

Becoming a Change Agent: Residency as Pathway to Accomplished Teaching

Sean O’Connell
Clarkson University

Patricia Rand
Clarkson University

Richard Lasselle
Clarkson University

Catherine Snyder
Clarkson University

A change agent is a person equipped to transform their environment meaningfully. This qualitative survey study examined the extent to which graduates of residency-based teacher education programs act as change agents across different stages of a career. The qualitative survey study used convenience sampling to gather data from 23 alumni of a full-year, graduate, residency-based teacher education program. Participants responded to questions aligned with the National Board for Professional Teaching Standards to determine how the residency program prepared graduates to be agents of change in their learning communities. Qualitative data was analyzed using a constant comparative method. Results indicated that alumni become agents of change, but this level of professionalism takes more than ten years to develop.

Keywords: change agent, teacher residency, National Board for Professional Teaching Standards, teacher preparation, teacher leadership, innovation, qualitative research, convenience sampling

INTRODUCTION

Pre-service teaching residents are in the unique position of simultaneously apprenticing into the profession while learning methodology and pedagogy from accomplished teachers and mentors throughout the entirety of a school year. Clarkson University is home to a 30-year-old residency-based Master of Arts in Teaching (MAT) program built upon the National Board for Professional Teaching Standards (NBPTS) standards. Beginning their teaching careers immersed in the profession’s highest standards, our residents are allowed to develop among and grow into the next generation of accomplished teachers positioned to be agents of change in American schools. Teacher candidates begin the MAT program with an already-earned bachelor’s degree in a specific discipline. They are matched with a mentor with whom they first observe, then co-teach, and eventually assume responsibility for teaching in their classroom. During their residency, students attend graduate classes in the evening, learning specific pedagogy, educational theory, and

methodology deliberately designed to mirror what teachers should know and be able to do (National Board for Professional Teaching Standards [NBPTS], 2016).

One of the students of our residency is helping our teaching residents understand the importance of the overall commitment to their student's learning and success. This cultural philosophy happens very early in our admissions process and continues throughout either a 1- or 2-year cycle where preservice teachers learn the importance of being committed to their students and their learning. This philosophy is deeply embedded in our programming, our sequence of courses in our curriculum, and ultimately our one-year residency, which provides residents with the tools and resources they need to cement this ethical commitment into their teaching practice. Our residents see this message repeated throughout our program: teachers are fully committed to the students they are teaching and most importantly, to their students' learning. This concept comes from the core tenets of the NBPTS (2016). This philosophical pillar of our residency program enables our students to focus on becoming change agents in their classrooms, their schools, their communities, and beyond.

LITERATURE REVIEW

Change Agent

A change agent in a school is a person equipped to transform that school meaningfully. With a need to address an ever-diversifying student population, the need to find a way to operate successfully in a post-pandemic world, and the need to face equity and systemic racism, it is the school's teachers who are poised to lead the way forward. A teacher as a change agent differs from the commonly seen teacher-leadership model. In teacher leadership, the teacher assumes the role of facilitator of the initiatives imagined and put forth by the school's administration (Lukacs, 2014). Alternatively, a change agent initiates change from the bottom up and is seen as the source, inspiration, and catalyst of ideas.

Upon searching the literature about teachers as change agents, three themes emerge. The first theme seeks to define the concept of a change agent and discusses individuals' qualifications that uniquely qualify them for the role. A second theme is a comparison between the NBPTS 5-core propositions, the document on which the Clarkson University teacher-residency program is based, and the attributes of teachers who are change agents in schools. A third theme discusses the role of teacher preparation programs in developing teachers who are equipped to effect change in their schools and beyond.

Brown et al. (2021) refer to attributes essential for an individual to effect change: change agents possess the social capital to mobilize others; they can make a change appear attractive and attainable; others see them as similar to themselves—the homophily heuristic (Kahneman, 2011)—and therefore worth following. Similarly, van der Heijden (2018) described change agents as individuals with these four qualities: mastery, collaboration, innovation, and lifelong learning. Teachers who are change agents should be master teachers themselves; they should have expertise in their field and pedagogy; they should make a difference in their students' learning; and they should be recognized as master teachers by their colleagues. Teachers who are change agents are also expert collaborators. They seek out advice from others out of a genuine desire to grow, and they share their expertise with others out of a genuine desire to help others grow. Teachers who are change agents are innovative. They don't adopt a business-as-usual approach but continually seek new ways to improve their craft. A change agent should be the source of new ideas that stem from creative thought and deep reflective practice. Lastly, change agents are lifelong learners; they possess a growth mindset (Dweck, 2006), strive to continuously improve, and view life as a series of opportunities to learn and grow (van der Heijden, 2018).

