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Bridging the Gap Between Preservice Teacher Education and Induction:

NSTA Student Chapters as a Transitional Support

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## **Bridging the Gap Between Preservice Teacher Education and Induction: NSTA Student Chapters as a Transitional Support**

At present, science teacher education does not effectively connect teachers' university preparation and continued education throughout their careers (Kahle & Kronebusch, 2003). Universities typically regard preservice preparation as their task, with responsibility for new teacher induction resting with schools (Feinman-Nemser, 2001). In particular, the science teacher education continuum has been criticized as "a fractured system, lacking both continuity and accountability" (Kahle & Kronebusch, 2003 p.585). The "ideal state," envisioned by Kahle and Kronebusch, includes a continuum of science teacher education with transitional supports, allowing for beginning teachers to develop their professional identities.

There are challenges, however, in achieving this vision. Even where there are close and beneficial relationships between universities and K-12 schools, those relationships cease for prospective teachers if they leave the community and seek employment elsewhere. Often, new teachers find themselves immersed in a school culture that does not support the practices learned in their teacher education programs. As such, rather than implementing reform-based practices learned in their methods courses, they may "adopt ways of thinking and acting that [place] them in harmony with the existing occupational culture" (Schempp, Sparks, & Templin, 1993, p. 448).

In addition to methods coursework supporting the development of reflective dispositions, field experiences with reform-oriented teachers, and other support mechanisms such as science-specific induction programs for teachers as they enter into the workforce (Roehrig & Luft, 2006), more innovative solutions are needed to bridge the gap between preservice preparation and induction. One relatively new and promising phenomenon is the creation of "student chapters" of the National Science Teachers Association (NSTA). NSTA initiated the student chapter

program in 2001 to “maintain a connection to future teachers as they enter the profession and create a conduit as the ‘new’ teacher workforce enters the classroom” (NSTA, 2009, p. 1). The purpose of the student chapters is to provide preservice teachers of science opportunities to access and use support resources and enhance their professional development (NSTA, 2009).

The role of professional organizations in the development of preservice teachers has been largely unexplored in the science education literature. As such, we sought to understand how a NSTA student chapter supported preservice teachers’ professional development and the implications for teacher education. Thus, the following research question guided this study: *What are preservice teachers’ perceptions about the ways in which a NSTA student chapter supports their professional development?*

### **Theoretical Framework: Continuum of Professional Development**

Teacher professional development is often discussed, researched, and referenced within three separate phases; preservice teacher education, induction, and then continuing professional development for more experienced inservice teachers. These phases have become distinct from another and “there is no connective tissue holding things together within or cross the different phases of learning to teach” (Feiman-Nemser, 2001, p. 1049). Thus, Feiman-Nemser (2001) developed a model of professional development which describes “central tasks of learning to teach” for all three phases and articulates how these tasks develop and build over time (Table 1).

Generally, preservice teacher education is charged with providing opportunities for preservice teachers’ to develop the knowledge, beliefs, and skills to teach in reform-oriented ways. During induction, teachers have the opportunity to enact their knowledge and skills in their teaching while also learning about their specific classroom context. Continuing professional development follows throughout teachers’ careers and is focused on a deepening of

knowledge and skill sets for teachers as they take on more professional responsibilities and leadership positions in their fields. We use this model as our theoretical frame for understanding how a professional organization supports the professional development of preservice teachers of science and its potential for continually developing those teachers' skills as they enter into induction.

