The OHIO Journal of Teacher Education

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Editorial Board

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A message from the Editors

The Fall 2008 issue of The Ohio Journal of Teacher Education has an open theme. The articles cover a range of topics of interest to teacher educators such as using academic content standards for best practice, constructivism for teaching and learning, technology integration into classrooms, and application of the Ohio Standards for Professional Development.

The first article by Brumbaugh is a reflection of her journey to design and deliver an undergraduate early childhood course in the social studies and integrated literacy methods. The author explores the use of multiple sets of national and state content area standards in conjunction with small group activities, classroom workshops, authentic experiences, reflective assessment and integrative units. Evidence supplied from this reflection supports continuing refining this course in its current direction.

The next article by Miller probes the contemporary criticisms of educational practice in the public schools and the focus on so-called progressive philosophies such as constructivism. The author communicates that the criticisms may reflect an insufficient understanding of the theory. Additionally, Miller investigates the responsibility as teacher educators to lead our students in a serious examination of the philosophical and psychological underpinnings of their practice in the classroom.

The third article by O'Connor and Still analyze the assorted obstacles and barriers that interfere with technology integration in early childhood classrooms. Teacher educators who demonstrate developmentally appropriate technology use instruction and integrate curriculum projects that can help prepare future teachers to incorporate technology into their classrooms.

In the final article by Harkness, Plante and Lane describe the use of the Ohio Standards for Professional Development contained within the *Standards for Ohio Educators* to rate their efforts. Using "hindsight" conversations, the authors discuss their professional development program. Harkness, Plante and Lane reflect on the five steps of the continuous cycle of professional development that may have changed the final outcome.

 We hope you enjoy this issue of the journal, and we hope you find these articles to be informative and helpful in your various roles preparing teacher educators.

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Fall, 2008

Standards Based, Best Practice Teaching in Higher Education: A Personal Journey

Erin Brumbaugh, Ed.D.

Introduction

Is it possible to model the recommended best practice methods for K-12 schools and the recommended best practice content area standards, while incorporating the Ohio Department of Education's (ODE's) content area Standards, Benchmarks and Indicators (SBI's) in a higher education classroom for pre-service early education teachers? Will this be an effective way to relate how to teach the social studies to young children? These were the questions I sought to answer as I pondered how to set up and deliver a methods course in the integrated social studies and language arts for Early Childhood Education (ECE) majors at a small, liberal arts college in a rural, relatively low-income area of southeast Ohio.

One of the issues I considered as I planned the course was that many of the students in the early childhood education program at the college attended schools in the local area and have developed their own notions about how to teach the social studies, as do a number of similar ECE students from many colleges that draw the majority of their students from the surrounding areas. Therefore, the beliefs, thinking skills, and teaching practices they have upon arriving in my college classroom came from their families, the local communities and the teachers who taught them in the public schools in the area. Even though we have some excellent teachers who try to stay up-to-date in their professional development, some or all of these best practice methods and standards may be unfamiliar to them for a variety of reasons. Is it small wonder then, that the teaching practices my students are familiar with and know very well may not be the recommended practices that I hope to teach them to use in their own classrooms? What will be their reactions to this "new" way of looking at teaching the social studies?

Another issue I considered was that I wanted to provide an excellent model of how to "do" social studies within the time constraints of a college semester. I must select from the best practice methods and standards those that will work best for each of the five grade levels of Pre-K through 3rd Grade, knowing that I have only 15 short weeks to do what public school teachers do in an entire school year. So, within those 15 weeks, I have to "talk the talk *and* walk the walk." Can I do this while meeting the Specific Professional Association's Standards (SPA's) required for national accreditation purposes? Will this short 15-week period be long enough to overcome some comfortable and ingrained practices for both my students and me?

I also wanted to model a powerful method of democratic decision-making that may be unfamiliar to my students given some of the prior experiences they have had in their own educational experiences. After all, the social studies are to assist teachers to help create the next generation of involved citizens in a democratic society. Will my students realize that there are many effective ways to teach that actually involve their students in active exploration that go beyond the few I am able to demonstrate? Will my students pick up on the fact that their students can generate the content, processes, and product ideas by themselves and/or

with assistance from my students? How uncomfortable will this be for my students?

Finally, I wanted to model for the students the concept of academic freedom: The idea that as a teacher, you must meet the content area standards - the SBI's - but that you could do so in the manner *you* choose. When I make curriculum and assessment decisions without my students I am able to meet the SPA's standards – the higher education equivalent of public schools' SBI's - just as my students are when they do. I want to model how to do this with some student choice, since I believe that is a primary responsibility of early childhood teachers: To prepare their students to be wise decision makers and to take responsibility for these decisions. Will my students realize that they have many options available to them in the form of the best practice methods and standards that enable them to meet the content area standards they are charged with meeting? Will they make this connection between the imagined and the real and explore student negotiated curriculum and assessment in their own classrooms?

Preparing the Course

I decided early on that since I am not a reading specialist, nor did I want to pretend to be, the language arts would not be the primary focus for this class. Indeed, the students will have had approximately 12-15 hours in reading and literacy coursework before they arrive at my door. Instead, I would integrate quality children's literature into the social studies content areas as I modeled best practice standards and methods, and I would require the students to develop a list of "literature links" that would become part of their "toolkit" for teaching the social studies with young children. This last component, the literature links, was one that the previous instructor of the course had designed and I decided to use it too, since it does integrate the language arts into the social studies so well.