National Board for Professional Teaching Standards

The NBPTS was created in 1987 in response to earlier studies indicating that US schools were falling behind in preparing students for life beyond school. The NBPTS established an optional certification process that teachers who wanted to improve their craft could voluntarily engage in and, if successful, earn National Board certification. As of this writing, there are well over 130,000 teachers in the US who have completed the process; this represents about 3% of the nation's teachers (NBPTS, 2022). Engaging in the

process does make a difference for students. Students in classes taught by a National Board Certified Teacher (NBCT) score higher on several metrics of student achievement than students taught by non-NBCTs (Cannata, 2010). NBPTS bases its certification on five core propositions that define what teachers should know and be able to do. These propositions form the foundation of individual standards that define accomplished teaching in different disciplines. These five core propositions are:

1. Teachers are committed to students and their learning.
2. Teachers know the subjects they teach and how to teach those subjects to students.
3. Teachers are responsible for managing and monitoring student learning.
4. Teachers think systematically about their practice and learn from experience.
5. Teachers are members of learning communities. (NBPTS, 2016)

A strong relationship exists between these five core propositions and the attributes of change agents. The attribute of mastery is strongly associated with Proposition 2 as well as in Proposition 3; collaboration is defined beautifully in the description of Proposition 5; innovation is woven into several propositions, most notably Proposition 4; and references to the attribute of lifelong learning can be found throughout the propositions which makes the claim that accomplished teachers never stop learning and improving their practice. Based on the positive relationship between the propositions and the attribute of change agents, it stands to reason that those teachers who achieve National Board Certification are equipped to effect changes. Schools of education with full-year residency-based programs can center their curriculum on these propositions because their residents have the time and support to become change agents.

Teacher Preparation Programs

Teacher education lays the foundation for the teaching profession and should sufficiently equip prospective teachers to meet the challenges of their future profession (Cochran-Smith & Zeichner, 2009; Darling-Hammond, 2006, 2010; Tatto, Richmond, & Carter Andrews, 2016; Wang, et al., 2011). As such, it is important to focus on preparing prospective teachers to become change agents (Lukacs & Galluzzo, 2014). The characteristics of teachers as change agents may serve prospective teachers to better understand relevant aspects of their future profession (van der Heijden, 2015). They may be useful as a source for reflection upon their professional development (PD). The characteristics can, for example, inspire and provide direction for prospective teachers in developing their vision of the teacher they want to become. By undertaking assignments such as observing and interviewing practicing teachers and mentors, the change agent characteristics may come to life through dialogues and discussions among peers and with teacher educators. Holding a growth mindset—which includes the personality factor of openness to experience—is important for (prospective) teachers to be or become open to change and deeper learning and, through that, develop themselves into directors of students' learning (Dweck, 2006). In teacher education, pedagogies need to be developed and experimented with to develop learning trajectories through which prospective teachers can become such directors of students' learning (Hattie, 2012).

MATERIALS & METHODS

This study was conducted by faculty in Clarkson University's MAT program. The degree program's pedagogical instruction supports the residency and leverages students' day-to-day experiences in their learning and growth. Many alumni accept teaching positions within 50 miles of the school, providing continued growth and program engagement opportunities. The Clarkson Education Department hosts a National Board Support Group. It encourages alumni to pursue National Board certification upon earning tenure after their fourth year of teaching (New York State Department of Education, 2022).

This qualitative study used convenience sampling (Patton, 2014) to survey alumni from our MAT program. Two hundred individuals from a population of approximately 700 alumni were selected to receive the survey invitation based on their graduation year and National Board status. Of the 200 possible participants, 23, or 12% responded. Forty-three percent of the participants identify as female, 57% as male; 17% as Black, 17% as Asian/South Asian, and 65% as White. Eighty-two percent teach in public schools,

18% in independent schools; and 26% in under-resourced settings. Participants were recruited online using an email invitation. See Appendix 1 for participant demographics and characteristics.

The qualitative survey included five demographic questions and seven short answer questions. The survey asked participants to report on their professional activities from their first year of teaching to the present. Participants wrote their answers independently of the research team in full sentences or bullet form. Questions were aligned with the National Board Five Core Propositions. For example, Proposition 4 states, “Teachers think systematically about their practice and learn from experience.” Participants were provided with that proposition and asked, “Please describe your experience as a reflective practitioner.”

This qualitative survey study examined the extent to which the participants acted as change agents in their careers. The 23 participants produced roughly 40 pages of qualitative data, which was analyzed using a constant comparative method (Merriam, 1998; Rubin & Rubin, 1995). The data was first analyzed for evidence of participants acting as change agents (Brown et al., 2021; Lukacs, 2014; van der Heijden, 2018). Themes emerged from this initial review of the data organized around the NBPTS five core propositions (NBPTS, 2016). Data was further disaggregated based on participants’ years of experience. Data was also analyzed for trends based on other demographic characteristics such as gender, race, and school setting, but no significant trends were identified.

