning the next steps. At that point, the organizer would need to decide if it makes sense to move onto the next level of the hierarchy or regroup, redesign, and try again with a different context or different grouping of teachers.

Finally, this program is tailored to meet the needs and goals of the group of people that exist in my district, but may not be easily transferrable to other districts. Meaning, there may be a need to modify the roles of teacher professionals to better fit within the ideals of a given district or certain parameters that are not easily compromised. The number of presentations in the hierarchy may also need to be modified depending on the size or type of district.

Organization

Like previously mentioned, this curriculum will be organized as a series of programs that consist of informational presentations including current research, surveys, and examples designed to raise awareness of the issues, enable people to understand the problems, and apply new strategies to their personal experiences. The program will also be specific to our shared student body and experiences with our current school environment and culture. The administrator and community versions of the program will be less about resources and strategies,

but instead, will focus on test scores, opportunities for students, teacher retention, and economic savings over time.

The majority of the curriculum will be executed through a presentation or discussion with the individuals in attendance. This program would be best completed in person in a manner that enables dialogue, presentation, and feedback simultaneously. That way, a person presenting has the opportunity to share information while also participating with the group. Assuming the program is effective and approved by the board, there is also a plan for professional development in the future that is led by teachers with different approaches, strategies, and research to support growth and professional development.

The structure of the curricular program is a combination of approaches since it is hierarchical in nature, but discreet in isolation as the teacher program should happen first prior to the other programs, but a participant could attend just one in isolation and would be capable of comprehending the objectives. The organization is discipline specific because I feel as though math is the subject where most restrictions are placed on teachers and the most common to be handed a curricular program and told to "just do it." In my experience, it would be a valuable start to use this group as the basis for showing the importance of teacher professionalism and could be a way to gather data through test scores, surveys, and other methods. Since mathematics courses are commonly assessed through standardized testing, the SAT, PSSAs, etc., there are many opportunities to use the system to show progress.

There are several frame factors that will keep this program from being successful if not considered carefully. The first is time. If teachers do not feel as though they have the time to take on a project like this, there may not be as much success in creating a meaningful proposal for the next steps. Not to mention, even if the proposal is successful, if teachers are not given the time to

develop as creative, autonomous, professionals in their classrooms, the freedom to make curricular decisions will be merely a waste. Additionally, administrators are already juggling so many responsibilities on a daily basis that a lack of time could make their job even more difficult. Another critical frame factor is the current uncertainty due to the Coronavirus pandemic. More schools are transitioning to unique models of schooling and professional development including hybrid approaches, zoom meetings, and other low contact methods for delivering instruction. It would be very easy to be passive in a professional development situation that occurs from a screen so the teacher program itself would almost need to be in person to get meaningful conversations and ideas flowing between individuals.

Overview of Programs Included

Sessions Required	What's included	Suggested Time Required
Math Teacher Workshop	Outline and Samples of Detailed plans Activity suggestions Discussion questions	8 hour In-service Day or other Full Day Professional Development Session Could also be broken into several hour long after school workshops by topic
Administrator Presentation	Basic outline and overview Some activity suggestions	Anywhere from 2-4 hours depending on materials
District Office Presentation	TBD – not included, but would be necessary in the action plan and course of this program	TBD – but would likely need to fit into a timeslot within a school board meeting
If Approved: Supplemental Professional Development	Overview of presentation topics to be led by teachers in future professional development sessions	Will vary

This program in its entirety is designed as a hierarchy of smaller programs where each session must happen chronologically and must be deemed a "success" before moving on to the next tier. Everything was designed with the knowledge that there is power in numbers and that certain groups of people would need to be on the same page in order to take the next steps. The first session is designed as a workshop for math teachers to raise awareness to the problem of teacher autonomy and brainstorm collectively how it can be fixed and what it would look like in the classroom. This session is followed by a presentation to administrators within the building to bring their attention to the issues and get insight in regards to how to proceed at a larger scale. Finally, with teachers and administrators involved, the last suggested tier is a presentation for the schoolboard to urge them to loosen curricular requirements on teachers and begin to give

teachers back the autonomy they deserve. In anticipation for questions about what that would look like realistically in the school, this program also includes suggestions for future considerations for professional development after the fact. The design of this curricular program is founded in the understanding that teacher professionalism is possible, necessary, and may look different between course subjects, grade levels, or individual teachers. However, that does not mean that it is unrealistic. Redefining a school structure where teachers are trusted and autonomous will involve thinking outside the box and will not look the same everywhere. This program is the beginning steps on a district specific scale with hopes at a larger future impact.

The details and plans described below are suggestions for executing a program inspired by my research and what I would do in implementing this program. In the interest of professionalism and autonomy, anyone who picks up this program can and should make it their own. The activities and resources provided are some of the tools I gathered from the resources available and made sense to me as arranged. By no means am I suggesting this is the only way to go about advocating for teacher professionalism and autonomy.

Professional Development Day for Teachers:

Rediscovering the value of Teacher Autonomy in Mathematics Classrooms

Topic and Goals	Suggested Materials	Suggested Time
Introduction: • Is teaching a profession? • Are teachers professionals? • What makes teachers important and valuable? • Why are we teachers?	• Educational Memory Activity • Profession vs. Occupation Questions • Pros and Cons of Teaching	15 – 30 minutes
The Context: • What is teacher autonomy? • What happened to autonomy? • What methods and approaches are used in classrooms today?	• Discussion • Historical Outline of Math Curriculum • Teacher Philosophy Activity	45 – 60 minutes
The Potential: • Why is teacher autonomy important? • What are the benefits of autonomous teachers? • What would it look like in the classroom?	• Case study or Review Articles about teacher autonomy • Surveys to measure perceived autonomy • Brainstorm ideas about classrooms	45 – 60 minutes
The Solution: • What are we going to do? • What do we need? • What are potential problems or obstacles we may face?	• Discussion • Guiding questions: things to consider • Assessment strategies for teachers and/or students	60 – 120 minutes
Next Steps: • Now what? • Who do we need to focus on next? • What are the benefits for the district?	• Discussion • Participants will build the presentation for administrators and the proposal for school board	60 – 120 minutes

The introduction to the program will be a short educational activity that aims at answering some introductory questions related to teaching as a career, what value teachers have, and why the individuals in the room are teachers. The driving force behind these questions is to force teachers to consider things they have not thought about in depth for a long time. First, I will ask them to silently think back to one or two of their most memorable experiences from any time during their education and write it down. It can be something silly, serious, or just anything memorable that stuck with them. After some time, I will ask volunteers to raise their hand if their memories had to do with a curriculum, state standard, or content objective. Then, I will ask them to raise their hand if their memory was about an experience, teacher, or feeling. My assumption is, that most people will raise their hand for the latter. The truth of the matter is, I would assume most people do not remember the content or the curricular program. Take a few minutes to have teacher participants share their memories and discuss among themselves what impact this has on our students.

The next activity focuses in on the questions: "Is teaching a profession" and "Are teachers professionals?" On the surface, the obvious answer is yes, but after additional considerations, that may not be the case. Begin by doing a quick brainstorm of "what it means to be a professional" and record some of the suggestions. Then, ask teachers to think of any profession other than teaching and answer the *Criteria for a Profession* (Sadker, 2016, p. 10) found in Appendix A. Ask participants to take inventory of their own job using the same criteria and compare. Finally, use the teacher's responses to determine whether or not teaching is considered a profession based on the criteria provided. Discuss what that looks like in other professions and why that it is important to be a professional. What are the differences between teaching and any other job? Why does it matter?

At this point, these activities are designed to trigger a response and people may start to display anger or frustration in their discussions. Use this momentum to ask participants to generate a list of pros and cons to their job. If useful for the discussion, compare this to the pros and cons list to the one provided in Appendix B (Sadker, 2016, p. 6-7). Finally, wrap up this session by asking participants to discuss why they are teachers and to describe how they are feeling after these first few activities. These first few activities are designed to raise awareness and grab the attention of the participants. If they are not convinced that this is a real problem to be solved, they are less likely to be attentive and take the rest of the day seriously. By connecting their educational experience with their career and personal feelings, the topic is hopefully more meaningful leading into the informational chunk of material.

At this point, the next chunk of time is designated to the history of mathematics curricula, strategies for teaching, the spectrum of pedagogy that we use to teach, and evidence for why reform is necessary. The session itself can be inform overload and may monotonous, but is important for context. I would suggest putting together a slideshow presentation with interactive components or other details that keep the participants engaged in the content. A suggested outline for the history of curriculum will begin at the start of the 20th century and cover brief overviews of the following topics: The curricular impact of global competition, the preparation for the standards, the standards themselves and their repercussions, the Math Wars, No Child Left behind, and the Common Core. Immediately following the historical context, I will ask participants to describe how they remember learning math when they were in school and how they see math taught today. I will use their responses to generate the types of pedagogy that exists in our teaching starting with traditional instruction, since I assume most teachers learned math that way, then all the way across the spectrum to interactive, problem-based classrooms.

Next, I will challenge them to consider their strengths as a teacher and what philosophies they identify with as the most effective ways to teach math. The plan will be to get the participants involved in a discussion about math pedagogical approaches and the philosophies behind them. In Appendix C, you will find a teacher philosophy discovery activity that is general to teaching and non-math specific. It could be an ice breaker or discussion generating activity if conversation is limited. At this point in the program, it is best to tailor the presentation toward the strengths of the presenter and the tendencies of the group. In Appendix D, E, and F, you will find three different readings of various lengths that detail why teacher autonomy is important and what benefits there are. These writings include, *Why Teachers Need Their Freedom* (Lamb-Sinclair, 2017), *One to Grow On / The Autonomous Teacher* (Tomlinson 2019), and *Teacher Autonomy: Key to Teaching success* (Sehrawat 2014).

While these articles are helpful in generating conversation and sparking ideas, these three do not make up an exhaustive list. If you choose not to go the reading route, in Appendix G there is a survey that participants can take to gauge their feelings about what level of autonomy they have in their classrooms. Regardless of which route is chosen, the goal of this section of the program is to build ideas and brainstorm what the school and classroom could look like in an ideal situation. This is a segue for the important final sections where we discuss realistic actionable next steps.

The last two components of this program focus a potential the solution and next steps. What are we, the teachers, going to do next and what are some of the potential obstacles we will face? What will teachers need to do in order to prepare for the next steps of implementation? What are our classrooms going to look like? What are the benefits of having autonomous teachers? These questions are the ones we should be prepared to answer in future presentations

and it is not something the presenter alone is responsible for. At some point during the last session, we will also develop a presentation on what the benefits are for school districts to develop what the next step will look like. If deciding to take a different route, it could also be advised to spend time in the last session putting together potential unit plans with mixed methods of instructions or collaborating between similar content teachers to generate ideas. Regardless of which approach is taken, the day will end by discussing specifics of implementation for the next steps of the program and talking practical takeaways that can be used in the classroom in the meantime.

The teacher session is designed in the order described because it begins with activities that help participants understand the objectives and ends with a brainstorming of alternatives and solutions to advise next steps. We need autonomous, creative, and professional teachers to lead education into the future.

Presentation for Administrators:
Rediscovering the value of Teacher Autonomy in Mathematics Classrooms and

Topic and Goal	Suggested Materials	Suggested Time
Introduction: • Why is teacher turnover high? • Why is staff morale low? • How can we enable students to be more successful?	• Statistics about teacher turnover rates and trends in recent years – NEA article Appendix I • Discussion	15 – 45 minutes
The Context: • Why is teacher autonomy important? • How will it help our students? • How will it help teacher retention? • What would it look like in the classroom?	• The developmental stages of teachers Lillian Katz Appendix H • Research that shows increased teacher autonomy leads to higher achieving student results • Classroom example lesson plans	45 – 75 minutes
The Solution: • What do teachers need from administrators? • What other elements should be considered?	• TBD during teacher session	30 – 60 minutes

The majority of the administrator presentation will be discussed and planned during the teacher session. However, this outline includes potential resources that could be used. In Appendix H, there is the *Developmental Stages of Teachers* (Katz, n.d.) that helps to demonstrate why teacher autonomy is imperative to teacher development and what could happen in its absence. While it is not always possible, having quantitative information is also helpful for convincing administrators why this is so valuable. Appendix I includes an article by NEA that shows a decrease in perceived autonomy over time. It is also a great resource for other articles and authors. This piece, like other suggested materials listed, are similar to the other resources included already as they are potential starting points or ideas, but are not designed to be exhaustive or required for the presentation. The goal and the questions provided are suggestions that could be valuable in building a case in support of teacher autonomy.

It is always valuable when confronting a problem to also come prepared with alternative solutions and expectations for what change would look like. Smith (2017) provides suggestions for how administrators can "ensure a quality education for all students while also honoring teachers' professional autonomy" (para 10). This includes things like minimum guidelines, big picture focus, and feedback. As teachers, we understand that an administrator has only so much power to affect change and we have to respect that. However, we do have the ability to ask challenging questions and demand answers. In addition to the ones provided in the overview, additional topics for consideration include: Why is it that teachers are hired based on their creativity in the classroom, but then are discouraged to use it? Why is there a desire to stifle teachers and turn them into data producing robots? Specifically related to math instruction, why is it that math teachers are always in demand and so hard to find? We have a society that hates math so it should come as no surprise that finding willing, talented math teachers is no easy task. So how can we maintain and support the teachers we do have? Compared to the teachers who are directly impacted by the curricular decisions from the district office, it may be difficult to get a similar emotional response from administrators. Instead of focusing on problems in the abstract, giving them more specific questions to consider may help get the point across better. What are the risks to running teachers out of the profession? What are the benefits that teacher autonomy will have on students? How will this improve the school community? The time teachers have to make a point to administrators is limited and valuable so the stronger the resources and more thought provoking the questions, the better for the program.

Targeted Professional Development Sessions on Instructional Methods

The list below includes a variety of topics that may be important if the district agrees to give teachers classroom and curricular autonomy. These sessions would be led by teacher volunteers with research and include suggested lesson plan "makeovers" and holistic unit plan overviews.

Topics of additional PD	Questions to Consider
Direct Instruction	• When is direct instruction valuable to use? • How can we tackle some of the "cons" to this approach? • How would assessment look in this approach? • Will differentiation be used? How will that look? • How often will direct instruction be used over the course of a unit and at what times typically?
Inquiry or Problem Based Learning	• When is inquiry learning valuable to use? • How can we tackle some of the "cons" to this approach? • How can we differentiate in this approach? • Will students work collaboratively? If so, how are groups built? • How often will inquiry learning be used over the course of a unit and at what times typically?
Mixing Instructional Methods	• What other instructional methods are part of your teacher toolkit? • How can we tackle some of the "cons" to these approaches?
Influence of Technology	• When is technology valuable to use? • How can we tackle some of the "cons" to using technology? • Will we use technology for assessment? • How can technology be used to differentiate?
Assessment Techniques	• What about assessments will look different? • What about assessments will look the same? • What will valuable student feedback look like?
Classroom Management and School Culture	• How can we build rapport with students? • How does the classroom impact school culture? • Why is school culture valuable? • How can an individual teacher (or student) have a positive impact on school culture? • What are some strategies for creating a positive classroom environment while also maintaining high standards for classroom management?

Implementation

The implementation of this program could theoretically be any time during the school year, but may be best initiated when teachers have the most time. The process of this series of programs will likely take weeks if not months to all occur and be deemed effective. It could also be advised that teachers initiate the district office presentation surrounding curricular decisions or during the end of a curricular cycle. All things considered, careful considerations should be made to ensure a deliberate timing of this entire curricular program.

The first major change that would need to take place if this program was successful is that teachers would need to have time to collaborate and determine essential curriculum topics. Some suggestions for administration would include: common planning time, more support or resources for teachers, a general trust in teacher decisions related to the curriculum, and less emphasis on evaluation of teachers. No more random "drop ins" to assess curricular fidelity. Similarly, professional development would need to be almost completely overhauled. Instead of being told what strategies and tools to use by educational "professionals," the structure should be formatted in a way that encourages teacher led professional development and considerations for planning time. Generally speaking, there are many other changes that would need to happen in order to redefine our classrooms and our schools. More specific suggestions may come from the teachers and other individuals in the programs themselves. I alone am aware that I do not have all the answers. The best I can do is create a program to help promote autonomy and professionalism.

Like every other component of organizing and structuring this professional development program, there are frame factors to implementation in addition to the ones listed already. The biggest potential for an issue is the relationship between teachers and administrators. If the

administration inherently has a distrust for teachers, implementing this program and asking for their support is going to be much more difficult. On the other hand, if administration has a good relationship with teachers, they may be more likely to help brainstorm alternatives for program progression. As we work within education in today's global society, frame factors could also be environmental. All around us every day are global factors that trickle into our schools. Any of these can become hurdles to tackle.