But, first, I needed to familiarize myself with the recommended best practice standards for the social studies (Zemelman, Daniels & Hyde, 1998, pp.139-147) and the best practice methods for K-12 teaching in general (Daniels & Bizar, 2005). After doing so, I obtained the prior syllabus for this course taught by a colleague in the department, and looked over the course roster to see who would be in my class in the fall. I decided that I would use the Carol Seefeldt text (2005) for the social studies methods portion of the

course while supplementing it with the National Council for the Social Studies (NCSS, 1994) and the National Council Teachers of English/International Reading Association (NCTE/IRA, 1996) standards books along with the ODE's (2003) content area standards books for the social studies and the language arts. In addition, copies of the ODE's Early Learning Content Standards (2005) books were available for each student. Thus, armed with the content and the standards books for teaching young children from Pre-K to Grade 3, I planned "units" for each of the five grade levels encompassed in early childhood.

I borrowed parts of Mitchell's model (1934) for teaching the social studies to young children as described in the Seefeldt (2005) text, which uses large themes as the basis for yearlong studies, while incorporating many smaller, related investigations throughout the year as they pertain to the children in each teacher's setting. The units and grade levels follow:

- Pre-K – "All about me"
- K – "Our homes" (at the college and in our hometown)
- 1st Grade – "Our community" (at the college and in our hometown)
- 2nd Grade – "These United States of America"
- 3rd Grade – "People elsewhere"

I also used Bronfenbrenner's (1989) ecological model of development and a modified version of the expanding communities approach to social studies instruction as described in Brophy and Alleman's text (1996) utilizing their "Eight Circles of Awareness" concept of curriculum development to provide a framework of sorts for the students. Bronfenbrenner and Brophy's models together assist the students in developing curriculum for and by the children that begins with the child at the center of the investigation branching out to the next sphere of influence, the home, and then branching out further to society-at-large and finally, to the world. This framework meshes well with Mitchell's model of curriculum development as outlined above. Since most young children are typically very egocentric, all social studies must begin and end with them.

Course Assignments

I divided up the course assignments into two parts: Those that would be done within the college classroom, and those that would be done in the public

schools. This method allows the students to experiment with the best practice methods and standards in the college classroom before designing their own teaching materials for use with "real" students, rather than the hypothetical students we conjure as a group.

I am very much a proponent of the work of John Dewey (1938 [1963]) as it pertains to experiential learning. If I want my students to teach the social studies effectively, they must be a part of the development of the curriculum and assessment for their social studies methods course. So, I look to the group of students as a community that must act as such to make informed group decisions. Therefore, the students assist in developing the foci for each of the smaller investigations that make up the "big idea" for each unit, as well as in developing the rubrics for the products we decided would show what they learned.

My students had some decision making power in this course initially, and have more so now that I've taught it for two semesters. Each semester, the students identify the ways that the content, process, and/or product for each unit could be modified to meet the needs of the students they will encounter. For the first semester of the course, my students helped decide what the content would be for the units as well as designing the rubrics for the products that I decided upon. The second semester students had more decision making power when I included the products as well as the content under their purview. Finally, the students in this third semester of my teaching the course have decision making power for all three components: content, process and product.

The issue of diversity in the social studies is integrated not only in the concept of DAP and the NAEYC standards as stated previously, but also as it pertains to the individual strengths and needs of the children in my students' settings. Because I would like my students to view their students as being autonomous, and also as being members of a community in the classroom, I borrow from the Talented and Gifted research literature (Betts, 1985) that seeks to hold all children to high levels of expectation, and to especially challenge those most capable. Therefore, as teachers they can differentiate using the content, process, and/or product method of curriculum development to better meet the needs of all children.

Although I encourage the students to assist in making many of the decisions concerning the content, process, and product portion of the course, I must adhere to the National Association for the Education of Young Children's (NAEYC's) Initial Licensure Standards – the SPA standards - as part of the program accreditation process. Broadly, these five standards address practical issues such as child development, family involvement, assessment, curriculum, and professional development. In addition, NAEYC's concept of and position on Developmentally Appropriate Practice (DAP) is incorporated throughout the course as it pertains to the five standards and the individual children my student's may/will encounter in their own classrooms, with their own individual and unique strengths, needs, and sets of circumstances. Some of the methods that can be used to meet DAP guidelines are learning centers, integrated units, field trips, and jackdaws. All of these were and are incorporated into this course, as well.

First Semester

The assignments, or products, completed in the classroom the first semester I taught the course included, in order from Pre-K to 3rd Grade: An autobiographical book, a jackdaw, individual lesson plans for a field trip to the local grocery store, a learning center, and finally a unit. As stated earlier, the students assisted in the development of the rubrics for these and understood that they had ownership of/for their participation grade for the course, as well as the grade for the development of the rubrics themselves by being part of the decision making process. The students brainstormed the content for each of the sub-topics to investigate in each unit and either worked individually, in small groups on separate pieces, or as small groups on integrated pieces of the units. I asked the students to brainstorm two ways: As college students hypothesizing what questions and assumptions they had about the particular topic and also as teachers hypothesizing what questions and assumptions the children at each of the grade levels would have.

