

American Educational Research Association  
Studying and Self-Regulated Learning SIG

Pamela F. Murphy,  
Senior Chair  
SSRL SIG

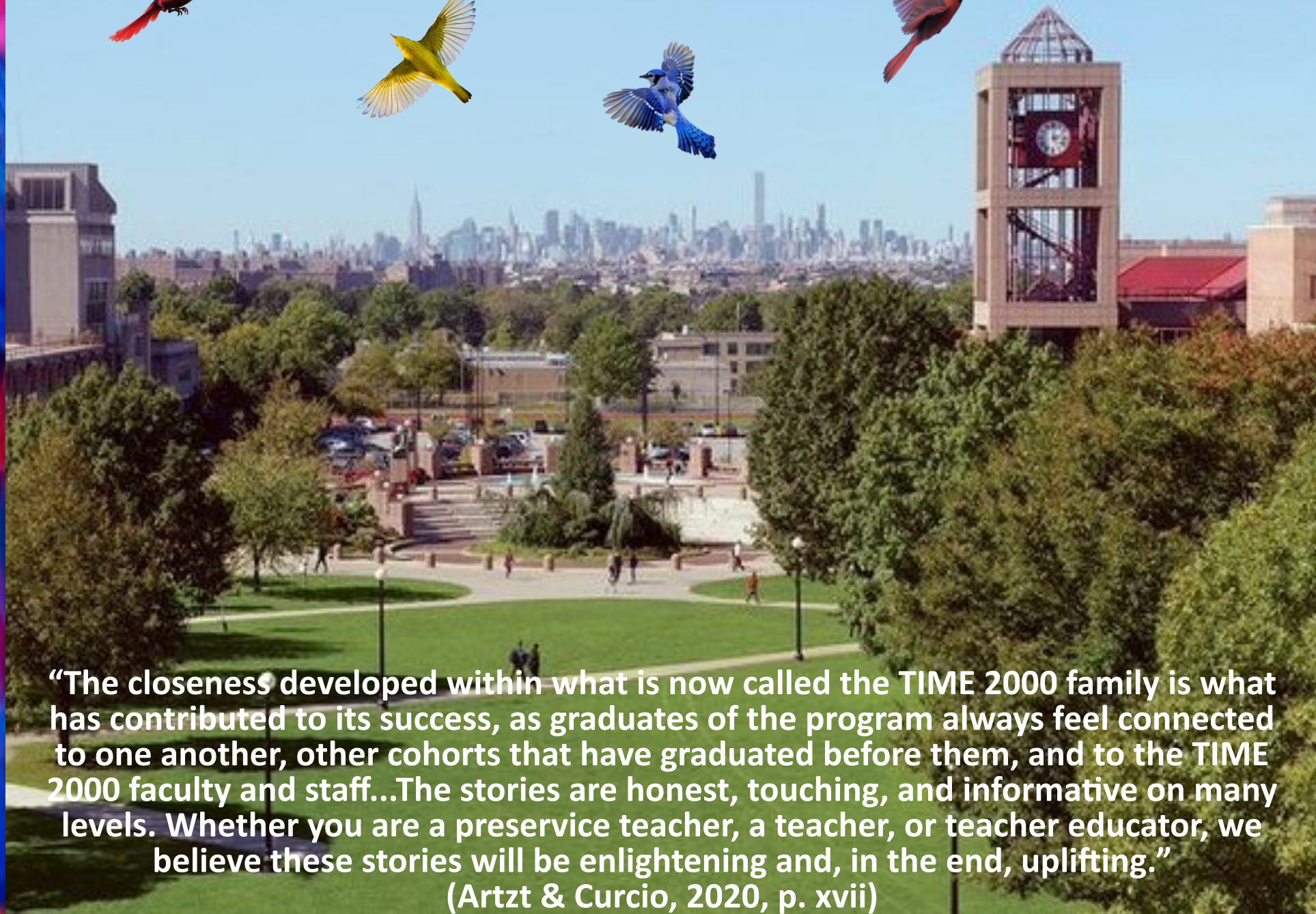
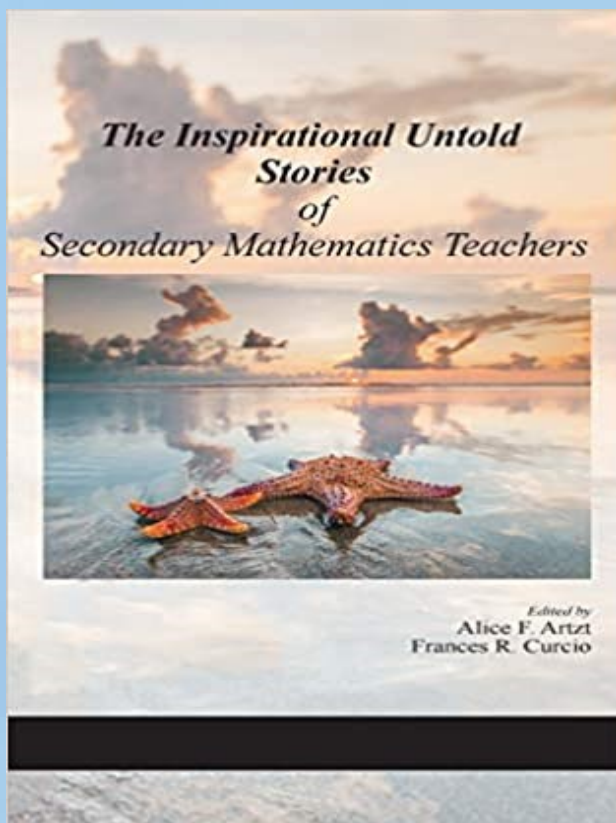
Héfer Bembunty,  
Editor-in-Chief,  
Content &  
Graphic Editor

Vol 4  
Issue 1  
February, 2021

# Times Magazine

## THE INSPIRATIONAL UNTOLD STORIES OF SECONDARY MATHEMATICS TEACHERS

Kendal Askins  
Alexandria Capozzoli  
Daniel De Sousa  
Angelina Ezratty  
Young Mee Kim  
Irina Kimyagarov  
Maria Leon Chu  
Michael London  
Mara P. Markinson  
Nerline Payen



“The closeness developed within what is now called the TIME 2000 family is what has contributed to its success, as graduates of the program always feel connected to one another, other cohorts that have graduated before them, and to the TIME 2000 faculty and staff...The stories are honest, touching, and informative on many levels. Whether you are a preservice teacher, a teacher, or teacher educator, we believe these stories will be enlightening and, in the end, uplifting.”  
(Artzt & Curcio, 2020, p. xvii)

# Developing Secondary Mathematics Teachers Is Human; Developing Secondary Mathematics Teachers with Self-Regulated Learning Is Divine

Héfer Bembenuddy



Héfer Bembenuddy  
Queens College

The on-going COVID-19 pandemic has significantly impacted teacher preparation programs, the teaching profession, and the entire school system. Most instruction is provided virtually and students miss interactions with their teachers and peers. In the midst of this, secondary mathematics teachers, prepared to make a difference in their students' lives, continue impacting their students. This special issue of the *Times Magazine* of the American Educational Research Association (AERA) Studying and Self-Regulated Learning (SSRL) Special Interest Group (SIG) highlights the experiences of some of those teachers.

Along with Eleanor Armour-Thomas, Professor of Educational Psychology at Queens College, Alice F. Artzt, Professors of Secondary Mathematics Education at Queens College, developed the [TIME 2000 program](#) to improve the teaching and learning of mathematics education. Frances R. Curcio, now a Professor Emerita of Secondary Mathematics Education, joined her as Co-director of the program. The TIME 2000 program has an uncompromising emphasis on developing secondary mathematics teachers through its robust family-like disposition, networking tradition, and rigorous curriculum. The program has demonstrated that it is possible to triumph over obstacles and challenges to become effective teachers. The TIME 2000 program aims to transform teacher candidates into precious diamonds who, with passion for learning and teaching, could make a difference in secondary school classrooms and communities.

Artzt and Curcio invited twelve teachers, graduates from the TIME 2000 program, to share their experiences in the program and their experiences as teachers in the book, *The Inspirational Untold Stories of Secondary Mathematics Teachers* (2020). In the book, also edited by Artzt and Curcio, the teachers relate events and aspects of the program that impacted their lives and journey after graduating from the program. Their stories are personable, insightful, and passionate.

The book contains evidence of the teachers' usage of self-regulated learning strategies, sustained self-efficacy beliefs, goal setting and planning, self-monitoring, task-value, help-seeking strategies, and their willingness to delay gratification. Thus, we invited the teachers to share their stories here. We suggested that they reflect on their professional development as secondary mathematics teachers, how they integrate self-regulated learning in their teaching, and what advice they might have for teachers and aspiring teachers. Readers will enjoy Artzt and Curcio's inspiring preface to the special issue, Stephen Pape's book review, Linda Sturges' commentary, and Darolyn Flaggs and Taylor W. Acee's letters to the teachers.

After reading *The Inspirational Untold Stories of Secondary Mathematics Teachers* and teachers' reflections in the *Times Magazine*, we are convinced of the vital role self-regulation of learning, self-efficacy, delay of gratification, and the cyclical self-regulated culturally proactive pedagogy model play in teaching preparation programs and classroom teachers' successes.

**Self-Regulated Learning.** In her reflection, Alexandria Capozzoli stated, "I believe it is very important to embed self-regulated learning (SRL) into daily teaching practice" (p. 7). All students have the power to be self-regulated learners. Self-regulatory processes help students learn effectively, set goals, select appropriate strategies, self-monitor, seek help, and self-evaluate their learning process. Students can keep diaries, logs, and weekly planners while reading, writing or solving mathematics problems. Self-regulation helps to sustain motivation in the face of distractions and obstacles.

**Self-Efficacy Beliefs.** Students need to be self-efficacious to be academically successful. They need to believe in their capability to learn and perform designated tasks. Mathematics teachers could help their students acquire self-efficacy by helping them to master necessary skills and by providing accurate and persuasive verbal praise for tasks completed at the target level. Self-efficacy is positively correlated with academic achievement, high GPA, high test performance, homework completion, and classroom management. Self-efficacy is an antidote to mathematics anxiety and fear and helps maintain effort, commitment, and persistence. Daniel De Sousa stated that he wanted to "increase students' self-efficacy to help increase their motivation, as well as meeting them on their level so that they feel comfortable setting goals for themselves that they believe they have the ability to accomplish." (p. 8)

**Delay of Gratification.** To be academically successful in mathematics classes, learners need to have the skills and the will to delay gratification. Sustaining effort in light of obstacles and attractive competing alternatives to school tasks requires remaining task-focused and goal-oriented. The TIME 2000 teachers understand the importance of delaying gratification since they have been doing that since they entered the program and the teaching profession. Teachers could help students delay gratification by setting short- and long-term goals, and by providing various learning strategies and resources they can have at their disposal. Keeping homework logs and diaries effectively promotes students' value of delaying gratification.

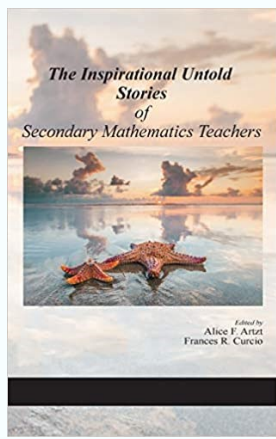
## Cyclical Self-Regulated Culturally Proactive Pedagogy.