Conclusion

In summary, the goal of this program is to raise awareness of the issues going on within mathematics classrooms today and use them to explain why there are even larger issues going on in schools. Educators are being forced to teach within one-size-fits-all curricula that doesn't necessarily align with their skills, they are losing autonomy in their own classroom practices and philosophies, and as a result, the consequences are catastrophic. Teachers are no longer able to use their creative skills to design instruction, they are limited in the ways in which they can connect with students to build rapport, they are no longer trusted to make decisions about content or assessment, and they are crippled by the pressure of test scores and standards. As a result, teacher turnover has reached all-time highs and teacher retention is at all-time lows.

With a program like this, it is important to take additional considerations to create a measurement for what success looks like. The reality is, we are not going to change the public perception of teachers overnight just like there is no way to magically give back teachers autonomy in their classrooms. By gathering feedback on what teachers need and how we can help, we are taking the necessary steps to build back the professionalism teachers deserve.

Chapter 5

Assessment and Evaluation

This program will be evaluated through different methods to provide feedback to different stakeholders in different forms. Following the teacher presentation, participants will be asked for feedback twice and the majority of that data will be used for the organizers while some of the information could also be used in preparation for additional workshops. The teacher feedback will be valuable in another sense as it can inform the administrators and other individuals that this is a problem worth pursuing. The next presentation will ask administrators for feedback that will almost exclusively inform the presenter. Specifically, what additional considerations should be made and what else can be done to have the principals and other professionals join the teachers in solidarity. Lastly, the success of the program in its entirety would be decided at the final upper administration/school board presentation where the assessment itself is whether or not the people in power agree to allow more teacher autonomy and professionalism within the curriculum.

First, the teacher participants in the preliminary professional development workshop will be asked to immediately fill out a survey assessing their thoughts and feelings about the program including their intentions with regard to being involved in the next steps of the action plan. All individuals will also be asked to fill out another survey electronically a few weeks after the initial presentation to assess whether or not anything they learned about was still having an impact on their teaching, professional development, or other facets of their day. During both surveys, participants will also be asked what suggestions for improvement they have for the presenter. The majority of this information gathered at this stage is for the presenter and the people who

organized the initial workshop. This will help them determine what material should be included in the next presentation of the hierarchy. However, the follow-up assessment surveys could also be used during the administrator presentation if it had not yet occurred yet to show administrators that the content of the teacher professional development did stick with participants beyond just the initial session and could also include how teachers have already applied their new knowledge in their classrooms. The teacher feedback could also be helpful in providing information to the district that this is a relevant problem that needs to be fixed.

Next, the administrator session would also come with its own degree of feedback and assessment in a way that helps the presenters determine how to proceed. The administrators would be asked a series of questions in regard to their comprehension of the presentation as well as suggestions for modifications, and ultimately, whether or not they would back the teachers in the next phase of the plan. If the administrators were not on board after this round of assessment, it would not be in the best interest to proceed to the next presentation. If that was the case, and the administrators are not on board, this would not be considered to be a success and more complex modifications would be needed.

Assuming the first two presentations are successful and there is the opportunity for a presentation to a larger body of powerful individuals like the school board, the success of the program would be whether or not they are willing to allow teachers to have more autonomy and professionalism within their classrooms. At this point, there would need to be a collaborative effort to determine what that would look like. In the previous chapter, there is an outline of suggestions for future professional development programs as well as other suggestions for actionable steps that can be taken to bolster teacher autonomy and professionalism. Unfortunately, that alone is nearly impossible to measure so in order to determine the success a

district may have in harnessing teacher professionalism and autonomy, the assessment itself would need to go beyond a handful of surveys.

When it comes to obtaining feedback from individuals at any stage, the best way to organize the assessment data would be through a digital surveying platform like Survey Monkey or Google Forms. That way, the organizers have all the data in an easily accessible way that they can refer back to at any time. These platforms also provide graphical analysis tools that could be used to make conclusions about the feedback in a quantifiable way. However, making general statements about the success or value of the program may be nearly impossible to measure. Since the members of the school board would want to see quantitative data, there is some data that could eventually be analyzed. One factor to look at is teacher retention, which would not become obvious right away and would take years to prove. Another potential route to go about would be to gauge effectiveness in the approach is by measuring student data. This would involve a great deal of controlled variables and additional considerations that would necessitate additional initial planning. The advantage to doing this is that it may provide more quantitative results that could offer another lens to gauge effectiveness. While that may be ideal for convincing people about the importance of teacher autonomy, details for doing so is beyond this program. My program uses research to support why this would be an important change and the benefits it would provide for the district moving forward. It does not include additional suggestions for gathering data to prove effectiveness after implementation. At the end of the day, autonomy and professionalism are both based in feeling and it is possible that some individuals will have differences in opinion. The only way to determine success in a truly quantitative way would be by redefining and planning the program to somehow include quantitative data, which could accidentally perpetuate the problem.

In terms of some final frame factors, there are several that could have an impact in evaluating the effectiveness of this program. Asking participants to rank their thoughts and feelings on a numerical scale could be interpreted different ways by different people. You also run the risk of nonresponse bias if participants choose not to respond to the survey. Additionally, since the implementation of teacher autonomy is nearly impossible to quantify, it may be rejected for that reason. While teacher autonomy is a significant issue, this program alone will not be enough to redefine society.

Limitations, Recommended Research, and Conclusion

Like most research endeavors, there are several limitations to this analysis and additional considerations should be made to strengthen the project. First, while the issue of distrust in teachers and a subsequent lack of autonomy in the profession are both nationwide issues, the circumstances laid out here are unique to my sphere of the world. Even in a similar district with many of the same elements I described, the actionable steps laid out here are merely suggestions. At the end of the day, lack of teacher trust and professionalism is a systemic issue that is deeply rooted in our society. Even with the most effective program, there is still so much work to be done. While this program outlines a curriculum as I would initiate it, this is not the only way that this could be done. The underlying goal of this writing is to raise awareness to how important teacher autonomy is and how much it is lacking in our current educational environment.

Since I began writing this thesis program and action plan, my teaching experience and educational worldview has been flipped upside-down. In March of 2020, the Coronavirus Pandemic changed education as we know it. As I sit here reflect on my years in the program, put together my writings, and articulate my philosophical beliefs, I have come to the realization that the problems outlined in this program have somehow managed to become less relevant but also

more applicable than ever before. In one sense, there has been no time to police curricular fidelity so the lack of autonomy has somehow resolved itself in some ways. In another sense, this is the time now more than ever to trust teachers as we all work together to provide valuable online experiences for our students and work within the new realities of education. Unfortunately, nobody can predict what the future may hold and the challenges of teaching have reached unimaginable peaks. There was a glimmer of hope early in the pandemic where, for a moment, as parents scrambled to help their children through educational tasks and activities, teachers got the recognition they deserved. It did not last long before judgement, criticism, and a lack of trust overshadowed those hopeful moments. Now more than ever, society needs to put their trust in teachers because they are not just reinventing the wheel, they are building an entirely new system that has never been done before. When this is finally behind us, it may just be the perfect time to redefine the teaching profession.

Teacher Participant Initial Survey –

On a scale of 1-10, how much did you enjoy today's session?

(1 = did not enjoy 5 = indifferent 10 = enjoyed very much)

1 2 3 4 5 6 7 8 9 10

On a scale of 1-10, how much of today's session was new information?

(1 = none of it 5 = half of it 10 = all of it)

1 2 3 4 5 6 7 8 9 10

On a scale of 1-10, how much autonomy do you feel you have in your current position?

(1 = no autonomy/professionalism 5 = some 10 = completely autonomous/professional)

1 2 3 4 5 6 7 8 9 10

On a scale of 1-10, how urgent do you feel this problem is?

(1 = not urgent/not a problem 5 = indifferent 10 = extremely urgent/very much a problem)

1 2 3 4 5 6 7 8 9 10

How likely are you to use something from today's session in your classroom? Explain. If so, what?

What suggestions do you have for improvement of this presentation?

Do you believe this problem is an issue for other content levels as well?

Do you believe this problem is a nationwide issue?

What did you think is missing from this presentation? What suggestions do you have for improvement?

Would you be interested in helping at any of the following levels to this action plan? Including, helping to plan and execute the administrator/school board presentations? If so, include your email.

Teacher Participant Follow up Survey –

On a scale of 1-10, how much autonomy do you feel you have in your current position?

(1 = no autonomy/professionalism 5 = some 10 = completely autonomous/professional)

1 2 3 4 5 6 7 8 9 10

Has your answer to the above question changed since attending the presentation?

Are there any topics from the presentation on teacher autonomy that are still regularly on your mind? If so, explain?

Have you tried anything different in your classroom as a result of what you learned since the presentation?

Administrator Participant Survey -

On a scale of 1-10, how much did you enjoy today's session?

(1 = did not enjoy 5 = indifferent 10 = enjoyed very much)

1 2 3 4 5 6 7 8 9 10

On a scale of 1-10, how much of today's session was new information?

(1 = none of it 5 = half of it 10 = all of it)

1 2 3 4 5 6 7 8 9 10

On a scale of 1-10, how much autonomy do you feel teachers have in our school?

(1 = no autonomy/professionalism 5 = some 10 = completely autonomous/professional)

1 2 3 4 5 6 7 8 9 10

On a scale of 1-10, how urgent do you feel this problem is?

(1 = not urgent/not a problem 5 = indifferent 10 = extremely urgent/very much a problem)

1 2 3 4 5 6 7 8 9 10

What suggestions do you have for improvement?

Do you believe this is an issue teachers should bring to the attention of the school board? If no, what do you think is missing from the proposal?

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APPENDIX

Appendix A

"The man who can make hard things easy is the educator." (*Ralph Waldo Emerson*)

In his preface to *Goodbye, Mr. Chips,* James Hilton writes that his portrait of the lovable school master is a "tribute to a great profession." But is teaching really a profession? Some experts in the business of defining professions say that it is difficult to determine whether teaching qualifies.

What is a profession, anyway? *Educating a Profession,* a publication of the American Association of Colleges for Teacher Education (AACTE), lists twelve characteristics of a profession. Read these carefully and try to determine which criteria the occupation of teaching meets, marking your reactions in the appropriate column. You may find it interesting to compare your reactions with those of your classmates.

	Yes	No	Don't Know
1. Professions are occupationally related social institutions established and maintained as a means of providing essential services to the individual and society.	____	____	____
2. Each profession is concerned with an identified area of need or function (for example, maintenance of physical and emotional health, preservation of rights and freedom, enhancing the opportunity to learn).	____	____	____
3. The profession collectively, and the professional individually, possesses a body of knowledge and a repertoire of behaviors and skills (professional culture) needed in the practice of the profession; such knowledge, behavior, and skills normally are not possessed by the nonprofessional.	____	____	____
4. Members of the profession are involved in decision making in the service of the client, the decisions being made in accordance with the most valid knowledge available, against a background of principles and theories, and within the context of possible impact on other related conditions or decisions.	____	____	____
5. The profession is based on one or more undergirding disciplines from which it builds its own applied knowledge and skills.	____	____	____
6. The profession is organized into one or more professional associations which, within broad limits of social accountability, are granted autonomy in control of the actual work of the profession and the conditions which surround it (admissions, educational standards, examination and licensing, career line, ethical and performance standards).	____	____	____
7. The profession has agreed-upon performance standards for admission to the profession and for continuance within it.	____	____	____

8. Preparation for and induction into the profession is provided through a protracted preparation program, usually in a professional school on a college or university campus. ____ ____ ____
9. There is a high level of public trust and confidence in the profession and in individual practitioners, based upon the profession's demonstrated capacity to provide service markedly beyond that which would otherwise be available. ____ ____ ____
10. Individual practitioners are characterized by a strong service motivation and lifetime commitment to competence. ____ ____ ____
11. Authority to practice in any individual case derives from the client or the employing organization; accountability for the competence of professional practice within the particular case is to the profession itself. ____ ____ ____
12. There is relative freedom from direct on-the-job supervision and from direct public evaluation of the individual practitioner. The professional accepts responsibility in the name of his or her profession and is accountable through his or her profession to the society.[14] ____ ____ ____

Do not be surprised if you find some criteria that do not apply to teaching. In fact, even the occupations that spring to mind when you hear the word *professional*—doctor, lawyer, clergy, college professor—do not completely measure up to all these criteria.

Those who developed these twelve criteria for a profession also listed another twelve criteria that would describe a **semiprofession.** Read these items carefully, and compare them with the characteristics that define a profession. Consider each item separately. Does it accurately describe teaching, or does it sell teaching short? After you have considered all the items and have marked your reactions in the appropriate column, decide whether you think teaching is actually a profession, or whether it would more accurately be termed a semiprofession.

	Yes	No	Don't Know
1. Lower in occupational status	____	____	____
2. Shorter training periods	____	____	____
3. Lack of societal acceptance that the nature of the service and/or the level of expertise justifies the autonomy which is granted to the professions	____	____	____
4. A less specialized and less highly developed body of knowledge and skills	____	____	____
5. Markedly less emphasis on theoretical and conceptual bases for practice	____	____	____
6. A tendency for the individual to identify with the employment institution more and with the profession less	____	____	____
7. More subject to administrative and supervisory surveillance and control	____	____	____

8. Less autonomy in professional decision making, with accountability to superiors rather than to the profession	____	____	____
9. Management of organizations within which semiprofessionals are employed by persons who have themselves been prepared and served in that semiprofession	____	____	____
10. A preponderance of women	____	____	____
11. Absence of the right of privileged communication between client and professional	____	____	____
12. Little or no involvement in matters of life and death[15]	____	____	____

Many people feel that teaching falls somewhere between professional and semiprofessional in status. For them, it might best be thought of as an emerging profession. Where do you place teaching?

Why does all this "profession talk" matter? You may be more concerned with such questions as "Do I want to work with children?" "What age level is best for me?" "Will I be good at teaching?" "Will the salary be enough to give me the quality of life that I want for myself and my family?" "Why," you may be thinking, "should I split hairs over whether I belong to a profession? Who cares?"

Although the issue of professionalism may not matter to you now or even during your first year or two of teaching, when classroom survival and performance have top priority, it will eventually become one of the most important issues you face during your career in education. Why?

Here's what Ellen Hogan Steele, a teacher who cares passionately about the privilege, responsibility, and dignity of belonging to a profession, says:

> I recall a carpenter—he visited my home to discuss a renovation—talking about a school strike in a neighboring town. Unaware of my occupation he called teachers ignorant, lazy, and lucky to be employed.
>
> "Can you imagine thinking they should make as much as me?" he fumed.
>
> I can imagine that. I presume my work to be as demanding and skilled as that of the carpenters I employ. . . . What do teachers want? This teacher wants to make a reasonable living, to be recognized as a person who performs an essential service, to be considered an expert in my small area of experience, to be occasionally praised when I do well and to be helped to improve when I don't. . . . In short, I want someone to know that I'm alive, and unless they do, I'll keep on kicking.[16]

Listen to another teacher, Patricia Dombart:

> Take a look at the working world of the insider. You will find that it is not an atmosphere that nourishes vision. Though we teachers are numerous, we are virtually powerless. We affect none of the key elements in our working lives. For example, we have no control over class size or the length of the school day and class periods.
>
> We have almost no input into the form and content of report cards. We do not select our schedules, grade levels or the buildings in which we teach. Indeed, we do not even control the time within our own classrooms, for we are slaves to the P.A., to notes from the nurse, from guidance, the librarian,

Appendix B

What Are You Doing for the Rest of Your Life?

In a "Peanuts" cartoon, Linus comments that "no problem is so big or complicated that it can't be run away from." As usual, Charles Schulz succinctly highlights a human frailty shared by most of us—the tendency to put aside our problems or critical questions in favor of day-to-day routine. In fact, it is amazing how little care and consideration many of us give to choosing a career. It is always easier to go to the movies or study for the next exam than it is to reflect on and plan for the future. This is probably one reason the question "What are you going to be when you grow up?" is so frequently asked but so infrequently answered with any conviction.

A careful analysis of who you are and where you are going can help you determine the extent of your commitment to teaching. For some of you, teaching may become a forty-year career filled with joy and satisfaction. For others, teaching may be limited to only a few years spent in the classroom, one of several careers you explore during your working years. And, for others, this course will help you reach an equally useful and important decision: teaching is definitely not a good match for your interests or skills.

To help you analyze your commitment to and compatibility with teaching, the following series of Teaching Balance Sheets summarize many of the advantages and disadvantages of teaching. Read and reflect on them by yourself first, and then you may want to discuss them with a friend or classmate. This should help you gain greater awareness of the realities of teaching and whether it is the right profession for you.

TEACHING BALANCE SHEET 1 WORKING WITH PEOPLE

The Good News

Among the Very Young at Heart . . .