I must note that without the assistance of one of the librarians at the college, the jackdaw for the Kindergarten unit would not have gone so well. Although my students did not develop a jackdaw for use by Kindergarten children, they did develop a jackdaw for use by first year students at the college that would assist them in learning more about the college as part of their first year program. Andrew Whitis, Head of User Services, met with me and my class, looked over the list of questions and assumptions, asked a few more questions, and

gathered a treasure trove of materials from the archived collection for my students to peruse while in the library for the 2-3 weeks we spent on this particular unit. The students developed a jackdaw that was very useful and practical for first year students and that our department used as an example of the work our students do to prepare them for the teaching field during our on-site visit by the National Council for the Accreditation of Teacher Education (NCATE).

The students were then required to develop both a unit and a learning center for use in their field experience classrooms, as well as designing a rubric for both with the assistance of the children in their settings. If the students chose to use learning centers as part of the unit, this was encouraged, but the two rubrics rule stood.

Second Semester

I decided to reverse the order of the assignments and began with 3rd grade instead of with Pre-K, to allow the students the opportunity to gather the materials from home over spring break that they could use in their self-biographies. The assignments for the second semester included: individual lessons as part of a larger unit, learning centers, jackdaws, outlines for a unit, and an autobiographical book. During the 2nd grade unit, I modeled the use of learning centers for the students knowing that I would require them to design them for use in their own 2nd grade classroom. They surprised me by voting on the products to use to share their knowledge with the rest of the class as a result of the assignments within the learning centers, when this was a step that I had not initially planned to do. These products ranged from bulletin boards, to brochures, to newspapers, to displays in welcome centers at state lines! The criteria for these products came from a Product Pouch developed by *Engine-uity*. The development of the rubrics and the brainstorming continued much as it had the previous semester. Because I only had 9 students the first semester, but 32 the second, I decided on the grouping patterns for many of the units in order to keep the same small groups of students from working together all the time. I don't believe it is good practice to allow students to stay in their comfort zone all the time; good ideas can be found everywhere.

I must also note that again, there were people in the community-at-large who made the learning experiences more than I could have imagined alone. If it were not for the director of a local museum, the owners of a local bed and breakfast, and a police officer at the city building, the jackdaws for this unit would not have gone so well this semester either. Joanna Duncan, Education Director of the John and Annie Glenn Historic Site, opened the museum to the whole class (all 33 of us!) before it was open to the general public and arranged for volunteer docents, sample primary source documents and artifacts, and offers of assistance should my students need it to develop their jackdaws. The owners of the bed and breakfast met with a delegation from the group working on this location and provided them with a tour, primary source documents from their business, and allowed the students to take many pictures both in and outside the home. And finally, the police officer took much time to answer the many questions the students had in that group and also offered them primary source documents relating to the town. I believe that because of this, the jackdaws for this class truly represented work that 1st grade students would be able to use!

Again, the students were required to develop a unit and a learning center with rubrics for both. Again, they were encouraged to use learning centers as part of the unit. I was pleasantly surprised with the variety of products the students were requiring their students to design as a result of the teaching materials. I attribute this to the Product Pouch mentioned earlier with its' many ideas and identified criteria that make designing a rubric relatively easy.

Third Semester

During each semester, my students helped decide for each unit what the content, processes, and/or products were that they wanted to focus on and could alter to meet their students' needs. But this semester, I changed the field experience requirements to focus on the issue of world hunger and poverty using World Food Day as celebrated on October 16 of every year for the content the students must select. I am allowing the students to choose the two methods – processes - they will be using in the field experience portion of the course after they consult with their cooperating teacher. Further, their instruction must lead to a product designed by their students that would inform the larger community about world hunger and poverty and the importance of World Food Day – student advocacy for other children. I am also insisting that they continue with designing a rubric with the students in these settings to measure the effectiveness of their

teaching methods and/or to measure the effectiveness of the products the children in the field experience setting design and create. It will be interesting to see how my students view their students when they work with the children on this particular assignment for the field experience.

After explaining the course and its format to the students I was surprised to see how the students chose to complete the assignments within the class. They have chosen to do almost all of the same products from previous semesters when students did not have as much choice! The students chose to write lesson plans that would be made into a group unit for the 3rd grade unit, a group learning center using individual stations designed by smaller groups of students for the 2nd grade unit, a complete and detailed plan for designing a field trip for other teachers to follow for the 1st grade unit, a group jackdaw designed by smaller groups of students on the various components of the K unit, and finally the self-biography for the Pre-K unit. It is interesting to note that the Pre-K assignment above all others is the student's favorite and the one they enjoy the most! I must say I also enjoy this one the most too, because I am honored, and sometimes surprised, to see a side of the students most other professors don't have the opportunity to see.

It will be interesting to see how the content and processes portion of this course develop. So far the students are viewing the process portion of the course as the student groupings. I have not indicated otherwise as of yet. After we begin the group brainstorming, it should become very apparent to them what processes will be used to obtain the content for their products and how these fit into the SBI's.