The TIME 2000 students understand the important role that culture has in teaching

mathematics. Culturally responsive teaching, culturally relevant teaching, differentiated instruction, and multicultural education have been essential in considering students' cultural perspectives, personalized instruction, reinforcing students' interest and development, and adapting instruction and the environment to accommodate individual needs. Despite these significant advances and considering new developments in educational psychology, those crucial models need to be complemented with the conceptualization of teachers as culturally proactive agents through cycles of self-regulation.

The self-regulated model focused on the development of self-fulfilling cycles of academic self-regulation in which both learners and teachers are culturally proactive in celebrating equity, diversity, and inclusion while learning and teaching take place, starting in the classroom, continuing at home, and completing the cycle when students return to the classroom with the homework or tasks completed. The emphasis on the cyclical nature of learning and teaching, the proactive role of both students and teacher, and construing students as agentic, self-efficacious, and self-regulated learners is missed in previous models. Similarly, the role of the culture as a dynamic and synergistic realism in which both the students and teachers influence learning, teaching, and the entire classroom environment and teachers' concomitant identity as self-regulated learners and self-regulated educators is missed in the previous models.

We acknowledge the assistance provided by Alice Artzt, Fran Curcio, Pamela Murphy, Stephen Pape, Linda Sturges, Darolyn Flaggs, and Taylor Acee to the earliest drafts of this issue. We appreciate the teachers' contributions and the laudable work of our copy editor, Sarah Young. The TIME 2000 program should be replicated in different institutions and other disciplines. The teachers' reflections support the notion that self-regulatory processes have helped them sustain motivation and professional goal-oriented tasks across time and obstacles. Evidently, *The Inspirational Untold Stories of Secondary Mathematics Teachers* demonstrates that nurturing and developing secondary mathematics teachers is human, but nurturing and developing secondary mathematics teachers with self-regulated learning is divine.



# TIME 2000: A Mathematics Education Program Incorporating Self-Regulated Learning

Alice F. Artzt & Frances R. Curcio

Queens College ([gctime2000@qc.cuny.edu](mailto:gctime2000@qc.cuny.edu))

The [TIME 2000 program](#) grew out of the recognition that to recruit, prepare, and retain preservice secondary mathematics teachers, undergraduate teacher candidates would have to be immersed in a program carefully planned to meet their social and emotional needs, support their motivation to persevere through a challenging mathematics major, and engage them in continuous reflection on how they and others learn mathematics.

By recruiting students out of high school and offering them courses in the Psychology of Learning Mathematics and Calculus as soon as they enter college, the students immediately begin to reflect on the teaching and learning of mathematics. More importantly, students work in study groups and form friendships that last throughout their stay in the program. Their closeness with one another and with the professors who teach in the program, as well as being exposed to graduates who return to the college to speak about their experiences, contribute to their motivation to persist and complete the program, and more importantly, to attain teaching positions that they remain in for their entire careers.

As professors, teaching within such a program brings many advantages and challenges. Once the students enter the program, we consider them as family. We view educating these future teachers as similar to how parents view raising their children. Just as parents have lofty goals for their children, we, as professors, have lofty goals for our TIME 2000 graduates.

We tell them right from the start: "You are not going to be just mathematics teachers, you are going to be SUPER mathematics teachers and LEADERS in the field. You will be the mathematics teachers who help the students who think they can't learn math. You are going to be the mathematics teachers who change your students' negative perception of math. You are going to be the mathematics teachers who change the world one student at a time!"

Indeed, these are lofty goals since our entering first-year students clearly identify only as students and must transition in a few short years to identify as teachers who bear the responsibility of educating students just a few years younger than themselves.

Self-regulated learning, motivation, and self-efficacy play a central role in the design and implementation of the TIME 2000 program, and thus, in the education of all the students in the program. For example, from the beginning of the program, students are told that at the end of every year, they must submit a portfolio, in which they reflect on their developing knowledge, beliefs, and goals with respect to mathematics, the way students learn mathematics, and the teaching of mathematics. They are asked to draw this information from reflecting on their own experiences in college mathematics courses and other courses. They are asked to take a metacognitive perspective on their learning and make adjustments as they see fit.

TIME 2000 students report their self-regulated strategies in their yearly portfolios and the journals they write and submit at least once per semester. Motivation to succeed in this program is high as students work together and depend upon one another and their dedicated professors to help them. Everyone in the program has a shared goal, which is to maintain their place in the family and graduate as highly effective mathematics teachers.

Of course, for some students, the scholarship is an added incentive to keep high grades and persevere during a very demanding program. TIME 2000 is now in its 22nd year of service to the community and has established itself as a high-quality program. Students who are part of the program take great pride in being a part of the TIME 2000 family in which they are treated with high esteem by all.

Writing this book was a sheer act of pleasure. The two of us have been working together for the past 20 years, and TIME 2000 has been a labor of love. Over the years, we have added many components to the program (e.g., newsletter, field day, class trip, hosting a conference at the school, attending a mathematics education conference off-site, portfolios, once-per-month seminars, small-group conferences with students, journals, innovative courses, innovative fieldwork).

Although we have data showing our program's success in terms of students' retention in the field and feedback from hiring agencies, we have not been able to assess the value of each

of the many program components we have developed. So, when deciding to put this book together, we tried to choose the graduates we felt might focus specifically on unique features of the program that impacted them. All of our graduates are like our children, and they jumped at the chance to participate.

We had a lovely meeting with them at the initial stage of book writing to share our vision of the book and get their ideas. Together we decided who would feel most comfortable writing about features of the program that impacted them most. From there, we enjoyed a full year of exchanging drafts with them until they and we felt comfortable and proud of their final versions. It was exciting to read their self-reflections, especially since so many of them had graduated many years ago. They are a testament to the success of a program whose main feature is self-regulated learning.



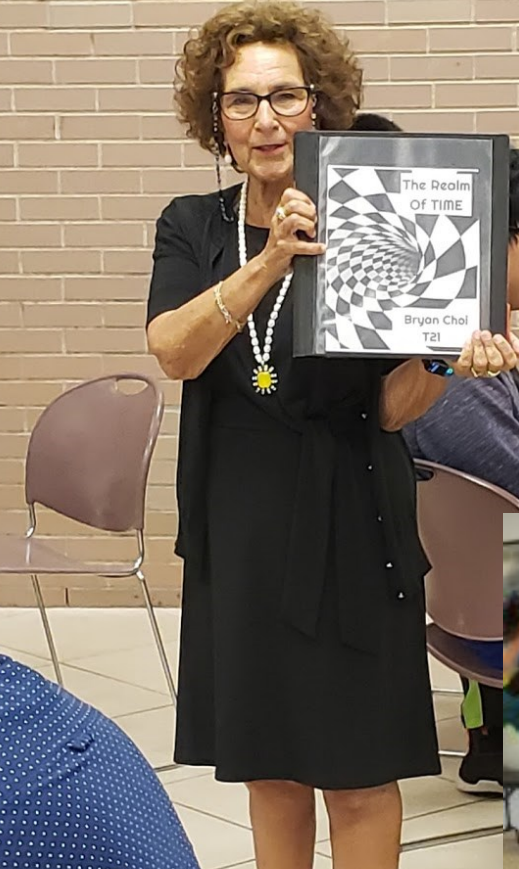
Dr. Alice F. Artzt, Professor, Secondary Mathematics Education, Director of the TIME 2000 Program, and Co-director of Secondary Mathematics Teacher Preparation at

the City University of New York, developed the TIME 2000 Program, creating a model for the improvement of the teaching and learning of mathematics. She proudly wears many hats: teacher, researcher, advisor, mentor, curriculum developer, supervisor, wife, mother, and grandmother.

Dr. Frances R. Curcio, Professor Emerita, Secondary Mathematics Education, was Co-director of the TIME 2000 Program in which she coordinated the innovative field work and designed and taught innovative courses in the program prior to her retirement from Queens College of the City University of New York, in January 2020. She has earned an international reputation in mathematics education having conducted multiple People-to-People Ambassador Program study tours for mathematics teachers, serving as a member of the Board of Directors of the National Council of Teachers of Mathematics (NCTM), editing NCTM yearbooks and other texts, and authoring numerous publications.



# TIME 2000 PHOTOHISTORY AT A GLANCE



*The Inspirational Untold Stories of Secondary Mathematics Teachers*  
by Alice F. Artzt and Frances R. Curcio (Editors). Information Age Publishing, 2020, pp. 102. ISBN 978-1-64802-201-2. \$39.09.

# The Development and Triumph of TIME 2000 Secondary Mathematics Teachers: A Book Review Stephen Pape



In *The Inspirational Untold Stories of Secondary Mathematics Teachers*, Alice Artzt and Fran Curcio document their work within TIME 2000, an inspiring teacher preparation program. This book discusses the important characteristics of this program and stories of the impact on individual graduates of the program who frequently questioned their pursuit of a college degree or becoming a teacher. They relate that they were inspired and empowered by the elements of the program, especially the personnel who devote their careers to developing mathematics educators. These stories provide a voice to these individuals' journeys within TIME 2000 and into their teaching careers. As Randolph Philipp writes on the Endorsements page, "These stories highlight that the path to teaching is often indirect, rocky, and filled with doubts. But these poignant stories are powerful because they are so honest" (p. vii).


This book has a special place for me. I was an early graduate of the Secondary Mathematics Education program (1991) at Queens College prior to the inception of TIME 2000. I can attest to the powerful and inspirational program that helped me become the mathematics educator I was as a middle school teacher and am now as a college professor. I recall the camaraderie developed by Alice Artzt (prior to Fran Curcio joining the faculty at Queens College) that propelled my colleagues and me forward.

I am proud to be a graduate of this program. I know that many of us who graduated from the program have pursued long secondary or higher education careers as mathematics educators. Alice Artzt encouraged me to pursue my doctorate within a new concentration in the Educational Psychology PhD program at CUNY Graduate School. Alice was a supporter and champion for me and this program. My career trajectory was shaped by her encouragement and instruction.

TIME 2000 was created in response to the growing shortage of secondary mathematics teachers. This shortage has resulted from teachers' dissatisfaction with their positions, limited professional status, low salaries, and often poor working conditions. To counter these conditions, the TIME 2000 program was designed to better prepare teachers for the challenges they would encounter, including supporting the professional identities and a sense of belongingness within a professional community. This is an important backdrop to the program described in the first chapter, "Preparing Secondary Mathematics Teachers."

This first chapter outlines important characteristics of effective teacher preparation programs gleaned from TIME 2000 and can inform other such programs. Importantly, TIME 2000 seeks to recruit talented mathematics students while they are still in high school. The program personnel reach out to these students and invite them to the program through multiple means, including the TIME 2000 Celebrates Mathematics Teaching event held on campus

**S**tephen Pape is a professor of education and former director of the Doctor of Education program at the Johns Hopkins School of Education. His research focuses on technology-enhanced classroom contexts that foster mathematical understanding and the development of strategic behaviors.



each year. Artzt and Curcio describe the program as "a close-knit learning community" (p. xii), which I can attest to as a graduate of the precursor to TIME 2000.