*Table 1: Central Tasks of Learning to Teach (Feiman-Nemser, 2001)*

Preservice	Induction	Continuing Professional Development
1. Examine beliefs critically in relation to vision of good teaching	1. Learn the context – students, curriculum, school community	1. Extend and deepen subject matter knowledge for teaching
2. Develop subject matter knowledge for teaching	2. Design a responsive instructional program	2. Extend and refine repertoire in curriculum, instruction, and assessment
3. Develop an understanding of learners, learning, and issues of diversity	3. Create a classroom learning community	3. Strengthen skills and dispositions to study and improve teaching
4. Develop a beginning repertoire	4. Enact a beginning repertoire	4. Expand responsibilities and develop leadership skills
5. Develop the tools and dispositions to study teaching	5. Develop a professional identity	

## Related Literature

### Structure of Preservice Teacher Education

Zeichner and Conklin's (2008) review of research on teacher education programs highlights the range in the structure of programs, with varying goals, curricula, coursework and field experience requirements. Generally, universities require preservice teachers to take content and pedagogy courses, and participate in field experiences in local schools throughout their programs. This culminates in a student internship experience which varies in length (often a semester or full academic year). Zeichner and Conklin (2008) discuss the need for more in-depth studies on the internal features of teacher education programs and connections among them, but also suggest that a coherent framework supporting the development of reflective practitioners

and the inclusion of explicit connections between coursework and field experience are two important themes recognized in the literature.

With regard to science preservice teacher education, Anderson and Mitchener (1994) describe the “three-pronged traditional model” which has been slow to change since the early years of teacher education in normal schools at the turn of the 20<sup>th</sup> century. These three prongs include general education coursework, subject matter preparation, and professional education – consisting of educational foundations courses, science methods courses, and field experiences. Research on science teacher preparation has brought forth several inadequacies of current programs using this three-pronged approach:

- A general lack of subject matter preparation, especially for elementary education majors who often take two or three science courses that are disconnected from education coursework and field experiences.
- A lack of a theoretical orientation that connects science, pedagogical, and professional knowledge.
- A disconnect for preservice teachers who learn to teach through inquiry in science methods courses but do not learn science through inquiry in their content courses.
- A disconnect between the reform practices in science teacher education programs and classroom practice in preservice teachers’ field experiences (Anderson & Mitchener, 1994).

### **Role of Professional Organizations in Preservice Teacher Education**

There is a lack of literature on the role of professional organizations in the professional development of preservice teachers. One exception is a study by Stewart and Davis (2005), in which preservice teachers who were members of a local chapter of Phi Delta Kappa International

completed surveys and open-ended questionnaires regarding their views of how professional organizations could support the development of certain teaching dispositions. Professionalism, lifelong learning, and communication were among the dispositions most commonly identified by the participants as being addressed in the organization. Moreover, responses from the questionnaire indicated that participants felt part of and supported by a professional community as a result of involvement in the organization.

Two papers address teachers and science teaching organizations. Bazler and Simonis (1990) describe the development of local science teaching organization for preservice teachers at the University of Montana. The Future Science Teachers of America was developed to support the professional development of preservice science teachers, although the breakdown of chapter members in terms of level of teaching (elementary, middle, secondary) is unclear. The chapter engaged in monthly meetings with science teaching activities and establishing service projects such as judging events at a local science fair. They report the general success of the chapter, which eventually became a subsidiary of the Montana Science Teachers Association. A study by Meadows and Koballa (1993), however, reports that beginning elementary teachers were disinclined to join NSTA because they tended to view themselves as “teachers of all subject areas” and did not have a strong identity as teachers of science.

### **Context of the Study**

The context of this study is one NSTA student chapter at a large Midwestern university which came into existence in 2003. At the time of data collection (Summer 2009), the chapter had approximately 40 active members, who ranged in year of school (freshmen through senior). In addition to student members majoring in middle level and secondary science education, the majority of members were elementary preservice teachers.

The student chapter engages in many activities throughout the academic year, consisting of monthly meetings, service projects, and attending conferences (Table 2). The faculty advisor works with the chapter officers (president, vice-president, treasurer, and secretary) to coordinate meetings, which typically offers pizza and door prizes (teaching resources), and focuses on education-related activities including science lectures, teacher discussion panels, and “make and take” workshops. The chapter is involved with several service projects including an annual fundraiser for the local science center and facilitating a “Science Fest” for elementary-aged children. Additionally, the chapter fundraises so that members can attend the state science teachers conference as well as regional and national NSTA conferences.

