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The Effects of Teacher Preparation on Student Teachers' Ideas about Good Teaching

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Abstract: Utilizing a mixed method approach, this study focuses on the perceptions of good teaching held by graduates of a teacher education program in the U.S. Specifically, this paper examines whether graduates embrace their program's vision of good teaching and core standards as a guide to their self-reported teaching practice. Six cohorts of graduates' responses were recorded and analyzed upon arrival and completion of preparation to examine whether students' ideas changed during the course of the program. Findings suggest mixed results suggesting that teachers adopted several ideas about good teaching that are related to the core standards of the program (e.g., collaborating with a colleague, encouraging risk taking, and asking open-ended questions).

Introduction

From spending thousands of hours as students participating in classroom life and observing what teachers do, we form images and beliefs about what teaching entails (Lortie, 1975). This is especially salient for prospective teachers who enter teacher education programs with strongly held images and beliefs about teaching and learning which may not offer reliable guides for their future practice. A central task of teacher preparation involves uncovering these often-implicit beliefs and helping prospective teachers examine them critically and, if necessary, revise or replace them with more dependable views (Feiman-Nemser, 2001). Unless teacher educators address this task of teacher preparation, prospective teachers are likely to rely on their entering beliefs to guide their learning and practice.

A related responsibility is helping prospective teachers develop a repertoire of core practices which enable them to enact their vision of good teaching in the classroom (Grossman et al., 2009; Tamir & Hammerness, 2014) and become professional educators. In the last decade, university-based teacher education has experienced a re-turn to practice, focusing teacher preparation around a set of core practices of teaching in an effort to ensure that beginning teachers are prepared for responsible teaching when they enter the classroom (Forzani, 2014; Grossman, 2018). The combination of an explicit vision of good teaching and opportunities to learn to enact that vision in purposeful ways contribute to program coherence, widely considered as a feature of strong pre-service preparation.

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This article explores the impact of one pre-service program on prospective teachers' entering beliefs about good teaching and their ideas about the kind of teaching practices they anticipate enacting in their classroom. The study was carried out in two program sites – Gold University, a leading college in the east coast of the United States and Arion College in the west coast of the United States.² In 2002 both institutions partnered to design a post-BA program called Cedar³ to prepare elementary teachers for U.S. elementary schools. Cedar's inception has been a direct response to the rising demand for highly-qualified teachers in two large school districts that the program serves (Tamir, 2011).

This 13-month cohort-based pre-service program features a year-long mentored internship in a local school and two summers of study on campus. At Gold University the program leads to a Master of Arts in Teaching (MAT) degree and an initial teaching certificate. At Arion College, the program leads to an initial teaching certificate and student teachers must pass exams and meet the requirements for public school teaching.

This study focuses on a critical issue for Cedar educators and many teacher educators around the world, that is, the extent to which program graduates embrace their program's vision of good teaching as a guide to their teaching practice. To that end, six cohorts of graduates' responses, regarding their vision of good teaching, were recorded and analyzed upon arrival and completion of their preparation. Specifically, I examined whether students' ideas changed or did not change at all, during the course of the program.

While the focus of this study is on one particular program, the issue relates to an overarching concern of teacher educators in the US and elsewhere to understand if and how teacher preparation affects graduates' vision of good teaching.

Visions of Good Teaching in Teacher Preparation

The idea that beginning teachers need to develop a clear vision of good teaching during pre-service preparation emerged during the 1980s as part of a broader argument about the role of experience in learning to teach and the importance of program coherence. Dan Lortie (1975) introduced the concept of the *apprenticeship of observation* – the years of elementary and secondary schooling when prospective teachers develop ideas and images of teachers and teaching. Because teacher education was viewed as a weak intervention, the concern was that prospective teachers' own schooling experience would influence their views and practice more than their pre-service preparation (Zeichner & Tabachnick, 1981).

In following years, researchers documented the entering beliefs of student teachers (Ball & McDiarmid, 1990; Calderhead & Robson, 1991; Tabachnick, Popkewitz, & Zeichner, 1979; Mewborn & Tyminski, 2004; Oerlemans, 2017; Westrick & Morris, 2016) and the limited effects of teacher education in changing those beliefs (Zeichner & Tabachnick, 1981; Smagorinsky & Barnes, 2014). Reformers called for more robust and coherent pre-service programs to counter the effects of the apprenticeship of observation and replace earlier beliefs with more dependable views of learners, learning, subject matter, and teaching.