Discussion of Social Studies Best Practices

Even though teachers in Ohio must use the ODE's content standards in their teaching, the state does not dictate how these standards are to be met. That decision is left up to the creativity and talent of the teachers. Two ECE models that are integrated into every course I teach include the Reggio Emilia Approach and the Project Approach. These two fundamentally believe that the children can help determine what topics to investigate, what questions and issues are important to consider in the investigation, and how to share with others what they've learned. This "emergent or negotiated curriculum" easily falls into the SBI's that the state of Ohio has developed with the guiding hand

of a teacher so trained to use either approach.

At the beginning of the semester, I take my students through an exercise in imagining what it would be like to follow a child's lead when teaching. I simulate the circumstances that might arise in their own classrooms and guide them in determining next steps. I do this as a way to approach lesson planning in a different manner than what is typically taught in teacher education courses: Select the SBI's, select the methods and materials, and then select an assessment to match all. This exercise allows me to identify those students who are "mired in the mud" of looking only at the SBI's instead of at the individual children and what they bring to the table. It allows me to put into practice the idea of a community of learners and how everyone involved has a say in what topics are investigated, how they are investigated, and how the information can be collected, recorded, and shared; in other words, the content, process, and product method of curriculum development. Let me now begin by addressing the recommended best practices for the social studies (Zemelman, Daniels & Hyde, 1998, pp.139-147).

Students need regular opportunities to investigate topics in-depth

I try to spend, at the minimum, 2-3 weeks for each of the five ECE grade levels; introducing the unit's "big ideas," brainstorming possible sub-topics with the students both for their investigations and those of their hypothetical students, and developing ideas for possible products by both my students and their students. I provide resources in the form of: People; documents; technology in the form of hardware, software, and the Internet; teacher materials provided by local school districts; and locations. We follow the same format for each of the grade levels providing them with 10-15 weeks of investigations on real social studies topics by relating them to their own lives and the lives of their students.

Students need opportunities to exercise choice and responsibility by choosing their own topics for inquiry

After I have introduced each new unit using children's literature, "essential questions" (to be explained later), artifacts, and/or primary source documents, the students engage in a brainstorming session for possible sub-topics for the unit. They decide with whom they would like to work, if anyone, how they will gather the data or information, from where they

will get the data, and how they will eventually share this information, if this has not been decided previously. Once these steps have been completed, we design a rubric to assist in the evaluation of the project. For example, during the 3rd grade unit on "People elsewhere" during the first semester, the brainstorming list included such sub-topics as shelter/homes, music, art, recreation, family structures, and clothing, to name a few. The students divided into groups, selected the sub-topic to investigate, decided from where and how to gather the information, and began the investigation. Since the product for this particular group was individual lesson plans as part of a larger unit, the product rubric was designed as a class.

Teaching should involve exploration of open questions that challenge students' thinking

For the aforementioned 3rd grade unit, I began with the question of: How are people elsewhere alike and different from people in the United States? I used a semantic web as a way to organize the responses and as a way for the students to see the interconnections of their responses. This transformed into a Venn diagram that more clearly showed the areas of difference and the areas of similarity, and yet also led the students to see that what may be perceived as differences are really similarities and vice versa. I also ask the students to respond in their reflective journals to a set of essential questions – questions that ask the students to think more deeply on the topic at hand – that ultimately guide our investigations and form the foundation for the course. The questions for the 3rd grade unit included: List the ways that people in the U.S. are like all other peoples around the globe. List the many ways that people from elsewhere have contributed to the U.S. today. How do they continue to contribute as citizens, illegal immigrants, and/or citizens of their own countries? Describe the relationship between the people/countries outside of the U.S. and a students' personal/family history. Identify the "big ideas" we are trying to incorporate into the project for this unit.

To make real the concepts being taught, it must involve students in active participation in class and the wider community

As stated earlier, students play an active role in deciding the content, processes, and/or products for the units, and they assist in the development of the ru-

brics. Additionally, after decisions have been made concerning grouping and sub-topic investigations, I "let the students loose" both in the college community on campus and in the community-at-large to find answers to their questions. For example, students grouped for the 1st grade unit on community according to the locations they wanted to investigate: The "S-bridge" and the National Road, the John and Annie Glenn museum, the local Bed and Breakfast, and the City Building. The activities my students designed for the jackdaw for actual 1st grade students allow the children to explore places of potential interest in the local community, just as the unit allowed my students to do the same.

Teaching should involve students in both independent inquiry and cooperative learning to build skills and habits needed for lifelong, responsible learning

This practice was accomplished in many ways, but two of them are worth mentioning: student grouping choices and reflective journals. As mentioned repeatedly, students have the choice to work alone, with another student, with a small group of students, and/or with the entire class. I made sure that all of these groupings occurred during the course of the semester. In addition, I patiently listened to the students when disagreements arose, encouraging them to work it out by offering a few suggestions. Additionally, the reflective journals required the students to individually reflect upon and answer the essential questions, provide their own list of literature links, identify the appropriate grade level SBI's met through the unit investigation, and develop a list of their own Knowledge, Skills and Dispositions (KSD's) attained as a result of the investigation.