If you enjoy being in contact with others, particularly young people, teaching could be the right job for you. Almost the entire working day is spent in human interaction. Your discussions will include an amazing array of topics—from rules for adding fractions to procedures for feeding pet snakes, from an analysis of *The Catcher in the Rye* to advice on applying to colleges. If you truly enjoy children, the pleasure of these interactions will be heightened, because young people are so often funny, fresh, and spontaneous. They will make you laugh and they will make you cry, but always they will make you feel needed. As America's students become increasingly diverse, you will find yourself learning about different cultures and different life experiences. Your life will be enriched, by the varied worlds of different children—black, white, Hispanic, Asian, blended—all kinds of children, who will broaden your horizons.

As one Denver high school teacher says, "I think that for the first time in my life, I feel useful. I didn't feel that way at the insurance company when I was pushing buttons and managing people. . . . They were machines, the whole outfit was a machine. But [in teaching] you're working with exciting people. I find high school kids exciting. They're doing things, and they're looking for people to help them do things."[1]

When you have free time away from the classroom, you can join friends and colleagues in the faculty room and discuss anything from the movie you saw last night to the effectiveness of the new curricular materials your school has just purchased. Of course, if you want some quiet time to grade papers, plan lessons, or simply rest, you can usually get that in the faculty room too.

The Bad News

Stop the Crowd—I Want to Get Away

There is so much involvement with others that sometimes, perhaps right in the middle of a language arts lesson when fifteen kids have their hands in the air, you may feel like saying, "Stop, everybody. I feel like being alone for the next fifteen minutes. I'm going out for a cup of coffee." However, given the hectic pace of classroom interaction, such announcements are virtually impossible. For the major part of each day, your job demands that you be involved with

(Balance Sheet 1 continues on next page)

people in a fast-paced and intense way—whether you feel like it or not. In fact, according to researchers, you will be involved in as many as one thousand verbal exchanges in a single day.

Equally as important as the degree of involvement is whom you are involved with—in this case, children. Even if you love young people, there undoubtedly will be times when they will get on your nerves, as when there is one Internet terminal and twelve kids want it.

Being surrounded by children all day can have strange effects on adult behavior. One 33-year-old teacher said, "I knew something was wrong when I began to skip out of school."[2] Another woman who taught in a kindergarten tells of the time she warned her 40-year-old brother "to be sure and put on his galoshes. Wow! Did he give me a strange look."[3]

And teaching children from very diverse backgrounds, children with varied racial, linguistic, and cultural origins, can be particularly challenging. As America's classrooms become more multicultural, teachers will increasingly find themselves stretching beyond their own background, pushing to learn how best to teach children whose lives may differ radically from their own.

For most teachers, it is just them and a crowd of kids, sometimes kids very different from the ones they grew up with. Funny, but you can feel very alone under those circumstances.

TEACHING BALANCE SHEET 2 RECOGNITION OF YOUR EFFORT AND COMPETENCE

The Good News

The Smell of the Chalkboard, the Roar of the Crowd . . .

You have spent several days researching and planning your lesson on social protest literature for your eleventh-grade English class. You have collected many fine poems and statements to share; you have brought your favorite compact discs and videotapes of social protest songs into the classroom; you have prepared an excellent Power-Point presentation to highlight the key labor figures and issues of the time; and your lesson is punctuated with thoughtful discussion questions and creative follow-up activities. Beautifully organized, you carry the lesson off with dashing style. Wow, what a lesson!

The students are spellbound. They ask many questions and make plans for doing their own research on social protest. One group even decides to meet after school to write a social protest song about the destruction of the natural environment. Their animated discussion continues as the bell signals their passage to the next classroom.

When you have taught well, your students will let you know it. On special occasions, they will come up to you after class or at the end of the year to tell you they appreciate your effort and ability. At younger grade levels, they may write you notes (often anonymous), thanking you for a good class or a good year.

Usually, students are not this direct in expressing their appreciation, but you can tell from their expressions when you are doing a good job. Perhaps it is in the excited way they respond to questions or share personal experiences. Or it comes through in their intense efforts to do their very best work for you. If you are a sensitive listener and observer, your students will send you nonverbal messages that translate into "I'm very happy to be in your classroom."

The Bad News

Is Anybody There?

After teaching your fantastic lesson on social protest literature, you want to share your elation with your colleagues, so you head for the teachers' room and begin to talk about the lesson. But it is hard to capture the spirit of what went on in the classroom for those magical forty-five minutes. You can sense that your description is falling flat. Besides, people are beginning to give you that "What kind of superstar do you think you are?" look. You decide you had better cut your description short and talk about CDF (Casual Dress Friday) instead.

Positive recognition is infrequent in teaching. It is rare to have another adult spend even ten minutes observing you at work in your classroom. Once you have obtained tenure, classroom observation becomes rare, and, in many school districts, years go by before a tenured teacher is "officially" observed. Often, the evaluation is little more than perfunctory. As one teacher said, "I live in my own little world in my classroom. Sometimes I think that my children and I share a secret life that is off-limits to anybody else." Consequently, most of your teaching and administrative colleagues will have only a general impression of your teaching competence. (Of course, if you cannot get your students to settle down, everyone will know about it: Excitement is its own advertisement.)

In short, the word may leak out—through students, parents, or even the custodian—if you are doing a really fine job; however, on the whole, when you call out, "Hello, I'm here, I'm a teacher. How am I doing?" there will be little cheering from anyone outside your classroom.

TEACHING BALANCE SHEET 3 INTELLECTUAL STIMULATION

The Good News

As a Teacher, You Are Constantly Involved in Intellectual Matters

You may have become very interested in a particular subject. Perhaps you love a foreign language or mathematics, or maybe you are intrigued by contemporary social issues. Whatever content excites you, if you decide you want to share this excitement and stimulation with others, then teaching offers a natural channel for doing so.

As a teacher, particularly at the secondary level, you will have the opportunity for continued involvement in the subject area of your choice. In the classroom, your interest and enthusiasm can be contagious, in some cases instilling in others your love of the subject. When this happens, the whole process becomes self-rejuvenating, as students offer you new ideas and fresh interpretations. Listen to what high school teachers say about the intellectual stimulation of their subject matter:

> I went into high school teaching because I was excited about science. Even if they never use science in their lives, these kids should know some of what science offers them. They live in a technological age, and I want them to be equipped to understand that age.[4]

> I guess at some level I want them to be exposed to what I love and what I teach. I want them to know somebody, even if they think I'm crazy, who's genuinely excited about history.[5]

This process of intellectual stimulation and growth can be further advanced by using your extended vacation times for travel and other activities that continue your education. Or you may want to use the Internet to communicate with other teachers in your field. The Internet is a great source for finding creative teaching ideas, discussing new books, sharing curricular insights, and joining teacher chat groups; all this and more can add to your intellectual growth. And don't forget the non-"techie" sources of information. Professional journals, weekly educational newspapers, and conferences and meetings (sponsored by school districts and professional education associations) can fill your professional life with ideas and excitement. In short, you will have ready access to the intellectual community, if you want it.

The Bad News

The Same Matters Year After Year After Year

Although it is true that you will be continually involved in academic subject matter, the word *continually* is a double-edged sword. Teaching, like most other jobs, entails a lot of repetition. After a while, you may get tired of teaching the same subject matter to a new crop of students every September. If this happens, excitement and interest may be replaced by boredom and a feeling that you are getting intellectually stale.

Also, if you truly love the particular subject you teach, it can be frustrating and disillusioning to work with students who seem unmoved by the ideas that excite you. If this happens, you may turn to your colleagues for intellectual stimulation, only to find that they are more concerned about weed killer and TV shows than the latest genetic breakthrough or the intricacies of current government policy.

Since you are just embarking on your teaching career, you may find it difficult to imagine yourself becoming bored with the world of education. However, as you teach class after class on the same subject, interest can wane.

Or perhaps a different scenario will emerge, as you are pressed into teaching one or more subjects that don't interest you. Staffing decisions and enrollment changes can transform you from a science teacher into a science AND a history teacher. Perhaps your "other" teaching assignment doesn't interest you at all. If you are not motivated, it is more challenging to motivate students.

TEACHING BALANCE SHEET 4 CREATIVITY

The Good News

Portrait of the Teacher as an Artist

For countless years, there has been an ongoing debate as to whether teaching is a science or an art, and so far no one has come up with a definitive answer. Some writers, however, draw clear parallels between teachers and artists and highlight the creativity that is essential to both:

> I love to teach as a painter loves to paint, as a musician loves to play, as a singer loves to sing, as a strong man rejoices to run a race. Teaching is an art—an art so great and so difficult to master that a man or woman can spend a long life at it without realizing much more than his [or her] limitations and mistakes, and his [or her] distance from the ideal. But the main aim of my happy days has been to become a good teacher. Just as every architect wishes to be a good architect and every professional poet strives toward perfection.[6]

Unless you are a slavish follower of instructor's guides and mass-produced lesson plans, you will determine and develop

(Balance Sheet 4 continues on next page)

what will be taught in the classroom each day and how this instruction will be carried out. You can construct everything from original simulation games to videotapes, from multimedia programs to educational software. Even the development of a superb lesson plan is an exercise in creativity, as you strive to meet the needs of the various children who come into your classroom each day. This truly demands creativity.

The Bad News

The Bog of Mindless Routine

Much has been said about the creativity of teaching, but, under close inspection, the job breaks down into a lot of mindless routine as well. A large percentage of the day is consumed by clerical work, child control, housekeeping, announcements, and participation in ceremonies. Although there is opportunity for ingenuity and inventiveness, most of the day is spent in the three *R*s of ritual, repetition, and routine. As one disgruntled sixth-grade teacher in Los Angeles said,

> Paper work, paper work. The nurse wants the health cards, so you have to stop and get them. Another teacher wants one of your report cards. The principal wants to know how many social science books you have. Somebody else wants to know if you can come to a meeting on such and such a day. Forms to fill out, those crazy forms: Would you please give a breakdown of boys and girls in the class; would you please say how many children you have in reading grade such and such. Forms, messengers—all day long.[7]

TEACHING BALANCE SHEET 5 SOCIAL CONCERN

The Good News

To Touch a Life and Make a Difference

Teaching is not an insignificant, an irrelevant, a paper-shuffling kind of a job. It has meaning, worth, and value. It gives you the opportunity to touch a young and impressionable life and make it better.

> We were the luckiest class in the school. We had a homeroom teacher who knew the core truth of education: Self-hate destroys, self-esteem saves. This principle guided all her efforts on our behalf. She always minimized our deficiencies, neutralized our rage, and enhanced our natural gifts. She never, so to speak, forced a dancer to sing or a singer to dance. She allowed each of us to light his own lamp. We loved her.[8]

> Mr. Jacobs won our hearts, because he treated us as though we were already what we could only hope to become. Through his eyes we saw ourselves as capable and decent and destined for greatness. . . . Mr. Jacobs introduced us to ourselves. We learned who we were and what we wanted to be. No longer strangers to ourselves, we felt at home in the world.[9]

As a teacher, you will have a rare privilege and responsibility: you can affect and change the lives of children. It is the basic nature of the job to guide academic learning, to help a puzzled and frustrated child finally crack the phonic code or discover pattern and meaning in what were once the lifeless and unrelated facts of history. But the teaching of reading, history, and other content areas does not take place in an emotional vacuum.

Each classroom is a composite of the anguish and joy of all its students. Students occupy psychological as well as physical space. There is the child in the fourth seat who seldom volunteers but who always knows the answer. You can feel the pain of the child's shyness. There is the rambunctious one who spills all over the classroom in a million random ways but is unable to focus on any one task or project. There is the "victim," who inspires taunts and even physical abuse from usually well-mannered classmates. There is the child who barely acknowledges your presence and pencil-taps on the desk in a disturbing and incomprehensible rhythm.

All of these children are struggling for self-esteem and for the discovery of who they are and what they can become. You can become an important part of their sometimes painful and sometimes joyful quest for growth and self-discovery.

If you are drawn to teaching because you want to work with children and in some way make a difference in their lives, you have plenty of company. In fact, most teachers choose their career because it is a helping profession; some people even call it a secular ministry. All other reasons given for becoming a teacher are minor, compared with this commitment to making a difference in children's lives. Christa McAuliffe, the teacher who touched all our lives before her tragic death in space, put it well: "I touch the future. I teach."

The Bad News

The Tarnished Idealist

We all hope to be that special teacher, the one students remember and talk about long after they have left Farrington Elementary School or Monroe High, the one who has reached them in such a personal and intense way that their lives are forever enriched.

In reality, it is not so easy to be this kind of teacher. Too often, idealistic goals give way to survival—simply making it through from one day to the next. Teachers are especially

vulnerable to feelings of frustration during their first year or two in the classroom. Some find their situations so intolerable that they leave teaching.

One of the key factors leading to depression and dropping out is the importance placed on discipline. All too often, new teachers find themselves judged on their ability to maintain a quiet, orderly room rather than on their ability to reach their students or to achieve instructional objectives. Idealistic young teachers find the worship of control incompatible with their humanistic goals. Likewise, they feel betrayed if a student naively mistakes their offer of friendship as a sign of weakness or vulnerability. They feel hurt and disillusioned when experiments in student self-control result in wild, out-of-control classrooms. As a result, many learn the trade secret—"don't smile until the holidays"—and adopt it quickly.

It is not only the newly initiated who find themselves caught in the unfortunate war of teacher against student. Long-time veterans also throw up their hands in despair and sometimes throw out their teaching credentials as well.

Teacher-student conflict is not the only source of teachers' lost idealism. Some teachers feel a lack of support from school administrators who do not do enough to help them with discipline problems or even to help them secure basic supplies. How can teachers stay inspired when their classrooms seem to be falling apart around them?

Sometimes teaching means confronting student apathy, tangling with bureaucratic red tape, or doing without the basic tools of the job. Then trying to make a difference may result in more frustration than satisfaction. Knowing this, can you still say to yourself, "I want to be a teacher"?

TEACHING BALANCE SHEET 6 MONEY MATTERS AND OTHER BENEFITS

The Good News

You've Come a Long Way, Teacher

Between 1981 and 1997, salaries, adjusted for inflation, rose about 20 percent. At the end of the 1980s, the average teacher's salary was approaching $30,000. By 1997, it had risen to $38,500 a year.

Salaries vary from state to state and from community to community, often reflecting different costs of living and different levels of support for education. For example, if you decide to teach in Connecticut, you will earn a good deal more than if you teach in West Virginia or North Dakota. In most areas, though, salary increases are tied to years of service and academic training. Additional salary comes from work in the summer or work as a coach or other extra faculty responsibilities. And occupational benefits, such as health and retirement, are generally excellent. (The "rule of 85," used in many districts, enables a teacher who is 55 years old and has taught for thirty years to retire; 30 plus 55 equals 85.)

Besides an improved salary picture, you will enjoy long vacation periods, both during the academic year and during longer-than-typical vacations. You can use your vacation time for much-needed rest and leisure, for professional and academic study, or for time with friends and family. A few school districts provide teachers with an opportunity to study, travel, or engage in other forms of professional improvement through an extended leave or sabbatical program. All of these considerations make for a more relaxed and varied lifestyle, one that gives you time for yourself as well as your family.

If you feel the need for more money, you can turn your vacation time into an opportunity for a second income. Some teachers run summer camps; others teach in summer school; still others write and publish curricular materials. Some schools offer merit pay or other salary incentives for additional work, as well as extra pay for club advisors and coaches. Some teachers work on grants or special school projects to earn extra money. Whether you use your "free time" to be with your family, to travel, or to make extra money, time flexibility is a definite plus.

The Bad News

But Not Far Enough

Although teachers' salaries have improved, they still lag behind what most people would call a good income. Anyone trying to support a family on a teacher's salary will tell you that it is a far cry from wealth and prosperity. Just listen to some teachers talk about trying to make ends meet. A history teacher with a master's degree says, "It's really difficult to maintain a family. . . . I've struggled by doing odd things. I operated the football stadium. I operate the gymnasium for the basketball games, to pick up a few extra dollars. I'm not sure I could have done it then except for a wife who's not demanding or pushy. She's completely comfortable with the things we have, and we don't have a great deal."[10] A Missouri school teacher who supplements his income by working as a service station attendant says, "You know, it's degrading to serve customers who are the parents of the kids you teach."[11] And the following comment was overheard in a school that services a well-to-do suburban community: "You can always tell the difference between the teachers' and the students' parking lots. The students' lot is the one with all the new cars in it."[12]

The long periods of vacation are nice—but they are also long periods without income. When a factory worker is put on two months' leave with no pay, it is called a layoff, not a vacation! The fact is that teachers are among the most active moonlighters, and many hold down two or more jobs in order to make ends meet. In short, your vacations cost you money.

TEACHING BALANCE SHEET 7 THE PRESTIGE FACTOR

The Good News

I'm Proud to Be a Teacher

Fortunately, most people recognize the critical importance of teachers. President John F. Kennedy said, "A child miseducated is a child lost." On the lighter side, Mark Twain wryly commented, "To be good is noble, but to teach others how to be good is nobler—and less trouble."

