

# **Impact of Preservice Preparation in Constructivist Strategies on Student Teachers**

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## **Abstract**

Five cohorts of upper-level undergraduate students of teacher education are studied to determine the extent to which constructivist teaching strategies taught in a teacher preparation program are implemented in field experience, student teaching, and initial teaching placements. The authors conclude that scaffolding in teacher preparation helps new teachers to implement these strategies successfully.

## **Introduction**

Constructivism is a view of how knowledge is constructed and how learning occurs. While many teacher educators and theorists believe that a constructivist approach to teaching is considered to be best practice (Brooks & Brooks, 1999; Marlow & Page, 2000; Richardson, 1997; Vygotsky, 1978), it can be a challenge to implement constructivist-based strategies in university classes. Modeling constructivist-based approaches is crucial; however, most college students have rarely experienced these methods in their prior university curriculum. Most teacher educators enthusiastically provide snapshots and examples of great constructivist practice in K-12 classrooms, but we must also “walk the talk” in the ways we teach the theory and content and the ways preservice teachers experience their teacher preparation curriculum and learn from other preservice teachers.

How might we do this? Research shows that teachers become socialized by their personal experience with education and schools, their preservice teacher preparation, and the beliefs held by their school settings as teachers (Buchanan &

Smith, 1998; Cochran-Smith, 1991; Darling-Hamond, 1999; Goodlad, 1990; Sarason, 1990; Zeichner, K. & Gore, J. 1990). Constructivism is based on the theory that learners can construct their own meaning through social interaction (Vygotsky, 1978). We have found that the cohort model, described in this article, provides the structural opportunity for preservice teachers to work and learn together in supportive environments immersed in social interaction and collaborative inquiry (Dinsmore & Wenger, 2006; Wenger & Dinsmore, 2005). A description of this context and the constructivist-based strategies we try to use within it is the focus of this article. Of special significance is our examination of how five cohorts felt about their experiences of constructivist-based approaches to their teacher education.

### **Communities of Learners and Teacher Socialization**

In cohort models of teacher education, preservice teachers take most of their upper-division classes together. They come to know each other and their professors very well. A growing body of research suggest that cohort groups in teacher education help create learning communities where preservice teachers are socialized to think deeply together about complex issues of practice making a case for cohort groups as a means to teacher socialization (Bullough, 1997; Dinsmore & Wenger, 2006; Eifler & Potthof, 1998; Goodlad, 1990; Holmes Group, 1995; Koeppen, Huey, & Connor, 2000; Norris & Barnett, 1994; Robinson, 1997; Tinto, 1997). This environment can create a place where trust and cohesiveness develop and preservice teachers feel safe to share ideas and take risks necessary for constructivist-based learning.

## **What do preservice teachers think about constructivist-based approaches to teacher education?**

Preservice teachers at Eastern live in small rural communities. Most are in their 30's seeking education degrees after suspending college for family or work responsibilities. Most had not experienced constructivist-based approaches and were often uncomfortable in first experiences. The purpose of this five-year study was to closely examine how cohorts of primarily nontraditional-age preservice teachers experienced a constructivist-based teacher preparation program. The following questions were explored:

1. Which specific assignments or activities did cohort members feel most contributed to their own learning ( of what) in their teacher preparation coursework?
2. Were cohort members able to implement constructivist-based teaching practices in field experience, student teaching, and initial teaching placements?

### **Methods**

Data for this study were collected from each cohort over a five-year period beginning in August, 2000 through June 2005 within a branch-campus, cohort-model teacher preparation program in a rural northwestern university. Multiple sets of data include field notes of in-class observations, transcribed interviews ( 1 individual 30-minute each term, 1 group each term), emails, copies of selected assignments, lesson plans, teaching observations, and questionnaires (3x per cohort) (Bogdan & Biklen, 1992; Merriam, 1998). Additional data sets were collected from graduates of the program in their first years of teaching and

recorded in the form of formal lesson observations and email questionnaire responses.

Constant comparative methods were used in order to guide the analysis (Glasser & Strauss, 1967; Lincoln & Guba, 1985). All transcripts, field notes and questionnaires were coded for emerging themes and examples. These initial codes were then examined and refined as data analysis continued. Follow up questions were utilized after initial interpretation of the data, to clarify and corroborate interpretation through member checking.