RESULTS

Proposition 1: Teachers Are Committed to Students and Their Learning

Teachers must become attuned to their students’ situations and changing circumstances (NBPTS, 2016). This overall philosophy from the NBPTS is embedded within our curriculum and residency preparation from the first day of instruction. Much of our orientation to the Clarkson MAT is dedicated to learning about our students. By modeling specific community-building interactions between students and teachers, and demonstrating different models to approach this task, students immediately are immersed in a philosophy that fundamentally stresses the critical importance of teachers knowing their students. Residency completers take this philosophy with them into new positions, where they begin to apply it as a change agent.

The importance of knowing your students continues throughout our program. When students begin their residency, they are required to take a course that focuses on the understanding that while some students in classrooms have state-mandated educational needs, all students come to us with unique needs, abilities, interests, and backgrounds. It is the ability to look out at a classroom and see not a group of students, but rather thirty individual students—all with very different backgrounds, family situations, educational success, cultural backgrounds, and preconceived notions about how successful they will be. Therefore, it is incumbent upon the new resident to fully comprehend and understand the students they have in front of them, their unique needs and abilities, and their past successes and failures.

Teachers use everything they know and understand about their students and about effective and ineffective instructional practices to begin to intentionally plan and prepare all students for academic success—regardless of content. Accomplished teachers capitalize on individual student backgrounds and use diversity to enrich the learning environment. Teachers who value students also recognize that their overall mission in the classroom is the learning: their students’ cognitive development. This includes the idea that failure can and should be a natural occurrence in the learning process. In order to foster an environment where students feel comfortable to take risks, teachers need to create a place where risk-taking is encouraged, and where students can attain the attributes of resilience and perseverance in a supportive environment. Our residency completers continue to demonstrate this philosophy based on their self-reported responses to the survey.

When looking at our data to determine how our residency completers applied these core propositions once employed, we see multiple representations of this first core competency. Two distinct elements emerged that demonstrated residency completers’ knowing students and being committed to their learning: first, making their classrooms a warm and welcoming environment, and second, providing a level of instructional differentiation that focuses on the understanding of individuality. An excellent example of

these elements is reflected in Evan's comments. Evan writes, "*I prioritize my relationships with my students above all else... I regularly remember my instructor would repeat: 'We teach students first, and English second.' It is when I lose sight of this that I am at my worst as a teacher.*" Evan provides insight into the high fidelity that our program has to the NBPTS standards, which is reflected not only in his response but also in his remembrance of the importance placed upon our work with students. Placing students first is paramount to overall instructional success.

Evan demonstrates that when he is planning instruction, he does so with the idea that every student comes to the classroom with unique learning needs. He states that these differences impact his instructional planning. This also can be seen with Drew, who writes more about building meaningful and lasting relationships with students. This commitment to understanding students and their funds of knowledge by building relationships is another core competency. Drew writes: "*Building meaningful and lasting relationships with students is the foundation of my teaching philosophy and correlates directly to my commitment to student learning.*" This theme of differences shared cultural values, diversity, and a safe environment amplifies what many of the residency completers have indicated: while celebrating differences and diversity, they are also creating a safe and warm learning environment.

Another residency completer, Mary, takes the idea of differentiation and amplifies it by speaking to the idea of culturally responsive teaching. She affirms that diversity in the classroom is something not only to be celebrated but that accomplished teaching creates a more engaging classroom environment when differences enrich the learning environment. "*I strive to design lessons that are culturally responsive and amplify all student voices...I establish a classroom culture and community within my classroom.*" Similarly, Ian writes, "*My classroom is a place of acceptance. I have visual representations of different groups of people throughout the room. We learn about diverse individuals throughout my classes.*"

Here, the emphasis on '...a place of acceptance' is at the core of Proposition 1. Ian dials in on the importance of diversity and a commitment to student learning. Ivy notes, "*I always make sure students have multiple ways of learning the content...My priority is to create a welcoming and inclusive classroom atmosphere where students are comfortable taking risks and making mistakes.*" Across different cohorts, our MAT students as professional teachers have taken the experience in their program and realized the importance of being committed to their students and their learning. Our residency completers are some of the most accomplished newer teachers in the region and are sought by districts with teaching openings because of the quality they can bring to the classroom. As such, our residency completers stand out among other early-career teachers. The immersion in the NBPTS core propositions helps them become accomplished teachers who emphasize knowing their students. Paige writes, "*I put an emphasis on making my classroom a comfortable learning environment that makes all students feel welcomed and valued.*" Clearly, our residency completers are invested in helping all their students succeed in the classroom.