In the past, public opinion polls have confirmed the importance of teachers in our society. A 1967 Louis Harris poll ranked teaching fifth out of a possible seventeen professions. Teachers were ranked higher than such professionals as corporate executives, psychiatrists, United States Supreme Court justices, the clergy, reporters and publishers, and members of Congress. Teacher status took a battering from public criticism during the 1970s and early 1980s, but the public is once again acknowledging the importance of teachers. In a 1984 Gallup poll, the public rated the value of teachers' services to society just below those of the clergy and medical doctors and ahead of school principals, judges, lawyers, business executives, and bankers. While, in 1981, only 46 percent of parents said they wanted their children to go into teaching, in 1996 more than a third of students expressed an interest in becoming a teacher, and two-thirds gave their teachers a grade of *A* or *B*.[13] In short when you become a teacher, society will accord you respect, because it values the worth of what you do. You will be someone whose specialized training and skills are used to benefit others.

The Bad News

I Don't Get No Respect

When you join the ranks of a particular occupation, you are personally measured and valued according to how society regards that group as a whole. You have done this yourself. Suppose you walk into a room and are introduced to five people: an assembly-line worker, a college president, a doctor, a garbage collector, and an accountant. Before getting to know these people as individuals, you would probably form some distinct impressions about their intelligence, character, and general worth, based on their occupation. Whether we like it or not, people play status games and value us according to the kind of job we have.

Right now when you meet new people, you are probably introduced as a student from a particular university. How will you feel about meeting the world as a teacher? Will that make you feel proud or apologetic?

Ironically, the importance of educating our children is widely recognized, but the key people in this process—teachers—are not always highly valued. There are several reasons for this paradox, one of which is the sexist nature of our society. Almost all occupations with large numbers of women seem to have prestige problems, and teaching is no exception. There may come a day when we will not have to mention this issue, but, for the time being, prejudice still exists.

Another reason has to do with the materialistic nature of our society. People's work is frequently measured by the size of the paycheck they bring home, and, as already discussed, the wallets of most teachers are modestly endowed.

Some people question whether teachers should even be considered professionals. In dismissing teachers from the professional ranks, these critics call attention to teachers' relatively short training period (compared with that of doctors or lawyers, for example), and they note that teacher preparation programs are not particularly selective in their admissions procedures. Further, unlike most other professionals, teachers do not choose their clients (students), nor do they have much choice in what they will teach. Their professional autonomy is further limited by school administrators, who hire and fire them and determine their salaries.

Although there has been a resurgence of support for teachers, when it comes to the game of impressing people, teachers are still not collecting a large pile of status chips.

PROFILES IN TEACHING: JAIME ESCALANTE

Jaime Escalante may be best known for an incident in 1982 involving the Educational Testing Service (ETS) and fourteen of his students at Garfield High in East Los Angeles. For four years, Escalante had been struggling to build a strong advanced placement (AP) calculus program at Garfield, a troubled inner-city school with a poor academic history and an uncertain future. It had been difficult going, but the program finally blossomed that year. Escalante had eighteen students in his class, almost double the number from the year before, and they worked so hard that every one of them passed the difficult and prestigious AP examination.

During the summer, however, an unpleasant controversy developed. The ETS, which administers the AP exam, told fourteen of the students that a high correspondence in their answers suggested that they may have cheated. They would either have to retake the test or have their scores nullified. Escalante, the students, and others protested. There had been no cheating, they argued. It seemed to be just another

Appendix C

What Is Your Philosophy of Education?

Each of us has a philosophy of education, a set of fundamental beliefs regarding how we think schools should be run. To discover your philosophy of education, decide whether you agree or disagree with each of the following statements about the nature of education. Use the following scale to express your response:

5 Agree strongly

4 Agree

3 Neutral

2 Disagree

1 Disagree strongly

_____ 1. The school curriculum should be subject-centered. In particular, student learning should be centered around basic subjects, such as reading, writing, history, math, and science.

_____ 2. The school curriculum should focus on the great thinkers of the past.

_____ 3. Many students learn best by engaging in real-world activities, rather than by reading.

_____ 4. Students should be permitted to determine their own curriculum.

_____ 5. Material is taught effectively when it is broken down into small parts.

_____ 6. A school curriculum should be shaped by a body of information that all students should know.

_____ 7. Schools, above all, should develop students' abilities to think deeply, analytically, and creatively; this is more important than developing their social skills or providing them with a useful body of knowledge about our ever changing world.

_____ 8. Schools should prepare students for analyzing and solving the types of problems they will face outside the classroom.

_____ 9. Reality is determined by each individual's perceptions. There is no objective and universal reality.

_____ 10. People are shaped much more by their environment than by their genetic disposition or the exercise of their free will.

_____ 11. Students should not be promoted from one grade to the next until they have read and mastered certain key material.

_____ 12. An effective education is not aimed at the immediate needs of the students or society.

_____ 13. The curriculum should be built around the personal experiences and needs of the students.

14. Students who do not want to study much should not be required to do so.

15. Computer software that emphasizes repeated practice is an effective method of teaching information.

16. Academic rigor is an essential component of education.

17. All students, regardless of ability, should study more or less the same curriculum.

18. Art classes should focus primarily on individual expression and creativity.

19. Effective learning is unstructured, personal, and informal.

20. Students learn best through reinforcement.

21. Effective schools assign a substantial amount of homework.

22. Education should focus on the discussion of timeless questions, such as "What is beauty?" and "What is truth?"

23. Since students learn effectively through social interaction, schools should plan for substantial social interaction in their curricula.

24. The purpose of school is to help students understand themselves and find the meaning of their existence.

25. Frequent objective testing is the best way to determine what students know.

26. For the United States to be economically competitive in the world marketplace, schools must bolster their academic requirements in order to train more competent workers.

27. Students must be taught to appreciate learning primarily for its own sake, rather than because it will help them in their careers.

28. Schools must place more emphasis on teaching about diversity and multiculturalism.

29. Each person has free will to develop as he or she sees fit.

30. Reward students well for learning, and they will remember and be able to apply what they have learned, even if they were not led to understand why the information was worth knowing.

31. U.S. schools should attempt to instill traditional American values.

32. Teacher-guided discovery of profound truths is crucial for effective teaching.

33. Students should be active participants in the learning process.

34. There are no external standards of beauty. Beauty is what an individual decides it is.

35. We can place a lot of faith in our schools' and teachers' ability to determine which student behaviors are acceptable and which are not.

_____ 36. Schools must provide students with a firm grasp of basic facts regarding the books, people, and events that have shaped the nation's heritage.

_____ 37. Philosophy is ultimately as practical a subject to study as is computer technology.

_____ 38. Whether inside or outside the classroom, teachers must stress the relevance of what students are learning.

_____ 39. It is more important for a student to develop a positive self-concept than to learn specific subject matter.

_____ 40. Education is more effective when students are given frequent tests to determine what they have learned.

Now that you have responded to all forty items, write the number of your response to each statement in the following spaces. Add the numbers in each column to determine your attitudes toward key educational philosophies.

A Essentialism	B Perennialism	C Progressivism	D Existentialism	E Behaviorism
1. _____	2. _____	3. _____	4. _____	5. _____
6. _____	7. _____	8. _____	9. _____	10. _____
11. _____	12. _____	13. _____	14. _____	15. _____
16. _____	17. _____	18. _____	19. _____	20. _____
21. _____	22. _____	23. _____	24. _____	25. _____
26. _____	27. _____	28. _____	29. _____	30. _____
31. _____	32. _____	33. _____	34. _____	35. _____
36. _____	37. _____	38. _____	39. _____	40. _____
Scores				
_____	_____	_____	_____	_____

The scores in columns A through E, respectively, represent how much you agree or disagree with the beliefs of five major educational philosophies: essentialism, perennialism, progressivism, existentialism, and behaviorism. The higher your score, the more you agree with philosophers who represent that viewpoint. The highest possible score in any one area is 40, and the lowest possible score is 8. Scores in the mid- to high 30s indicate strong agreement, and scores below 20 indicate disagreement with the tenets of a particular philosophy. Compare your five scores. What is your highest? What is your lowest?

Now you have examined some of your basic beliefs about education, and you may even lay claim to a philosophical label. But what do these philosophical labels or terms mean? In this chapter, you will learn about all five of these educational philosophies, as well as the beliefs that underlie them. After you finish reading the chapter, you may want to take another look at this quiz to gain a better understanding of what you believe at this point in your education.

Appendix D

The Atlantic

EDUCATION

Why Teachers Need Their Freedom

Educators must remain engaged and autonomous in order to do their jobs well and avoid burnout.

ASHLEY LAMB-SINCLAIR SEPTEMBER 10, 2017

MICHAEL KOOREN / REUTERS

My co-teacher and I met in the parking lot before school and stared into my car trunk at the costumes and props we had gathered over the weekend. We were giddy with excitement and nervous because neither of us had tried anything like this before. We also taught in the kind of school where one wrong move in the classroom could lead to disastrous results because of our students' intense behavioral and learning needs.

The co-teacher, Alice Gnau, had found a book called *Teaching Content Outrageously* by Stanley Pogrow, which explained how secondary classrooms can incorporate drama into any content to engage students in learning—incorporating the element of surprise, for example, or developing role-play or simulation experiences to teach content and standards. The book inspired us to change how we taught our seventh-grade language-arts students in a high-poverty school that struggled with test scores, especially reading and math.

personnel insisted that teachers use the textbook, citing evidence that it brought up test scores.

RECOMMENDED READING

The Disproportionate Stress Plaguing American Teachers

TIMOTHY D. WALKER

How to Teach American History in a Divided Country

KRISTINA RIZGA

Working for Racial Justice as a White Teacher

KRISTINA RIZGA

Alice and I decided to take the risk and apply Pogrow's advice. The mandated curriculum, we decided, would never be enough to encourage our students to love reading and writing.

Which brings me back to the parking lot. Alice and I came up with a plan to integrate some of the ideas and strategies we had read about in *Teaching Content Outrageously* into a unit on *Lord of the Flies.* She would be the pilot and I was the flight attendant. We changed in the faculty restroom before school and hid around the corner by the lockers in the hallway as we watched students enter the teacher-less classroom.After a few minutes, we burst into the room with a library rolling cart full of pretend snacks and drinks. "Okay, ladies and gentlemen," Alice shouted, "welcome aboard flight 2101 headed to sunny Paraguay. The weather looks great, so we should have you safe and sound to your final destination soon. Now buckle up for important safety information." She sat down in the front of the room, pretending to pilot, while I instructed the students to sit up straight, to buckle up, and to please enjoy their flights.

Even our toughest kids lit up with excitement; when we prepared for "takeoff," they went right along until the inevitable happened and we crashed onto a deserted island. As Alice and I popped out of our seats, we morphed from pilot and flight attendant back into teachers.

The remainder of class was a problem-solving simulation in which students worked together to determine how food would be attained and distributed, how medical

So began a year of teaching outrageously, a year that forever changed my practice as an educator. It also changed my students' learning experience and, arguably, helped improve their test scores. The state accountability system changed in 2011, and although schools had prepared for a drop in scores (both the district and state reading scores did indeed take a hit), the seventh-grade class at our school saw a bump of nearly 5 percentage points in reading.

Teaching outrageously wasn't just fun, it also gave Alice and I the power to create meaningful and exciting experiences for ourselves and our students—at least for that school year. The school was on the cusp of state takeover the following year, which was my last one there. Three of our four principals resigned or transferred, prompting a series of not-so-great interim principals; teachers felt unsupported, leading to many absent days and some resignations. General student chaos ensued due to a lack of consistency and support—for two weeks straight, someone pulled the fire alarm at least once a day, sometimes more. The best I could muster as a teacher most days—for my own sanity—was to slap on an audio recording of *The Hunger Games*, hand out a generic graphic organizer, and guide the students step by step through filling it out. I did not have the energy or support to teach outrageously, or even effectively. It may have been controlled, but I was not engaged, the students were not engaged, we were all stunted in our growth. Unsurprisingly, test scores plummeted, and the school closed its doors a year later, only two years after the best year of my career.

After dozens of my peers and I left the school, the state audit team conducted a diagnostic assessment of the school through surveys, observations, data collection and analysis, and stakeholder interviews. Among the final report's conclusions: Staff struggled to build a cohesive school team due to high teacher turnover, and most teachers "delivered traditional lessons with limited opportunities for students to think critically, participate in group discussions, or collaborate with their peers." These shortcomings joined the myriad factors that led to such a drastic change in teacher motivation and student achievement.

A body of research illustrates the self-evident reality that students' interest in what they're learning is critical to their achievement. And student engagement, according to various studies, is often a direct result of teacher engagement. When Alice and I decided to teach outrageously, our attitudes about our work improved, which data suggests improved our students' attitudes.

Teaching outrageously, it seems, also put us at a decreased risk for burnout because it allowed us to take control of our craft. One of the biggest reasons teachers quit, contributing to the increasing teacher shortage in the U.S., is a lack of autonomy in the classroom; indeed, overall teacher perception of autonomy in instruction has decreased since 2003. The upshot? As a lack of autonomy helps push more and more teachers out of the profession, children are often left with a steady stream of

indicator of student success, it makes sense that schools would exercise caution when determining how much control teachers have over the classroom; letting an ill-equipped teacher do what she pleases isn't smart policy. But does a top-down trickle of scripts and mandates detached from students' day-to-day lives really improve a teacher's effectiveness? It could have the reverse effect, forcing educators who might otherwise gain a real knack for teaching over time to rely on others to make decisions for them and become stunted in their ability to improve.

Teacher autonomy is not necessarily incompatible with administrative support. When I was a student teacher, I'd often go to my mentor, Renee Boss, with off-the-wall ideas for the classroom. I wanted to have an "I Love the '80s" theme day when I was supposed to be teaching students about the Baroque period. I wanted to show the introduction of the film *Desperado* because it was a good example of storytelling even though it was violent and riddled with the F-word. And at one point, I wanted to teach debate by organizing a game of kickball outside. Renee listened to these ideas with patience and curiosity. She asked me pointed questions about my reasons, my plans for implementation, and my backup plans for when these ideas inevitably flopped. Each time, I found myself sitting across a table from Renee, breaking down and discussing what worked, what didn't, and how to get better. She let me take risks. Occasionally, she would talk me out of something (*Desperado* was a no-no), but usually she found a way to help me turn my crazy ideas into effective lessons that improved my students' learning and outcomes. My career might have been very different had Renee handed me a binder or a dusty textbook and told me to follow it from beginning to end.

Recently, I guided some educators in a brainstorming session on creating more exciting, student-centered lessons. I asked them to consider the possibility that the full lecture they planned to give, the chapter they hoped to cover, or the worksheet they printed from a cookie-cutter curriculum is as precarious a teaching tool as is, say, a kickball game. If kickball fails at teaching kids about debate, they lose a day in the same way they would have lost a day if they went through the motions of a lesson that bored them and their students. The lecture might feel safer, but safety doesn't achieve anything if kids leave without learning anything new. Maybe the kids don't leave kickball learning anything new either, but the approach has an advantage over any hackneyed teaching tool: As an outrageous teaching idea, it gave the teacher an opportunity to create something new, to develop as a professional who thinks about and experiments with pedagogy, and to reflect thoughtfully upon her work. It also allowed her to build trust with students, who desperately want to feel hopeful and engaged at school.

I finally did teach debate kickball effectively after six years of trying to get it right. And I dare anyone to face off with my former students in an argument now.

Appendix E

September 2019 | Volume **77** | Number **1**
What New Teachers Need Pages 92-93

Issue Table of Contents | Read Article Abstract

One to Grow On / The Autonomous Teacher

Carol Ann Tomlinson

What teachers really need is greater professional discretion.

To delineate everything teachers need would result in a list so long that it should be an embarrassment to our local and state governments and to any adult who proports to value education. To reduce that list to any one item seems almost pointless given the scope of the need. I think I'll take a chance, however, and make a nomination because sometimes, addressing one need can make a meaningful difference. Sometimes, changing one thing changes many things.

So I'll vote for professional autonomy for teachers as that one item.

Here's what autonomy *doesn't* mean. It doesn't mean anything goes. It doesn't mean license. It doesn't mean selfishness, every person for him or herself, or disregard for the feelings and needs of the people with whom we work.

What it *does* mean is the right of an individual to self-direct, the freedom to make informed, uncoerced decisions. It means that an employee is granted the latitude to make decisions about his or her own work, around a commonly agreed-on purpose or shared set of values.

Purpose is important: As Daniel Pink notes, people are motivated by a purpose if it seems as though it would make the world better.[1] Experts in the field of leadership tell us that autonomy is also a great motivator. Pink points to research demonstrating that people function more productively and are more satisfied at work when they are more autonomous. Autonomy promotes mastery because autonomous individuals care enough to master the knowledge and skills that are likely to elevate the work they believe in.