Teaching should involve students in reading, writing, observing, discussing, and debating to ensure their active participation in learning

I believe this was met nowhere more clearly than in the development of the rubrics for each of the products assessed, although this occurred at every step in the process. Additionally, all students used many sources of information to gather the answers to the sub-topic questions. They took notes during the investigation and reflected on the process for each unit in their journals. The students also discussed and debated not only the quantity of information gathered for

each of the products, but the quality as well when designing the products and the rubrics.

Learning should be built on students' prior knowledge of their lives and communities rather than assuming they know nothing on the subject

The brainstorming sessions at the beginning of each unit enabled all of us to share what Katz and Chard (2000) identify in the Project Approach as the EKWQ: Experiences, Knowledge, Wonderings, and Questions. At times, we examined the larger topic according to this framework, and at other times we simply listed or webbed whatever topics arose. This was nowhere more apparent than in the Pre-K unit on "All about me" that examined the life of each student thus far. We brainstormed two lists: Those things they would like to share with me and each other, and those things that preschool children would most likely want to share with their teacher, other preschool children, and anyone else willing to listen. The students made the final decision as to what would be the contents of their autobiographical book based upon both of these lists.

Teaching and learning should explore a full variety of the cultures found in America, including students' own backgrounds and understanding of other cultures' approaches to various social studies concepts

The 3rd grade unit on "People elsewhere" accomplished this practice. After sharing my own background, both personally and professionally, I insisted on the students first identifying their own ancestral heritage and those things that made their cultures unique, those traditions their families followed, and the ways they felt special because of their background, before broadening their view to other students in the class and their findings. Only after this had been done did we brainstorm possible sub-topics that they and 3rd graders would be interested in investigating.

Social studies should eschew tracking students because it deprives various groups of the knowledge essential to their citizenship

Again, as mentioned earlier the groupings of the students during the course changed for every unit. Also, since students sign up for this course only after successfully being admitted into the department, it cannot be said that some tracking is not done. We do have to follow state and national accreditation guidelines for admittance that public schools do not follow.

Evaluation must reflect the importance of students' thinking, and their preparation to be lifelong, responsible citizens, rather than rewarding memorization of decontextualized facts

As mentioned many times previously, the students were actively involved in developing the rubrics that would be used to assess their products. Additionally, their participation in each class session determined that portion of the grade for the course: Did they offer suggestions? Did they ask questions of me and other students? Did they provide input in small and/or large group work? Were they actively engaged in finding answers to their groups' questions? Finally, there were many different methods used to determine the students' grade for the entire course: Reflective journals, class participation, the products as a result of the units' investigations, the evaluation of their cooperating teacher for the field portion of the class, and the work they prepared as a portfolio from their field experience, to name a few.

Discussion of K-12 Best Practice Methods

I must admit that I, like many teachers, found myself using the same sorts of activities, or methods, to engage my students at the college level in learning the material that would allow them to be teachers who engage their students in learning the material. I also spoke earlier of my "awakening" to the thinking of Dewey (1916 [1944]) who looked at education as needing to be experience-based, investigative, and active. It was precisely this inconsistency with what I was doing with what I knew I should be doing that caused me to reflect. Am I really using "power-full" practices that would enable me to be a powerful teacher and my students to be powerful learners? After much soul-searching, collaborating with colleagues, and delving into the relevant literature, I changed my teaching in general, and specifically changed my teaching in this course. Although I may not interpret the best practice methods for K-12 as the authors intended, I found their framework useful. Allow me to now identify the manner in which the best practice methods for K-12 (Daniels & Bizar, 2005) were met in this course.

Reading as thinking

I do not approach this social studies methods course as a reading or language arts teacher would. Therefore, I don't specifically place emphasis on decoding the text found in the many sources of informa-

tion that my students use in their investigations or in editing the writing that is turned in as evidence of the reflections in their journals. What I do ask my students to do is to behave as a social scientist would by identifying the questions that need answers, identifying and locating the possible sources of information that could provide the answers to their questions- and not just those printed sources- and to find a way to share the answers with others in the form of a product. In this way, I am engaging my students in *thinking* about the topics and sub-topics that we are investigating, as well as the ways they are learning about how to teach, to try to make sense of their role as teachers of the social studies. In the course of their investigations the students do encounter many forms of print material that they need to be able to read and interpret. They also need to be able to connect what they are reading with information they currently possess about the topic and with their own experiences as well as with the students' experiences and knowledge with whom they will be working.

Representing to learn

I prefer to look at the products the students design as a measure of their understanding of the methods they could be using in their own classrooms. For example, in the 2nd grade unit, the students designed learning centers that second grade children would use to learn about the individual states in America. The learning centers my students designed for other students to use represented their knowledge of how to construct learning centers that encompasses the content, process, and product method of curriculum development. There are many ways for students to represent their learning in this course, as previously mentioned. These include the learning centers as just indicated as well as other products, rubrics, literature link lists, and the cooperating teachers' evaluations of the students work in the field, among others. I also ask the students to write their reflections on each of the units in their journals. These provide me with another layer of information that may not be apparent in the finished product for each unit.