Alice Artzt, at that time, created a supportive and welcoming program that inspired students to reach their full potential as educators and to reflect on their experiences in good and not-so-good times. I recall a time when I had a rough day—there was violence outside the school in which I was working, and I had found myself in the middle of it, only narrowly missing the swing of a bat—and the class together took the time to process the incident before we began the material for the evening. It is the close attention to students and their experiences that supported the development of this close-knit group of individuals, which supported the development of authentic friendships and study groups that resulted in success in my era and within TIME 2000 cohorts.

There are several other elements of TIME 2000 that provide a positive context for effective mathematics educators' development. First, the coursework has been carefully considered. For example, students begin with an education course in the first semester of their freshman year, called "The Psychology of Learning Mathematics." This course provides students with a foundation for understanding the psychology of learning in mathematics rather than educational psychology in general. This understanding supports their later learning of mathematics pedagogy. They also engage in a field experience modeled after a Japanese lesson study during their freshman year.

The experiences described in this first chapter provide ample evidence of effective coursework to adequately prepare students for the challenges of teaching mathematics. The program attends to leadership development through organizational structures such as a tutoring organization and putting on an annual conference. Further attendance at this and other professional conferences and engagement with mathematics teachers build a strong sense of belonging within a professional community.

In the program, students have ample opportunities to reflect upon their experience, which leads to meaningful learning about self and their work as a teacher. Artzt and Curcio proudly indicate that "this support system is the reason that the retention record of TIME 2000 students in teaching after five years is over 92%" (p. xvii), which far exceeds the retention rate of teachers nationally. The program components' impact is evidenced within the stories of the individuals in the rest of the book as they begin their teaching careers.

The foreword for the book begins with the following statement:

Storytelling has the potential to reveal what is in the heart and mind of the storyteller.

Throughout the ages, storytelling, both orally and in writing, has been the means to pass on traditions, cultural expectations, and social mores and offer life lessons by communicating and connecting with people. (p. ix)

This book does precisely that. Twelve courageous individuals share their journey toward teaching as a career, as well as their triumphs and struggles as secondary mathematics teachers. These stories both inspire and inform us. For example, Maria Leon Chu's story portrays the importance of giving oneself the grace to struggle as a new teacher and the affordances teaching has provided her personally. She writes:

On some days, teaching is like climbing a vertical hill, it just seems that impossible.

Then again, when I think back to everything teaching has done for me, I can't say I regret it. Speaking in front of a classroom has done wonders for my shyness. Teaching has molded me into a more assertive and confident person. Teaching also gives me the opportunity to build meaningful relationships with my students. (p. 11)

Michael London echoes this journey from shyness to teaching confidently in his story.

Julio Penagos' story illustrates the power of TIME 2000. Growing up in an area that was fraught with violence in Colombia, he recalls nightmares. One such dream provided two images of himself—one that was of a flourishing man; the second was that of a "muddled individual" (p. 46). These early experiences afforded Julio the opportunity to develop the empathy and compassion that led to his dedication as a teacher. It is the flourishing man that he was enabled to realize within the TIME 2000 program.

Julio's story is only one of many similar inspirational stories included in this book. In a related journey, Sabrina Joseph repeated to herself as a high school student, "I WAS GOING AWAY FOR SCHOOL" (p. 77). Unfortunately, family circumstances did not permit her to live this dream. However, she found her passion as a student in the TIME 2000 program, which enabled her to pursue an undergraduate degree. She concludes her inspirational story with the following:

As an 18-year-old with her dreams of going to college out of town being crushed, I would have never thought that this would be where I am 13 years later. Sometimes doors get shut, or slammed in your face, and you feel like you are failing, but as we have all heard before, setbacks are just set-ups for epic comebacks. I believe that it was always all part of God's plan for my life—to shape me and to help me always be grateful. I look back now and am so thankful that I didn't go away to college and more thankful for the kind lady with the sweet voice who answered the phone and told me that there would always be room for a good student [in the TIME 2000 program]. (p. 80)

The postscript resounds with the praise of these courageous and inspiring individuals. Artzt and Curcio write,

If we have learned nothing else from reading these touching and authentic untold stories, we have learned that great teachers are great caring human beings who have multiple abilities and talents and also have a passion for teaching, mathematics, and are dedicated to their profession and helping their students. (p. 89)

These stories are compelling and inspiring. They propel one to believe in the human spirit and understand the powerful opportunity Artzt and Curcio have created within their TIME 2000 program. This book should inspire many young students considering pursuing a teaching career. I thank Alice Artzt for my experience and trust that these courageous individuals do the same. Artzt and Curcio have inspired so many, but more importantly, they have provided them with the tools to create powerful learning experiences for their students. This book is the inspirational untold story of the development and triumph of TIME 2000 secondary mathematics teachers.



# Kendal Askins

## CULTIVATION OF LOVE FOR MATHEMATICS THROUGH THE TIME 2000 PROGRAM

**K**endal Askins is an assistant principal at an intermediate school in Pennsylvania, currently in her 13th year of education. She attended Queens College, where she received both her bachelor's and master's degrees in Mathematics Education. She is certified in mathematics grades 7-12 in both New York and Pennsylvania, and she recently received her certification in Educational Leadership.



### PROFESSIONAL DEVELOPMENT

I have wanted to teach since I could speak. I always knew that I would be a teacher. I just did not know what I wanted to teach. I often found myself wanting to teach the grade that I was in because that was what I was familiar with at the time. When I look back now, I realize that I always had a love for mathematics, but that love was not cultivated until I went through the TIME 2000 program.

In the TIME 2000 program, I learned to appreciate the process and not just the outcome. I entered into teaching with that same mindset and began to develop lessons that focused on conceptual understanding. I wanted my students to experience the appreciation for mathematics that I did not get to experience until I was teaching.

Having the opportunity to tell my story from the perspective of a gifted support teacher with a mathematics lens was very exciting. When writing a chapter for *The Inspirational Untold Stories of Secondary Mathematics Teachers*, I realized exactly how much TIME 2000 has influenced my teaching practice. Much of what I developed with the gifted students that I worked with was modeled after my experiences in TIME 2000.

### SELF-REGULATED LEARNING AND TEACHING

The school I currently work in utilizes a Positive Behavior Support System that has been developed by the teachers and driven by the district goals. In education now, especially amid COVID-19, there has been a huge shift to focus on students' social and emotional learning and how their social and emotional needs impact them as students.

The Positive Behavior Support System that we currently have in place focuses on students being aware of who they are as learners, how they learn best, and what they need to be successful in their learning environment. It shifts the

focus of others being responsible for their learning to them taking ownership of their learning.

This is also a shift for teachers. Teachers are used to being the *solver of all problems*. This system forces them to be more of a *facilitator* and allows space and time for students to struggle through these processes productively. As a leader in my building, it is my job to facilitate these processes through all my interactions with both students and teachers. I try to aid in this shift by providing a different lens for them to look through.

### ADVICE TO ASPIRING TEACHERS AND TEACHERS

#### YOUR EXPERIENCE IS YOUR REALITY.

When you are a teacher in a classroom, you have to create a space where everyone has a common reality, and that reality is learning.

#### KEEP YOUR LOVE FOR WHAT YOU DO AT THE CENTER OF YOUR FOCUS ALWAYS.

This will help you to appreciate and learn from both the good and the bad days.

#### CHANGE DOES NOT MEAN BAD; IT MEANS DIFFERENT.

Be comfortable being uncomfortable because when you are uncomfortable, you are learning.

### CHALLENGES, SURPRISES, AND SUCCESSES

"Being an educator is not just a job for me, it is who I am. I have wanted to teach since I could speak and my love for teaching continues to develop every day. I believe that one person can make a difference and I strive to be that person."  
(Askins, 2020, p. 75)

# A The Inspirational Untold Stories of Secondary Mathematics Teachers: An Amazing Experience

Alexandria Capozzoli

## PROFESSIONAL DEVELOPMENT

I always did well in math. It came easy to me, and that made me love the subject. I knew I wanted to teach mathematics when I was in seventh grade and had a hard-working first-year teacher who tried her best but could not break down the concepts in a way that my peers understood. She taught using direct instruction, and it was not engaging enough for the students who already lacked the fundamentals they needed.

Luckily, I could grasp the concepts when she taught them and then during the time where we were expected to practice what she taught, I would explain the day's concept to my peers in a way that they understood. Seeing my peers' faces when they started to understand (the "lightbulb" moment) was rewarding to me.

My friends told me how happy it made them that I explained the concepts in a way they understood because they *wanted* to learn. That motivated me to become a math teacher so that I could help as many students as possible. I believe that everyone *wants* to learn—and I wanted to be the teacher who allowed my students to be successful in the math classroom by presenting the math topics in a way that was engaging and attainable to them.

TIME 2000, my undergrad program, was the most amazing program that emphasized the importance of conceptual knowledge of mathematics. TIME 2000 was *not* easy for me, but I knew that teaching was what I was destined to do, and that

helped me get through the tough times. I was so grateful to be in a program that, every step of the way, was teaching me how to teach my future students in a way that I *knew* students needed.

Once I began teaching, I saw how well TIME 2000 prepared me—with knowledge of mathematics and



Alexandria Capozzoli is a lifetime learner and a lover of mathematics and mathematics education. She loves teaching mathematics to her students through discovery learning and showing them the importance of their knowledge through real-world application.

knew that I cared about them. It made me excited to share my experiences with the readers and how being a caring teacher makes such a difference in the classroom.

## SELF-REGULATED LEARNING AND TEACHING

I believe it is very important to embed Self-Regulated Learning (SRL) into daily teaching practice. In my classroom, I strongly emphasize the eight Mathematical Practices provided in the Common Core Standards. I present and explain the Mathematical Practices at the beginning of the year and ask students to keep them in mind as we work through our concepts and applications.

At the end of each unit, I have my students reflect on their learning and identify which of the Mathematical Practices we used during that unit and when/how. Knowing and applying the Mathematical Practices teaches my students how to be self-regulated learners by self-monitoring. Each day, they plan how to approach each problem, use strategies, monitor their progress as they are working through it, and reflect on how they did.

When applicable, part of their plan includes a check to make sure that their answer is correct. If their check or reflection on the process shows that the answer is not correct, they repeat the cycle with a new plan. Since we have real-world applications daily, this is an almost daily process in my classroom.

## ADVICE TO ASPIRING TEACHERS AND TEACHERS

- Show your students that you care about them, their wellbeing, and their education.
- Always plan and be prepared, but flexible.
- Reflect on your knowledge, your teaching, presentation, planning, and every aspect of your delivery always to put your best foot forward and offer the best possible education for your students!

### THE POWER OF CARING

"When people ask me what is the *most important* aspect of classroom management—and more importantly, being a teacher, I always say the students need to know you CARE. Caring is not something you can learn, but you can learn *how to show* students that you care. Everything I have done in my teaching career to show my students that I care about them and that they matter has been in ways that I learned in my undergraduate teacher preparation program and by talking to other program graduates and colleagues for their opinion on how to handle situations. Students need to know that you care about their learning, but more importantly about *them*." (Capozzoli, 2020, p. 88)

pedagogy. My students love coming to my class because they are met with consistency and high expectations. Students thrive in an environment where they know the teacher believes in them and teaches them in an attainable way.

Writing my chapter in this book was an amazing experience. It allowed me to reflect on some of the most impactful students I have taught and experienced in the classroom. I realized how important it is that my students





**Daniel De Sousa**

# Self-Regulated Learning Is at the Core of My Instruction

**D**aniel De Sousa was born in Bellerose, New York, graduated from the TIME 2000 program at Queens College, and is currently completing his master's degree in secondary mathematics education. He is in his fourth-year teaching and is the mathematics department leader at the Business Technology Early College High School.