### **Context**

In this study, groups of up to 20 preservice elementary teachers are admitted to a demanding, integrated, highly field-based, cohort-model undergraduate teacher preparation program, at a branch campus 115 miles from the main campus. The cohort takes all methods classes together, taught by two professors who closely align their practices and explorations. Cohort members are placed in selected linguistically and culturally diverse public and charter schools within a two-state, 50-mile radius. These schools have approximately 50 percent, non-migratory Hispanic student population. In addition, most of these field placements are within “full inclusion” school districts in relation to students with special needs.

### **Cohort Model Program Snapshot**

To provide the reader with a snapshot of the cohort program, a description of the schedule is needed (see Table 1). The cohort meets 4 days a week for 3-4 hours each time. In addition to in-class time the cohort members spend a minimum of 12 hours a week in practicum placements. First term, the program focuses on primary

level curriculum and all field placements are in primary classrooms (grades K-2). Second term, the curriculum and placements are at the elementary level (grades 3-6). During this time, cohort members teach a minimum of 10 lessons to the elementary classes at their placement sites, complete several read alouds, conduct miscue analysis, hold class meetings, work intensively one-on-one with a “reading buddy”, and engage in a variety of other classroom experiences. The third term consists of student teaching. During this time cohort members meet together for three “support sessions” where ideas, frustrations, and successes are shared. In addition, throughout the term, a minimum of six formal teaching observations from student teachers’ university supervisors takes place.

The cohort model provides the structure to create a community of learners. Cohort members take 34 upper-division credits together, approximately 16 hours a week, over two terms before disbanding for student teaching. This sense of community is crucial for the success of this constructivist-based integrated approach at the university level since it is very different from most of their previous educational experiences.

### **Cohort Members**

The five cohorts in this study include eighty preservice teachers who have graduated and are now certified teachers. Most teach in rural communities. The members of the most recent cohort are representative: 15 women, 1 man, average age of 37, 14 were married, and 12 had children.

### **The Learning Process**

The focus on constructivism in the preservice teacher program was two-fold: first, the content, or teacher preparation curriculum, was taught through practices that

reflect a constructivist perspective. These included authentic activities and assessments that develop deeper understanding and transference of knowledge to relevant situations (see Table 2 for activities using teacher prep. content). Second, cohort members were encouraged to design, teach, and evaluate constructivist-based lessons within their practicum settings (see Table 3 for activities used by cohort members).

### **Assignments and Assessments**

In the university classroom, cohort members engage in group work, class discussions, and focused inquiry projects (for a discussion of several representative inquiry projects, see Wenger & Dinsmore, 2005). The preservice teacher curriculum is presented and experienced through constructivist-based activities and authentic assessments. There were no traditional tests given, instead many projects and applications of concepts in elementary settings were used to demonstrate learning. When students were assigned a chapter to read in the text book, the instructor often used content area pre-reading, during reading, and after reading strategies (Strong et. al., 2002; Vacca & Vacca, 1986) to focus the learning while teaching a technique at the same time. For example, students read the table of contents for the assigned chapter and write down something they already know about the topic and something they want to know more about. After reading the chapter, students were instructed to create a representation of their understanding of the chapter. This can be ANY way they choose to represent their learning such as a mind map or brain web, a group of pictures representing specific content, a song, poem, or the creation of a website to list a few examples.

These assigned readings always require a classroom application piece, thus connecting the information to authentic relevant learning, i.e. *How can you use your new understanding of mind mapping when teaching?* Often cohort members used these ideas derived from their assignments in their practicum when teaching elementary students. These examples were used to guide discussion groups during class. The cohort members learn from each other through the discussion bringing their individual lenses and relevant experience to share and work through.

Larger inquiry and cumulative projects were also implemented to promote teacher learning. Rubrics or scoring guides were created in class together to model the process and to negotiate value of each aspect of the project. Some projects were investigations of questions they raised in practicum schools such as the HIP (Hispanic Inquiry Project). Others were in depth research papers such as the F.I.P. (focused inquiry project), or the “Domains Documentation”.

Each term cohort members were given questionnaires and surveys where they were asked which specific assignments and activities most contributed to their learning to become teachers and those that least impacted their learning. The cohort members were also encouraged to reflect on the use of these constructivist-based approaches to teaching, learning and assessment. This ongoing feedback and collaborative process informed instruction and was used to develop, improve, remove, or alter assignments and teaching practices for the following year. During the five years of this study, the program moved toward a stronger implementation of constructivist-based approaches to teaching and

learning; an operationalization of theory into contextual practice, led by the needs of our cohort members.