What If They *Had* Autonomy?

I'm just guessing, but I'd wager that teachers who had the autonomy to come together to create a common purpose might not coalesce around the mission of raising standardized test scores. Instead, I think they'd band together around something like helping students build thoughtful, productive lives. I think they might jettison the "pacing guide" in favor of asking students how they'd like to learn about, say, animals, or about how history connects with their own lives.

With more professional discretion, I think teachers would find better ways to engage parents in understanding and supporting their children's growth than by just recording a specified number of grades in an online platform each week—whether or not calculating those grades supported actual learning. And I feel pretty sure many teachers—and students—would embrace mechanisms that let students demonstrate their diverse strengths and talents more fully than single-grade report cards do.

I'd conjecture that a good number of teachers, given the opportunity, would opt to develop expertise in a range of ways to teach reading to young learners, depending on the learners' needs, rather than teaching every student according to one mandated approach. And I'm confident that, in a culture of autonomy, teachers would invest more consistently and more deeply in studying their craft than they do in systems that require all teachers to attend the same "professional development" regardless of their growth stage. Most teachers would rather be propelled by a sense of personal responsibility than by a system of external accountability.

I believe that in a culture of autonomy, teachers would be better models of empathy and would offer their students more compelling examples of creativity in action. And I'm fully confident that both teachers' and students' stress levels would lessen, and that joy would once again take up residence in most classrooms.

Autonomy in Action

Last spring, I learned a lot from interacting with two high school biology teachers in Vermont whose work is thought-provoking and inspiring. These teachers collaborated throughout the year to design instruction that captured their students' imagination while ensuring that the students developed a robust understanding of science as a discipline and a way of life. The teachers' preparation was wide-ranging and their energy unflagging as they created multiple iterations of a new unit on body systems. Their sense of personal responsibility for this work was palpable.

As the school year was ending, these two teachers took a leap of faith; they set aside the more familiar progressions of teaching such a unit to guide their students in an open inquiry on vaping, an issue of immediate concern to adolescents. Students investigated and analyzed factors that lead to nicotine use, researching the issue through the lens of the teenage brain. Students' interests and questions served as rudders for the work, with the teachers providing scaffolding for students' learning activities. The work the students produced (which included claim-evidence-reasoning essays, personal reflections, and a revision of the school's juuling policy) and their feedback on this project revealed not only a solid understanding of the targeted content, but also strong skills in research and in drawing reasoned conclusions. Students took pride in their products. They gained life-changing insights.

It isn't surprising that these educators work in a public high school where leaders make it clear that teachers' ideas are central to instructional decision making, that teaching that ignites student thinking takes precedence over test-prep, that great teaching will result in deep learning, and that leaders will support teacher innovation. For me, these two teachers' creation and teaching of this innovative unit offered a mini-lesson on the power of teacher autonomy to transform teaching and learning—and teachers and learners.

Many Teachers' One Wish

I suspect many people don't realize how little autonomy most teachers have, and how little their perspectives are taken into account. Recently, a colleague of mine attended a discussion on education initiated by a local political candidate. The candidate asked the teachers in attendance, "What's the one thing you most wish policymakers would do to improve schools?" My friend responded, "Ask us for our opinions before you act." I appreciated the politician's question and my friend's answer, but I was jarred by the candidate's response to that answer. "You mean they don't do that?" she queried.

We have a long way to go in professionalizing teachers and giving them autonomy.

Endnote

[1] Pink, D. (2009) *Drive: The surprising truth about what motivates us*. New York: Riverhead.

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KEYWORDS

Click on keywords to see similar products:
content areas, curriculum design and lesson planning, engaged, instructional strategies, science, teacher engagement and motivation, teacher leadership, whole child, audience: new-principals, audience: new-teachers, audience: principals, audience: students, audience: superintendents, audience: teacher-leaders, audience: teachers, level: k-12

Appendix F

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Teacher Autonomy : Key to Teaching success

***Joyti Sehrawat**

Abstract:

Teacher autonomy refers to freedom of study, learn & teach. The teacher is the controlling figure of educational process and also play critical role in the power of social change. National Policy of Education (1986) also says that teachers should have the freedom of innovate, to device appropriate methods of communication and activities relevant to the needs & capabilities of the concern of the community. If a teacher has good habits or qualities, he can transfer it in his students and can play an important role in good nation formation. The present paper tries to focus on the different aspects of need and importance of teacher's autonomy and professional independence in our education system as laid down in NCF 2005.

***Key Words**: Teacher Autonomy, Professional Independence, NCF 2005,*

Give a man a fish, Feed him for a day.
Teach a man to fish, Feed him for a lifetime.

Education is a most potent source of achieving the desired goals. Education is a tri-polar process including teacher, learner and environment (teaching material). As Secondary Education Commission or Mudaliar Commission (1954) says "The most important factor in the contemplated educational reconstruction is the teacher, his personal qualities, his educational qualifications, his professional training and the place, he occupies in the school as well as in the communication. The reputation of a school and its influence on the life of community invariably depend on the kind of teacher working in it".

According to NPE (1986), "The status of the teacher reflects the socio-cultural ethos of a society. It is said that no people can rise above the level of its teachers. The government and the community should endeavor to create conditions which will help motivate and inspire teachers on constructive and creative lines."

Teacher autonomy is essential for ensuring a learning environment that addresses children's diverse needs. As much as the learner requires space, freedom, flexibility and respect, the teacher also requires the same. There is need to encourage an atmosphere that facilitates collaborative efforts among teachers. Teacher autonomy is driven by a need for personal and professional improvement, so that an autonomous teacher may seek out opportunities over the course of his or her career to develop further. Teacher autonomy and professional independence is a socially

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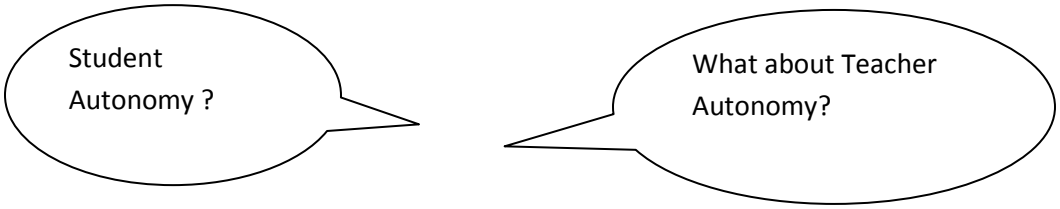
constructed process, where teacher support & develop groups that can act as teacher-learner pools of diverse knowledge, experience, equal power & autonomous learning. If teachers are professionals then autonomy is an important element in confirming the status of teacher's work.



The comment above is overheard in a teacher staffroom and made by teachers who felt they had very little control in their working life.

Meaning and definition of Teacher Autonomy:

Teacher autonomy is defined by "the capacity to take control of one's own teaching". Teacher autonomy means freedom of study, learn and teach. There should not be too much interference in the work of teacher by higher authorities so that teacher may perform his duty without any fear.

Little (1995) first defines teacher autonomy as the teachers' capacity to engage in self-directed teaching. After that, scholars have been trying to define teacher autonomy from different aspects. Aoki (2000) offers an explicit definition of teacher autonomy, suggesting that this involves the capacity, freedom, and/or responsibility to make choices concerning one's own teaching. According to Richard Smith (2000), teacher autonomy refers to "the ability to develop appropriate skills, knowledge and attitudes for oneself as a teacher, in cooperation with others." Benson (2000) argues that teacher autonomy can be seen as "a right to freedom from control (or an ability to exercise this right) as well as actual freedom from control".

According to Huang (2005), " Teacher's willingness, capacity and freedom to take control of their own teaching and learning are known as teacher autonomy.

McGrath (2000) illustrates the characteristics of teacher autonomy from two dimensions, "as self-directed action or development; as freedom from control by others." When teachers act in a self-directed manner, they are not guaranteed to learn from the experience. Because their professional development of autonomy could be considered as one form of professional action, but their action and development of autonomy do not necessarily mean the same thing. When teachers make use of their freedom, allowance needs to be made for a distinction between capacity for and/or willingness to engage in self-direction and actual self-directed behavior. In

China, for example, some college teachers have the capacity to engage in self-directed activity but refuse to do so for the sake of personal responsibility.

Smith (2001) summarizes six very comprehensive characteristics of teacher autonomy as follows:
A. Self-directed professional action
B. Capacity for self-directed professional action
C. Freedom from control over professional action
D. Self-directed professional development
E. Capacity for self-directed professional development
F. Freedom from control over professional development

Teacher autonomy is also known as academic freedom. Autonomy is also being described as a capacity to take charge of, or take responsibility for, or control over your own learning. It involves ability and attitudes that people possess, and can develop to various degrees. The ability to self-assess for the sake of his/her learners, the capacity to develop certain skills for oneself as a teacher, the tendency to criticize oneself, self development, self observation, self awareness of his own teaching, continuous reflection, sustainable development, self control taking responsibilities for his learners, being open to change through co-operation with others, questioning oneself in particular position improving oneself so as to keep up with changing condition of the centuary, an attempt to compensate for what he lacks as a teacher.

Dimensions of teacher autonomy:

The dimensions identified by Mac Grath (2000) are as follows:

- Teacher autonomy as self directed action or development.
- Teacher autonomy as freedom from control by others.

In relation to professional action, dimensions of teacher autonomy are-

i. Self-directed professional action (self-directed teaching).
ii. Capacity for self-directed professional action.
iii. Freedom from control over professional action.

Table : Degree of teacher autonomy and areas of responsibility

Degree of Teacher Autonomy	Area of Responsibility
High degree of autonomy	-Teacher/Student interaction in class

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	-Type of activities used in class -Pace, timing and total time allocation -timing of tests
Shared autonomy with others	- Objectives - Curriculum material - Teaching Strategies
Low - decisions dominated by principals and staff groups	- Global concepts and outline of curriculum - Criteria for assessing students

Table above is based on Leithwood *et al's*(1997) review of research into teachers' curriculum decision making. Looking at the areas of teacher autonomy in more detail, they identify four main areas where an individual teacher's autonomy may be high.

What Teacher autonomy is not?

- Teacher autonomy is not an independence or isolation.
- Teacher autonomy cannot be explained as an exclusive psychological, technical or political issue.
- Teacher autonomy is not a static entity that some people possess and other does not.
- Teacher autonomy cannot be interpreted as additional responsibilities given to the teacher.
- Teacher autonomy does not refer to an absolute state of freedom constraint.

Why is Autonomy important?

In National Policy of Education (NPE) 1986: "Teacher should have the freedom of innovate to device appropriate methods of communication and activities relevant to the needs and capabilities of the concerns of the community. The pay and service conditions of a teacher have to be commensurate with their social and professional responsibilities and with the needs of attract talent to the profession."Many reasons can be given as to why autonomy is important and most of them are related to the question of teachers' work. Are teachers technicians who implement other people's decisions or are teachers 'professionals', people capable of deciding for themselves? The answer to this question affects how teachers' work is designed and what tasks teachers are expected to do. These expectations in turn can influence teachers' performance and their perceptions of their work.

Needs of Teacher Autonomy:

- Teacher autonomy is essential for ensuring a learning environment that addresses children's diverse needs.
- Teacher autonomy is driven by a need for personal and professional improvement, so that an autonomous teacher may seek out opportunities over the course of his/her career to develop further.
- An autonomous teacher feels personal responsibilities, attends workshops & come up with new classroom ideas.
- Teacher autonomy refers to the ability to develop appropriate skills, knowledge & attitude for oneself as a teacher, in cooperation with other.
- The teacher should have the freedom to innovate, to devise appropriate methods of communication & activities relevant to the need & capabilities of the concerns of the community.
- Autonomous teacher feel more confident with virtual learning environment.
- Teacher autonomy is necessary in order to be able to respond to student needs, interests & motivation and individualize our approach.

NCF (2005) states "Teacher autonomy is essential for ensuring a learning environment that addresses children's diverse needs. As much as the learner requires space, freedom, flexibility, and respect, the teacher also requires the same. Currently, the system of administrative hierarchies and control, examinations, and centralized planning for curriculum reform, all constrain the autonomy of the headmaster and teacher.

Even when there is curricular freedom, teachers do not feel confident that they can exercise it without being taken to task by the administration for doing things differently. It is therefore essential to enable and support them in exercising choice. As much as the classroom needs to nurture a democratic, flexible and accepting culture, so also the school institution and the bureaucratic structure need to do the same. Not only should the teacher receive orders and information, but equally the voice of the teacher should be

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heard by those higher up, who often take decisions that affect the immediate classroom life and culture in the school. Relationships between teachers and their heads and principals must be informed by equality and mutual respect, and decision making must be on the basis of dialogue and discussion. The annual, monthly and weekly calendars of activities need to provide time for such staff interactions for reviewing and planning. There is need to encourage an atmosphere that facilitates collaborative efforts among teachers. There must also be mechanisms for conflict resolution.

Often technologies such as radio and TV are introduced into their classrooms without consulting teachers on whether they would like to have these and what they would like these to do for them. Once these there in the classroom, teachers are expected to use them, when they have no control over what will be delivered, or how it will integrate with their own teaching plans.

Time for Reflection and Planning:

- On a daily basis (at least 45 minutes) to review the day, make notes on children to follow up the next day, and organize materials for the next day's lessons (this is in addition to the time that they may need to correct homework).
- On a weekly basis (at least two/three hours) to take stock of learning, to work out details of activities and projects proposed, and to plan a group of lessons (unit) for the coming week.
- On a monthly/term basis (minimum of one day) to review their own work, children's learning, and map the contours of the learning activities planned for the groups they teach.
- At the beginning and the end of the year, two or three days each need to be allocated to evolve an annual plan for the school, in which they locate activities such as local holidays, annual events (national events, sports day, cultural events) and days for parent-teacher meeting that would involve the whole school. They would also plan excursions and field trips for their class groups, and for any projects that two or more classes would do together. They would also be involved in activities of preparing the school and class environment, putting up and changing posters and displays, organizing children's work, etc. such planning time is also essential for the school to review its relationship with the community, and identify points of focused action in the year such as enrolment, retention, school attendance and school achievement.
- Current in-service training-related time allocation (compulsory 20 days per year) could be partly diverted towards making time available for such reviewing, reflecting and planning.

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- Monthly meetings organized for teachers at the cluster level could be based on groups of teachers teaching similar subjects and grade levels, so that they can share ideas and plan teaching for the forthcoming month together.

Teacher's role in promotion of own autonomy:

The teacher can promote his autonomy himself. Some suggestions to promote the autonomy of teacher are as follows:

- He/ she should read a lot to be familiar with current subjects.
- Teacher should be able to observe himself.
- They should co-operate with others'
- It is really necessary to be open to criticism.
- Teacher should make notes at the end of lesson and evaluate them.
- Feedback by students may be given to the teacher.
- They should be given the opportunity to develop his own autonomy.
- Teacher should observe each other to give feedback (peer observation).
- A very careful lesson plan is required.
- One should be aware of his good and bad points or qualities.

Personal experience as both a classroom teacher and an administrator suggests that teachers need a great deal of autonomy if they are going to be life-long learners, and effective in the classroom if they are to be life-long learners, decision makers, leaders, and are to provide effective instruction for all students. However, in allowing autonomy, leaders must be cautious, constantly monitoring whether teachers are using their autonomy for the good of their students, or if teachers are hiding behind autonomy---using it as a shield from progress. What is intriguing about teacher autonomy is not the belief that it is necessary, but that it is a double-edged sword. In allowing and providing autonomy for teachers, one must be certain those who desire autonomy have good intentions. As important as autonomy is, there is the potential for teachers to misuse it.

Conclusion:

Teacher autonomy is driven by a need for personal and professional improvement, so that an autonomous teachers may seek out opportunities over the course of his or her career to develop further.If the teacher possesses these qualities then he will be autonomous and studies show that the autonomous teacher teaches very effectively and conveniently than non autonomous teachers. There should be some professional independence among the teachers because when they are free to teach, they teach more efficiently.

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Appendix G

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DEVELOPMENT OF A RATING SCALE FOR MEASURING TEACHER CLASSRO(AUTONOMY IN SECONDARY SCHOOLS IN SOUTHWESTERN NIGERIA

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ABSTRACT

The study developed Teacher Classroom Autonomy Scale (T-CARS) and estimated the validity and reliability of the scale as well as establishing the scale factor structure. The study adopted a survey design. The population comprised secondary school teachers in southwestern Nigeria and a sample of 1440 teachers that were selected from 72 secondary schools using multistage sampling procedure. Two instruments, T-CARS and School Participant Empowerment Scale (SPES) were used for data collection. Data were analysed using factor analysis and reliability analysis. The results showed that the 40-items T-CARS have seven factors of teacher classroom autonomy that accounted for 91.46% of the total scale variance and significantly converge with the SPES (r = 0.611). The internal consistency of the scale was r=0.913 (Cronbach), and r=0.736 (Spearman Split-half), p< 0.05. The study concluded that the T-CARS developed in this study is reliable, valid and suitable to measure teacher classroom autonomy in Southwestern Nigeria.