Small group activities

Again, I agree with Dewey (1938, [1963]) that schools and classrooms should be authentic communities where students practice democracy and make joint decisions that affect them and their learning. Students should work collaboratively to identify and solve

problems and to investigate answers to questions. He also believed that the methods used in education were just as important as the content. Therefore, this course uses collaboration between the students and each other as well as between the students and me as much as possible. We brainstorm the sub-topics for each of the units of study, we decide on the processes to use to investigate the sub-topic questions, we decide on the products to develop to share the answers or information, and finally we decide on the rubric for assessing the learning that did occur. It is my hope that my students will use the same methods that have been modeled for them in their own classrooms to continue this democratic process of inquiry that is so much a part of the social studies.

Classroom workshops

I have modeled this course on the classroom workshop as envisioned and practiced by many classroom teachers. I provide the college students with entire class sessions to brainstorm sub-topics, possible processes and sources of information, possible products and rubrics to assess their effectiveness, as well as to engage in the actual investigation of the sub-topics to assist them in developing the products. Many times the students are amazed that they don't have to necessarily stay in my classroom to "look up" information. They have gone to local places of interest to interview people and to take pictures. They have taken driving and walking tours of local places of interest, including those on the campus of the college itself. They have spent hours in the college library working with archived materials – primary source documents – to develop jackdaws. In other words, the entire course is a workshop where "...genuine knowledge is created, real products are made, and authentic inquiry is pursued." (Daniels & Bizar, 2005, p. 152).

Authentic experiences

As explained in the above example of best practice methods, the entire course is an authentic experience. It does sometimes get very messy and is usually unpredictable, yet it is these very characteristics that make it so valuable in my mind. Teaching is messy and unpredictable if we are truly taking the needs of our students into account when we plan the content, processes, and products, and it is even more so when we engage them in the process of assisting us with these decisions. In this sense, this course is following the NAEYC guidelines for DAP; it is just on a

higher level than in an early childhood setting!

Reflective assessment

According to Daniels and Bizar (2005), assessment should be: constructive, formative, reflection-oriented, and able to be used at any grade level, in any subject, with any students. I chose to use three of the six structures for assessing student growth over a period of time: Portfolios of the students work in the field experience classroom, conferences with the students during classroom workshop, and performance assessment rubrics. In addition, I also use their reflective journals, classroom participation, literature links and an article summary of relevant research in teaching the social studies. I strongly believe that a single test score is not indicative of students' strengths, weaknesses, or areas for concern. Again, I am hoping that what I model will follow my students into their own classrooms.

Integrative units

The individual grade units form the backbone of this course. As such, I seek to integrate as much "other" content as possible in a variety of ways. One method I use is the brainstorming done with my students at the beginning of each unit that requires them to look at the topic via two perspectives: Their own as learners and the students with whom they will be working in their own classrooms. It is during these brainstorming sessions that sub-topics for the unit are developed. These sub-topics at times are integrative. For example, in the 3rd grade unit, the class divided itself into smaller working groups to investigate such things as the various types of shelters (homes) found around the world, the types of music and musical instruments around the world, and what people elsewhere do for recreation. Another method I use is during the 1st grade unit by taking the students into the community to interview members of the community and to take digital photos of various locations. Although I do not always intentionally plan for integration – with the exception of the literature links – the students integrate the units on their own. Many of the students were able to identify SBI's from other content areas in addition to the social studies and the language arts in their lists from their journals, such as math, science, and the arts.

Conclusion

Because I believe so strongly in the power of our students to tell us what they would like to, and possibly need to, learn I value their voices, not only in my classroom when I seek their input, but also as reflected in their writing. Reflections from the students' journals have provided me with much incentive to continue refining this course in its current direction. It is always refreshing to view my professional practices from their perspective as I am hoping they will do with theirs.

One requirement for the journals asks the students to identify the Knowledge, Skills and Dispositions (KSD's) that were developed during the course of each of the units. For example, one student stated she has developed the disposition of being willing to learn, including suggestions from others after she and two other students developed ideas for a lesson on taking a group of students to the library. This same student also spoke about her eyes being opened from the teachers perspective after completing her self-biography, "It's projects like this that make me look back at myself and where I come from that will help me to understand that their problems are real problems and that I need to guide them through them the best I can." Another student stated under her list of dispositions that, "I have the disposition to go against the norm to promote successful student academics – allow them to write while they are hanging off a bench in the cafeteria." In a similar vein, another student wrote, "I can now be a rebel and create Venn diagrams in all sorts of shapes and sizes."

I have also found the "essential questions" – or the questions of doom as one student called them! – to be extremely useful in assessing how well my students met the SPA standards as well as the content area SBI's. For example, I asked the students to answer the following question after the Pre-K unit and after they had the classroom workshop to develop their self-biographies: How did we integrate the 8 democratic values as outlined in your book into our lesson? One student spoke of groups of people needing an authority figure, but that the teacher isn't a dictator. He goes on to say, "The students get to be a community as they work on their projects at a table. Supplies might be limited so the students need to know how to have respect for each other. They need to learn how to be resourceful and how to share materials." Another student stated that the, "…biggest idea I got from investigating my state was that the states in the United States all seem to be 'individually unique, but together com-

plete'" as she reflected on her growing awareness of the individual states that make up the U.S.A.