## **Findings**

All data sets were analyzed to illuminate cohort members' perceptions of important aspects of the program which contributed to their teacher learning. Space precludes a full discussion here of all emerging themes of the data for this in-depth study (for a full description of all themes see Dinsmore & Wenger, 2006).

However, of particular interest to be discussed in this paper are two themes:

*Teacher learning and Use of constructivist practice in the field.*

### **Teacher Learning**

The three recent cohorts of preservice teachers (2003, 2004, 2005) were asked which activities and projects in the university classroom they felt most contributed to their learning. Almost ninety percent of all cohort members listed specific assignments where nonlinguistic or artistic representation were used to demonstrate their understanding of specific concepts, as the most influential to their understanding. Thirty-two out of thirty-six felt that the Domains Documentation contributed greatly and thirty-five out of thirty-six, or all but one, felt that the Artistic Representation assignment most contributed to their learning to become teachers and to understand constructivism.

The Domains Documentation was an assignment where cohort members were to document their competence in each of the five Domains of teaching created by the state and required for licensure. It was a culminating activity where cohort members were required to provide an artifact as evidence of their competence in

each domain. For example, for Domain I which focuses on the teacher's ability to plan instruction, many students included copies of successfully implemented lesson plans and units. Upon completion of this project, students were able to articulate what they knew about teaching and had concrete examples of their proficiency. They were also aware of exactly what the state expected beginning teachers to know and be able to do. Many cohort members represented their competence in a portfolio format. However, there were many other documents in a variety of formats including children's books, restaurant menus, a puzzle, slide show, a twelve-step program brochure to name a few.

The purpose of the Artistic Representation assignment, which cohort members stated most contributed to their learning, was to represent their understanding and knowledge of teaching and learning. This assignment was designed for students to reflect on their growth as teachers and create a representation of this. An artist's statement explained the artistic response and each cohort member orally explained their projects to the class. There were many different representations including: photograph collages, layered cakes, songs performed, paintings, sculptures, mobiles, a play, a collapsible model of a school with four rooms each representing the knowledge most impacting this teacher's learning, a teaching analogy/scientific process demonstration, and a wide variety of other pieces. As Anna said, "These assignments were definitely the most challenging and the most rewarding." In addition cohort members stated in a focus interview that their learning was much deeper and they were able to then apply their new knowledge to teaching situations successfully. One student began:

“I really enjoyed creating lessons for our elementary students based on constructivist theory. You can make the lessons really engaging and different from what they do most of the time. This made sense to me—to create really engaging lessons and use authentic assessment. But what really, really surprised me is how much more I understood all of our teacher prep content that we were learning when you had us use these same “techniques” activities and assessment with my own learning.”

Kara added:

“Ya, it was really the process that you had to go through to like, consolidate your thinking that made me understand what I knew.”

A student who is less confident in her oral linguistic skills and is weaker in writing stated:

“I know that presenting to adults and my writing are areas that I need to improve on but this assignment (nonlinguistic representation) gave me freedom and a voice that allowed me to show what I know and totally express myself and my learning in a way that I can’t easily do through writing.”

Cohort members also stated that they learned when their peers presented and explained these nonlinguistic representations:

“I can’t believe how each of us came up with representations that were so different and all so right. I can really see how effective this can be for the second language learners and other students who aren’t strong in Gardner’s verbal linguistic intelligence.”

Upon interview, Beth, a cohort member, stressed the importance of participating in the experience with her own teacher learning.

“This assignment was in one way the hardest, I had severe brain strain, I had to think so hard but now I really know what I know.” We read about it, we talked about it, we even created lesson plans applying the concept but I just don’t think I could have really understood that without going through the process myself with content that I needed to create meaning from.”

Another student compared her teacher preparation experience to other course work. This particular student had completed Primary Core and was taking another

college class outside of the program to finish her degree. She stated in an interview:

“Now that I understand rubrics it’s hard to go back to a more fill in the blank traditional model assessment. I had to take a science class after I had had all of my teacher prep work and it was agonizing to sit in a lecture class again when I could think of better ways that the class could be taught, that I could learn and ways to show what I had learned.”

These cohort members perceived their learning to be enhanced through the experience of constructing meaning from their teacher preparation content within a constructivist-based setting.