*Table 2: NSTA student chapter activities.*

Chapter Activities	Examples
Monthly Meetings	<ul style="list-style-type: none"> <li>• <b>“Iron Scientist” Competition</b> – student groups design a lesson based on a limited set of materials</li> <li>• <b>Cosmic Conversations</b> – the chapter attends science talks sponsored by the Department of Physics and Astronomy</li> <li>• <b>Make and Take Workshop</b> – students and local teachers present different classroom tested activities</li> <li>• <b>Experienced Teachers Panel</b> – local award-winning science teachers field questions and offer advice</li> <li>• <b>Members’ Choice</b> – student members choose an activity for one meeting each semester</li> </ul>
Service Projects	<ul style="list-style-type: none"> <li>• <b>Fundraiser for Science Center</b> – the chapter raises money to sponsor an event at the local science center</li> <li>• <b>Science Night</b> – the chapter sponsors a family science night at a local elementary school</li> <li>• <b>Science Fest</b> – student members design science stations and teach elementary-aged children</li> <li>• <b>Science Olympiad</b> – the chapter hosts an event at the state Science Olympiad competition</li> </ul>
Conferences	<ul style="list-style-type: none"> <li>• <b>NSTA Conferences</b> – many members attend and present at regional and national NSTA conferences.</li> <li>• <b>[Name of state] Science Teachers’ Conference</b> – many members attend the annual state science teachers conference</li> </ul>

## Methodology

As the purpose of our study was to understand how preservice teachers perceive the NSTA student chapter to support their professional development, we collected and analyzed data

from a phenomenological perspective to place emphasis on the participants' point of view (Bogdan & Biklen, 2003). Seeking to understand preservice teachers' perspectives on their development as educators has been explored more fully in the realm of methods courses (Abell & Bryan, 1997) and field experiences (Varma & Hanuscin, 2008). Thus, a phenomenological perspective on preservice teachers' experiences with a professional organization will add to the existing knowledge base on teacher development.

### **Data Collection**

We designed a web-based survey which was sent to the NSTA student chapter membership roster via email. Response was voluntary and members were informed that any answers reported for research purposes would be done so anonymously. We were interested in identifying preservice teachers' routes to becoming chapter members, their perceptions of the benefits of membership and involvement in the chapter, and their interest in continued membership in the national organization upon graduation. Participants provided information about their major and year of school, and responded to six open-ended questions (Appendix A). Eighteen members responded (13 elementary majors, 4 middle school majors, and 1 secondary major), with fifteen providing answers for all questions. Of those, eight members agreed to participate in a semi-structured phone interview (Appendix B). The purpose of the interview was to gain more in-depth understanding of participants' responses. In line with phenomenological interviewing, our questions were focused on the participants' clarification and explanation of their perceptions rather than using a formal interview protocol (Seidman, 2006). We repeated each survey question as well as the participant's survey response, and then asked for more elaboration on their answers.



## Data Analysis

Our first level of analysis was inductive in nature as we read through participants' responses to the surveys and transcribed interviews multiple times and began grouping responses into categories for each question. After grouping responses independently, we compared categories and accommodated discrepancies. For the second level of analysis, we began looking across survey questions to develop initial assertions regarding ways in which the NSTA student chapter supports preservice teachers' professional development from the perspective of the participants. Each assertion was then checked against the data as we searched for both confirmatory and negative cases. Our final level of analysis consisted of refining our assertion statements to accommodate all data. The triangulation of multiple data sources (surveys and interviews) and use of negative case analysis and peer debriefing improves the trustworthiness of this study (Lincoln & Guba, 1985).

## Findings

We report the findings of this study by first presenting the major categories of responses to each survey question in Table 3. Next, we present our three assertions that cut across the survey and interview data about the ways in which the NSTA student chapter supported preservice teachers' professional development.