## PROFESSIONAL DEVELOPMENT

Growing up, I was not too fond of mathematics. I felt that mathematics was not something I was good at. I felt like I could not do it. Maybe this was due to not being successful earlier on or seeing other students excel while I did not. It was not until I met my 11th-grade Algebra 2 teacher, who showed me that math did not just work because there was some kind of *mystical element* pulling strings making it all happen, that I changed my mind.

When my teacher showed me how/ why the math worked (e.g., proving the quadratic formula), I was hooked. I needed to know why everything else worked and where it came from. That is what I want to do for all my students. I want to ensure I could be someone who can show them that math can be exciting, relatable, and something that can be explained. My amazing experience in the TIME 2000 program solidified my knowledge, skills, and disposition for teaching mathematics.

## SELF-REGULATED LEARNING AND TEACHING

Reflecting on my teaching, self-regulated learning is at the core of my instruction. I believe that how students view themselves and how they approach the activities in my class (and how I try to enhance their experience) is a driving force for my students' academic success. In my chapter, "My Unexpected Happiness," published in *The Inspirational Untold Stories of Secondary Mathematics Teachers*, edited by Alice F. Artzt and Frances R. Curcio, I wrote about a girl I called Isabel whose lack of self-efficacy and pressure from her parents were key forces that made her think she could not succeed.

We typically see students with low self-efficacy when it comes to mathematics classes. Look at what I wrote above, so did I! For me, this was where I wanted to help make a change for students, increase students' self-efficacy to help increase their motivation, as well as meeting them on their level so that they feel comfortable setting goals for themselves that they believe they have the ability to accomplish.

*Know Your Growth* is an activity that my co-teacher and I created that ties well with self-regulated learning. Students take a brief entrance ticket (formative assessment) within this activity, where students answer a few questions and reflect on how they did (reflecting on their work).

There are always three symbols

representing the groups they could be placed on the top of their slips. With these data, I would go around the room and circle one of the three emojis on top of their paper (I like to choose pictures that students identify with, e.g., Pokémon, superheroes, cartoon characters, or even symbols that represent the season we are in) signaling in a nonconfrontational way what group they will be in for the day. What is significant about this particular step is when students then split up into their group for the day, students can identify their goal for the day and work within their group to meet that goal.

### MY UNEXPECTED HAPPINESS

"As a child I hated learning mathematics. Thinking back to when I was in middle school, any time someone asked me whether I liked mathematics, I always responded with, 'It is so boring and not interesting.' I really struggled with mathematics up until high school and even then it took such a long time for me to appreciate it. But, when I was asked what I wanted to be when I grow up, I always answered that I wanted to become a teacher... My love of mathematics blossomed in high school... Sometimes the most difficult students end up bringing teachers the most satisfaction." (De Sousa, 2020, p 26-29)

Throughout the small group instruction, students have learned to determine how long they need to complete the task, collaborate with their peers, practice, and of course, reach out for the help of the teacher (for that group). I love this method because, at the end of the instruction for that day, students self-assess based on their goal that they/we set for the group that day.

Then these obtained data drive what we will do in the next lesson. Students have said they feel more confident by the end of the lesson. They feel more comfortable learning/working because of the group setting and their support without feeling pressured. Overall, I do see students' motivation and self-efficacy increase because through this process, they have learned how to be reflective and comfortable working/asking for help in their learning.

## ADVICE TO ASPIRING TEACHERS AND TEACHERS

Some advice I would give to aspiring teachers and current teachers would be to be kind to yourself, be (or not be) the teacher who inspired you to teach math, and have compassion while seek understanding. It is ok to strive to be the best you can be and still make mistakes and have some failures. As I always tell my students, "Mistakes and failures can always turn into a success. It depends on your perspective." There have been times where I have worked a lesson and by the end, I think that this lesson will be the

best thing I have ever done; and after I teach it, it is not as great as I thought it would be. Having a lesson not do as well as you intended is normal, but if you just leave it at that, you are truly missing an opportunity for growth.

When something does not go right, reflect and ask yourself, why. Determine what were the parts that worked and what did not work. Did you need to develop your questioning more? Maybe you needed to make that activity more hands on. Whatever it is, reflecting on your mistakes/failures is key. **Be kind to yourself**, you will always be learning how to be a better teacher. I view teaching as something that is ever-changing. The experiences that you create are the building blocks that will continually help you become a better teacher each day.

Try and **remember who inspired you to teach math, whether that person made you love math or discouraged you from learning mathematics**. I think back to some of the teachers who I had. Some never made the material relevant, some were mean and assumed that you need to memorize to do well. I always keep this in the back of my mind as a reminder that I became a teacher who will never make his students feel that way. I also think back to teachers who did encourage me to want to learn math and ultimately love math. Ask yourself, why did they make you feel inspired to learn math? How did they make you feel in their class? I think of these things to keep me grounded in why I became a mathematics teacher.

Growing up, a lot of my math teachers did not feel like they cared. My personal belief is that before you can teach you need to develop a relationship with your students. By creating an authentic relationship with your students can allow you to understand where they are coming from. For example, a student might skip your class not because they don't like you or would prefer to stay home. It is very well possible, that the student needs to stop by the deli because they don't have food at home, or maybe their parents can't drop them off early to school.

**Have compassion and seek understanding**. From my experience, doing this allows me to develop authentic relationships with my students and therefore having my entry point to help teach them. I am sure at some point in your life, you might have felt either lost, not motivated, needed guidance or just needed someone to help you get through something you were struggling with personally or educationally. Think about the teacher you would need at that time; That is what to strive for.





Angelina  
Ezratty

# TIME 2000 Principles and Self-Regulation of Learning Have Been Part of My Practice since I Began Teaching

## PROFESSIONAL DEVELOPMENT

I did not realize it at the time, but my childhood and adolescent experiences were building blocks for my personal and professional development as a secondary mathematics teacher. As early as 8th grade, I began tutoring. I attended a K-8 school and to get 8th grade service hours, and we had the option to spend our lunch with the pre-kindergarten students. We would read stories to the students at lunch and participate in hands-on learning through play during this hour.

Throughout high school, teaching experiences continued, but with peers instead of with younger students. In my first year of high school, my Algebra 1 teacher let me teach the previous night's homework. This experience became so routine that at some point in the school year, my teacher would hand me the smartboard marker as I walked into class and gesture to the board to signal that I was reviewing the homework from the night before.

In senior year, I worked towards getting service hours for the National Honor Society and tutored during one of my free periods. I sat at a table in the library and volunteered to tutor math or science, as those were the subjects through which I was working towards qualifying for the honor society. I found I enjoyed these moments, and sometimes if I were caught up on work, I would tutor extra periods. By the end of senior year, I started tutoring some of my friends in Physics and Math. I used to think it was such a shock that I became a math teacher, but looking back, it is not all that surprising.

Being asked to write a chapter in a book edited by my past professors with

chapters authored by my TIME 2000's peers was an honor. I was excited to reflect on and share my story. I was able to look back on college and graduate school with a sense of gratitude. Writing about the journey of where I was before college to where I am, allowed me to process how much I have grown. I went from a student myself to an experienced teacher.

## SELF-REGULATED LEARNING AND TEACHING

TIME 2000 principles and self-regulation of learning have been part of my practice since I began teaching. Students need to reflect on their learning, decipher what strategies work well for them, and set and achieve realistic goals. One of the current practices I am using to spark self-regulated learning in my students is to provide them with an example of each topic or standard's goal question. I ask them to answer, "What do I already *know* about this problem? What do I *want* to know about this problem?" Then when we have learned the topic/standard, we refer back to the question. The students then answer, "What have I *learned* to solve this problem?"

This series of questions is often referred to as *KWL*. I add my own set of questions to this by asking the students how they felt when first seeing the problem, using our school's *Mood Meter* to answer. We then repeat this when students have been exposed to the material. I then like to ask, "How does this help you build confidence as a learner?" Although this process can take time, students need to realize, especially in the middle grades, that just because something is scary does not mean it is impossible.

## ADVICE TO ASPIRING TEACHERS AND TEACHERS

**BE YOURSELF.** Something I have learned is that if you are not yourself, teaching is much more difficult and not nearly as much fun. In a system in which we often are trying to fit in with our school's goals, district, and latest buzz words, it can be difficult to stay true to whom you are. In my first year of teaching, I wanted to be just like my mentor teacher. However, by December of that same school year, I realized that I was not her and that that was okay and should be embraced. I started experimenting with methods that fit my philosophy of teaching. For example, I don't particularly appreciate walking around with a clipboard, but I do like taking a few minutes at the end of each week to ask my students how

they are and respond to each of them. This was not something my mentor did, and that was okay. I advise current and aspiring teachers to *be yourself*.

**TAKE TIME FOR YOURSELF.** In my earlier years of teaching, and sometimes still, I find it feels like I have a never-ending to-do list, which is true. As a teacher, you are never "done." There is always something more you can do. However, once you accept this, you begin to trust that although you may never finish *everything*, you will finish what needs to get done and do it well, but only if you are taking time to enjoy life in the interim. For example, in my first year of teaching, I would be planning every night and weekend. By my third year of teaching, I felt a little burnt out. During the March 2020 quarantine, I learned to slow down. I realized that I did not need to be working *all the time*. Fast forward to the fall of 2020, I found I was a better and happier teacher, having taken time for myself.

**HAVE FUN!** Being a teacher is so much fun. I feel so lucky that I get to work with young adults daily. I love to joke around with them, connect the latest pop-culture into my instruction, share my quirky personality with them, and empathize with their worries and concerns. I also love being able to get students to build their self-efficacy beliefs. Teaching can be a lot of work, and it can be frustrating, but it is also so much fun.

**A**ngelina Ezratty is a middle-level mathematics teacher in the NYC Department of Education. She attended Queens College for her bachelor's and master's degrees and continues to remain involved with the secondary mathematics preparation community.



## FROM THE MIRROR TO THE SMARTBOARD

"Our last day of school activity was for each member of the class, including me, to write our names in the center of a piece of paper and pass it to the other members of the class either writing a favorite memory, a well wish, or something similar. When I received my paper, I was moved to tears:

Thank you for being there for me.  
I came to grow as a successful student  
because of you. Thank you.  
Thanks for being the most supportive  
teacher I had this year.  
Thank you for getting me interested in  
math.

These comments actually motivated me to compile a portfolio this year—something I grew to *love* doing as an undergraduate; *full circle*.

Who I am and where I am today would not be possible had I not been lured by the attraction of being in a special program for people who had the same interests as I did... I am right where I belong, in front of a SmartBoard with a calculator." (Ezratty, 2020, p. 23)



# The TIME 2000 Program

## Broadened Me from a Self-Motivated Learner to a Student-Centered Teacher Young Mee Kim



### PROFESSIONAL DEVELOPMENT

My learning approaches and the TIME 2000 program were synergic in molding me as the teacher who I am now. My earliest memories from childhood are from elementary school. I was the young girl in third or fourth grade who, when never asked to, voluntarily worked on workbook questions. Since then, I have always been directing my learning process. I plan to study and enjoy learning the content. I also self-evaluate the effectiveness of my learning process and push myself further in areas of weakness.