Proposition 2: Teachers Know the Subjects They Teach and How to Teach Those Subjects to Students

Novice teacher candidates, in particular, instantly understand the superficial meaning behind this proposition and grasp its importance. They recognize the two fundamental components: knowing your subject matter and how to teach it. The National Board, however, provides a much more complex explanation of this proposition, which ties the expectations set forth to teachers by positioning them to become change agents. As would be expected, our study revealed teachers only begin to recognize the proposition's complexity and potential after years in the field.

Understanding one's subject area begins with understanding how that knowledge domain is defined, created, and used by society (NBPTS, 2016). Teachers who understand this also recognize how their content area intersects with other content areas; how their content leverages and buoys other content areas, and benefits from these intersections as opportunities for deeper student learning. A direct line is drawn to critical thinking skills within a disciplinary domain. Teachers with a deep understanding of this may create opportunities for students to use their content to develop critical thinking skills. The complexity of this proposition also includes using subject matter to connect to students' family, community, and school

settings, as well as their cultural, religious, and ethical beliefs. Teachers should understand how their content may be used for greater societal benefit.

The second aspect of this proposition is the demonstration of expertise in one's pedagogical content knowledge (PCK). PCK is defined as the ability to combine knowledge of a specific discipline with the teaching of that discipline. (Nuangchalerm, 2012; Schulman, 1986). Knowing how to teach one's discipline is just as important as knowing one's (NBPTS, 2016). An accomplished teacher strives to facilitate learning in such a way as to enhance students' understanding of the subject matter as well as their understanding of how that material is infused into a larger system of knowledge. Teachers need to stay abreast of any changes in how their content area is taught, including ways changes in technology may impact their content. Accomplished teachers are critical consumers of changes in the field, carefully selecting ways to improve their PCK while dismissing fads. Creating multiple pathways into their content area better ensures all students have opportunities to meet with success; students can begin to think about what may have been presented as a discrete subject area more divergently, making connections to other domains of knowledge.

With this deeper understanding, one can see a teacher's role as a change agent. Curriculum development and the application of PCK, is more than aligning lesson plans with standards and ensuring content is covered. Teachers who deeply understand their content use it as a vehicle to transform their students' thinking about their content and make connections with that content to other disciplines and the world around them.

Our study participants expressed their understanding of Proposition 2 on both basic and more complex levels. All of our participants' responses included elements of the characteristics of change agents. They reference ways they master their content through professional development, coursework from their undergraduate degree or from their time at Clarkson University, and new books and resources they have read. Their emphasis on new learning aligns with van der Heijden's (2018) identification of mastery as one of the characteristics of a change agent. They reference collaboration with their colleagues, mentors, and others in the field. Hand in hand with that collaboration is innovation in their curricular design. Below are quotes from our participants that combine the notion of a change agent with NBPTS's second core proposition. Mary suggested,

My English/film and theater classes in undergrad gave me a strong foundation to teach my subject. In addition, the content classes during graduate school at Clarkson [University] gave me the opportunity to apply my knowledge of English within the context of a high school classroom. I have developed many lessons based on what I read and learned in the content classes at Clarkson [University].

In reference to his growth, Evan said,

Clarkson MAT did a great job of breaking us into content specific groups. We got a chance to use the pedagogy we were learning as a full cohort and apply it to content we would be teaching by designing lessons and teaching it to our peers in class. But the full-year residency, along with a team of content-specific mentors, was what really reinforced it in a more authentic classroom setting. Having three (plus) instructors to talk over how lessons went was invaluable.

And Stephanie references her time in her residency,

My MAT mentor was invaluable in terms content and curriculum; I developed my practice over the years, especially during the years in which I mentored Clarkson's MAT's residents and pursued National Board Certification.

Proposition 3: Teachers Are Responsible for Managing and Monitoring Student Learning

Teachers continuously assess learning in multiple and varied ways: they continually seek to engage all learners, vary their approach, and work to get students to invest in their learning process (NBPTS, 2016). Differentiation is strongly emphasized; meeting learners where they are and motivating them to move ahead is important. This proposition also stresses the importance of academic rigor and maintaining high expectations for all students. Managing and monitoring student learning is a complex and comprehensive task. Teachers need to manage schedules, materials, and limitations as they seek to create learning environments that are serious yet enjoyable, rigorous yet attainable, respectful and inclusive. Teachers should be masters of their content, knowing not only the information but also what specific parts of that content might be challenging for students of that age and misconceptions they may already have or acquire.

Teachers should also be masters of pedagogy, always looking for techniques that will engage students and maximize learning opportunities. Paige wrote about her assessment of students,

Informally and formally, verbally and written, in partners and individually, and through different media—which I attribute to learning in the MAT. The MAT taught me to think creatively about forms of assessments. In each level I give a quiz after each chapter, but within each chapter I have other forms of assessments that include formal worksheets, online activities, and written responses that display understanding. I also will play games in class that can focus on vocabulary and/or grammar, and this is informal, yet it is fun for students and gives me an understanding of how students are interpreting and applying what they have learned. Sometimes I will give an ‘alternative assessment’ that allows students to express themselves while also expressing their understanding of the content.