*Table 3: Categories of responses to survey questions.*

Survey Questions	Categories of responses	# of participants
1. What event/person led you to join the student chapter?  (18 participants responded)	• Science Methods Professor	10
	• Physics for Elementary Teacher Course	4
	• Student Chapter Member	4
	• Advertisement – flyer on campus	2

2. How has being a member of the student chapter benefitted you?  (18 participants responded)	• Access to teaching strategies/materials	13
	• Building relationships with chapter members and practicing teachers	10
	• Experiences with teaching science	4
	• Leadership opportunities	1
3. Have you taken advantage of NSTA resources (website, journals, conferences, etc.)? If so, comment on which resources and how you have used them.  (18 participants responded)	• NSTA and local conferences	9
	• NSTA Journals / <i>NSTA Reports</i>	9
	• NSTA website	3
	• No	3
4. What do you like most about the chapter meetings?  (18 participants responded)	• Collaborating with chapter members and practicing teachers	9
	• Learning new science teaching ideas	8
	• Food and door prizes	7
	• Positive learning environment	4
5. What suggestions for improvement do you have for the student chapter and monthly meetings?  (15 students responded)	• More access to teaching materials	9
	• Meeting logistics (place, time)	3
	• None	2
	• Improve recruitment	1
6. Do you plan to remain active in NSTA upon graduation? Explain.  (17 students responded)	• Yes	15
	• Maybe	2

\*Note: Participants often referenced more than one category, and therefore the total number of responses is greater than the number of participants for most questions.

**Assertion 1: The NSTA student chapter provides a platform for networking and collaboration with other teachers of science.**

Throughout survey and interview responses, participants noted the opportunities to network and collaborate with other teachers of science. In response to the question, “What do you like most about chapter meetings?” half of the participants (9/18) mentioned collaboration

with other teachers. The participants viewed monthly meetings as an opportunity for sharing ideas about science teaching and how to facilitate effective learning experiences for their students; “I like being able to share ideas with peers about how to integrate science and their ideas on how to make a science lesson interesting and effective in the classroom” (S2.SV). They also mentioned the “energy” and “enthusiasm” of the meetings, discussing the positive aspects of working with other preservice teachers with similar interests; “I like to be around other people that are going to be teaching science that are at a similar place [as me]...the pre-teaching experience” (S9.Int). Collaborative work during meetings has led to the development of professional relationships and friendships within the chapter. As one student explained, “I didn’t have a lot of teacher friends before NSTA, and so working with the NSTA members has been fun and personally rewarding” (S4.Int).

Student chapter members not only discussed collaboration with other preservice teachers, but also referenced networking and learning from inservice teachers of science. Two main sources of interaction with inservice teachers were mentioned. First, half of the participants noted the benefits of the teacher discussion panels at monthly meetings. Practicing teachers’ discussion of daily challenges and successes in the science classroom helped chapter members reflect upon their teaching, even if their classroom experiences have been somewhat limited; “[The teacher panels] are wonderful because it helps me think about how I am as a teacher even though I’ve only taught a few lessons...it makes me contemplate how I would handle different situations in my classroom and how I think about my students” (S9.Int.). The award-winning teachers talked about facilitating inquiry in their classrooms, reinforcing the vision of the university teacher education program. In reference to this, one participant stated, “It was helpful to see local teachers that are practicing the things we are learning about” (S4.Int.).

The second source for networking was the conferences, including the local state science teachers association annual conference as well as regional and national NSTA conferences. Half of the participants referenced their attendance to these conferences, and seven of those nine discussed their networking with practicing science teachers as a benefit of membership. According to one student, “[The national conference] opened my eyes to just how many resources, whether print or people, there are for me to use!” (S18.SV). Chapter members learned to interact with other teachers during sessions and strike up informal conversations in the hallways. These interactions have allowed the chapter members to form contacts with other teachers, as discussed by the following student during the interview:

NSTA has really given me a lot of information, and to be honest, it’s the people. I’ve met a lot of good contacts and if I ever need anything I can be like, ‘Hey, I met you at this conference, remember me? Now, can you give me these resources and help me out?’ (S15.Int).