Keywords: Rating scale, Classroom autonomy, Teacher autonomy, Teacher classroom autonomy scale, Validity, Reliability, Scale convergence, Internal consistency, Teacher classroom autonomy scale.

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Contribution/ Originality

The study generated appropriate, valid and reliable items with which teacher classroom autonomy can be measured. It also provided information on ways through which school administrators; teachers and other stakeholders can ensure that teachers have good institutional knowledge in order to effectively address imagined constraints on teaching and learning.

1. INTRODUCTION

Teachers are generally regarded as an important factor in education, as they are the providers and facilitators of teaching and learning in schools. They have several responsibilities in schools, involving both classroom and other activities that make learning wholesome for students and build in them, optimum intellectual, physical, social and emotional capacities. Teacher classroom autonomy refers to the degree of control that teachers have over their work. It is related to the authority they possess to impact knowledge, opportunity for independent thought action and creativity, and the freedom to organize the learning process. Teacher classroom autonomy also embodies the liberty that teachers have to initiate and operate collaborations with their peers, and relate with students not only to reinforce and support positive behaviour, but also to disapprove and sanction improper behaviour in an attempt to make teaching/learning process in the classroom effective and efficient.

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The school environment today, more than ever before, calls for increasing teacher classroom autonomy in schools. In recent times, there has been rapid changes in the school core curriculum, with the introduction of many and varied subjects, including craft and entrepreneurial subjects. There is also the increasing incidence of cult activities in schools. The decline and fluctuating performance of students in both West African Examination Council (WAEC) and National Examinations Council (NECO) results in Senior School Certificate Examination (SSCE) puts pressure on teachers to take increasing responsibilities. Furthermore, these, among other factors, make the recognition and exercise of teacher classroom autonomy imperative.

Many reasons can be given as to why classroom autonomy is important and most of them are related to the question of teachers' work. Are teachers technicians who implement other people's decisions or are teachers 'professionals', people capable of deciding for themselves? The answer to this question affects how teachers' work is designed and what tasks teachers are expected to perform. These expectations in turn can influence teachers' performance and their perceptions of their work. Examining the features of a profession in more detail, Hoyle (1980) provides the following list; a body of theoretical knowledge on which members of the profession base their practice, a relatively long time spent in training, a code of ethics regulating members behaviour, a means of controlling the admission of new members, - a high degree of autonomy in their work.

These characteristics are shared by the teaching profession as a whole and the individual practitioner. Thus both the profession and the practitioner are able to regulate their own work free from external controls. In the concern over quality in education, one strategy has been to call for the greater professionalization of teaching and the continual professional development of teachers. Attempts have been made to improve the status of teaching in general and in language teaching.

Besides being necessary to encourage development, two further reasons can be advanced for the importance of teacher classroom autonomy in teaching. First, perceptions of autonomy relate to job satisfaction (Pearson and Hall, 1993). Work is perceived as more enjoyable if there is felt to be some influence over it. This is consistent with theories of motivation at work advanced by Maslow (1943) and Porter (1963) where autonomy is seen as a need people will attempt to satisfy. A second reason concerns congruence between the goals of education and how teachers' work is organized to accomplish these goals. Student autonomy is an important goal of education. This is outlined in Kenny (1993) who sees autonomy as empowering and emancipating. However, the end result of learner autonomy is more likely to be accomplished in an environment that supports teacher classroom autonomy. In order to achieve this goal all parties should behave consistently. So for teachers to be confident in working with autonomous students the training that the teachers receive should use methods and techniques to foster autonomy (Little, 1995). For this training to be sustained, the conditions of teaching should also support autonomous teaching beliefs and practices.

Many authors have indicated the need teachers and workers in general have for autonomy and the assertion that autonomy is an innate human need (Deci and Ryan, 1985; Wilson, 1993; Erpelding, 1999; Jones, 2000). Many experts in the field of educational reform report that empowering teachers is an appropriate place to begin in solving the problems of today's schools (Melenyzer, 1990; Short, 1994). Autonomy refers to thinking for oneself in uncertain and complex situations in which judgment is more important than routine. For teachers, the nature of their work and its social context complicates this definition. Teaching involves placing one's autonomy at the service of the best interests of children (Pitt and Phelan, 2008). Teacher classroom autonomy vacillates between being portrayed as a mark of a robust professionalism and as a sign of the difficulty other educational stakeholders have in influencing or believing they have influenced what teachers do behind classroom doors. Whether cast as earned or stolen, bestowed by professional membership or diminished by external forces, autonomy is generally may be perceived as a quantifiable characteristic of an individual. As such autonomy is equated with freedom to act in accordance with one's personal beliefs and, most dangerously, in one's own interest (Pitt and Phelan, 2008).

A common trend that appears when one researches teacher motivation, teacher empowerment, and teacher stress and burnout is teacher autonomy. Like the constructs of teacher motivation, teacher empowerment, teacher stress, and teacher burnout, attempts to dissect teacher classroom autonomy and identify the underlying theoretical dimensions have met with varied results and conclusions. Difficulties in developing an adequate concept of teacher classroom autonomy have resulted in problems developing appropriate measures of teacher classroom autonomy. Unlike the concept of ability, teacher classroom autonomy is a difficult concept to operationalize. Nevertheless, government officials, school board members, and principals must recognize and meet the need for teacher autonomy if they wish to motivate and empower teachers, minimize teacher stress, and prevent teacher burnout. Perception of autonomy has also been found to be related to factors within the work environment and teacher attitudes (Erpelding, 1999). Natale (1993) reported that although teachers have various reasons for leaving the teaching profession, they most often leave the classroom because of the lack of professionalism, lack of recognition, or lack of autonomy afforded them. If teachers are to be empowered and exalted as professionals, then, like other professionals, teachers must have the freedom to prescribe the best treatment for their students as doctors or lawyers do for their clients. This freedom is teacher classroom autonomy and is not restricted to the classroom but also must include decisions that impact the classrooms such as (a) school structure and organization, (b) disciplinary procedures, (c) curriculum content, (d) academic standards. It is also important to measure the level of teacher classroom autonomy and the impact it is having on teaching learning process. Thus, there is the need for a measuring instrument which is the focus of this study.

The basis of attitude measurement is that there are underlying dimensions along which individual attitudes can be ranged. A scaling procedure permits a person to be assigned a numerical score indicative of his/her position on the attitudinal dimension. The issue of scale types is important to the measuring that can be attached to such scores. Coombs *et al.* (1970) noted the variations on the four basic scales originally enunciated by Stevens (1946) namely; nominal, ordinal, internal and ratio scales. A nominal scale of measurement is one in which numbers are used to classify and identify a person. In their measurement, numbers are substituted for names or verbal labels. An ordinal scale of measurement, on the other hand, is one that assigns numbers to individuals so that the rank order of the numbers corresponds with the rank order of the individuals in terms of the attribute(s) being measured. The third type of scale, the interval scale has the defining characteristic of the size of the difference between the numbers assigned to two persons or objects corresponds to the degree to which the persons or objects differ on the attribute being measured. They also defined a ratio scale of measurement as one in which ratios between the numbers assigned to persons or objects correspond to ratios between the attributes measured in these persons or objects. Ratio scale is particularly different from interval scale in that the unit of measurement in an interval scale is arbitrary, especially the zero point; whereas, in the ratio scale, the zero point is a true value, always having the same measure. The Likert scale used in this study is considered to be interval scale.

Despite a number of research articles including perceived autonomy support as an independent predictor of motivation and psychological and behavioral outcomes, few studies have provided a systematic evaluation of the measures of teacher classroom autonomy especially in Nigeria. Numerous measures have been developed, such as the teacher efficacy scale (Adewolu, 2006) teacher efficacy scale (Gibson and Dembo, 1984) and teacher effectiveness (Kumar and Mutha, 1976). While such measures have exhibited acceptable internal consistency statistics, none have been evaluated using a rigorous, hypothesis-testing approach such as confirmatory factor analyses (CFAs) to establish the factor structure of the teachers classroom autonomy scale construct in Nigeria. Studies in education have identified academic leaders (Reeve *et al.*, 1999) as important sources of autonomy support. Yet sufficient empirical study have not provided evidence that varying the source of teacher classroom autonomy within such measures has an effect on the validity of the measure and the perceived understanding of the teacher classroom autonomy construct by respondents. The present investigation resolved these issues by developing a measure of teacher classroom autonomy scale based on an exhaustive review of previous measures of perceived autonomy

support using a rigorous, hypothesis-testing approach with CFA. Such an approach is often considered the gold standard in the development of psychological instruments as it permits a priori specification of a proposed model which is then tested against observed data. Further, it used latent variables which explicitly model the random error associated with the questionnaire items that made up the construct, thereby making the latent variable representing the construct ostensibly error free.

The fact that teacher classroom autonomy varies across the different domains due to internal and external factors means that if teachers are expected to exert their decision making skills in teaching and assessment, designing curricula, participating in different school committees, and engaging in professional development, among other tasks, they need to be provided with the appropriate conditions for this to happen. If they are not, they may end up rejecting new responsibilities or not performing at the expected level due to a lack of professional competence, low motivation to accepting new responsibilities, or adverse working or personal conditions to accept new challenges. Teacher classroom autonomy is not an omnipresent attribute of certain teachers; it manifests itself differently in every teacher, and at the same time, every teacher perceives and exercises his/her professional classroom autonomy across different domains in different ways. This variable condition must be acknowledged by administrators and policy makers in order that they might respect teachers' interests and areas of expertise, and provide appropriate conditions for them to succeed in every task. Teacher classroom autonomy or the lack thereof, seems to be a critical component in the motivation of teachers to stay or leave the teaching profession and, therefore, should be explored in more detail before decisions affecting the autonomy of teachers in the classroom are implemented. However, in Nigeria, the nature and factors that can contribute to teacher classroom autonomy have not been empirically ascertained and there is no known locally designed instrument with which teacher classroom autonomy can be measured. This study filled this gap.

1.2. Objectives of the Study

The major objective of this study was to develop a valid instrument for the measurement of teacher classroom autonomy in Nigeria. Specifically, the study was conducted to:

1. develop appropriate items on teacher classroom autonomy;
2. estimate the validity of the scale;
3. determine the reliability indices of the scale.

1.3. Research Questions

In order to realize the objectives stated above, the following questions were raised:

1. What items would adequately measure teacher classroom autonomy?
2. What is the validity of the teacher classroom autonomy scale?
3. What is the reliability of the scale?

2. METHOD

The design employed for the study is the descriptive survey design. This is because the researcher was only interested in developing valid and reliable instrument with which teacher classroom autonomy can be measured. This technique enabled the researcher to obtain accurate data and high response rate from selected member (sample) of a population. In this study appropriate items with which teachers' classroom autonomy can be measured was developed and the developed items were used to collect information from teachers of selected secondary schools in the study area.

The study population comprised secondary school teachers in Southwestern Nigeria. This included teachers from both public and private schools in all subject areas. The study sample consisted of 1440 teachers that were selected from 72 secondary schools in three states using multistage sampling procedure. The three states (Osun,

Ekiti and Ogun) were randomly selected from the six states of the Southwestern Nigeria and from each of the three senatorial districts of the selected states, two Local Government areas (LGAs) were selected randomly to give a total of 18 LGAs. Four schools were selected from each of the selected 18 LGAs using stratified random sampling technique to make a total of 72 secondary schools, where school ownership (public and private) served as strata. Twenty teachers were then selected from each of the 72 secondary schools using random sampling.

2.1. Research Instruments

2.2.1. Two Instruments Were Used in the Study Namely

(a) Teacher Classroom Autonomy Rating Scale (T-CARS)

The first stage of item development was the generation of initial items on teacher classroom autonomy. A pool of 65 items was generated from the literature (Charters, 1974; Gnecco, 1983; Nero, 1985; Losos, 2000) and from ideas of experience teachers. It covered aspect of teacher classroom autonomy such as teacher satisfaction, teaching information, selecting textbooks and other instructional materials, selecting content, topics and skills to be taught, teaching technique, evaluating and grading students, disciplining students, determining the amount of homework to be assigned, teacher responsibility, opportunity to participate in decision which affect the teacher, opportunity for independent and creative thought and action. These items were moderated and reviewed by experts in the fields of Tests and Measurement and Psychology to determine the appropriateness, relevance and adequacy of the items (content validity). This was then reduced to 60 items. The response pattern adopted was Likert format with four option range from SA= strongly Agree, A = Agree, D = Disagree and SD = Strongly Disagree.

2.2. Pilot Testing the Initial Items

The 60 items were administered on 50 teachers who were not part of the final sample size used for the study. This was done to ascertain some salience, variance, phraseology, ordering, and ambiguity of items, as well as possible item burden with a view to refining and ensuring its suitability and stability. Item responses were evaluated for variability, and discriminant value (in relation to classroom teacher autonomy). After the pilot study, the items were re-examined by statistics educators at the second stage for possible adjustment, replacement and addition as appropriate. The final version contained a total of 46 items, 6 selection of instructional materials, 5 content selection, 4 selecting teaching styles, 10 students evaluation process, 8 students discipline, 5 decision making, and 8 teacher independence.

(b) The School Participant Empowerment Scale (SPES)

The School Participant Empowerment Scale (SPES) was developed by Short and Rinehart (1992). The SPES is a 38-item instrument that measured teacher empowerment on six dimensions: (1) decision-making, (2) professional growth, (3) status, (4) self-efficacy, (5) autonomy, and (6) impact. The SPES used a five-point Likert-type rating scale for each of the 38 items (1=strongly disagree to 5=strongly agree). Cronbach's coefficient alpha reliabilities for the subscales measuring the dimensions were reported as: decision-making, .79; professional-growth, .66; status, .84; self-efficacy, .83; autonomy, .83, and impact, .91. Alpha reliability for the total scale was .94 (Short and Rinehart, 1992). The scale was adapted in this study. The 38 items were used as it is in the original scale but the response pattern was changed from 1=strongly disagree - 5=strongly agree to 1=strongly disagree - 4=strongly agree. That is in this study three- point was not be assigned to "Undecided".

The data analysis was based on the structural components of the scale; the underlying factors and subscales (selection of instructional materials, content selection, selecting teaching styles, students evaluation process, students discipline, decision making, and teacher independence) and psychometric (reliability and validity) properties of the Teacher Classroom Autonomy Rating Scale. Responses to the T-CARS were subjected to factor analysis procedures, orthogonal rotation to a single structure through the varimax method. Exploratory Factor

Analysis (EFA) was conducted to identify the factors on which the scale items loaded. Reliability of the subscales and total instrument was determined using Cronbach Alpha (for internal consistency coefficient) and Pearson Product Moment Correlation analysis (for Stability coefficient). SPSS version 20 was utilized to show the theoretical underpinnings of the T-CARS, inter-item correlation, the relatedness of the items to each of the factors of the EFA and their homogeneity.

3. RESULTS

Research Question 1: What items would be adjudged to measure teacher classroom autonomy?

To resolve this question, the 60 items used in the pilot study moderated and edited based on expert judgment for content relevance were subsequently reduced to 46 (see Appendix IV). The 46 items were then subjected to psychometric analyses. The items of the second version were grouped into seven factors as indicated in Table 1.

Table-1. The T-CARS second version subscales and corresponding items

S/N	SUBSCALE	ITEMS
1	Selection of Instructional Materials	14, 28, 29, 30, 40, 41
2	Content Selection	2, 6, 8, 18, 22
3	Selecting Teaching Styles	1, 9, 16, 46
4	Student Evaluation Process	15, 21, 23, 24, 27, 33, 34, 35, 36, 37
5	Students Discipline	3, 25, 26, 31, 32, 38, 39, 45
6	Decision Making	19, 20, 44, 43,7
7	Teacher Independence	4, 5, 10, 11, 12, 13, 17, 42

Source: Field Survey

The item means, of the 46 item was 1.988 while the inter-item correlation was 0.150 with a Cronbach Alpha coefficient 0.879. The reduction of the second T-CARS version was based on Govaerts and Gregoire (2008) item reduction criteria which stipulated that any item affected by the three or any two of the conditions below should be expunged

i. Items with Low Item Mean (LIM) 1.988 or less.
ii. Items with Low Item total Correlation (LITC) of 0.150 and below.
iii. Items having a High Cronbach's Alpha if Item Deleted (HCAID) of 0.897 or more.

The application of the three conditions led to the removal of six items (4, 10, 21, 23, 37 and 42) from the 46-item version (i.e. second version) of the T-CARS. After the removal of the six items from the T-CARS, the remaining items were grouped into the seven factors (subscales) were as presented in Table 2.