Davis wrote about how comprehensive assessment is for him,

I use a lot more informal assessment that I verify with formal assessment. I also work to help them take a good answer and make it better. Always. Even if it is questions. the best answer. These revisions are a form of assessment. I ask a lot of questions. A LOT OF QUESTIONS. I’m constantly checking for understanding. Sometimes I ask the same questions over and over. Kickoffs and exit tickets of course, but sometimes my exit [ticket] is to have them answer the essential question for the day based on their notes, the activity, etc. Nearly everything I do really is assessment.

Similarly, Evan wrote about how he differentiates his assessments for individual students,

Informal, formal. Formative, and summative. I am constantly trying to gather all sorts of data to figure out what worked with my lesson, and how to design the next to meet my students where they are, rather than where I think they should be. This data can be quick writes, a Google form, a show of hands, or massive amounts of sticky notes. It’s important to mix it up, but every lesson needs to end with feedback for not only an average of how well the class internalized the lesson, but each individual student.

Jett wrote,

With my class being lab-based I usually provide authentic assessments to my students. We have projects that students do and a multi-point rubric helps me analyze those. I incorporate various formative assessment strategies to also assess my students’ learning.

Dawson wrote,

I am always touring, asking questions, striving for more information. I am listening to my students talk about the mathematics and using that information to gauge where my students are. I can then extend more questions and ideas to further their mathematical understanding. Obviously, I do the traditional summative assessments (tests, quizzes) and more formal formative assessments like homework and computer science lab. I also use thumbs up and down, technology, body language and a variety of means to gauge my students' understanding.

Proposition 4: Teachers Think Systematically about Their Practice and Learn From Experience

Accomplished teaching requires practitioners to pursue continual growth and improvement. As times change, so must teachers. Analyzing and reflecting on their practice, observing and learning from other educators, compromising and shifting the focus of instruction based on the needs of their students, exploring and implementing current education research, and designing and innovating curriculum are habits of mind effective teachers practice (NBPTS, 2016). This pursuit of and enthusiasm for lifelong learning enables teachers to effectively and efficiently model analytical and critical thinking and commitment to curiosity, creativity, and risk-taking—all desirable dispositions—for their students to foster within themselves.

Many of our residency completers embody these characteristics and demonstrate their dedication to improving their practice, the profession, and the quality of their student's learning through the activities they engage in. Whether participating in or preparing PD, collaborating to create curriculum or programming, innovating equitable practice, or epitomizing critical dispositions, forefront is improving the learning experiences of their students and their professional intellect. They are sparking change in their classrooms and communities.

Much of this change is sparked from within. We first teach our residents to develop a growth mindset (Dweck, 2006) and then require they constantly reflect on their practice, understanding that every text, lesson, activity, and assessment can be improved upon and should be improved upon throughout their teaching careers. Understanding that no two classrooms are alike and that our students' needs differ from year to year underscores that teaching is not a static profession and is continuously evolving to address emerging challenges (OECD, 2020). We foreground teachers as reflective practitioners, so residents adopt this professional disposition. Two of our residency completers, Paige and Evan, both emphasized the importance of mindset,

From the start, the MAT program emphasized the asset of having a growth mindset. After each lesson I still take note of what went well and what can be improved, and this has allowed me to grow from every lesson and to work toward trying to be a better version of myself every single day for students. (Paige)

Most of the reflection I do has less to do about me, and more to do about how I am meeting the needs of my students. When I first got to the MAT program, and they emphasized growth mindset ad nauseam, I was admittedly terrible at it. But as I have loosened my ego and settled in for the long haul of a teaching career, I have found that maintaining a growth mindset is actually more about the students I serve than about my own sense of accomplishment. (Evan)

Others described the practice and impact of reflection on their current teaching practice:

I reflect on my practice every single day through writing, but also more informally with the other trusted English teachers in my department. I always consider what went well and what could be improved for next time. I look at assessments and consider students' overall response to a lesson or activity and use that information to help me plan moving forward. I do a lot of written reflection on my experience and consider how I can create a more

equitable classroom and design lessons that challenge and empower the students entrusted to me. (Mary)

Clarkson [University] has engrained the reflective practice in my everyday teaching. After each lesson, I take notes on what worked/didn't, and make plans to either re-teach that lesson, or modify for next year. Additionally, I take student feedback into consideration as we work through the year, making sure to incorporate choice and interest into each unit. (Ian)