Participants seemed to feel that they were part of a larger science teacher community which supported their professional development.

**Assertion 2: The NSTA student chapter helps chapter members gain access to science teaching strategies and lesson materials.**

In response to the question, “How has being a member of the student chapter benefitted you?” 13/18 participants mentioned the increased access to science lesson plans, activities, and teaching materials. Membership with the student chapter allows preservice teachers to receive the *NSTA Reports* newsletter, gain access to the NSTA journal articles, and attend conferences. 16 of the 18 members said they have taken advantage of these NSTA resources to collect science activities and lessons, and also mentioned the chapter’s “make and take” workshops during

meetings as a source for lesson materials. Of the 13 participants discussing access to lesson materials, 9 cited conferences as their main source. Survey responses indicated that the NSTA national conference was a significant resource bank for science teaching ideas for all science content areas and teaching levels. Another positive attribute was the individual autonomy from conference experiences; According to one chapter member, “I was able to choose from different seminars and workshops...it’s helpful because conferences let you personalize what you want to learn and what you want to know” (S2.Int).

Chapter members majoring in elementary education mentioned in their survey responses that lesson materials collected through NSTA experiences are placed in their “Idea Books” for later use. Those who participated in the interview clarified that all elementary preservice teachers are required to assemble an “Idea Book” consisting of lesson ideas and materials for each subject area once they enter into the college of education their junior year. Several chapter members have expressed challenges associated with this task. For example, elementary majors must consider many content areas and therefore have less time to focus solely on science teaching. As such, it is “extra important” for them to “get their hands on as much as [they] can” (S9.Int). Although members feel that science methods coursework is valuable, they explain that courses focus more on “how to teach” science and less on collecting lesson plans. NSTA has become an important support mechanism to help preservice teachers build their repertoire, as one student stated, “We don’t have a ton of [science] lesson ideas, and I think NSTA is a completely helpful resource for that.”

Many of the participants also described opportunities they had to use the strategies and lesson materials acquired through chapter experiences with students in various settings. While only 4/18 participants noted teaching experience as a benefit of chapter membership in the

survey, 4 additional participants discussed their use of teaching materials in the interviews. The preservice teachers mentioned the positive experience of designing and facilitating science stations for local elementary-aged students during the “Science Fest” event. Other members were able to use their lesson materials in science teaching internships and tutoring jobs. One member discussed how she used several activities related to the concept of sound from a “make and take” meeting with her students at a summer pre-school program. According to her, “it was a big hit!” (S11.Int). Another student worked as a supplemental instructor for the biology department at the university, facilitating group tutoring sessions for students enrolled in a non-majors general biology course. She became aware of a book on formative assessment probes after attending the NSTA national conference and ended up using the probes with her college-aged students. She states;

I was surprised how many topics we were teaching [in general biology class] were also covered in the formative assessment books...[Using the assessment probes] ended up being really cool for me, to be able to use them immediately and see that it works and opens up really good conversation with the students (S9.Int).

When asked “What suggestions for improvement do you have for the student chapter and monthly meetings?” the most common responses (9/15) referenced the need for even more lesson activities and materials. Thus, it seems the participants perceive the student chapter to support their developing repertoire of science teaching lessons.