The students are also required to reflect on their experiences in the field. It is in this section that I sometimes see the greatest growth in students who aren't the most academically talented. For example, one student wrote about his efforts at engaging his students in developing the rubrics required for the field. He spoke about their need for his guidance and support early on, but by the third rubric they were able to develop it mostly on their own as they became better at the process and took ownership. He states, "I have learned so much from the kids. I thought it was supposed to be the other way around. I have learned… children learn best when they are communicating with each other, and when they are doing more hands-on activities." Another student found using learning centers in the field to be frustrating because of their under-utilization in many classrooms. She stated, "I think that doing this project was very good for me to realize that I have to be an advocate for my classroom." Finally, another student realized that she could assist her students in developing their own dispositions as she stated, "I know that learning about states doesn't have to be all factual content; I can foster their exploration through different story books to inspire inquisitiveness."

The literature links requirement will also remain, but not because it is a way to integrate the language arts. I have found through the journals that students begin to see resources other than books as "literature." Some of the items they have listed include primary source documents such as postcards and pictures of primary source documents in museums; artifacts such as maps, globes, and atlases in addition to pictures of artifacts from museums; notes from interviews they've conducted as well as notes they've taken while listening to a speaker; and Internet sites. It was also heartening to see that some students went beyond simply listing the titles and authors of the various children's literature they would use, to actually providing a brief summary of the book. I understand that these are available from many publishing companies and from various websites, yet that doesn't bother me. I am glad the students have found a way to make this a useful resource for their classrooms.

In closing I would like to share a quote from the field experience section of a student's journal. She states, "I would like to teach the students that they

have a right to explore…and ask questions. They are to be responsible consumers and in order to develop this quality they must understand that they have a right to question." She gives me hope in knowing that my students will become the teachers who truly assist their students in developing the qualities of being responsible citizens. Isn't that the real lesson here that goes beyond best practice methods and standards?

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In Defense of Constructivism

Terry C. Miller, Ed.D.

I teach in the graduate program at a small liberal arts college in southwestern Ohio. Since the master's degree program at the college is for teachers and would be teachers in both general and special education, the courses I teach are related to foundation areas such as research methods, educational psychology, and contemporary issues confronting educators in public school settings. The latter course comes at the end of the students' graduate careers and in the past two years I have taken to introducing the course by requiring students to read from E.D. Hirsch's (1996) *The Schools We Need…and Why We Don't Have Them* and David Berliner and Bruce Biddle's (1995) *The Manufactured Crisis.* I do this in an attempt to make students aware of a conceptual framework that informs the debate about education both past and present. Hirsch's and Berliner and Biddle's book, written as they were in the mid-90's, represent the locus of criticism directed at public schools from both the left and right ends of the political spectrum. The two books summarize and elaborate on criticism that has been leveled at schools since the Soviet Union's launch of Sputnik, through the era of the "open" classroom, to the Nation at Risk report of 1983, and finally to political initiatives culminating in the age of accountability and the No Child Left Behind Act.

Other than convincing my students of the political and pendular nature of education reform, the hope that I bring to the reading assignment that incorporates a discussion of essentialist, progressivist and constructivist approaches to education, is to make them acutely aware of the fact that they do not teach in a theoretical vacuum, that their various approaches to curriculum and instruction reflect, in fact, assumptions about the nature of teaching and learning which perhaps they are only barely able to articulate at the beginning of the course, but which hopefully they can evaluate in light of their own teaching endeavors as the semester progresses.

Hirsch's book is particularly salient in this regard, representing as it does a full frontal attack on what some critics believe to be the "progressivist" underpinnings of teacher preparation and practice in this country. The reasons for students' declining content knowledge, these critics maintain, is primarily the student-centered approach to learning that is embodied in the learning theory identified as constructivism. In his book, *The Schools We Need…and Why We Don't Have Them,* Hirsch discusses several aspects of a progressivist educational philosophy that has at its roots the writings of John Dewey. Among the concepts that Hirsch attacks as "naturalistic fallacies" characterisitic of this student-centered approach are "developmentalism," "American exceptionalism and localism," "individualism," and anti-intellectualism, all of which found expression in the thinking of American Transcedentalists such as Emerson and Thoreau who, according to Hirsch, encouraged a suspicion of book-learning and its potentially corrupting influences on the natural development of the child that persists to this day (Hirsch, 1996). The romantic developmentalism that has supposedly triumphed in our approach to early childhood education is an extension and culmination of the belief that academic instruction is

inherently corrupting and that the appropriate focus for the education of the young child is the child's development rather than academic learning per se. According to Hirsch, these philosophical convictions play out in American classrooms in the form of a preoccupation with nurturing the self-esteem of children and with cooperative learning arrangements that are designed to advance Dewey's socially reconstructivist vision of a democratic and egalitarian community.

While Hirsch correctly identifies constructivism as the psychological theory that underlies much of the current thinking about pedagogy in schools of education, there is some question as to whether he understands the scientific basis of the theory and its real implications for education. He is not alone, however, and his own mischaracterization of the theory could aptly describe teachers' and prospective teachers' own misunderstanding. This lack of understanding can be attributed, at least in part, to our own failure as teacher educators to present the theory accurately in all of its complexity and richness. As presented in most educational psychology texts, constructivism is described as one of many approaches to teaching and learning. Other approaches might include behaviorism, information-processing models, and various stage theories of development that integrate issues related to children's physical, social, and moral development with teachers' attempts to create student-centered learning environments.