In New York State, professionally certified teachers must complete 100 Continuing Teacher & Leader Education (CTLE) hours during each five-year registration cycle (New York State Education Department, 2022) to maintain their credentials. Our residents must complete at least 18 hours of PD during their residency to begin building their professional disposition of lifelong learners. Many of our residents attend local or state conferences and hold student memberships in professional organizations that sponsor these professional learning opportunities. Additionally, we require residents to reflect in writing about what they learned during these PD opportunities and how this learning could be applied to their classroom. Once the residents begin their own teaching careers, they are already familiar with discipline-specific local and state CTLE providers, so they can begin clocking hours to maintain their teaching credentials once they receive their provisional state teaching licenses. Our residency completers begin as participants at CTLE-eligible programs, and within a few years are taking on presenter and facilitation roles at the local, state, and national levels.

I was asked by my supervisor to run professional development about connecting with students and creating an encouraging, inclusive and a positive classroom environment. I have also been asked to speak at the Classical Association of the NY State (CAES) Annual Conference. (Paige)

I've provided professional development to our middle school staff regarding marginalized students in the LGTBQIA+ community. (Ian)

School districts have a unique position to empower their teachers by offering them possibilities and opportunities to be agents of change through advocacy and advising on education reform (OECD, 2020). Several of our residency completers serve their schools and communities as committee members or in leadership roles on district-level committees. Additionally, some of our graduates have taken on leadership roles beyond their school districts and serve the professional education community at the local or state levels. Appendix 2 illustrates a few of the education leadership roles our alumni serve.

Our research found that many of our residency completers begin their teaching careers by taking on additional responsibilities such as advising student clubs and coaching student sports. By the time they are in their third year of teaching, they are beginning to serve on school and district committees, and by their fourth or fifth year are taking on leadership positions within and outside of their schools. Active involvement in these different programs helps to demonstrate their commitment to continual improvement and lifelong learning.

Proposition 5: Teachers Are Members of Learning Communities

One of the most important attributes of a change agent is continuing to learn in ways that improve student learning. NBPTS Proposition 5 considers the teacher's responsibility as two-fold: collaborating with other professionals to improve the effectiveness of schools and partnering with families and other stakeholders to promote students' education (NBPTS, 2016). Engaging in professional development (PD) is a cornerstone of our MAT program: residents must complete three PD days before graduation. Faculty and mentors are actively involved in professional education organizations. They take students to discipline-specific conferences and workshops, invite them to co-present at conferences, and share PD opportunities

with them. As graduate students, they are encouraged to seek out additional opportunities on their own to build on the idea of teacher as professional, and further their commitment to a wider range of curricular and instructional professional development.

In this manner, they are apprenticed into different learning communities. Whether the PD in which they engage is counted toward CTLE requirements, our program completers already have collaboration and continual improvement in their habits of mind. Among all our residency completers, one element constant across all the data was that our graduates are committed to learning and improving their craft through additional PD activities within their districts or through regional and statewide associations. This is a substantial commitment on the part of these new teachers, and yet they readily accept that because they know that this work will continue to prepare them for their students and their students' learning in the months and years to come. One of the residency completers, Mary, writes about her quest to constantly improve her instructional content knowledge by participating in and becoming actively involved with a regional writing project sponsored by a NYS university. She writes,

The Writing Project has been the most influential and impactful learning community I've been a part of ...we consider ways to move beyond the boundaries of the education system to make a more equitable, responsive, and creative classroom where students' voices, stories, and literacies feel valued.

The incorporation of these values into her classroom again speaks to the value our residency completers place on this part of their overall development. It is indicative of the type of accomplishment typically seen in more seasoned professional educators.

Our residency completers understand the unique role they play in developing and shaping curricular design and instruction within their schools and throughout their school community, and thus as change agents. We have multiple representations of this value within their school, and often throughout the region and nationally. This idea that the teacher as a leader can engage and help shape education and curriculum germinates within our program and continues to grow throughout the residency completers' career. It starts with reflective practice and expands once the resident graduates to residency completer. "I am a learner, so I interact with other Physics teachers. Working together has helped me create more meaningful lessons." (Limi) What Limi has described is something that we strive to highlight, and then program completers seek to improve their professional practice once established within their school and community. This also occurs within schools and outside on a more regional level. From Davis's, "I seek out those who want to share ideas, learn, grow, and genuinely improve outcomes for our kids," to Thomas' "Since I have started teaching, I have become a Level 2 Google Certified Teacher and Promethean Certified Teacher." Avery notes:

I have been ...running the Regional Math Circle ...(and) I have learned so much from the founders. Math Circle brings me into contact with a wider network of organizations (which aim to grow love of math across all schools and ability levels) and parents from a variety of schools.