The TIME 2000 program equipped and broadened me from a self-motivated learner to a student-centered teacher. I was an expert in studying independently before the program, but I was not aware of the art of teaching students to be independent learners. The TIME 2000 program educated me about student-centered instruction, where students were the main characters in the lesson. These strategies encouraged students to study in the same ways that I found to be most effective when I was a student.

When I began to teach, I employed these strategies to stir students' intrinsic motivation, arousing curiosity, and enabling students to see the mathematical content's beauty. I encouraged students to reason how certain formulas were derived and why they worked. During cooperative learning instruction, the students discussed and evaluated their ideas and solutions with their peers. My students were actively deriving and exploring the mathematical content with my guidance, instead of being passive participants in the learning process.

Moreover, I learned the crucial role a teacher's compassion plays in the learning process. As I was writing a chapter

**Y**oung Mee Kim received her bachelor's and master's degrees at Queens College and completed her Doctor of Education degree at Teachers College, Columbia University. Currently, she is an Associate Professor at Vaughn College of Aeronautics and Technology.

for the book, *The Inspirational Untold Stories of Secondary Mathematics Teachers*, I reflected on how my professors in the TIME 2000 program cared for me. I also reflected on how my professors hoped for my success when I was in the program and guided me when I was pursuing a higher degree. I am grateful to be a part of the TIME 2000 family. I find myself sharing what I received from my professors with my students. It gives me great joy to see my students succeed, and this drives me to spend more time preparing for engaging lessons that optimize student learning.

### SELF-REGULATED LEARNING AND TEACHING

As a self-motivated learner, the self-regulated learning (SRL) processes are found in my teaching and professional practices. I continue to seek out and evaluate better and more effective methods of delivering mathematical content in my instruction. For instance, I experimented with effective educational pedagogies in an online platform this semester. I searched for methods and technical tools that encouraged student engagement. I wanted to provide a similar learning experience to the students as they usually have in an in-person classroom.

I discovered various methods for students to share their work (e.g., screen sharing, sharing pictures on their phone, screen capturing students' work on camera) and participate in the lesson (e.g., annotating on screen, breakout rooms, polling). I evaluated and reflected on these methods to continue to provide an effective learning platform.

Professionally, the analysis of data that I conduct as part of the program evaluation for work and my research study stirred my curiosity; I wanted to learn in-depth about the ideas behind statistical topics. This led me to pursue a master's degree in Applied Statistics. I assessed my time constraints every semester and managed my time to enable my learning process.

### ADVICE TO ASPIRING TEACHERS AND TEACHERS

The elements that I find most crucial in my teaching are preparation, compassion, and reflection. I believe that *effective lessons begin from preparation*. Sometimes a lesson may go very well even when it was not planned for or different from what was planned. However, most lessons will be a by-product of the time and effort spent developing a thoughtful and detailed lesson plan.

Another component is *compassion*. Theodore Roosevelt once said, "Nobody cares how much you know until they know how much you care" (BrainyQuotes, n.d., Theodore Roosevelt Section). I hope aspiring teachers and I continue to have compassion toward our students. Caring for students and understanding students' interests and backgrounds are necessary to encourage student participation and develop lessons suitable for the specific student population. I want to share the compassion that my professors showed me with my students.

Lastly, we need to *continue to evaluate and reflect on our teaching practices*. There is no one perfect lesson for all students; varying student populations have different needs and interests. When I was a novice teacher, there were days when I was disheartened by the awful delivery of the lesson, even with hours of planning. However, I evaluated the areas that went wrong to improve the lessons. When we continue to reflect on our teaching practices and address our weaknesses, our lessons can only improve.

### FACULTY SUPPORT GOES A LONG WAY

**"I tried to meet with the students and talk to them before and after class and sometimes in the hallways to find out about their learning experiences and areas of concern. If students were struggling, I reached out to them. I strive to create an engaging, supportive, and positive learning environment... The word compassion was deeply rooted in me due to the genuine and heartfelt concern and support that I received and now I am paying it forward to my students."  
(Kim, 2020, 69-70)**



# The TIME 2000 Program and Self-Regulated Learning Helped Me Grow as a Teacher and an Administrator Irina Kimyagarov



## PROFESSIONAL DEVELOPMENT

Growing up, my experiences were atypical of my peers. I immigrated to the US as an eight-year-old, learning a new language and culture, reconciling the newness around me with what was embedded since my early childhood. My priorities and after-school activities were all in support and service of my family, helping taking care of younger siblings and other household chores while my parents worked to support the family. Whatever spare time I had, I used to focus on my learning.

My academic achievements were the only endeavor I had complete control over, the only thing that was uniquely mine. I did not have much time to focus on myself, on developing my identity or who I wanted to be. Despite all that, I knew that I enjoyed working with others and helping them learn as I did. I believed in the power of education and yearned to be able to provide others with the kind of support I wished I had.

Joining the TIME 2000 program at Queens College was by far one of the best decisions I have made. From the very first class, I was immersed in the teaching philosophies that formulated my professional ambitions and experiences. I found the nurturing and supportive environment I needed to grow as a person and an educator.

Writing the chapter for the book, *The Inspirational Untold Stories of Secondary Mathematics Teachers*, forced me to take a step back and consider the journey I went through to get to where I am today. It was a highly reflective and emotional task, one that revealed truths about myself I previously have not acknowledged. This experience was very much in line with the guiding philosophy of teaching and learning; you must reflect in order to grow.

## SELF-REGULATED LEARNING AND TEACHING

Self-regulated learning (SRL) has been a part of my development from the very beginning. Professionally, it is what drives my growth as a teacher and an administrator. I am always reflecting on outcomes and the actions that lead to them. Specifically, and especially now in the new remote teaching world, I find myself taking note of even the smallest planning and instructional decisions and their impact on my students' learning. Something as simple as body language while teaching in person is lost across the screen—and so my expressions of content has to be more deliberately visual in different ways.

As an administrator, I find myself supporting my teachers in identifying such behaviors that make all the difference in an in-person setting that now have to find new representations in a virtual world. Being a self-regulated learner is what helped my transition into the virtual teaching and learning world back in March. It is still what drives my innovation and what allows me to make the most appropriate professional decisions in my day-to-day work.

### A JOURNEY IN DEFINING MY INNER TEACHER

“Since becoming chairperson of the mathematics department in my school, I’ve enjoyed working with my teachers. I’m still a mathematics teacher, and my class consists of seventeen ‘students.’ As with any group of students, skills are always varied. I have the excellent teachers who need to continue being supported and challenged to be even greater. I have the teachers who need more of my attention and guidance. I have those who needed to be coached to proficiency, and yet others who needed an out-of-the box approach.” (Kimyagarov, 2020, p. 35)

**Irina Kimyagarov** is the chairperson of mathematics at Elmont Memorial High School of the Sewanhaka Central HS District. She attended the TIME 2000 program at Queens College, CUNY, for her undergraduate degree and continued her graduate studies there as well. Irina holds an MS Ed in Mathematics and an Advanced Certificate in School Building/District Leadership.

## ADVICE TO ASPIRING TEACHERS AND TEACHERS

**TEACHING IS AN EVER-EVOLVING PROFESSION, AND YOU MUST BE WILLING TO EVOLVE WITH IT.** When you accept the fact that the journey and the effort are what is important, the result will always be a success.

**REMEMBER THAT EVERY DAY IS A NEW OPPORTUNITY.** Whatever setbacks you may have had, each day presents a chance to start fresh and do better. Savor every success you have, and use it to propel yourself to new heights.

**BE HONEST WITH YOURSELF AND BE PROUD OF WHAT YOU DO.** If you can look at yourself in the mirror at the end of the day, and honestly say that you have done your best that day, under the circumstances of that day, then no matter what, you should be proud of what you accomplished that day—however small, or not entirely successful.



# Great Teachers Are Not Born Great. They Work Hard to Improve Themselves.

Maria Leon Chu

## PROFESSIONAL DEVELOPMENT

Growing up, I always felt the need to be perfect. Well into adolescence, I focused on excelling in my studies and felt that my teachers made a tremendous impact on my life. Not only did they teach me English and pique my interest in math, but they believed in me. They believed in my ability to succeed despite setbacks. They thought that I could do anything I set my mind to, and they provided me with opportunities and guidance to achieve my goals. To me, they were heroes, and I wanted to be just like them.

Fortunately, when I joined the TIME 2000 program, my professors gave me the same support. Even after I graduated from the program and struggled during my first-year teaching, they lent me a shoulder to cry on, quite literally, and continued to believe in me.

My first year was challenging. I approached teaching with the same high expectations for myself that I had since childhood, but try as I might, I could not get some students to behave, let alone focus and learn math. Balancing classroom management, lesson planning, establishing relationships, and my emotional turmoil was more than I could handle.

During the first year, I realized that

teaching is a difficult journey and my efforts to be the perfect teacher were futile because no such being existed. Because students have varied backgrounds and experiences, they will each have different needs and perspectives. The only things I could do were to try my best, set smaller goals, and savor smaller victories.

Now, after almost a decade of teaching, I can say I have learned that great teachers are not born great. They work hard to improve themselves by always reflecting on their practice. They chip away at the problems they encounter, little by little. I continue to seek opportunities to challenge and improve myself as a teacher. I still have a long way to go before I consider myself on the same level as the teachers who have impacted my life.

Contributing to *The Inspirational Untold Stories of Secondary Mathematics Teachers* has been a unique opportunity to reflect on my teaching experience. In thinking more deeply about my early career, I have gained insight into what made me struggle so much. I have been able to forgive myself for my past mistakes and move on with a more positive attitude. I am also thankful that I had a support system in TIME 2000 that pushed me to remain in the teaching profession, which has enabled me to support students in reaching their goals. Knowing that my efforts have made even a small difference in their lives makes it all worth it.

## SELF-REGULATION OF LEARNING AND TEACHING

As a teacher, I teach students how to fish rather than catching a fish and giving it to them. Part of this philosophy is getting the students to *want* to fish and evaluate their ability. In my classroom, I encourage productive struggle by setting up learning groups. In a setting devoid of constant teacher feedback, students are challenged to think for themselves and evaluate the correctness of their answers via a mutual agreement with their peers.

One strategy I have tried to accomplish peer feedback is to give each group access to only three questions to the teacher. A consequence is that students ask each other for help first, and if everyone is stuck, they then get support from me. Limiting the number of questions they can ask me has dramatically increased student collaboration and understanding of mathematics.

As a result of the transition to

## MORE THAN A TEACHER

“In our education courses, I not only learned about cooperative learning, motivation, discovery learning, classroom management and more, but I got to experience it vicariously through our fieldwork experiences that started since freshman year, and personally as a “student” applying the methods we learned to our own courses... Most of the teachers in my department graduated from the TIME 2000 Program and I feel as though I fit right in. The assistant principal is supportive and gives great advice. He always reminds us, ‘The math you teach your students is not most important. Everything else you do for them is. You don’t teach math. You teach students.’” (Leon Chu, 2020, pp. 3-10)

remote learning due to the COVID-19 pandemic, I have flipped my classroom, another self-regulated learning strategy. I record videos of new material and post them along with questions that check for understanding on Edpuzzle. Students watch the videos and take notes before the next class meeting. Once they have answered the questions about the video, students get immediate feedback about their understanding. In class, they can ask clarification questions and then complete practice problems in groups. Students must monitor their learning and watch old videos again if they did not grasp the concept the first time.