For programs, this meant developing closer conceptual and structural links between courses

² The original names of the involved institutions and program were concealed and replaced with pseudonyms.

³ Both program sites recruit academically strong college graduates interested in elementary school teaching. In terms of size, Cedar prepares about 20 teachers annually. In the sixteen years since the program's inception, Cedar has prepared well over 200 new teachers.

and field work, and grounding programs in a vision of good teaching. Such visions often took the form of a set of professional teaching standards which elaborated the dimensions of good teaching (Darling-Hammond, Hammerness, Grossman, Rust, & Shulman, 2005; Hammerness, 2004; 2010). According to a report by the National Academy of Education (Darling-Hammond, 2007), *A Good Teacher in Every Classroom*, strong pre-service programs:

...teach teachers to do more than simply implement particular techniques; they help teachers learn to think pedagogically, reason through dilemmas, investigate problems, and analyze student learning to develop appropriate curriculum for a diverse group of learners. (p. 119)

This effort to create coherent teacher education programs fits with a view of teaching as a profession with shared standards to guide teacher learning and teaching practice.

The standards movement in teacher education in the United States reinforced the view that having an explicit vision of good teaching was foundational to strong teaching, teacher development, and teacher evaluation. Since the 1990s, these ideas have spread across the world and been adopted in multiple countries, like Norway (Klette & Hammerness, 2016), Australia (Call, 2018) and New Zealand (McDonald & Flint, 2011). For example, a recent OECD report about the preparation of teachers in Lithuania (2017) argues that:

A widely accepted vision of good teaching is needed to underpin teacher policies: initial teacher education programmes, regular teacher appraisal, certification processes, teacher professional development and career advancement. And, these, in turn, are needed if Lithuania is to develop the skills of its population to higher level than in the past. (p. 53)

During this period (1990s), the Interstate New Teacher Assessment and Support Consortium (INTASC) brought together leading educators in the United States to develop a set of standards for beginning teaching (INTASC, 1992) which reflect a shared vision of good teaching. Over the years, many states and teacher education programs adopted and adapted the INTASC standards as a basis for program development and student teachers' assessment.

Having a clear vision of good teaching allows prospective teachers to connect important values and goals to concrete practices and provides them with a solid base for evaluating their teaching and their students' learning (Feiman-Nemser, 2001). Research also confirms that a shared vision of teaching provides an image of the possible to guide and inspire new teachers as they continue developing their practice on the job. Hammerness (2004) studied the role of a vision of teaching in the practice of experienced teachers. Such a vision,

encompasses not only what she [the teacher] hopes students will engage with [but] also how they will accomplish it: she has a clear sense of the pedagogical approaches, roles, and materials that embody her ideals. She knows what role she needs to play as a teacher and what role her students must play. She has a strong grasp of the content that she feels is critical to learn in her field. And ultimately, because she can imagine her aims and goals with some elaborateness and richness, she is able to appropriately measure her students' progress — and in turn, can tune her curriculum and practice appropriately. (p. 41)

Numerous studies support the role of vision and standards in teacher education (Darling-Hammond, 2012; Darling-Hammond, Chung, & Frelow, 2002) arguing “that such programs have a greater impact on the initial conceptions, practices, and effectiveness of new teachers than others that are less coherent and less intent on connecting theory and practice” (Darling-

Hammond, 2007, p. 119). Other studies have shown that programs designed around a vision of good teaching have greater coherence among courses and between courses and field experiences.

Cedar's Vision of Good Teaching

In developing the Cedar program, leaders from both sites collaborated on a set of standards that embodied their conception of high-quality teaching. In this effort, they built on existing standards in the field of education. While the two sites adopted slightly different versions, the core ideas remained consistent. Both sets include ideas about the importance of teachers knowing their students and their content deeply, creating a safe and respectful classroom culture that supports learning, engaging in thoughtful planning, teaching for conceptual understanding, and using pedagogies centered on learners and learning. Taken together these standards were developed to express the program's vision of good teaching.