NBCT Proposition 5 includes the idea that accomplished teachers work collaboratively on teams where they share knowledge and skills while also contributing to the development of strong schools and communities (NBPTS, 2016). Evan writes,

I will say Clarkson spoiled us on this one. At Clarkson, I lesson planned with science teachers, and got ideas from math teachers. We could all give each other feedback and all apply it to our content, because we all spoke the same pedagogical language and we were all trained to view teaching as a collaborative process. In my career, I discovered this was way more rare than I had hoped. I am lucky to have some other MAT grads in my building.

We found that our alumni participate in learning communities early in their teaching careers, and within a few years, some are already leading PD or serving as adjunct instructors of education. Blake writes,

I am grateful to work in an environment that promotes both professional autonomy and collaboration. Working with like-minded faculty, the act of service to novice professionals, and embracing the culture of excellence have all helped mold the professional who I currently am.

Identifying first as learners and second as teachers enables many of our residency completers to adopt the continual improvement mindset (Byrk, 2014). The current landscape and nature of teaching is shifting so dramatically that accomplished teachers must stay abreast of significant changes in education policy and practice: curriculum, technology, equity, and disproportionality. Positioning our residents as lifelong learners and changemakers may better assist their development as teacher professionals as they work to improve learning for all students.

DISCUSSION

A review of our data reveals a range of understanding of the concept of change agent that generally aligns with years of experience in the field. This finding, in and of itself, is not surprising. What is surprising is how many years in the field it takes before teachers exhibit the characteristics of change agents.

Early-Career Teachers

Our residency completers are generally still mastering the day-to-day work of teaching, while moving toward being change agents. Generally, the early-career participants discussed their PD, work with colleagues to plan lessons and write curriculum, and efforts to increase their content knowledge. For instance, Limi states,

I believe I understand what my students need to better learn difficult concepts. I break down difficult concepts and bring to a level at which high school students can understand.

Chad explained how he is managing his new teacher workload, “*The best time for me [to reflect] is during breaks and when I am grading. This allows me to know what was unclear. Also, being in my second year doing assignments again, I notice how I can expand on certain topics.*” Overall, alumni who have been teaching for two to five years have a clear, but fundamental understanding of their work as teachers. While they may be on their way to building the skills a change agent embodies, they clearly need more experience.

Mid-Career Teachers

Analysis of alumni teaching between six and fifteen years reveals a broadening understanding of the meaning and power behind the concept of change agent. Maddie, a six-year veteran, explained,

I belong to a group of teachers that cares about our content but cares even more deeply about the students we teach. We are naturally collaborative as a group... The PLC [Professional Learning Community] model allows for weekly collaboration and discussion about content and student progress. As a young teacher, this has truly been transformative...

Generally, the alumni in this range of experience clearly begin to look outward for more satisfying professional learning experiences. Max, a seven-year veteran explained,

I am a part of many professional networks and have attended professional developments ranging from my work with the Capital District Writing Project to more content-specific

professional development with groups such as the Institute for Curriculum Services, Gilder Lehrman, and Harvard's Case-Study Method cohort.

Veteran Teachers

Moving from early- and mid-career alumni to late-career alumni, we see a significant jump in their ability to act as agents of change within and outside their learning communities. Blake, a 17-year veteran, credited his work in the Clarkson residency for ensuring he was well prepared with an introductory level of content and PCK. Like Drew, Blake credited the models approach in the MAT program with his ability to learn and apply effective teaching methods. A NBCT, Blake intentionally seeks out innovative colleagues with whom to collaborate. He states, *"I have tried to surround myself with forward-thinking educators who hold the same values I do with regard to what excellent teaching and learning should include..."* Blake's professional growth has moved from internally focused on his immediate learning community, to an external focus. He now teaches in a MAT program and is the International Scholars coordinator. In this role, he mentors international students, ensuring they are well-supported for their studies in the United States. Blake's work demonstrates his skills as a change agent by enriching the school and greater community.

Abigail and Stephanie are additional examples of alumni who have grown from participating in PD as novice teachers to leading outside the classroom. In her 18th year, Abigail has gradually shifted to leader by taking on administrative positions in her school, forming and leading PLCs, which include using instructional rounds as a source of information for the school (City, et al., 2009). As a building administrator, she integrated project-based learning (Larmer, et al. 2013), and has served as a role model by earning and maintaining her National Board certification.

Stephanie, a 20-year classroom veteran, also successfully achieved NBC and moved into an instructional coaching role in a regional center, allowing her to support teachers in several districts. During her career, she also hosted numerous Clarkson MAT residents, shepherding them through that all-important residency year. As representatives of our most experienced alumni and study participants, Abigail and Stephanie embody the work of change agents by reaching beyond their classrooms and schools to provoke positive change among large groups of educators.