## ADVICE TO ASPIRING TEACHERS AND TEACHERS

Teaching *is* a learning experience. First, ***be patient with yourself***, especially when you are first starting your career. You will always think of better approaches after the fact. Instead of feeling guilty, learn from your mistakes and apply what you have learned to similar situations in the future. Second, ***do not be afraid to try new things***. Your students will appreciate that you are human and, hopefully, learn your courageous spirit, too! Third, ***spend time building relationships with your students*** because years later, they may not remember what you taught them, but they will most definitely remember that you cared about them.



**B**orn in Trujillo, Peru, Maria Leon Chu graduated from Queens College, CUNY, in the TIME 2000 Program in 2010 and earned a Master of Science degree in Secondary Mathematics Education from Queens College in 2013. She is currently teaching at Francis Lewis High School in Fresh Meadows, New York, and is in her tenth year in the profession.



# Self-Regulation of Learning

## Provides Students Resources to Communicate Mathematically and Become Independent

Michael London

**M**ichael London was a member of the TIME 2000 teaching program at Queens College from 2003 to 2007, where he majored in Mathematics and minored in Secondary Education. He earned a master's degree from Queens College in Mathematics Education in 2009. For the past ten years, Michael has worked at the Queens School of Inquiry. He is currently a member of Math for America as an emeritus.



### PROFESSIONAL DEVELOPMENT

My childhood experiences influenced my personal and professional development in the secondary mathematics teaching profession. As a child, I would often play math games with my father. For instance, when we would order a pizza, my dad would often ask me what fraction of the pie was left in the box. I was also a big sports fan and would often check the baseball standings. As I would check the standings, I would calculate how many games my team would have to win to be in first place.

An experience that helped me develop as a mathematics teacher occurred during high school when I had the opportunity to tutor another student in algebra. As I tutored, I learned how to ask the right guiding questions to help students recall the knowledge they needed to solve a problem. Furthermore, I gained a sense of inner satisfaction, which made me realize what I could see myself doing in the future. The TIME 2000 program empowered me with the knowledge, skills, and disposition necessary to be an effective mathematics teacher.

### SELF-REGULATED LEARNING AND TEACHING

I integrate self-regulation of learning (SRL) in my classroom by providing students opportunities and resources to communicate mathematically and become independent learners. One way that I do this is by doing homework review as a completely student-centered activity. I will often provide students with an answer key at the beginning of class to the previous night's homework. I give the students 5-10

minutes to read over the solutions and then compare their answers. Therefore, they have the opportunity, on their own, to check their work, and discover and correct any mistakes that they may have made.

After the students have time to check the solutions by themselves, I allow them to discuss the questions they still may have about the ones they got wrong with their peers. This allows the students to provide targeted feedback to one another. By reviewing homework in this manner, the students are self-responsible for correcting their work and helping each other.

The latest pedagogical discovery that I have made is that students learn best when given the time to work on problems during class rather than at home. Therefore, this year in a remote environment, I have begun using a flipped classroom model. Each day before class, I ask students to watch a 5–10-minute video that introduces a new concept and fill in guided notes as they watch the video. To assess how well the students understood the video, they are asked a question at the end of the video, evaluating what they just learned. This practice allows the students to learn the material at their own pace to re-watch the video as many times as they would like.

The students also can go back over the tapes to review for an exam. Having the students watch these videos before class can allow them to be more active during class. Instead of spending a lot of time having the students passively take notes during class, they can spend a lot more time working on problems and asking their peers in breakout rooms.

### ADVICE TO ASPIRING TEACHERS AND TEACHERS

The first piece of advice that I can give to teachers is regarding classroom management. In most cases, there are specific reasons as to why students misbehave. *If teachers are experiencing classroom management issues, it is critical that they self-reflect on their practices.* To illustrate, a mistake that I see too many teachers make is that they will not provide students enough time to quiet down. Consequently, they will quickly start yelling at the students and create a very chaotic atmosphere in the classroom. My advice is to wait quietly for a few extra seconds. By waiting a little longer, you will see that most of the time, the students will quiet down, and you will be able to stay a lot calmer and keep a more relaxed atmosphere in the class.

The second piece of advice I can give is regarding off-task behavior. Often, a teacher will assume that students are lazy and do not want to do work. In my experience, most students do not do work either because it is too easy or too difficult for them. Therefore, my advice to teachers is *always to analyze the task you are giving students.* Does it provide enough rigor for your high-level students? Conversely, is it too challenging for some students? In cases where low-level students are frequently off-task, a teacher must provide remediation.

The last piece of advice that I can provide for teachers is always to *complete the tasks that you will be giving to students in advance.* It is essential to complete tasks in advance for a variety of reasons. First, it allows you to see how long it will take the students to complete the task. It will also enable you to anticipate the errors that students may make and, therefore, help guide your instruction. Furthermore, by completing the task beforehand, you may discover that some aspects of the task are repetitive or are not at the appropriate difficulty level. Consequently, you may be able to alter the task before you give it to the students.

### GOOD-BYE SHYNESS, HELLO TEACHING

"The more I went through the program the more excited I was about becoming a mathematics teacher. We were learning so many strategies to keep students engaged and motivated. Moreover, we were given many valuable experiences outside of the classroom. For example, we had opportunities to meet and hear guest speakers every month and were given the chance to attend conferences that were designed for mathematics teachers. Because of these experiences, I began to realize that I was part of a community that would last for a very long time... I had the passion for teaching, the motivation to become part of a community, and the will to help people." (London, 2020, p. 55)



# TIME 2000: THE POWER OF IMPACTING FUTURE GENERATIONS

Mara P. Markinson

## PROFESSIONAL DEVELOPMENT

Learning mathematics as a child was fraught with anxiety and self-deprecation. As a dedicated student who generally excelled across all subjects, I struggled to understand the *why* of mathematical processes and more-or-less shut down when it came to learning new topics.

Most of my teachers, assuming my high marks indicated understanding, seemingly resented my expression of confusion and did not spend the time necessary to explain the answers to my questions. I began to feel that my inquiries were irritating and stopped asking.

All of this changed in twelfth grade when my AP Calculus teacher realized how much I struggled and dedicated her free time to teaching me fundamentals and new calculus topics. She refused to give up on me, and in turn, I began to see how all the pieces fit together to form the beautiful field of mathematics. I fell in love with the subject and felt firsthand the tremendous influence of a devoted teacher. And so, my career choice was set.

My years in TIME 2000 were transformative. Initially, I experienced self-doubt at times and struggled to learn high-level mathematics concepts. However, the self-regulatory tactics I developed under my calculus teacher's guidance propelled me to push myself to new limits.

My Queens College professors became mentors; they assured me that my struggles as a child would turn me into an even more understanding and impactful educator. I engaged deeply in my course work and sought self-improvement opportunities through tutoring, studying alongside my peers, and attending office hours.

Nearly nine years after graduating, I can say with certainty that preparing for a career through TIME 2000 was the best decision I have ever made. While teaching high school, I kept my childhood and teenage experiences in mind. I taught with

the patience that I knew was necessary to help students succeed in mathematics rather than develop math anxiety.

I know that I am an impactful and understanding educator. My full-circle experiences inspired me to move further and become a college-level instructor of Secondary Education and Mathematics. Each day, I strive to pass along my philosophies of teaching and learning to prospective teachers.

Writing a chapter for the book was a humbling experience. I recognized the power of the opportunity that I had to inspire others to pursue careers in fields that may initially pose challenges to them.

Reflecting on my experiences to date while writing my chapter of the book, I realized not only how fortunate I am to have received the education I did in TIME 2000, but also that being an educator is a coveted position, one of impacting generations of future students by teaching them to believe in themselves.

## SELF-REGULATED LEARNING AND TEACHING

My experiences as a teacher and learner of mathematics have taught me that self-regulated learning (SRL) is an integral ingredient for success and improvement. I have realized that there is no singular, most impactful SRL strategy through teaching in different environments and age groups. SRL strategies should be utilized as individualized strategies for personal growth.

While I require time and space to process new mathematical ideas, others learn more quickly and require interacting with more examples at once to make something click. Keeping this in mind, I try to meet each of my students at their respective levels and differentiate my instruction to make the material germane for all learners.

I strive to communicate the importance of SRL in my teaching by modeling impactful study habits and note-taking practices, and incorporating cues for all learners while considering their individual learning preferences. In this way, students can realize what specifically helps or hinders their learning, and use self-regulation to create individualized plans for studying and learning.

## ADVICE TO ASPIRING TEACHERS AND TEACHERS

**Set small, measurable goals... one at a time!** It is natural for beginning teachers to feel like they need to improve in many areas at one time.

However, it is much easier to see the progress you are making, and its impact on your students, if you are not trying to take on too much at once.

**Practice self-care.** Your emotional and physical well-being will make you better prepared to meet the needs of your students. Your health and happiness will spread to your students and keep you grounded when the demands of teaching pile up. Be sure to get enough rest and spend time doing activities unrelated to work (although this will be difficult).

**Be patient with yourself and with your students.** All students are different—getting to know their learning preferences, backgrounds, and personalities will help you differentiate, and best meet their needs. Try out different strategies—you will learn just as much from your students as they will from you.

## DARING TO LEAD: A STORY OF EARLY LEADERSHIP DEVELOPMENT

“I spent my childhood plagued with math anxiety—I never would have believed that mathematics would be in my future. I worked hard and memorized procedures to earn high marks, but I never understood anything that I was doing. What was worse was that none of my teachers *believed* that I didn't understand the concepts. I felt that my repetitive questions were annoying, and eventually stopped asking... I grew to despise mathematics and hated going to math classes every day. It took until 12th grade for a teacher actually to *listen* to me...She tutored me every day... She was patient, yet firm and clear in her expectations of me...My freshman year of college was tumultuous...I decided to transfer to Queens College...I seemed like a perfect fit for TIME 2000...The program faculty was there to support me every step of the way. I started to engage deeply in the program community and took on leadership roles...Presently, I have completed six years of teaching secondary mathematics, and three of those years as a mathematics department chairperson. I have given many more conference presentations and workshops. I am currently a mathematics instructional coach, a college-level mathematics instructor, and I am completing a doctoral degree in mathematics education.”  
(Markinson, 2020, pp. 39-41)

Mara P. Markinson is a faculty member at Queens College, City University of New York, teaching secondary education and mathematics courses. Mara is currently completing her PhD in Mathematics Education at Teachers College, Columbia University.



# Grouping, Planning, Revising, and Reflecting: Components of the TIME 2000 Program and Self-Regulation of Learning

Nerline Payen

## PROFESSIONAL DEVELOPMENT

Ever since I was a child, I always found a fascination with numbers. I loved counting items, I loved making small calculations, and I loved solving puzzles. I also loved helping other people. My parents always instilled in me a desire to help others in any way possible.

As I went through middle and high school, I fell more and more in love with mathematics. I enjoyed solving problems and enjoyed helping my peers who may have been struggling with a math topic. It did not take me long to realize that being a math teacher was my calling.

Upon entering the TIME 2000 program, I immediately began using strategies that I was learning in the program with students I was tutoring. Seeing the smiles on their faces after understanding a topic they had previously been struggling with made me confident that the strategies that I learned in the program were effective. I could not wait to use these strategies in a classroom setting.