At Arion College, Cedar student teachers study the program's teaching standards during their first summer in the program. Then the standards are invoked and elaborated across the school year in foundations and methods courses and used as a basis for ongoing reflection and assessment. Student teachers, mentors and field instructors use the program's teaching standards during the internship as they reflect on their work during their preliminary, formative, and summative assessment conferences.

At Gold University, Cedar students are also introduced to the program's teaching standards in their first summer. Then, during their internships, they are expected to focus on different standards at different points in the school year. Coursework and internship expectations explicitly reflect those foci (Feiman-Nemser, 2014). A continuum has been developed to describe what the teaching standards look like at different levels of expertise from the initial stage of joining a new school as an intern to program completion and mentors and interns use the relevant standards and continua as formative and summative assessment tools (see Appendix A).

The Study

This study considers student teachers' views of teaching at the beginning and end of the program in order to see whether and how participants' ideas about good teaching and professional practice change. More specifically, it aims to examine what ideas about good teaching did Cedar student teachers bring to the program? How do their views change over the course of their preparation and are graduates' visions of good teaching and its enactment consonant with the vision and practices embraced by the program. By analyzing data gathered at the beginning and end of the program, it can be inferred that changes are due primarily to the impact of the program, rather than subsequent classroom experiences.

Data come from two surveys completed by Cedar students in cohorts five through 12, when they enter the program (during the first week) and prior to graduation (during the final week). This study began with 131 surveys completed by entering students, and 104 completed by graduating students. The 131 students represent a 100% response rate for the entering survey and a 80% response rate for the graduation survey. About half of the 27 students who did not complete the graduation survey, dropped from the program during their preparation (14 students). The rest were absent for various reasons when graduation surveys were collected. In conclusion, about 3-5 students did not fill out the surveys every year.

This research is based on a mixed methods approach. I first present the sources of data and methods used to collect and analyze the qualitative data that contain descriptive open-ended students' survey responses. Next, I present the items used to collect quantitative data from the same student teachers. These two parts of the survey offer complementary data points which help explain Cedar students' ideas about good teaching and their associated core instructional and classroom practices, as well as a professional habit, such as ongoing learning and collaboration with colleagues.

Source of Qualitative Data

To elicit student teachers' conceptions of good teaching, the survey asks the following open-ended question: "What are the most important aspects of being a good teacher?" I placed this question at the beginning of the survey so that remaining questions did not influence student teachers' responses. Responses varied in length and complexity and ranged from single words or brief phrases to fully articulated ideas.

In considering how student teachers' ideas changed over the course of the program, I was particularly interested in identifying ideas that student teachers expressed at the end of their preparation which they did not articulate at the beginning. I also considered how well those ideas correlated with the program's vision of good teaching. To carry out individual comparison, I eliminated cases where responses to the question were missing on either the entrance or graduation survey, for any of a number of reasons.⁴ This led to 77 complete pairs of responses from student teachers in Cohorts 6 - 12. Overall, the 77 completed pairs, distributed relatively equally across the seven cohorts (with six and half to nine completed pairs per cohort).

Qualitative data were analyzed using the qualitative software, Atlas.ti. Entry and graduation responses for each student were compared using a directed content analysis approach to tag new ideas within the graduation survey text. If an idea appeared in both the entry and graduation surveys, it was not tagged, on the assumption that the student entered the program with that idea. Responses could be tagged with multiple codes if more than one new idea was contained within a response.

After comparing the new ideas about teaching embedded within teacher responses to the program's vision of good teaching, I found that 52 of the 77 graduating survey responses (68%) contained one or more new programmatic ideas. According to Hsieh and Shannon (2005), directed content analysis methodology is used when researchers are looking to confirm, reject or find connections to a well-structured theory, model, or concept. In this paper, I had a similar goal of understanding how prospective teachers' ideas and practices of good teaching developed between the time they started and finished their preparation, and to what extent these ideas aligned with Cedar's vision of good teaching.

When applying a directed content analysis methodology, the process of developing codes started by scanning for key concepts in the text and turning them to initial coding categories (Hsieh & Shannon, 2005; Potter & Levine-Donnerstein, 1999). Next, I developed operational codes for every category that were aligned with the program's standards and based on its vision of good teaching (see Appendix A). Below I introduce these operational codes (based on the

⁴ Missing responses occurred for various reasons. In addition to students who dropped out or were absent on the day the survey was administered, occasionally students who filled out the survey skipped the open-ended question.

program’s standards), explaining their origins and defining their meaning (see Table 1). I also illustrate each code with examples of students’ responses.