CONCLUSIONS

The process involved in becoming a NBCT is arduous and voluntary. Fewer than 2% of New York State teachers have earned this designation, and fewer than 35% of teachers pursuing National Board achieve it (Boyd & Reese, 2006; Hunzicker, 2011). As most of our MAT faculty at Clarkson University are NBCTs, they represent an objectively elite cadre of adolescent pedagogy experts; and since our residency-based MAT is built on the NBPTS, alumni are encouraged to earn this designation once they enter the field. Five of the residency completers we surveyed have gone on from their residency to achieve National Board certification, and several others are engaged in the NBC process.

A number of our residency completers are acting as change agents in education whether in their classrooms, schools, districts, communities, or beyond. We identified a trend that revealed the more years' experience our alumni had, the more likely they were engaged in enacting change. These results were unsurprising: our MAT immerses residents in the NBPTS and within a culture of inquiry. Our residents receive a consistent message from and about accomplished teachers throughout their graduate coursework and residency. Our residents are imbued with, adopt, and eventually embody these 5 Core Propositions (NBPTS, 2016). This approach establishes a foundation upon which our residency alumni become change agents in their school communities.

Grounding teacher education in improving student learning and centering accomplished teaching practices—knowing students, content and PCK, assessment, reflection, and lifelong learning—provides residents a blueprint to update, modify, and revise throughout their careers. Working toward demonstrating the knowledge and teaching practices expected of accomplished teaching (NBPTS, 2022) by providing evidence of positive effects on student learning is a goal many of our alumni seek to achieve. Whether

through PD, reflective practice, or habits of mind, our residency completers build toward mastery of the art and craft of teaching from the foundation we provided. The combination of the full-year residency with an intentional grounding in the standards of the National Board sets our residents on the path to becoming change agents.

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APPENDIX 1: PARTICIPANT DEMOGRAPHICS AND CHARACTERISTICS

| Pseudonym | School Setting | Years Teaching | Race | Gender | NBPTS Status |
|-----------|-----------------------------|----------------|----------------|--------|--------------|
| Chad | Public, Urban | 2 | Black | Male | N/A |
| Mary | Public, Suburban | 3 | White | Female | N/A |
| Liya | Public, Suburban | 3 | Asian/S. Asian | Female | N/A |
| Jett | Public, Suburban | 3 | Asian/S. Asian | Male | Pursuing |
| Limi | Independent, Day | 4 | Asian/S. Asian | Female | N/A |
| Drew | Public, Urban | 4 | Black | Male | N/A |
| May | Public, Technology Regional | 4 | Asian/S. Asian | Female | Pursuing |
| Ian | Public, Rural | 4 | White | Male | Pursuing |
| Benjamin | Public, Suburban | 5 | White | Male | N/A |
| Evan | Public, Urban | 5 | White | Male | N/A |
| Davis | Public, Suburban | 5 | White | Male | N/A |
| Marc | Public, Rural | 5 | White | Male | N/A |
| Paige | Public, Suburban | 6 | White | Female | N/A |
| Jared | Community College | 6 | White | Male | N/A |
| Maddie | Public, Suburban | 6 | White | Female | N/A |
| Thomas | Public, Suburban | 6 | White | Male | N/A |
| Max | Public, Suburban | 7 | Black | Male | N/A |
| Ivy | Independent, Boarding | 8 | Black | Female | N/A |
| Avery | Independent, Boarding | 15 | White | Female | Certified |
| Blake | Public, Suburban | 17 | White | Male | Certified |
| Abigail | Public, Rural | 18 | White | Female | Certified |
| Dawson | Public, Suburban | 18 | White | Male | Certified |
| Stephanie | Public, Regional | 20 | White | Female | Certified |

APPENDIX 2: EDUCATION LEADERSHIP ROLES

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|---|--|
| <p>Local Professional Development Coordinator Building Director and Political Action Chair Culturally Responsive Education Committee Building Leadership Team Anti-Racism Task Force Co-chair Union Pride Committee Department Team Multicultural Fair Director District’s first Director of DEI Department Coordinator Black Student Union Founder Advisor Teacher Leader for Agents of Positive Change</p> | <p>Regional Regional Farm-to School Initiative Board BOCES Mathematics Consultant Capital District Writing Project National Board Support Provider Adjunct Instructor Co-chair Campus Alumni Committee NCBI Trainer</p> |
| <p>State State Department of Agriculture Board NY State Master Teachers National Board State Advisory Board ASCD State Executive Board Association of NY State Mathematics Board NY State Mathematics League Coordinator Science Instructional Coach and Coordinator</p> | <p>National National Board Certified Teachers Presidential STEM Award Winners 100K in 10 Initiative Panel Representative Associate Editor of NGSS Activity Books AP Chemistry Lab Book Co-author Essential Chemistry Lab Book Co-author POGIL Trainer/ Webinar Developer</p> |