Table-2. The T-CARS third version subscales and corresponding items

S/N	SUBSCALE	ITEMS
1	Selection of Instructional Materials	14, 28, 29, 30, 40, 41
2	Content Selection	2, 6, 8, 18, 22
3	Selecting Teaching Styles	1, 9, 16, 46
4	Student Evaluation Process	15, 24, 27, 33, 34, 35, 36,
5	Student Discipline	3, 25, 26, 31, 32, 38, 39, 45
6	Decision Making	19, 20, 44, 43,7
7	Teacher Independence	5, 11, 12, 13, 17

Source: Field Survey

Table 2 showed that "Selecting Instructional Materials" subscale has 6 items, "Content Selection" and "Teacher Independent and Creativity" has five items each, "Teaching Techniques" and "Decision Making" has 4 items each while "Evaluation Process" and "Discipline" has seven items each. Finally, 40 items were retained on the T-CARS.

Thus, the 40 items on Table 3 were considered suitable and adequate to measure teacher classroom autonomy in Southwestern Nigeria.

Table-3. Teacher Classroom Autonomy Rating Scale (Third and Final Version)

S/N OLD	S/N NEW	STATEMENT	SA	A	SD	D
1	1	The expectation of my school is that I should be creative in my teaching approach				
2	2	Selecting student-leaning activities is my sole responsibility				
3	3	I set the standard of behaviour students should exhibit in my classroom				
5	4	In my teaching, I use my own guidelines and procedure				
6	5	The decision in the content that is selected for teaching is the sole responsibility of the teacher				
7	6	I should not have control of the scheduling of use of time in my classroom				
8	7	I only concentrate on the goals and objectives I set for my teaching				
9	8	I seldom use alternative procedures in my teaching				
11	9	I am actively involved in proffering solutions to problems that occur in my classroom				
12	10	The decision on what to teach is my responsibility				
13	11	Classroom space usage is beyond my control				
14	12	The school gives the opportunity of selecting instructional materials of my choice				
5	13	The selection of assessments activities is considered my responsibilities by the school				
16	14	The school allows me to selecting the teaching method of my choice in my lessons				
17	15	I am not control of allocation of time to be used in my choice				
18	16	The skills taught in my class are those I select				
19	17	In my school monitoring the school programs is the responsibility of the teachers				
20	18	Teachers in my school are saddled with making decision about the implementation of new programs in the school				
22	19	I am expected to be involved in breaking down the curriculum of my subject				
24	20	I select the type of test to be used in assessing students				
25	21	I am free to promote class spirit in my lesson				
26	22	I am to allowed to use intra-class competitions to foster students after assessment				
27	23	I determine the type of feedback appropriate to students after assessment				
28	24	I take decision on instructional materials to support struggling learners				
29	25	The decision on materials that could provide pathways to accelerate students learning is left to me to make				
30	26	I make plans on how instructional materials are used in improving students learning style				
31	27	I am allowed to arrange project like award schemes for classes with good classroom discipline				
32	28	As a teacher, I am involved in the observation of students' behaviour inside the classroom				
33	29	I am responsible for structuring my classroom assessment				
34	30	As a teacher, I am involved in the observations students' behaviour outside the classroom				
35	31	I am involved in the formulation of the school evaluation and assessment policies				
36	32	I am given free hand in the implementation of school assessment policies in relation to my subject				

38	33	The school allows me to adhere to the limit I set for tasks giving to the students				
39	34	Clear rules on disciplines are constantly enforced in my class				
40	35	The school allows me to set criteria for selecting instructional materials				
41	36	The school allows me to evaluate the appropriateness of instructional materials supplied to the school that are relevant to my subject				
43	37	My school principal usually put into consideration my opinion on matters that directly affects my students				
44	38	The school principal usually involves me in the development of school policy that affects my lessons				
45	39	Clear rules on discipline that are laid by me in my class				
46	40	I execute on how instructional materials are used in improving students' learning style				

Source: Field Survey

Research Question 2: What is the validity of the teacher classroom autonomy rating scale?

To answer this question, construct and convergent validity of T-CARS third version (final version) was ascertained. The construct validity was determined using two methods. The first was Kaiser or eigenvalues greater-than-one criterion (K1), (Kaiser, 1960). The second was Cattell (1966) scree test, which involves an examination of a plot of the eigenvalues for breaks or discontinuities. In doing this, Exploratory Factor Analysis (EFA) a good technique for studying the dimensionality of a scale (Spector, 2006) was applied so as to explore the dimensionality of T-CARS with the aim of determining (a) the number of factors that best represent the items and (b) the interpretation of the factors. Thus, principal components factor analytic model was adopted. It was followed by an oblique rotation since. Tables 5 and 6 present eigenvalues greater-than-one criterion and standardized item loadings of TPES final version respectively.

Table-4. Eigenvalues and total variance on the T-CARS

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	9.525	23.814	23.814
2	6.044	15.109	38.922
3	5.969	14.922	53.845
4	4.737	11.843	65.688
5	3.977	9.943	75.631
6	3.475	8.687	84.318
7	2.858	7.145	91.463
8	.962	2.405	
9	.791	1.976	
10	.493	1.233	
11	.306	.764	
12	.229	.572	
13	.205	.513	
14	.188	.471	
15	.103	.257	
16	.067	.168	
17	.018	.044	
18	.015	.038	
19	.010	.026	
20	.006	.016	
21	.006	.015	
22	.004	.010	
23	.003	.007	
24	.003	.007	

25	.002	.006	
26	.002	.005	
27	.001	.003	
28	.001	.001	
29	2.027E-016	5.069E-016	
30	4.317E-017	1.079E-016	
31	2.388E-017	5.971E-017	
32	7.094E-018	1.774E-017	
33	1.334E-018	3.335E-018	
34	4.865E-034	1.216E-033	
35	-8.224E-033	-2.056E-032	
36	-2.180E-019	-5.451E-019	
37	-3.110E-018	-7.775E-018	
38	-1.710E-017	-4.275E-017	
39	-3.624E-017	-9.060E-017	
40	-6.793E-017	-1.698E-016	

Extraction Method: Principal Component Analysis.

From the initial eigenvalues as presented in Table 4, seven factors of teacher classroom autonomy emerged, which accounted for 91.46% of the total scale variance on the T-CARS. The factor solution was in line with the initial assumption of the researcher (which was seven).

Table-5. Standardized item loadings of T-CARSS (Final version)

Items No.	Component						
	1	**2**	**3**	**4**	**5**	**6**	**7**
1						.983*	
2					.981*		
3	.983*						
4		.996*					
5					.981*		
6		.997*					
7					.981*		
8						.982*	
9		.997*					
10		.997*					
11		.997*					
12				.987*			
13			.969*				
14						.997*	
15		.935*					
16					.961*		
17							.961*
18							.926*
19					.973		
20			.985*				
21	.740*						
22			.973*				
23			.985*				
24				.985*			
25				.309*			
26				.885*			
27	.985*						
28	.967*						
29			.967*				
30			.356*				
31			..867*				
32			.985*				

33	.985*						
34	.987*						
35				.986*			
36				.961*			
37							.861*
38							.981*
39	.980*						
40						.982*	

* Significant at 0.05 level

The standardized factor loadings for the 40 item presented in Table 5 were statistically significant at $p < .05$. Thus, the standardized item loadings of the T-CARS items showed that the instrument is valid. From Table 6, eight of the 40 items of the T-CARS loaded on factor 3 (Students Evaluation). It could therefore be concluded that student evaluation is the most important of the factors. Seven items loaded on factor 1 (Student Discipline), which makes it next most crucial to the first factor on T-CARS. Six items loaded on factor 2 and 4 (Teacher independence) and (Selection of Instructional Materials), five items loaded on factor 5 and four items loaded on each of factors 6 and 7 (Selecting Teaching Technique) and (Participating in Classroom Decision Making).

Scree plot was also employed to further confirm the number of factors on which the TPS items would load. The plot is as presented in figure 1.

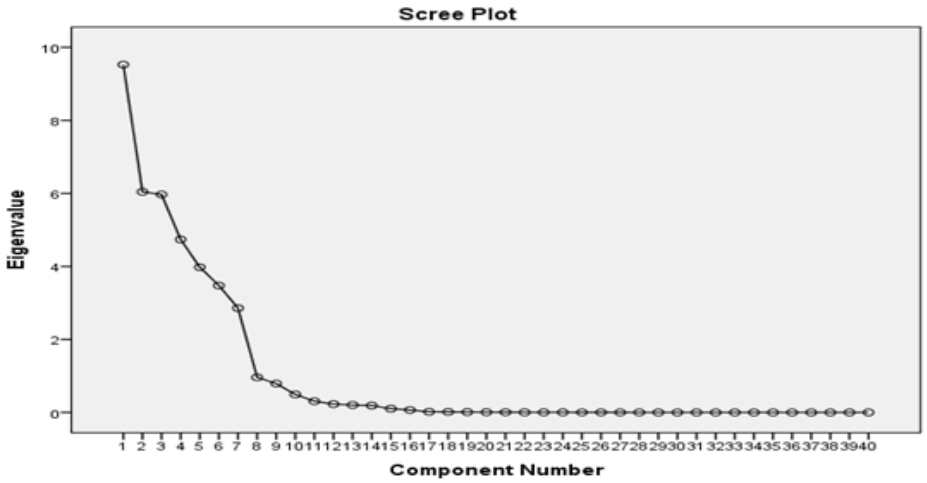

Figure-1. Scree plot showing seven factors on T-CARS

Source: Field Survey

The Scree plots in Figure 1 showed also seven factors on the T-CARS and thus, confirm the number of factors in Table 6. Thus, there are seven factors on the developed Teacher Classroom Autonomy Rating Scale (T-CARS) for measuring teacher classroom autonomy in Southwestern secondary schools in Nigeria.

To determine the convergent validity, scores from the T-CARS were correlated with those from the "The School Participant Empowerment Scale" (SPES), a related construct. Table 6 presents the result.

Table-6. Convergent validity of T-CARS

Source of Variation	N	Mean	SD	r	p
T-CARS	1326	77.97	15.33	0.611	<.05
SPES	1326	71.70	15.76		

Source: Field Survey

From Table 7, the correlation coefficient between the two scales, T-CARS and SPES, was 0.611, which is significant at 0.05 level of significance. Since the SPES is a widely used scale with a significant alpha (α) reliability of r= 0.94, a high and positive correlation with it by the T-CARS thus establishes the validity of the latter. That is, the T-CARS does measure teacher classroom autonomy of secondary school teachers in Southwestern Nigeria.

Table-7. Inter-Item Correlation Matrix

	T-CARS	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
T-CARS	1							
Factor 1	.691*	1						
Factor 2	.748*	.302*	1					
Factor 3	.849*	.561*	.709*	1				
Factor 4	.795*	.575*	.714*	.854*	1			
Factor 5	.607*	.466*	.485*	.446*	.307*	1		
Factor 6	.799*	.638*	.570*	.511*	.492*	.447*	1	
Factor 7	.844*	.688*	.643*	.691*	.523*	.592*	.699*	1

* Significant at 0.05 level

Table 7 showed that the seven factors correlated significantly at ($p < .05$) with the T-CARS. Also all the factors correlated significantly with each other suggesting that they are responsible for teacher classroom autonomy.

Research Question 3: What is the reliability of the scale?

Table-8. Internal consistency estimates of the T-CARS

Scale Items	Guttman Coefficient	Cronbach Alpha	Spearman Brown Split Half	Guttmann Split Half Coefficient	Common inter-item correlation	Item Variances
N=46	0.867	0.879	0.665	0.663	0.150	0.783
N=40	0.905	0.913	0.736	0.733	0.212	0.671

Source: Field Survey

Table 8 shows that the reliability of the final 40-item T-CARS was consistently greater than that of the initial 46 item scale in each of the three reliability measures, namely Guttmann, Cronbach Alpha and Split-Half. Moreover, the item variances of 0.783 of the initial items reveals the homogeneity of the items that had relatively lower mean scores. This is also corroborated by the inter-item correlation values of 0.150 and 0.212 for the initial and final scale items respectively. Thus, the T-CARS is considered very reliable in terms of the internal consistency of its items.

Table-9. Teacher Classroom Autonomy Rating Scale Sub-scales Reliability

Sub-scale	Cronbach Alpha	No of Items
Students' Discipline	0.994	7
Teacher's Independence	0.999	6
Student Evaluation	0.914	8
Selection of Instructional Materials	0.998	6
Content Selection	0.983	5
Selecting Teaching Style	0.998	4
Decision Making	0.973	4

Source: Field Survey

The result as presented in Table 24 showed that T-CARS sub-factors estimated reliabilities are very high, indicating that the items were internally consistent and can be used to measure teacher classroom autonomy consistently.

4. DISCUSSION OF FINDINGS

The reliability of an instrument is the consistency with which it could elicit responses when administered once (and investigated through internal consistency method) or more than once (when tested for stability). The 40 items on the T-CARS were found to be reliable when tested through internal consistency. It was not only tested for reliability but also tested for validity as the items showed evidence of validity through the coefficients. The submissions of measurement experts were uniform concerning the reliability and validity of measurement instrument. Before an instrument can be depended upon as having the strength to elicit the desired information from respondents, its reliability coefficient should be at acceptable level.

In this study the initial items generated for Teacher Classroom Autonomy Rating Scale (T-CARS) were 60 items. The items through moderation and editing by experts in Tests and Measurement, Educational Psychology and teachers of not less than 20 years teaching experience were later reduced to 46 items. The 46 items were then subjected to psychometric properties analyses. The 46-item T-CARS was reduced to 40-item final version of T-CARS based on Govaerts and Gregoire (2008) item reduction criteria. The application of Exploratory Factor Analysis (EFA) using Principal Components (PC) approach with eigenvalues greater-than-one on the 40-item T-CARS gave rise to seven factors of the teacher classroom autonomy. With the use of scree plot the seven factors on which T-CARS loaded was confirmed. The seven factors are; Students' Discipline, Teacher's Independence, Student Evaluation, Selection of Instructional Materials, Content Selection, Selecting Teaching Style and Decision Making.

The items on the T-CARS showed evidence of validity as the initial factor loadings on the data collected using T-CARS were statistically significant. These were good enough for declaring the T-CARS usable for measuring the invisible believe that teacher classroom autonomy is capable of enhancing (or impeding) the success with which teaching task would be discharged. It should be reminded that perceptions of autonomy relate to job satisfaction (Pearson and Hall, 1993). Work is perceived as more enjoyable if there is felt to be some influence over it. This is consistent with theories of motivation at work advanced by Maslow and Porter where autonomy is seen as a need people will attempt to satisfy. Also, concerns congruence between the goals of education and how teachers' work is organized to accomplish these goals. This is outlined in Kenny (1993) who sees autonomy as empowering and emancipating. Therefore, the T-CARS has shown that the level of an individual teacher's capability to achieve educational goals through the teaching task activities could be demonstrated through adequate; Students' Discipline, Teacher's Independent, Student Evaluation, Selection of Instructional Materials, Content Selection, Selecting Teaching Style and Decision Making.

The estimated reliability coefficients of T-CARS (Guttman Coefficient = 0.905, Cronbach Alpha = 0.913, Spearman Brown Split Half = 0.736 and Guttmann Split Half Coefficient = 0.733) was very good as asserted by Devellis (1991) as cited by Adewolu (2006). The reliability of any measuring instrument (T-CARS inclusive) is affected by a number of factors. These include group homogeneity and the length of the instrument (Popham, 2002). The differences in the values of classroom autonomy of the sampled teachers in the study could have arisen from the number of sample involved as well as the long length of T-CARS. This is in agreement with the recommendation of Sarantakos (2005) that large samples be involved in the survey so as to reduce sampling error and obtain a more reliable result. Although, quite a number of other factors capable of affecting the reliability of scales have been confirmed by researchers, the influence of many of these factors have not been tested for T-CARS.

5. CONCLUSION

The 40-item T-CARS, based on the analyses that were carried out could be adjudged to be reliable and valid for the measurement of teacher classroom autonomy. A high factorial validity was also obtained from the scale. Teacher autonomy to select teaching styles and instructional materials remains the two most important factors. School administrators, government and every other stake holders in the educational system should consequently

give the teachers freedom to select instructional materials and teaching styles of their choice in order to achieve the objectives of their teaching.