Arion College standards	Gold University standards	Ideas regarding to vision of good teaching that appear across standards	Specific operational codes
Know students as learners and use this knowledge to inform teaching	Knows children as learners	<i>Attending to learner differences;</i> <i>Engaging in ongoing professional learning;</i> <i>Collaborating with colleagues;</i>	<i>Knowing children</i>
Create and sustain a classroom learning community based in universal and communal values and ideas	Builds a classroom learning community rooted in students’ experiences and values		<i>Creating a learning community</i>
Design/adapt curriculum and plan for teaching; know what’s important for students to learn in the subjects they teach; plan learning activities based on an understanding of content and curricular expectations	Knows subject matter for teaching		<i>Knowing content</i>
	Plans for student learning		<i>Planning effectively</i>
Teach for understanding	Teaches for understanding		<i>Teaching for understanding</i>

Table 1: List of Cedar standards at Arion College and Gold University with their assigned operational codes (specific and general)

Knowing children: This code comes directly from the programs’ vision of good teaching which includes a standard related to “knowing children.” Survey responses which were coded under “knowing students” included ideas such as “understanding of child development stages and brain development,” “careful observation of students,” and “seeing students.” Because this standard also includes knowledge of families and the need to learn about children in a holistic manner, ideas such as “being sensitive to school culture and family needs” and “caring for the whole child” were tagged with this code.

Because the program promotes active listening as an important way to learn about students, the word “listening” or phrases, such as “listening to each student” was coded as related to “knowing children.” Some student teachers paired observing with listening: “observing and listening to your students.” These responses were also coded as “teaching for understanding” (code 5 below), since one practice central to teaching for student understanding is listening to students.

Creating a learning community: This code also comes directly from the program’s vision of teaching as articulated in the program standards/frameworks. A range of responses was associated with this code, including ideas about the centrality of the teacher-student relationship, ideas about behavior management, such as “feeling comfortable and confident as an authority figure,” ideas about the importance of rules and routines, such as “structure, because children need to know what is happening on a regular basis,” and descriptions of a desirable classroom culture, e.g. “making it clear to your students that they can feel safe, calm, and comfortable in this learning environment.”

Knowing content: This code and the next one are closely related. In the Arion College Framework, knowledge of content, and the capacity to plan effectively are combined into one dimension.⁵ Elements which elaborate that dimension include the importance of content knowledge for teaching. In the Gold University teaching standards, content knowledge is listed as a separate standard. Due to the large number of references to knowledge of content and effective planning, separate codes were given to them. The code *knowledge of content* included responses such as “knowledge of material,” “subject mastery,” “knowing the content you teach well and loving that content,” and “understanding of subject matter.”

Planning effectively: As described above, the Arion College framework combines this aspect of teaching with content knowledge. In the Gold University teaching standards, planning has its own standard. Responses tagged with this code included phrases such as “preparing materials and activities for class,” “planning for lessons,” “being intentional in your practice,” or “have a purpose for teaching,” as well as more elaborated ideas such as “Planning with the end result in mind and focusing on the bigger picture,” or “Planning and being thoughtful about your objective and main goal in what you are teaching; teaching to what is most important.”

Teaching for understanding: Both the Arion College framework and Gold University teaching standards highlight this idea with nearly identical wording. A close examination of the elements contained within this category reveals that the Cedar program promotes the kind of teaching which builds on students’ prior knowledge, mobilizes intellectual engagement, and fosters understanding rather than just recall. This vision is often described as learner- or learning-centered teaching. Responses that were tagged with this code sometimes included shorter phrases, such as “educate for understanding.” More often, these ideas were slightly elaborated and included aspects of teaching such as: “Providing students with a constructivist and inquiry-driven learning environment,” “Remember to put yourself in the place of the learner,” “Helping students listen to each other,” “Teaching towards the students’ learning abilities, interests, and goals,” or “Being open to ideas that students generate and following them.”

Attending to learner differences: References to differentiation or meeting the needs of all learners are found in several different sections of the program standards, including those focused on knowing students, planning for learning, and teaching for understanding. Therefore, this aspect of teaching was assigned its own code. Many responses took the form of a single word, “differentiation” or “differentiate.” Others were phrases such as “meeting the needs of all learners” or “ability to differentiate lessons to individual learners.”