### **Use of Constructivist Practice in the Field**

Cohort members were required to teach a minimum of eight lessons during Primary Core/ first term, ten lessons during Elementary Core/ second term, and a minimum of nine weeks full time teaching which included two ten lesson units. It was not a requirement to implement lessons based on constructivist theory. The lesson design was entirely up to the cohort member and their cooperating teachers. During practicum and student teaching placements, observations by peers, cooperating teachers and university supervisors were completed on each cohort member. Copies of lesson plans and units were analyzed for the use of constructivist-based teaching methods.

Over 90 percent of all lessons observed focused on engaging, student-centered, meaning-making, constructivist-based lessons. At some point during their practicum teaching experiences, all of these cohort members used constructivist-based lessons. Group work, social learning, artistic representation, discussions,

literature circles, and artistic responses were present in 92 percent of all cohort members' lesson plans. Kayla said:

"I love using a constructivist approach to teaching! These fifth-graders are totally engaged—they are talking a lot, but talking about their discoveries. Even my, uh, "normally bored" kids are participating and learning. I think it is pretty cool when the kids ask me first thing...when are we going to have social studies?"

Bev added:

"I'm amazed at what these kids can do! Sometimes they are so wrapped up in the project that I stand back and think... what do they need me for? There they are just learning way more on their own than they would get out of reading the book and doing a work sheet or a lecture from me."

Not all cohort members felt that their placements "allowed" for such nontraditional approaches to teaching and learning especially those placed in districts where scripted reading and math programs and daily scheduled blocks of time were strictly adhered to. This was especially evident during student teaching when the "evaluation pressure" is really on. Two cohort members commented:

"I just feel like I don't want to rock the boat and I need to do the same type of stuff that she (the cooperating teacher) does. Besides, all of the scripted programs don't allow for anything else within the time frame."

"I don't do as much of a constructivist process as I would like to because I feel like there is a big time crunch, I'm a guest, and I'm evaluated."

However these two cohort members' lesson plans still reflected the use of many constructivist-based lessons but felt their philosophy was confined to their units.

First year teachers interviewed preferred implementing constructivist –based assessments and felt "it gave a clearer picture of what students really know and understand. It just makes more sense and supports my philosophy of learning and the kids have to really think—there is no room for guessing." One first year teacher said her biggest concern facing her first year teaching was how she would be able

to teach what she needed to and still be true to her constructivist-based teaching philosophy and to use authentic assessment with such a focus on the state standards.

“I feel like I’m the only one teaching this way sometimes but I see the students learning and they are engaged. I don’t think that they realize the deep thinking that they are doing with these projects because they view it as being fun.”

This particular 5<sup>th</sup> year teacher and graduate of the first cohort was voted “Teacher of the Year” by the district and students.

Analysis of the lesson plans shows that cohort members used a variety of constructivist-based lessons. Some of these transferred many of the same constructivist-based assignments to their lesson plans that were used within their university classrooms with teacher preparation content. Others created a variety of new constructivist-based lessons and were able to really “test drive” their constructivist practice.

### **Implications**

Overall, data in this study indicate that while a frustrating transition for some, implementing a constructivist approach to teaching in higher education can influence the cohort members’ approach to teaching during their own careers. In addition, data in this study suggest it was the process these preservice teachers experienced which scaffolded them to be able to apply constructivist-based approaches in their teaching practice. Equally important, however, were cohort members’ discoveries that when they had a choice of what specifically they wanted to focus their learning on in their own course work and through the process

of thinking how to represent learning, content was meaningful and learned more deeply as in the case of the Domains Documentation and Artistic Representation.

This study provides information for teacher educators who are trying to better prepare future teachers to meet the needs of our growing population of diverse learners. Sharing the model and snapshot may also be helpful since there are no “how to” guides for creating constructivist-based teacher preparation.\* In addition, this study may be useful for professors, including those in other disciplines, to align constructivist practice (Wenger & Dinsmore, 2005). Data in this study suggest support for a process-oriented constructivist-based approach to teaching and learning for preservice teachers.

\* [*Ed. note:* New texts by Flynn, Mesibov, Vermette, and Smith (2004) help to fill this niche. See *JPACTe* Annotated Bibliography.]