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Appendix H

Early Childhood and Parenting (ECAP) Collaborative

The Developmental Stages of Teachers[1]

Lilian G. Katz

The concept of development and associated developmental stages has a long history in the field of child development and early childhood education. However, several postmodern scholars have argued that the concept of development is of doubtful validity (Burman, 1994; Grieshaber & Cannella, 2001). As it is used here, the term *development* is used to indicate that both thought and behavior are learned in some kind of sequence and become increasingly adaptive to the tasks at hand and to the environment. In other words, no one can begin a professional role-such as a teacher or physician-as a veteran; in most cases, competence improves with experience and the knowledge and practice that come with it. It is unlikely that any experienced teacher believes and feels that he or she was more competent during the first month or year of teaching than during the fifth month or year, all other things being equal. Therefore, it seems to me meaningful as well as useful to think of teachers as having developmental sequences or stages in their professional growth patterns (Katz & Weir, 1969). The purpose of the present discussion is to suggest the tasks and training needs associated with each developmental stage and to consider the implications for the timing and location of training efforts that might be most responsive to the nature of the stages.

Stage I: Survival

Developmental Tasks

During the survival stage, which may last throughout the first full year of teaching, the teacher's main concern is whether or not she [2] can *survive* the daily challenges of carrying responsibility for a whole group of young children and their growth, development, and learning. This preoccupation with survival may be expressed to the self in terms such as "Can I get through the day in one piece? Without losing a child? Can I make it until the end of the week-to the next vacation? Can I really do this kind of work day after day after day? Will I be accepted by my colleagues?" Such questions are well expressed in Ryan's (1970) enlightening collection of accounts of first-year teaching experiences.

The first full impact of responsibility for a group of immature but vigorous young children (to say nothing of encounters with their parents) inevitably provokes some teacher anxieties. The discrepancies between anticipated successes and classroom realities may very well intensify feelings of inadequacy and unpreparedness.

Training Needs

During this survival period, the teacher is most likely to need support, understanding, encouragement, reassurance, comfort, and guidance. She needs direct help with specific skills and insight into the complex causes of behavior-all of which must be provided at the classroom site. On-site trainers may be principals, senior staff members, advisors, consultants, directors, or other specialized and experienced program assistants. Training must be constantly and readily available from someone who knows both the trainee and her teaching context well. The trainer/mentor should have enough time and flexibility to be on call as needed by the trainee. Schedules of periodic visits that have been arranged in advance cannot be counted on to coincide with trainees' crises, although visits may frequently be helpful. Cook and Mack (1971) describe the British pattern of on-site training given to teachers by their headmasters (principals). Armington (1969) also describes how advisors can meet these teacher needs on site at times of stress or during moments of crisis.

Stage II: Consolidation

Developmental Tasks

By the end of the first year-give or take a month or two-the teacher has usually come to see herself as capable of surviving immediate daily crises. She is now likely to be ready to consolidate the overall gains made during the first stage and to differentiate specific tasks and skills to be mastered next. During Stage II, teachers usually begin to focus on individual children and problem situations. This focus may take the form of looking for answers to such questions as "How can I help a clinging child? How can I help a particular child who does not seem to be

learning? Are there some more effective ways to handle transition times?" These questions are now differentiated from the general survival issues of keeping the whole class running smoothly.

During Stage I, the neophyte acquires a baseline of information about what young children of a given age are like and what to expect of them. By Stage II, the teacher is beginning to identify individual children whose behavior departs from the pattern of most of the children she knows. Thus she identifies the more unusual or exceptional patterns of behavior that have to be addressed to ensure the steady progress of the whole class.

Training Needs

During this stage, on-site training continues to be valuable. A trainer can help the teacher by engaging in joint exploration of an individual problem case. Take, for example, the case of a young preschool teacher eager to get help who expressed her problem in the question "How should I deal with a clinging child?" An on-site trainer can, of course, observe the teacher and child *in situ* and arrive at suggestions and tentative solutions fairly quickly. However, without firsthand knowledge of the child and the context, an extended give-and-take conversation between teacher and trainer or mentor may be the best way to help the teacher interpret her experience and move toward a solution of the problems in question. The trainer might ask the teacher such questions as "What strategies have you tried so far? Can you give an example of some experiences with this particular child during this week? When you did such and such, how did the child respond?"

In addition, during this stage, the need for information about specific children or problems that young children present suggests that learning to use a wider range of resources would be timely. Psychologists, social and health workers, and other specialists can strengthen the teacher's skills and knowledge at this time. Exchanges of information and ideas with more experienced colleagues may help a teacher master the developmental tasks of this stage. Opportunities to share feelings with other teachers in the same stage of development may help to reduce some of the teacher's sense of personal inadequacy and frustration.

Stage III: Renewal

Developmental Tasks

Often during the third or fourth year of teaching, the teacher begins to tire of doing the same things, offering the same activities, and celebrating the same sequence of holidays. She may begin to ask more questions about new developments in the field: "What are some new approaches to helping children's language development? Who is doing what? Where? What are some of the new materials, techniques, approaches, and ideas being developed these days?" It may be that what the teacher has been doing for each annual cohort of children has been quite adequate for them, but that she herself finds the recurrent Valentine cards, Easter bunnies, and pumpkin cut-outs insufficiently interesting! If it is true that a teacher's own interest and commitment to the projects and activities she provides for children contribute to their educational value, then her need for renewal and refreshment should be taken seriously.

Training Needs

During this stage, teachers are likely to find it especially rewarding to meet colleagues from different programs on both formal and informal occasions. Teachers in this developmental stage are particularly receptive to experiences in local, regional, and national conferences and workshops, and they profit from membership in professional associations and participation in their meetings. Teachers are now widening the scope of their reading, scanning numerous magazines and journals, viewing films and videotapes, and using the Internet as a source of fresh ideas. Perhaps during this period, they may be ready to take a close look at their own classroom teaching through videotaping themselves at work and reviewing the tapes alone or with colleagues. This is also a time when teachers welcome opportunities to visit other classes, programs, and demonstration projects. Concerns about how best to assess young children's learning, and how to report and document it, are also likely to blossom during this period.

Perhaps it is at this stage that teacher centers had the greatest potential value (Silberman, 1971; Bailey, 1971). Teacher centers were once places where teachers gathered together to help each other learn or re-learn skills, techniques, and methods; to exchange ideas; and to organize special workshops. From time to time, specialists in curriculum, child growth, or any other area of concern identified by the teachers were invited to the center to meet with them and focus on their concerns.

Stage IV: Maturity

Developmental Tasks

Maturity may be reached by some teachers within three years, by others in five or more. The teacher at this stage is likely to have come to terms with herself as a teacher and to have reached a comfortable level of confidence in her own competence. She now has enough perspective to begin to ask deeper and more abstract questions, such as "What are my historical and philosophical roots? What is the nature of growth and learning? How are educational decisions made? Can schools change societies? Is early childhood teaching really a profession?" Perhaps she has asked these questions before. But with experience, the questions represent a more meaningful search for insight, perspective, and realism.

Training Needs

Throughout maturity, teachers benefit from opportunities to participate in conferences and seminars and perhaps to work toward an advanced degree. Mature teachers welcome the chance to read widely and to interact with educators working on many problem areas on many different levels. Training sessions and conference events that Stage-II teachers enjoy may be very tiresome to the Stage-IV teacher. Similarly, introspective, in-depth discussions enjoyed by Stage-IV teachers may lead to restlessness and irritability among the beginning teachers in Stage I.

Summary

Figure 1. Stages of Development and Training Needs of Preschool Teachers.

In the above outline, four dimensions of training for teaching have been suggested: (1) developmental stages of the teacher, (2) training needs of each stage, (3) location of the training, and (4) timing of training:

Developmental Stage of the Teacher. It is useful to think of the growth of teachers as occurring in stages, linked very generally to experience gained over time.

Training Needs of Each Stage. The training needs of teachers change as experience accrues. For example, the issues dealt with in the traditional social foundations courses do not seem to address themselves to the early survival problems that are critical to the inexperienced. However, for the maturing teacher, attention to those same issues may help to deepen her understanding of the larger context in which she is trying to be effective.

Location of Training. The location of training can be moved as the teacher develops. At the beginning of the new teacher's career, training resources are most likely to be helpful when they are taken to her. In that way, training can be responsive to the particular (and possibly unique) developmental tasks and working situation, as well as

the cultural context that the trainee faces in her classroom, school, and neighborhood. Later, as the teacher moves beyond the survival stage, training can move away from the school to a training facility or a college campus.

Timing of Training. The timing of training should be shifted so that more training is available to the teacher on the job. Many teachers say that their preservice education has had only a minor influence on what they do day-to-day in their classrooms; this claim suggests that strategies acquired before employment will often not be retrieved under the pressures of the actual classroom and school situation. It is interesting to note that the outstanding practices to be observed in the small Italian city of Reggio Emilia that are admired worldwide are implemented by teachers with only a high school education, but with extensive and intensive on-site inservice training and support (Filippini, 1993).

However, even though it is often said that experience is the best teacher, we cannot assume that experience teaches what the new trainee should learn. To guide this learning, two of the major roles of the mentor and teacher trainer and educator are to make sure that the beginning teacher has *informed* and *interpreted* experience.

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[1] This paper was first published in 1972 under the title "The Developmental Stages of Preschool Teachers" in *Elementary School Journal* [73(1), 50-54]. It was revised and reprinted in 1995 as "The Developmental Stages of Teachers" in *Talks with Teachers of Young Children: A Collection* (Stamford, CT: Ablex). This version has undergone further revisions, though the same central ideas are presented.

[2]The female pronoun is used throughout this discussion in as much as most adults who work with young children are females. It is hoped that the proportion of males among teachers of young children will increase substantially in the near future.

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Appendix I

NEA News

Teacher Autonomy Declined Over Past Decade, New Data Shows

What a survey from the National Center for Education Statistics does and doesn't tell us about teacher autonomy, job satisfaction and student success.

neaToday

By: Tim Walker

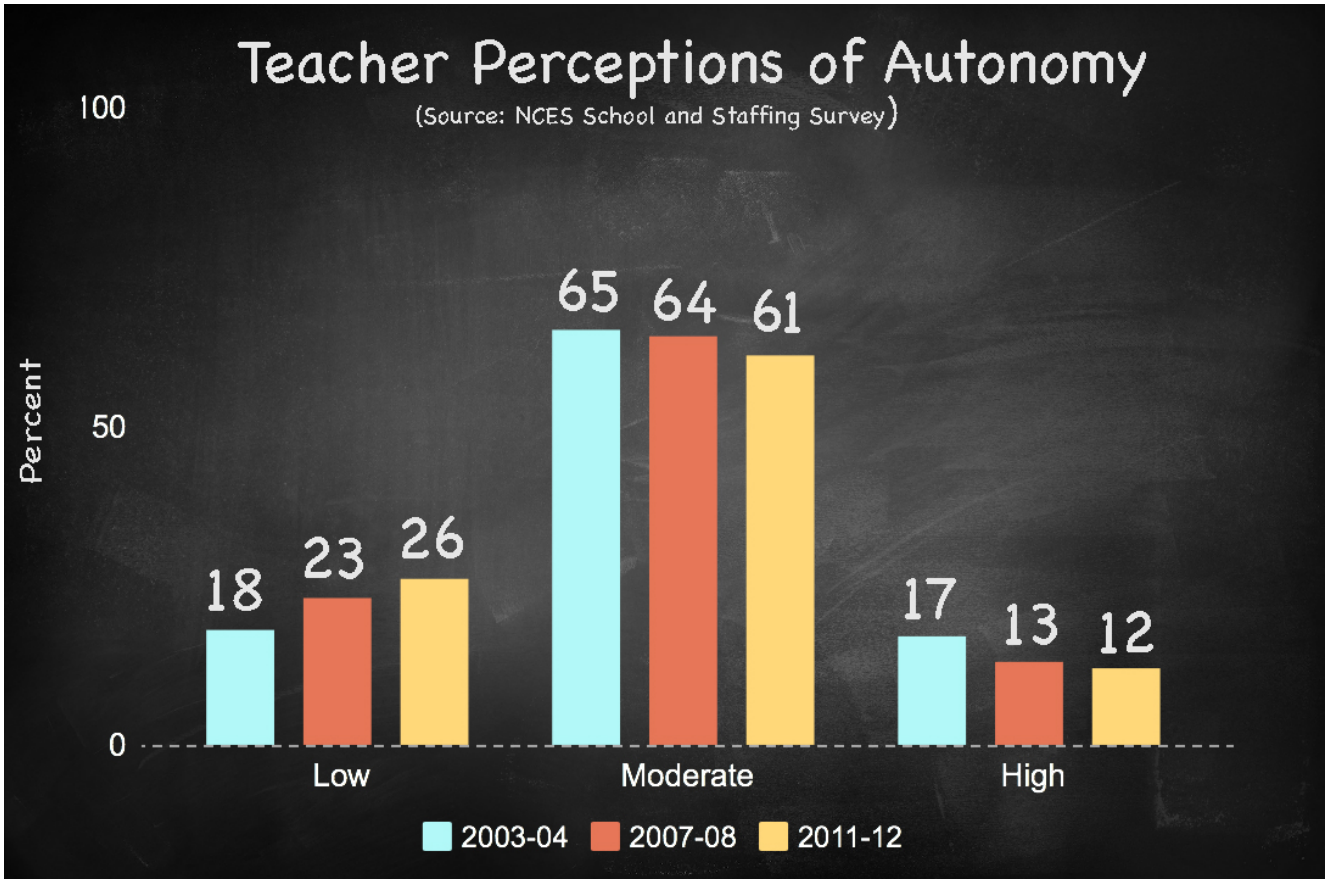
Published: 01/11/2016

Not exactly breaking news: Teachers believe their classroom autonomy suffered during the No Child Left behind era. According to just-released federal data from the National Center for Education Statistics (NCES), educators reported less classroom autonomy in school year 2011-12 compared to 2003-04. That teachers felt their independence wane during a decade marked by standardization and high-stakes testing won't come as a surprise to most educators, but having real data (a nationally representative sample of more than 37,000 American public school elementary and secondary teachers) to support this widespread belief is nonetheless significant.

Studies have repeatedly shown that classroom autonomy is a major factor in determining level of job satisfaction, simply because, says Richard Ingersoll of the University of Pennsylvania, it speaks to whether educators are treated as professionals.

"The data consistently show us that a big issue is how much voice, how much say, do teachers have collectively in the school-wide decisions that affect their jobs?" Ingersoll explains. "Teachers are micromanaged. They have been saying for a long time that one size *doesn't* fit all, all students are different. But they're told to stick to the scripted curriculum, which might work for a weaker teacher but it drives good teachers nuts."

The NCES took data from the School and Staffing Survey (SASS) from three school years (2003-4, 2007-08, and 2011-12) to compare responses to one central question: "How much actual control do you have in your classroom over specific areas of teaching and planning?" These specific areas include textbook selection, identifying contents and topics to be taught, selecting teaching techniques, evaluating and grading students, disciplinary measures, and the amount of homework assigned.



Generally, eighteen percent of teachers perceived "low" autonomy in the 2003-04 school year, right as NCB was being implemented. That number increased to 23 percent four years later and again to 26 percent in 2011-12. In all three years, a majority of educators reported "moderate" autonomy but at a slightly smaller percentage in 2011-12.

Across all three school years, no specific area was categorized as one in which teachers reported having a "great deal of control." Teacher techniques, evaluating students, discipline and homework levels all were labeled as "moderate," although again by a smaller percentage in 2011-12. Selecting textbooks, content topics and skills were the two areas in which teachers reported the least amount of autonomy in all three school years.

It might be tempting to look at the SASS survey and say, "Well, most teachers have 'moderate' levels of classroom autonomy. Nothing wrong with that, so let's move on." But "autonomy" is a nebulous concept that

doesn't necessarily tell us a lot about, for example, teacher success or job satisfaction, and the SASS survey doesn't dig very deep beyond its basic questions.

Does a teacher, for example, who reports a moderate or even a large amount of autonomy actually have the time and space to actually exercise that autonomy? What are the other competing demands placed on educators that they have to cram into a single school day? Does moderate autonomy create a creative and successful classroom and higher job satisfaction for educators? As researcher Kim Farris-Berg and co-author of ***Trusting Teachers with School Success: What Happens When Teachers Call the Shots*** points out, educators should have the opportunity to exercise significant control over their classrooms and not be satisfied with barely acceptable levels of autonomy.

“The federal survey doesn’t ask whether teachers think it is possible or necessary to have real decision-making power at the school level, or if they think classroom autonomy is enough to influence their students’ success, or if they believe teachers should set the policies being implemented in the schools, or if they believe teachers as a profession should set any content standards,” Farris-Berg says.

In the United States, policymakers talk a lot about giving autonomy to *schools* that stops at the district or administrative level and often results in decision making that ignores the voices of educators and the community, says Finnish educator and scholar Pasi Sahlberg.

"School autonomy has often led to lessening teacher professionalism and autonomy for the benefit of greater profits for those who manage or own private schools, charter schools or other independent schools," Sahlberg writes here. "This is perhaps the most powerful lesson the US can learn

from better-performing education systems: teachers need greater collective professional autonomy and more support to work with one another. In other words, more freedom from bureaucracy, but less from one another."

Photo: Associated Press