Engaging in ongoing professional learning: This code and the one that follows reflect ideas about what it means to be a professional educator. Both the Arion College framework and the Gold University teaching standards explicitly highlight the importance of teachers continuing to learn about content and pedagogy. They also encourage reflection on one’s practice as an important habit for ongoing learning. Responses tagged with this code include words and phrases such as “being a learner,” “reflection,” “ability to reflect on practice,” “openness to feedback,” and “learning from your mistakes.”

Collaborating with colleagues: This is another aspect of professionalism explicitly endorsed in both the Arion College and Gold University standards. Cedar emphasizes making teaching public as a means of strengthening teachers’ practice. Responses tagged with this code include the single word “collaboration” as well as phrases such as “being open to the ideas of other professionals,” “working with other adults: staff and parents,” or “being open and talking about your teaching with other teachers.”

⁵ Design/Adapt Curriculum and Plan for Teaching.

Source of Quantitative Data

In the quantitative data set the first question attempted to ascertain how student teachers perceive the importance of various purposes and practices associated with teaching in schools. The question asked: “In your role as a school teacher, how important are the following?”

- Preparing students for active citizenship
- Helping children to succeed academically
- Being a school leader
- Collaborating with colleagues
- Developing my practice as a teacher
- Teaching about social justice

Each of the six possibilities was scored on a 5-point Likert scale.⁶ The items were included because they reflect the program’s vision of strong beginning teachers and their practice. A second question asked about which teaching practices student teachers anticipated enacting in their classrooms: “When you picture yourself teaching, what would an observer see you doing, and how often?”

- Asking open-ended questions
- Involving families in children's education
- Encouraging risk-taking
- Facilitating student collaboration/paired learning
- Collaborating with a colleague

These options were also ranked on a 5-point Likert scale.⁷ They, too, were chosen because they reflect teaching practices and/or commitments taught in the Cedar program.

I compared the mean responses of student teachers to these questions before they entered the program and after they graduated. Here I was interested in identifying general trends and thus used the computed means of all the survey responses. Data were imported into the SPSS statistical software and a chi-square analysis was conducted to discover how student responses before entering the program and after graduation were either similar to or different from each other, and whether those differences reached a level of statistical significance. In the context of such comparisons, a difference that reaches statistical significance between beginning and graduating students may suggest that the program experience influenced students and changed their behaviors and/or beliefs.

Results

The following section explores and analyzes how student teachers’ ideas about good teaching and what it means to be a professional teacher change over the course of the program, based on both the qualitative and the quantitative data. In addition, based on my knowledge of the program, I suggest where in the program I believe it is most likely for people to encounter the ideas and practices they refer to in their responses.

⁶ The scale consists of the following responses: 1=not at all important, 2= slightly important, 3=somewhat important, 4=very important, 5=extremely important.

⁷ The scale consists of the following responses: 1=never, 2=rarely, 3=sometimes, 4=often, 5=very often.

Cedar Students’ Qualitative Responses

In analyzing the qualitative data some distinct patterns were uncovered. Table 2 shows the frequency with which various categories appear and the percentage of teachers who mentioned them.

Categories	Number and percentage of student teachers ⁸
Knowledge of children	19 (37%)
Capacity to plan effectively	13 (25%)
Knowledge of content	12 (23%)
Create a learning community	12 (23%)
Teach for understanding	10 (19%)
Ongoing learning	9 (17%)
Collaboration	8 (15%)
Differentiation	8 (15%)

Table 2: What are the most important aspects of being a good teacher?

The idea that emerged most frequently was the importance of a teacher’s knowledge of children. Well over a third of the student teachers whose responses in the graduation survey contained new ideas (37%) included this important aspect of teaching. Deep knowledge of individual students, as well as knowledge of how children learn, is at the foundation of any learner-centered pedagogy and opportunities to learn about children are embedded within the Cedar program. For example, student teachers in both programs take a course in child development and conduct a child study in which they use observations, interactions, and analyses of student work to learn deeply about an individual student. Student teachers are expected to develop a well-rounded understanding of children and develop strategies for supporting their social, emotional, academic, and spiritual growth.