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Table 1.  
**Northwestern's Preservice Teacher Preparation Program**

<b>Primary Core I</b>	<b>Elementary Core II</b>	<b>Core III</b>
<p>Begins Winter term and includes the following courses focusing on grades K-3:</p> <p>Reading and Language Arts Methods (3 credits)            Children's Lit (2)            Assessment (2)            Learning Cycle (3)            Classroom Dynamics (2)            Development (3)            Music, Art Methods (1)            PE/Health Methods (1)            Practicum (3)</p>	<p>Begins Spring Term and includes the following courses in grades 3-8:</p> <p>Reading and Language Arts Methods (3)            Children's Lit (2)            Assessment (2)            Learning Cycle (3)            Classroom Dynamics (2)            Individual Differences (3)            Science and Social Studies Methods (2)</p>	<p>Begins the following Fall term and includes:</p> <p>Student teaching (10)            Student teaching seminar (2)            Practicum (3)</p>

Table 2.  
**Constructivist Based Assignments, Activities used  
 with Teacher Preparation Content**

Primary	Elem.	Assignment, Activity, Assessment	Description
*		Focused Inquiry Project (FIP)	An APA formatted in depth research paper focusing on a specific topic in education. Language Artful presentations required to share their expertise.
	*	Hispanic Inquiry Project (HIP)	An ethnographic research project investigating the validity of one of four quotes overheard in local area schools which stereotyped Hispanic students.
	*	Domains Inquiry Project (DIP)	Artifacts documenting and representing PTs' ability to meet all five domains required by state teacher licensing; planning instruction, classroom climate, engaging students, assessment, professionalism.
	*	Artistic Representation	A nonlinguistic representation of the preservice teachers' understanding of teaching and learning.
*	*	Artistic Responses	Artistic responses to children's books during Core I and II.
*	*	Lesson Plans	Individual lesson plans, 5 and 10 lesson units all taught within the preservice teachers' placements.
		Community Inquiry Write & Present	Taught in an ESOL class one term prior to the teacher preparation program. Preservice teachers go out into the community where a culture with another language often go and investigate through ethnographic eyes.
	*	Learning Inquiry Project (LIP)	An investigation of any topic preservice teachers felt they wanted to learn more about. Presentations.
*	*	Chapter Readings	Three part assignment per chp: to web or note learning of key points in the chapter; extend understanding by creating a way to apply new content in field placements when teaching elementary students; activate prior knowledge by describing if/how they see the content being implemented in their placements include implications for future teaching.
*	*	Act-present a concept	Working in pairs or groups students act out Gardner's 8 intelligences
*		Infomercial	Create an infomercial about qualities of an effective reading program
*		Wanted Poster	Create a help "Wanted" poster or Help Wanted Advertisement for a teaching position
	*	Role play	Role play classroom management scenarios (problems and solutions)
*		Song	Write and perform a song about Vygotsky, Piaget and Skinner
*		Poetry	Write a poem about the 4 cueing systems

Table 3.  
**Constructivist Activities Used by Cohort Members and Graduates**

Primary	Elem.	Activity, Assignment	Description
*		Draw (Reading)	Draw and label the parts of a plant
*		Draw	Draw a picture of the qualities you look for in a friend
*		Draw (Reading) Comprehension/sequencing	Draw the beginning, middle, and end of the story—Include the main character
*		Act—Comprehension	Act out part of the story
*		Venn Diagram (reading) Characters or two versions	Groups, create a Venn diagram comparing two versions of the story
	*	Draw (science)	Sketch an open and closed circuit
	*	Construct (science)	Build a model demonstrating your understanding of the flow of electrons
	*	Draw (reading)	Draw a model of the plot and setting in the book
*	*	Advertisement (Social Studies)	Create an ad for crew members for Christopher Columbus
*	*	Model-build (science)	Create a model of the parts of the earth
	*	Demonstrate (science)	(Group) Demonstrate the phases of the moon
*	*	Draw (science)	Draw a picture of the solar system
	*	Non-linguistic representation	Create a non-linguistic representation of learning about the skeletal system
*		Inquiry Guide (science)	Complete an inquiry/prediction guide about the 5 senses
	*	Postcard (S.S)	Create a postcard illustrating features of the Northwest region of the U.S.
	*	Act or Draw	Act out or illustrate key vocabulary words
	*	Poetry (S.S.)	Create a 4 stanza poem about the different explorers studied. Include Who, When, Where, Why, and What
	*	Award (S.S.)	Research a woman in US History, create award for her accomplishments
*	*	Diorama (S.S.)	Create a diorama of the winter near the Mandan Indian Village depicting why Lewis and Clark spent the winter there include one hardship they faced.
	*	Poetry (S.S.)	Create a Haiku poem about the important geological features of Idaho
	*	Commercial (S.S.)	Develop hypothesis for the need of a particular invention of the time period. Create commercial explaining how it will impact viewers lives