**Assertion 3: The NSTA student chapter helps preservice elementary teachers feel more confident with science teaching.**

Survey and interview responses indicate that opportunities to network with other preservice and inservice teachers and gain access to lesson materials has led to a general

sentiment of feeling more confident about science teaching for the elementary education members. In the interviews, the elementary education members discussed their dislike or anxieties associated with science teaching and learning; “Coming into college, I hated science, didn’t want to teach it, and hoped I had a science specialist in my future school” (S10.Int). However, their experiences with the student chapter seem to have had an impact on their incoming perceptions. As many students stated, science is now “fun,” “engaging,” and “interesting.” Moreover, several chapter members became actively involved with other science teaching endeavors. One member discussed her transformation as a science teacher through NSTA:

It was a total accident that I joined [NSTA], and I’ve loved it ever since. I never in a million years would have thought that I would want to teach science, and now I’m working at [a science center] teaching science all summer. (S15.Int)

Another member explained her goal of becoming a science specialist; “I think after I took my science course for elementary education and being in NSTA, it kind of solidified that that’s what I want to do instead of [being] a general elementary teacher” (S1.Int). In conjunction with science methods coursework, the student chapter has worked to dispel many elementary preservice teachers’ negative perceptions of science and improve their self-efficacy as teachers of science.

Eleven of the thirteen elementary preservice teachers stated their intentions to remain active in NSTA after graduation to continue to “exchange ideas with other educators” (S10.SV), “learn about all the various teaching techniques” (S16.SV), and “use the journals and resources” (S9.SV) for their classrooms. Moreover, several members mentioned the importance of becoming a lifelong learner, as one student stated; “As an educator, you can’t ever stop

learning...I plan on keeping on top of things. Professional development is about planning ‘prior to’ as opposed to ‘after the fact’” (S10.Int).

**Discussion**

Considering our assertions in relation to Feiman-Nemser’s central tasks of learning to teach for preservice teacher education provides meaningful insight into the ways in which the NSTA student chapter supports preservice teachers’ professional development. The student chapter supported preservice teachers’ examination of beliefs critically in relation to good teaching, developing a beginning repertoire, and developing the dispositions to study teaching (Table 4), as discussed in the following section.

*Table 4: Linking assertions regarding NSTA student chapter’s support of preservice teachers to preservice central tasks of learning to teach.*

Preservice Central Tasks of Learning to Teach (Feiman-Nemser, 2001)	Assertions Regarding NSTA Student Chapter’s Support of Preservice Teachers
1. Examine beliefs critically in relation to good teaching	Assertion 3: The NSTA student chapter helps preservice elementary teachers feel more confident with science teaching.
2. Develop subject matter knowledge for teaching	
3. Develop an understanding of learners, learning, and issues of diversity	
4. Develop a beginning repertoire	Assertion 2: The NSTA student chapter helps chapter members gain access to science teaching strategies and lesson materials.
5. Develop the tools and dispositions to study teaching	Assertion 1: The NSTA student chapter provides a platform for networking and collaboration with other teachers of science.

**Examine Beliefs Critically in Relation to Good Teaching**

One central task of preservice teacher education is to provide opportunities for preservice teachers to examine their beliefs about teaching and think about what it means to teach effectively in their content area. As Feiman-Nemser (2001) discusses, preservice teachers enter



into their programs with beliefs (often strongly held) about teaching. This was certainly evident with the elementary preservice teachers in this study, many of whom discussed their dislike of science and belief that science teaching consisted solely of lecturing and cookbook labs.

Elementary teachers' general anxiety and negative perceptions about teaching science has been well-documented (Weiss, Banilower, McMahon, & Smith, 2001). This is often due to their negative experiences with learning science throughout their schooling. However, the NSTA chapter members majoring in elementary education were exposed to science teaching activities and experiences with practicing teachers of science who taught in reform-oriented ways, which helped them to feel more confident about teaching science through inquiry.

### **Develop a Beginning Repertoire**

Preservice teacher education is a time for preservice teachers to “[become] familiar with a limited range of good curricular materials, [learn] several general and subject specific models of teaching, and [explore] a few approaches to assessment that tap student understanding” (Feiman-Nemser, 2001, p. 1018). Through chapter meetings, NSTA resources, service projects, and conferences, student members expressed that the chapter increased their access to science teaching strategies and lesson materials which supported reform-oriented teaching practices. Moreover, many participants noted their opportunities to begin enacting the use of those materials in their science teaching jobs and internships, a “central task” generally carried out during induction.