Twenty five percent of the student teachers mentioned the importance of planning as an aspect of good teaching. Pre-service teachers rarely understand the intellectual work of planning since this is part of the invisible work of teaching. Cedar students spend considerable time learning to plan lessons and units, based on the “understanding by design” framework (Roth, 2007; Wiggins & McTighe, 2005). These opportunities to design individual instructional activities and sequences of learning activities are supported by coursework, instructors, and mentor teachers.

Nearly one out of four (23%) of the student teachers whose responses contained new ideas included a statement about content knowledge. While students can tell when a teacher lacks content knowledge, many prospective elementary teachers underestimate the degree and kind of content knowledge necessary for good teaching (Ball, Thames, & Phelps, 2008). The nature and importance of teachers’ content knowledge is widely discussed within the program. When student teachers develop curricular units, their first step is to deepen their subject matter knowledge. As they begin planning lessons, Cedar students often express surprise at the amount of subject matter knowledge necessary to successfully design lessons and units and implement them effectively. This is illustrated in the response of one of the graduating students:

I was very impressed with the depth to which [my mentor] explored telling time to the minute with the students. I used to think that it would have been enough to

⁸ Number of students and their percentage are calculated out of the 52 coded responses of teachers that contained new ideas in the graduating survey (compared with the matching responses of these teachers to the initial survey). Categories are ranked according to frequency of appearance.

teach students the correct way [to set] the time on a clock... I now think that teachers need to have a wealth of understanding about the subject matter they are teaching so that they can explore various misconceptions, answer student questions, and enhance student understanding.

The same percentage of student teachers (23%) included ideas about building a classroom community that supports learning. Novice teachers often struggle to manage classrooms and develop a productive culture of learning. It's also likely that pre-service teachers have not thought about what it means and what it takes to create a safe and respectful classroom learning community. Cedar strives to teach basic classroom management while also providing a deeper understanding of the ways that classroom norms and structures support a culture of learning. Student teachers study the "Responsive Classroom" approach and read *Teaching Children to Care* by Ruth Charney (2002). In addition, they study how their mentor teacher creates a productive classroom community. During their year-long internships, student teachers are expected to practice their newly learned skills by introducing and reinforcing norms, routines and expectations, and by drawing on communal values to create a culture of learning.

Almost one out of five graduates (19%) included new ideas related to teaching for understanding which reflect the learner-centered pedagogy that the program promotes and follows its emphasis on the kind of teaching that promotes deep student understanding. As mentioned, student teachers use an approach to instructional planning called "Understanding by Design" to formulate their pedagogical purposes, which emphasizes conceptual understanding of the "big ideas" of the lesson, not simply the acquisition of knowledge, as the ultimate goal of teaching.

As discussed above, engaging in ongoing learning and collaborating with colleagues are linked to the program's concept of professionalism. Five graduating students included the idea of teachers as learners, as an important aspect of effective teaching, four included collaboration, and another four included both. Therefore, a total of 13 student teachers (25%) included at least one idea related to professionalism.

One possible explanation to the relatively small number of graduates who mentioned aspects of professionalism may relate to the emphasis of the question on "good teaching" rather than the conditions that "enable such teaching." All the while, when asked directly about aspects of professionalism, like collaboration, student teachers identified it as an important professional dimension (see responses on quantitative items below). This is not surprising, as the program invests in student teachers' collaborative work with their mentor teachers, as well as their peers. Mentor teachers regularly use collaborative protocols to analyze classroom videotapes, provide feedback on lesson and unit plans, and look at student work with their interns. In addition, mentor teachers model the process of ongoing learning by making their questions and their efforts to improve their teaching transparent. In many ways, the program promotes the idea of teachers working together to strengthen their teaching and their students' learning.

Eight student teachers (15%) mentioned the idea of differentiation or teaching in ways that meet the needs of all learners. While this idea was not mentioned as frequently as some of the others, it fits with a pattern in the responses that places learners and their needs at the center of instruction. Student teachers learn strategies for differentiation in various courses and are expected to build differentiation into their lessons in order to support the learning needs of all students.

Student Teachers’ Quantitative Responses Before and After Preparation

Data from the scaled survey questions adds to the understanding of changes in student teachers’ beliefs about the importance of particular teaching practices and commitments and their anticipated use of these practices in their future classrooms.