One primary strategy that I learned and currently implement is to allow students to take full control of their learning. I now believe that stepping back as a direct instructor and allowing students to take ownership in the classroom is the most effective way of teaching and learning.

## SELF-REGULATED LEARNING AND TEACHING

In my teaching practice, I love giving my students full control of their learning. I love allowing them to come up with strategies and methods for solving problems. I grew up in a schooling system in which teachers would display a problem, display a specific method for solving that problem, and expect students to replicate that method on an exam to

## TUTORING TO TEACHING AND BACK AGAIN

“Looking back, people always tell me that I always knew that I wanted to be a math teacher but in reality, I didn’t. Teaching had to find me.

How did I know it was meant for me? I just knew.”  
(Payen, 2020, p. 65)



**N**erline Payen was born in Queens, New York, graduated from Queens College in the TIME 2000 Program in 2014, and she completed a master’s degree in Secondary Mathematics at Queens College in 2017. Payen currently teaches sixth- and seventh-grade math at George J. Ryan Middle School in Queens, New York.

assess understanding.

Coming up with different strategies was discouraged, and analyzing problems with a different approach was frowned upon. There was not much room for expanding mathematical thinking. I knew that I did not want this for my students when I began teaching. I wanted my students to feel comfortable exploring and testing out different methods of solving problems. I wanted them to take charge of their learning and feel excited when they would discover something new.

After completing the TIME 2000 program, I learned how important and exciting discovery learning is for students. One practice that I implement in my teaching is a weekly challenge problem. I like to offer my students a challenging problem each week, and I give my students freedom in their approaches to solving these problems. Students work on the challenge problem throughout the

week and share solutions and methods to solve their classmates' problems. The students work in groups to plan how to approach the problem, revise their strategies, and reflect on their solutions and work, all components of the TIME 2000 program and self-regulated learning.

## ADVICE TO ASPIRING TEACHERS AND TEACHERS

One piece of advice that I can give to aspiring teachers is to **Let go**. Let go of the desire to control every aspect of a lesson. Let go of the concern of not finishing a lesson in time. Let go of the concern of falling behind in the curriculum and not covering enough material. This is something that I have struggled with for a while, but I realized that trying to control and force situations is not ideal in learning. I have realized that my students better understand a lesson when giving them a chance to have meaningful discussions instead of cutting discussions short of finishing teaching a topic in a designated time frame. I have found that my students grasp a topic more when restricting them to specific problem-solving methods. I know it can be challenging, but letting go of these things is so important as a teacher.

My second piece of advice is to **avoid frustration with low performing, unmotivated students**. Although I have had many successes with students improving and developing a love for mathematics, there have been situations where this is not the case. Every learner is different and requires different approaches to learning. Something that may motivate one student may not motivate another. It is essential never to give up on a student but to strive to find strategies to reach them and meet them where they are.

My last piece of advice is to recognize that **learning is a changing process**. In my seven years of teaching, I am still amazed each year at the different methods students come up with for solving a problem. If a student comes up with a new strategy, embrace it! The changes in learning is what makes being an educator so exciting and enjoyable!



Linda Sturges, PhD, is an Emeritus Professor of Mathematics and former Vice Provost for Institutional Assessment at SUNY Maritime College. She earned her doctorate in Educational Psychology, under Barry J. Zimmerman's advisement, from the CUNY Graduate Center.

## Self-Efficacy, Self-Regulation, and Passion for Teaching Mathematics by TIME 2000 Teachers: A Commentary Linda Sturges



The role of middle and high school mathematics as a gateway to post high school options has been demonstrated through data over time. A firm understanding may lead a student to a STEM career. A frustrating experience may limit a student's perceived college or career path. Completion of one's first mathematics degree course is identified as a benchmark of student retention and perseverance ([The Education Trust, 2014](#)).

Queens College's TIME 2000 program offers a comprehensive dual major that equips graduates with strong foundations in mathematics and educational pedagogy within a cohort setting consistent with a self-regulation approach to teaching and learning. A recent compilation of teaching experiences from 12 of TIME 2000 graduates is offered in *The Inspirational Untold Stories of Secondary Mathematics Teachers* edited by Alice F. Artzt and Frances R. Curcio. It is with great pleasure that I, as a career mathematics educator, offer a commentary on five of the contributors' reflections.

Each of the five TIME 2000 graduates, **Alexandria Capozzoli, Angelina Ezratty, Young Mee Kim, Mara Markinson, and Nerline Payen**, personifies the TIME 2000 program's goals. Uniformly, they credit the program for the knowledge and understanding needed to be an effective teacher and the development of the self-regulation of their learning and the support they received to succeed. Nerline and Young Mee speak of utilizing the strategies developed throughout the program with their students. Within their writings, one can recognize the dedication to their students, reflective practices, modeling of skill acquisition, and cultivating a sense of mathematics confidence in their students.

I started my career as a high school mathematics teacher when being a math major, along with six credits of early childhood and adolescent psychology, a methods course, and student teaching fulfilled the certification requirements. This type of preparation made the initial years difficult. Developing the art of teaching, engaging students to want to learn more, and becoming an expert teacher took many years to achieve. I am encouraged by the TIME 2000 program, with its strong educational foundation and whole-person approach, that this generation of mathematics educators will enter the field equipped with a skill set to succeed professionally and personally.

**The journey to becoming a career mathematics educator often begins early on with excitement for solving puzzles or tutoring other students.** Alexandria and Mara each speak of the "ah-ha moments ... it all makes sense and I can do this," but in very different contexts. Alexandria relates her motivation to become a mathematics teacher moment while tutoring when her peers grasp a concept and want to learn more. Mara describes her frustration comprehending mathematics concepts while earning good grades. It was a dedicated Calculus teacher who took time to help Mara relearn the fundamentals that caused the initial blockage. Once overcome, Mara embraced mathematics and the impact of a dedicated teacher on student learning. Her career path was set.

**Each of the educators strongly supports the role of self-regulated learning in one's teaching practice. Self-regulation processes are a natural fit with mathematics problem-solving.** Angelina describes her integration of self-regulated learning (SRL) with problem-solving by prompting students to consider the SRL cycle. In terms of forethought, her students ask, "What do I already know about this problem?" and "What do I want to learn about this problem?" Students gather strategies, considering which have worked well with similar problems, during the performance phase. Self-reflection is considered in terms of, "What have I learned in order to solve this problem?" and "How does this help you build confidence as a learner?"

I have often seen students approach a new problem without considering what they know and can use in the solution. The result is a solution that starts with building basic knowledge rather than using that stored knowledge as a jumping point toward the solution. Alexandria's and Nerline's classroom practices include asking students to devise a plan on approaching a problem, using strategies and progress monitoring, and reflecting on how well they completed the task. Mara incorporates modeling SRL practices, such as note-taking and study habits, in her instruction as a tool for students to create their plans for studying and learning.

Young Mee describes how she integrated SRL processes to transition her instruction to an online platform. Her planning examined tools that would foster student engagement comparable to the experience in a classroom. Student learning experiences were monitored through screen sharing or capturing

student work via a phone camera. Student and instructor's reflections provided information on student engagement and instruction methods in an online environment. **As these educators know, SRL can be adapted to many situations. I have used the SRL processes to develop academic program assessment plans.**

As I read through the TIME 2000 graduates' reflections, I am inspired by the self-efficacy, self-regulation, and passion for teaching and student learning exhibited by these teachers. Angelina shares that she feels so lucky to work with young adults and help students build their confidence. The authors offer words of advice to aspiring or new teachers that include a universal recommendation to be mindful of student differences in learning, "... plan; but be flexible; show your students you care; strive to find strategies to reach and meet students where they are; understanding students' background and interests encourages student participation; continue to be a reflective practitioner." Aspiring and early career teachers are encouraged to recognize that teaching can be a lot of work, especially during the first few years. It seems this piece of advice may be a by-product of the TIME 2000 monthly meetings that include discussions with recent graduates and peer mentoring.

**In March 2020, our teaching environment changed in a matter of days. We went from meeting and interacting in-person with our students daily to a virtual environment with technology challenges for teachers and students alike. I believe this group of teachers easily applied the principles of SRL as they transitioned to online learning.** As may be experienced when students are on a split schedule, the tools to prepare students to learn on their own are fostered through SRL practices.

All the book's contributors regularly encourage students to determine how they wish to solve a problem and to self-assess their work and their beliefs as a learner. These practices will keep students engaged in their learning and facilitate each student to be a self-regulated learner. I applaud each of you, **Alexandria, Angelina, Young Mee, Mara, and Nerline**, for your dedication and service. Your efforts foster a generation of students who are self-efficacious about their mathematics ability and possess the skills to solve problems across disciplines.





Editor's Note: Darolyn and Taylor wrote letters to five of the ten TIME 2000 teachers who contributed to this issue of the *Times Magazine*.

# Developing Self-Regulated Teachers: Letters to TIME 2000's Mathematics Teachers (1)

Darolyn A. Flagg & Taylor W. Acee

Dear Daniel,

Your experience with mathematics growing up is much more common than we educators may want to acknowledge, so we really appreciate your candidness. Beyond educators, many students can also relate to the perception of mathematics as a foreign language or *mystical element*, as you phrase it. These perceptions can lead to low self-efficacy, so finding that one teacher willing to engage students in the why and to meet them where they are, can be mind-altering. So, kudos to you for doing just that!

We like how you were able to reflect on your own learning and teaching and utilize that to help build students' motivation. Through your "Know Your Growth" assignment, students have two opportunities to self-reflect: once at the beginning of class based on the entrance ticket questions and once more at the conclusion of class based on the accomplishment of their set goal. Further, students have the support of their peers to create and execute a plan, which likely includes discussion of their reasonings. This intentional time your co-teacher and you have crafted for students to self-reflect allows them to think about their own thinking and make meaningful connections with the mathematical concepts. Over time, this self-regulatory practice becomes second nature – thinking about their own thinking, understanding the thought processes of others, and making sense of what they have learned, are now all normalized.

Theory and research suggest interrelationships among self-reflection, self-efficacy, collective self-efficacy, motivation, and math course performance (Bandura, 1997; Choi, Walters, & Hoge, 2017). Therefore, we are not surprised that you noticed an increase of students' self-efficacy and motivation through your process.

The relationship you highlight between self-efficacy and motivation is extremely important for students to understand. In Taylor's graduate-level motivation course and my freshman-level seminar course, we both use a simple task to explain this relationship. We ask students to walk up the wall. Students then decide why one would or would not attempt the task – which nicely leads to a discussion on individual's judgement of their own capability to perform a task. If I do not believe I can walk up the wall, why try? Similarly, if I do not believe I can do math, why try? This can help students explicate their own self-efficacy beliefs about mathematics learning and the extent to which those beliefs are inhibiting their motivation and performance. This is an empowering message because self-efficacy beliefs are malleable, and they can be modified intentionally with practice. Building students' confidence and self-efficacy is thus a great strategy for motivating students to try. They may never be able to walk up the wall (ha ha), but with the right supports (e.g., peer-learning, teacher encouragement) students' self-efficacy may increase, and in turn they may be more motivated to attempt challenges and find strategies to accomplish tasks. We believe that teacher motivational support and student self-reflection are excellent strategies for instigating this process of belief change and the generation of mindsets more reminiscent of the inquisitive student into which you evolved.