### **Develop the Tools and Dispositions to Study Teaching**

Throughout their teacher education programs, preservice teachers begin to learn how to study teaching. Feiman-Nemser (2001) explains it in the following way:

Preservice preparation is a time to begin forming habits and skills necessary for the ongoing study of teaching in the company of colleagues. Preservice teachers must come to see that learning is an integral part of teaching and that serious conversation about teaching are a valuable resource in developing and improving their practice (p. 1019).

The chapter members frequently discussed their collaborations with other teachers of science through chapter activities. Not only did they engage in conversations with inservice teachers at conferences and learn from local teachers at monthly meetings, they also noted the importance of continuing their engagement with the science teacher community throughout their careers, showing a disposition of life-long learners. During induction, teachers' continual collaborative work helps them develop professional identities (Feiman-Nemser, 2001); yet, the NSTA chapter activities led to several elementary preservice teachers developing identities as teachers of science prior to their first years of employment.

### **Implications**

#### **Science Education Research**

Although this study is limited by a fairly small sample size from one student chapter, its results indicate that NSTA student chapters support preservice teachers' professional development. The traditional three-pronged model of preservice science teacher education not only continues to dominate university-based programs, but also teacher education research agendas. We must be willing to consider other sources of professional development to fill the gaps in preservice teachers' professional development experiences. In addition to preservice teachers' perceptions of student chapters, more research on how preservice teachers learn to teach through chapter activities and how chapters work in conjunction with coursework is needed to shed light on the role of professional organizations in preservice teacher preparation.

### **Science Teacher Educators**

The results of this study provides implications for methods courses, field experiences, and professional organizations working together to achieve a coherent science teacher preparation program. Due to the fact that most preservice teachers only take one or two methods courses, teacher educators often try to “cram too much into their courses, because they believe this is their last chance to influence prospective teachers” (Feiman-Nemser, 2001, p. 1016).

Another problem is that preservice teachers often believe that the methods courses are the only opportunities for them to learn how to teach science (Young & Kellogg, 1993). If more support mechanisms existed, such courses would serve as a foundation and would no longer represent the only chance for prospective teachers to learn how to teach science. In this study, most preservice teachers were in a methods course with a faculty member who was also the sponsor of the NSTA student chapter. Chapter members commented on the advantages of learning from local teachers who were teaching through inquiry, which was also supported in their methods coursework.

Aligning learning goals between methods courses and preservice teacher educations can provide opportunities to reinforce a reform-oriented vision of science teaching. Moreover, the two also complement each other, as chapter members found that coursework provided a foundation for learning how to teach science while the NSTA student chapter provided them with increased access to teaching materials which they can later use.

### **Bridging the Gap Between Preservice Teacher Education and Induction**

Not only did the NSTA student chapter support preservice central tasks of learning to teach, but also provided opportunities for chapter members to get a “head start” on tasks for induction, such as enacting their teaching repertoire and developing professional identities as science teachers. Most participants expressed a desire to continue involvement in the national

organization upon graduation and to continue to take advantage of NSTA resources, attend conferences, and possibly connect with student chapters in the future. Thus, as a new phenomenon, these NSTA student chapters are an untapped source of socialization of teachers into the profession and can serve as one means of support to bridge the gap between preservice education and induction.

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Appendix A: Survey Questions

1. What event/person led you to join the student chapter?
2. How has being a member of the student chapter benefitted you?
3. Have you taken advantage of NSTA resources (website, journals, conferences, ect.)? If so, comment on which resources and how you have used them.
4. What do you like most about chapter meetings?
5. What suggestions for improvement do you have for the student chapter and monthly meetings?
6. Do you plan to remain active in NSTA upon graduation? Explain.