Looking at the series of questions about the importance of certain purposes and practices suggests that student teachers rated as *very important* almost all of these questions when they enter and when they graduate. The means for the two highest scoring items, *helping children to succeed academically* and *developing my practice as a teacher*, indicate that a majority of student teachers rated these as *extremely important*. Out of the six questions in this section, only one demonstrated a statistically significant difference in the mean response upon graduation: *collaborating with colleagues*. Student teachers rated this of higher importance when they graduated compared to their rating upon entry (see Table 3).

Survey item	Mean upon program entry	Mean upon program graduation	Chi-square (P-value)
In your role as a day school teacher, how important are the following?			
Preparing students for active citizenship	4.07	4.11	.144 (.705)
Helping children to succeed academically	4.64	4.66	.048 (.826)
Being a school leader	3.94	3.82	.87 (.351)
Collaborating with colleagues	4.16	4.38	* 4.7 (.03)
Developing my practice as a teacher	4.65	4.66	.003 (.954)
Teaching about social justice	4.01	4.00	.015 (.902)

Table 3: Comparing key teaching purposes upon program entry and graduation⁹

The other set of five survey questions ask student teachers to anticipate which teaching practices an observer would see them enacting in their future classrooms. Again, the means tended to be high, demonstrating that student teachers believed a future observer would see them engaging in these practices *often*. In this set of questions, the mean response to two of the prompts remained statistically stable while three of them demonstrated statistically significant change in the mean between the entry and graduation surveys. The three practices that showed a statistically significant positive change were *asking open-ended questions*, *encouraging risk taking*, and *collaborating with a colleague*. In other words, on graduation, students believed an observer was more likely to see them engaging in these practices compared to the time they entered the program (see Table 4).

⁹ Variables meeting accepted levels of significance (p-value ≤ .05) are denoted with *.

Survey item	Mean upon program entry	Mean upon program graduation	Chi-square (P-value)
When you picture yourself teaching, what would an observer see you doing and how often?			
Asking open-ended questions	4.21	4.42	*4.585 (.032)
Involving families in children's education	4.00	3.90	.829 (.363)
Encouraging risk taking	4.26	4.47	*4.365 (.037)
Collaborating with a colleague	4.16	4.46	*8.838 (.003)
Facilitating student collaboration	4.16	4.17	.011 (.917)

Table 4: Comparing key teaching practices upon program entry and graduation¹⁰

Discussion

Patterns in Cedar Students' Responses

It is notable that the mean responses for most questions were extremely high upon entry. Ten of the eleven means were 4 or above and the lowest mean upon entry was 3.8. This may reflect student teachers' impulse to respond in socially acceptable ways, given the program's priorities and emphasis or it could reflect a close fit between the pedagogical orientation of both the program and the people who chose to attend it.

Another notable pattern that emerges from these data is that seven out of eleven of the response means did not change in a statistically significant way from entry to graduation. In some ways, this is unsurprising as many of the prompts may be perceived as statements of desirable outcomes and were rated highly upon entry. For example, student teachers entered Cedar believing that *helping students succeed academically* is *very* or *extremely important* and they graduated with that belief unchanged.

As described above, some Cedar students graduate with newly developed or strengthened professional commitment about the importance of teachers working together to develop their practice. This finding from the open-ended responses is reinforced by the fact that both survey items about collaboration demonstrated statistically significant positive change.

While developing collaboration as an important professional teaching practice is consistent with major findings in the literature about professional culture (Johnson et al., 2007; Tamir, 2013), it may have been counter-intuitive to the incoming students, as the dominant cultural image of a teacher is the solo practitioner working with students behind closed doors (e.g., Little, 1990; Lortie, 1975). The fact that the program provides multiple opportunities for student teachers to engage in collaborative learning experiences may help change student teachers' perception and allow for new understandings, about the complexity of teaching and the accompanying necessity of ongoing collaborative learning, to emerge.