In rephrasing Gandhi, we as educators have to be the change we want to see. Your advice to aspiring teachers reminds us to do just that. Thanks for sharing your journey with us. Sincerely, Darolyn & Taylor

Dear Maria,

Your story gleams with such perseverance and purpose. We admire your tenacity in overcoming obstacles and adversaries as a first-year teacher and your ability to self-reflect on your adolescence and early career so that you could evolve as a teacher. Taking stock of those experiences seemed to have marked a transformative time in your career. What really captivated us was how you seemed to use the nurture and support provided in your own development to cultivate similar experiences that students could grow to call their own.

The transfer of your first-hand experience with a challenging, yet supportive system to your current teaching and professional practice is apparent in your analogy of teaching students to fish. This philosophy of productive struggle is a learner's sweet spot. Consistent with research on self-determination theory (SDT), we believe that supporting students' autonomy during instruction yields increased student engagement (Jang, Reeve, & Deci, 2010). The self-regulation strategies you have integrated into the classroom are reminiscent of this instructional approach in that students are tasked to self-instruct, self-question, and self-check.

We really appreciate the advice you offer to aspiring teachers to embrace the novel and exciting experiences that come with teaching and "savor smaller victories." Your advice also acknowledges the importance of building meaningful relationships with students, so they not only leave with a conceptual understanding of the mathematics material but also with a continued desire to learn and understand themselves as learners. We agree that students' perceptions of their relationship with their teacher impacts their academic achievement and their motivation to learn. Abandoning the one size fits all mentality allows for students' uniqueness to be accounted for and for teachers to connect with each student on a deeper level.

After reading your story in *The Inspirational Untold Stories of Secondary Mathematics Teacher*, we are inspired to view ourselves as investors in students' lives. We are also reminded great teachers are not always born great, so be gentle with ourselves in this learning experience. We thank you for sharing your personal journey and the impact it made on your teaching profession and the many lives your efforts have already reached.

Sincerely, Darolyn & Taylor

**Taylor W. Acee, PhD**, is Associate Professor in the Graduate Program in Developmental Education at Texas State University. His research focuses on college student learning and persistence and interventions and assessments designed to foster strategic learning, motivation, and self-regulation in postsecondary educational settings.

**Darolyn A. Flagg, PhD**, is an Assistant Professor in the Secondary and Middle Grades Education Program at Kennesaw State University. She has a research focus on college students' perceptions of sense of belonging, racial climate, and motivation, and a passion for understanding and supporting historically underserved students' path to persistence.

Dear Irina,

We are inspired by your story, your insights about teaching mathematics, and the connections you made between self-regulated learning and practice. We are also impressed with your steadfast commitment to both family and academics during your youth, and proud of your accomplishments in graduate school and as a teacher and administrator. It sounds like you are a wonderful student and colleague. The ideas you have shared here and in the book entitled *The Inspirational Untold Stories of Secondary Mathematics Teachers* are impactful and much appreciated.

Teaching mathematics, statistics, and other subjects that have a heavy mathematics component can be both fulfilling and demanding. As you mentioned, teacher self-regulation is critical to improving as a teacher and better serving students. It is also vital to being resilient when teaching a subject that many resist and fear. The three pieces of advice you gave are excellent messages for instructors to intentionally and proactively recall and practice, especially in moments when demands are high and reaching every student seems out of reach.

Darolyn teaches developmental and college mathematics and first-year seminar courses, and I teach graduate-level quantitative methods and courses on college learning and motivation, and I used to teach an undergraduate learning-to-learn course. Through our experiences, we have found that teaching strategic and self-regulated learning alongside course content enhances student learning, motivation, and metacognitive awareness. Weinstein and Acee (2018) have differentiated a content curriculum (e.g., the curriculum of math content to be taught in a course) and a meta-curriculum (i.e., curriculum for teaching and supporting strategic and self-regulated learning within a content course). When working with instructors in professional development sessions, we have confronted legitimate skepticism that there is simply not enough time to teach a meta-curriculum when getting through the content curriculum alone is a challenge. However, we believe that teaching with a meta-curriculum does not need to be particularly time consuming and that it often yields more effective and efficient results than not doing so. For example, when giving test feedback it does not take long to address students' attribution beliefs and engage them in self-reflection and forethought activities. Similarly, mentioning different learning and motivational strategies during class and having students practice these strategies in class and on homework assignments can be accomplished in a timely manner and can lead to better results for students.

Thank you for sharing your inspirational story and reminding us how important it is to proactively lift ourselves up as instructors and use self-regulation in our own lives to better support our students.

Sincerely, Taylor & Darolyn



# Developing Self-Regulated Teachers: Letters to TIME 2000's Mathematics Teachers (2) Darolyn A. Flaggs & Taylor W. Acee

Dear Michael,

Reading your reflections about learning and teaching mathematics, and the role of self-regulated learning, has been inspirational and refreshing to us. Darolyn and I can relate to your intrinsic motivation for learning mathematics as a child. For example, as a little kid I remember being glued to my Speak and Math game and spending time playing with math-related ideas in my head before going to bed. As Wigfield and Eccles (2000) have shown, students' interest in learning mathematics tends to decline over the grade levels, and this is a real challenge for instructors.

We greatly appreciate the many teaching ideas you shared in your response such as asking guiding questions aligned to a student's individual learning needs; making homework a student-centered activity by having students evaluate their own answers, correct their own mistakes, and discuss the homework further with classmates during class; and allocating more class time to active learning using flipped classroom approaches for delivering course content and exam feedback. We can see how all of these approaches could help to support students' learning, interest, and the development of more effective studying and self-regulated learning strategies.

In our teaching of mathematics (Darolyn teaches math) and statistics (I teach statistics), we have found that conveying reasons for why learning course content could be important and asking students to reflect about the personal relevance of course material has helped students develop more positive attitudes towards learning in our courses. This idea is also supported by research on task-value interventions (see Acee et al. 2018; Harackiewicz & Priniski, 2018). We also try to contextualize course content and assignments to show how mathematics and statistics can be applied to authentic problems in society.

Your suggestions about classroom management and handling off-task behaviors are very useful and address a major issue facing instructors during class. We believe your suggestions would help to cultivate positive and supportive relationships with students and that strong rapport with an instructor can help students overcome motivational setbacks during class. Although time consuming and not feasible for every instructor, Darolyn has required office hours visits with students where she addresses students' needs, goals, and concerns holistically, in addition to working with students on mathematics learning. I have always admired Darolyn's determination to reach every student on an individual level and I believe these required office hours visits, and the supportive approaches she uses during them, have helped.

Thank you for sharing your passion and helpful insights for learning and teaching mathematics here and in the book entitled *The Inspirational Untold Stories of Secondary Mathematics Teachers*. Your story and ideas are useful and much appreciated.

Sincerely,

Taylor & Darolyn

Dear Kendal,

We appreciate your personal reflections and insightful suggestions about learning and teaching mathematics. You mentioned that "I wanted my students to experience the appreciation for mathematics that I did not get to experience until I was teaching." We think this quote contains some particularly powerful ideas and implications for multiple reasons. For one, you suggest that the process of teaching can enhance the appreciation of learning for the teacher. Research on tutoring (Roscoe & Chi, 2007) supports this idea by showing that tutors often benefit as much from the tutoring process, if not more, than their tutees. Similarly, Weinstein and Acee (2018) suggest that teaching the material to someone else is a powerful learning strategy for students to use. Another part of your quote above implies that teachers have the power to help students discover greater appreciation for learning mathematics. Of course, we cannot make students appreciate learning, but there are certainly things we can do as teachers to make it more likely. We admire your goal to facilitate appreciation for learning mathematics in your students and believe the Positive Behavior Support System you described utilizes effective approaches for cultivating learning and interest, especially during this pandemic.

The three pieces of advice you offer to aspiring teachers are each significant in their own right. Keeping "your love for what you do at the center of your focus" really resonated with Taylor and I because we are as passionate about teaching as you describe in the book *The Inspirational Untold Stories of Secondary Mathematics Teachers*. We know that research studies on teacher enthusiasm show positive influences on intrinsic motivation (Patrick et al., 2000) and students' perceptions of teacher effectiveness (Feldman, 2007). Therefore, creating the space you describe, in which everyone has a common reality of learning, begins with the teacher's appreciation for and attitude towards learning. This is particularly true with mathematics because students commonly perceive concepts as too difficult and irrelevant to their everyday lives. When we are able to make the mathematics classroom more welcoming and the content more relatable, students are more likely to be motivated to learn the material.

Further, because we are agents of self-regulated learning, we acknowledge the importance of teaching students cognitive processes needed to take control of their learning and to become independent problem solvers. Furthermore, we also believe it is critical to foster interconnections among students and a sense of community and shared responsibility to the class. Considering the current pandemic and the resulting increase of threats to basic needs, fear, and isolation, it is ever more important that we address the social emotional needs of learners and find ways to support students holistically. Meeting students where their concerns are during this pandemic will require adaptation, and self-regulated teaching is a means to effective and efficient adaptation.

Your motivation to cultivate that love for mathematics that you gained from your TIME 2000 experience is ever-so-evident in your words. Thanks for your work in inspiring others to appreciate all that is mathematics.  
Sincerely, Darolyn & Taylor

## References

- Acee, T. W., Weinstein, C. E., Hoang, T. V., & Flaggs, D. A. (2018). Value reappraisal as a conceptual model for task-value interventions. *Journal of Experimental Education, 86*(1), 69-85. <https://doi.org/10.1080/00220973.2017.1381830>
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. Macmillan.
- Choi, J., Walters, A., & Hoge, P. (2017). Self-reflection and math performance in an online learning environment. *Online Learning Journal, 21*(4), 79-102. <https://www.learntechlib.org/p/183779/>
- Feldman, K. A. (2007). Identifying exemplary teachers and teaching: Evidence from student ratings. In R. P. Perry & J. C. Smart (Eds.), *The scholarship of teaching and learning in higher education: An evidence-based perspective* (pp. 93-143). Springer.
- Harackiewicz, J. M. & Priniski, S. J. (2018). Improving student outcomes in higher education: The science of targeted intervention. *Annual Review of Psychology, 69*, 409-435. <https://doi.org/10.1146/annurev-psych-122216-011725>
- Jang, H., Reeve, J., & Deci, E. L. (2010). Engaging students in learning activities: It is not autonomy support or structure but autonomy support and structure. *Journal of Educational Psychology, 102*(3), 588-600. <https://doi.org/10.1037/a0019682>
- Patrick, B. C., Hisley, J., & Kempler, T. (2000). "What's everybody so excited about?": The effects of teacher enthusiasm on student intrinsic motivation and vitality. *The Journal of Experimental Education, 68*(3), 217-236. <https://doi.org/10.1080/00220970009600093>
- Roscoe, R. D., & Chi, M. T. H. (2007). Understanding tutor learning: Knowledge-building and knowledge telling in peer tutors' explanations and questions. *Review of Educational Research, 77*(4), 534-574. <https://doi.org/10.3102/0034654307309920>
- Weinstein, C. E., & Acee, T. W. (2018). Study and learning strategies. In R. F. Flippo and T. W. Bean (Eds.) *Handbook of college reading and study strategies research* (3<sup>rd</sup> ed., pp. 227-240). Routledge. <https://doi.org/10.4324/9781315629810>
- Wigfield, A., & Eccles, J. S. (2000). Expectancy-value theory of achievement motivation. *Contemporary Educational Psychology, 25*(1), 68-81. <https://doi.org/10.1006/>