Two of the practices that are important in a learner-centered classroom demonstrated statistically significant positive change: *asking open-ended questions* and *encouraging risk-taking*. At graduation, student teachers were more likely to believe an observer would *very often* see them asking open-ended questions and encouraging risk-taking. Open-ended questions have no "right" answer; they invite students to listen to each other and think deeply and creatively

¹⁰ See footnote 10.

about what is being asked. In order to support all students in responding to questions that invite multiple responses, teachers must create a culture where students are encouraged to take intellectual risks. Feeling safe enough to take intellectual risks makes the exploration of open-ended questions possible. Facilitating these two practices enable student teachers to uncover and extend student thinking and assess their understanding. The Cedar program explicitly teaches students how to engage in these practices and models them through the pedagogy of course instructors and mentor teachers (Tamir & Hammerness, 2014).

Conclusion

This close examination of survey data supports the idea that Cedar interns develop beliefs about teaching which match the program's articulated vision. Ideas that put learners at the center, highlight teaching for understanding, and acknowledge the importance of ongoing, collaborative learning were widespread in the graduation surveys and aligned with the responses on the survey prompts. The program supports the development of these ideas through explicit teaching and by engaging student teachers in multiple experiences, such as child study and collaborative teamwork. These findings reveal that the program's coherence, which largely rests on explicit standards of teaching and the regular use of these standards in formative and summative assessment, shapes students' thinking. Furthermore, these findings confirm previous ones, reasserting that when a program has a guiding vision of good teaching and shared language for talking about teaching and using it as a framework for learning and assessment, this has a lasting effect on its graduates (Darling-Hammond, 2012; National Academy of Education, 2007; OECD, 2017).

Cedar students may enter the program with a desire to create classrooms that support the academic success of all students and an interest in learner-centered pedagogies. As prospective teachers, however, they do not yet have a repertoire of teaching practices that will turn that vision into reality. Studying the ways their mentor teachers create emotionally safe classroom cultures that support intellectual risk-taking, and then working to facilitate learning experiences that maintain that culture, helps program students understand the complexities and importance of these practices and the underlying vision that supports and inspires them. Learning about different types of open-ended questions, studying examples of productive questioning across content areas, and having multiple opportunities to practice leading classroom discussions based on open-ended questions also helps program students develop their capacity to incorporate this practice into their teaching (see also, Tamir, Pearlmuter & Feiman-Nemser, 2017).

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Appendix 1: The Cedar program teaching standards

A good beginning school teacher...

Standard 1: Knows children as learners

- a. Gets to know children as individuals and learners, with diverse intellectual, emotional, and spiritual needs
- b. Refines knowledge of learning and child development through interactions with students
- c. Uses knowledge of children as learners in planning and teaching
- d. Maintains open communication and works with families and caregivers to support student learning
- e. Respects and learns about families' diverse religious practices, cultural and socio-economic backgrounds, and family structures

Standard 2: Builds a classroom learning community rooted in communal experiences and values

- a. Infuses communal experiences and values into the learning environment
- b. Creates an emotionally safe culture of learning that promotes intellectual risk taking
- c. Encourages democratic processes and habits
- d. Establishes and maintains clear expectations and consequences for individual and group behavior
- e. Develops procedures for the smooth operation of the classroom and the efficient use of time
- f. Arranges the physical environment to support student learning

Standard 3: Knows subject matter for teaching

- a. Assesses and develops subject matter knowledge
- b. Acquires and uses subject specific pedagogy
- c. Aligns instructional content with standards

Standard 4: Plans for student learning

- a. Frames clear, developmentally appropriate, and worthwhile goals for student learning
- b. Designs short and long term plans that foster student inquiry and understanding

- c. Organizes coherent lessons and prepares for the “particulars”
- d. Uses materials and resources to make subject matter accessible to all students
- e. Plans assessment and instruction in tandem
- f. Connects information and ideas within and across subjects

Standard 5: Teaches for understanding

- a. Builds on students’ prior knowledge, life experiences, and interests
- b. Monitors and maintains students’ intellectual engagement
- c. Adjusts instruction based on ongoing assessment
- d. Engages students in problem solving, critical thinking, and other activities that promote subject matter understanding.
- e. Communicates effectively with students.

Standard 6: Assesses student learning

- a. Uses a variety of formal and informal assessments to monitor student learning
- b. Provides students with criteria and informative feedback to guide their learning and involve them in self-assessment
- c. Uses the results of assessments to inform future planning and instruction

Standard 7: Develops as a professional educator

- a. Exhibits professional judgment and behavior
- b. Collaborates with colleagues to support and improve student learning
- c. Demonstrates commitment to ongoing learning as an educator