This concept of "student-centered" education in the context of the current debate about educational reform is instructive, presented as it is in almost every educational psychology textbook, as well as in Hirsch's writings, as being synonymous with constructivism and constructivist approaches to learning. In Sternberg and William's (2002) *Educational Psychology,* for example, the authors equate the student-centered approach with constructivism "because it sees students as constructing their own understanding" (p. 444). Elaborating on this idea, the authors go on to say that "Placing students at the center of the learning process…means your goal must be to teach for meaningful, useful, and deep understanding, rather than for the number of correct responses on a quiz," and further that "Student-centered teaching has been the foundation of so-called open schools, a term often used to describe schools in which students are actively involved in deciding what and how they will study" (Sternberg & Williams, 2002, p. 444).

If there be a consensus among various writers of educational psychology texts that Sternberg and Williams have accurately defined constructivist and constructivist approaches to teaching, then there is substantial agreement between them and the critics of teacher preparation programs and progressivist ideology that supposedly advocate these approaches. In his critique of the child-centered tradition, Hirsch (1996) has written that constructivism asserts that "students are not passive vessels for receiving knowledge but active participants who construct knowledge for themselves" (p. 133). However, Hirsch goes on to say that the "theory is said to support 'learner-centered' teaching, hands-on learning, discovery learning, and the rest" (p. 133), dismissing the implications for instruction as "elaboration" which has directly resulted in the demise of content knowledge in American public schools. Acknowledging that the theory is generally accepted in mainstream psychology, Hirsch cites early studies on memory by Frederick Bartlett as a foundational work underpinning its primacy among cognitive psychologists. While Bartlett's findings regarding the nature of memory as a reconstructive experience are indeed seminal, this is Hirsch's only citation in reference to constructivism. He can't be faulted for this, however, since there are few if any theorists or evidence-based findings cited in connection with constructivist theory in educational psychology texts either. My question then is, Are we guilty of giving prospective teachers an identity as constructivists without a foundational understanding of what that means?

My own experience with constructivist theory dates back to the late 70's when I taught in a preschool and kindergarten program at the University of Illinois-Chicago. The program attempted to apply the theories of Jean Piaget directly to the early childhood educational setting. This was accomplished with the help of Dr. Constance Kamii, an early childhood educator and scholar who worked directly with Piaget at the University of Geneva in Switzerland and who taught and consulted at the University of Illinois-Chicago. It is important to remember that while Piaget himself wrote little on the topic of education and pedagogical techniques, Dr. Kamii, among others, attempted to reformulate curriculum and instructional approaches to working with young children, enunciating Piaget's "interactive constructivism" in terms of its pedagogical implications. Emphasizing the constructive nature of learning, Kamii's work focused less on the stages

of children's cognitive development and more on what Piaget himself believed to be the true aim of education, which was moral and intellectual autonomy (Kamii, 1984). Responding in an interview to a question about education, Piaget was quoted as saying that "Education, for most people, means trying to lead the child to resemble the typical adult of his society…but for me and no one else, education means make creators...you have to make inventors, innovators – not conformists" (Bringuier, 1980, p.132). So what does autonomy have to do with constructivism, especially as constructivism is formulated by Piaget and Piagetian scholars like Kamii?

Kamii (1978) maintains that most of the knowledge that we come to have is constructed as a result of our interaction with the world around us, including the people and objects in it. This is true of physical knowledge where we act on physical objects and observe their reactions, for example in coordinating movements in order to maintain one's balance on a balance board. It is true about a great deal of our mathematical knowledge; for example, when young children put one object into relationship with another object and mentally construct the relationship of twoness, or in their construction of the spatio-temporal frameworks for the events that happen in their lives (Kamii, 1978). But it is also true about children's developing moral judgment, with Piaget believing that moral reasoning is largely a constructive process that children engage in as a result of their interactions with those around them. Intellectual and moral autonomy then are fostered by adults – teachers, parents, caretakers – when they provide opportunities and ask questions that promote this constructive process.

Note here that the terms "hands-on" and "discovery learning" are not part of the constructivist lexicon for describing what really happens when learning takes place. That is because they do not describe cognitive processes that are necessarily constructive in nature. In fact, they do not describe learning processes at all, at least not in any systematic way. "Hands on" and "discovery learning" are still largely intuitive ways of describing learning that have more to do with materials and curricular approaches than they do with specific cognitive processes. For Kamii in fact, the terms still imply that knowledge is somewhere outside the learner, residing in the objects themselves and waiting to be absorbed or discovered and not necessarily constructed by her. Yet it is an association that Hirsch makes repeatedly throughout The

Schools We Need, one that may be reinforced by our own imprecise way of teaching constructivist theory to our students.

It should also be said here that interactive constructivism does not necessarily exclude or refute other learning theories on points related to certain kinds of learning. Kamii's description of the three kinds of knowledge that could be accounted for by Piaget's theory – physical, logico-mathematical, and social – allow for some learning to be gained by means other than an actively constructive process. Social knowledge, for example, is more often than not transmitted from a teacher to a student, with the teaching source being as diverse as reading materials, television and the internet, parents and peers, as well as classroom teachers. Examples of social knowledge are that the Spanish word for cat is gato, that we celebrate the country's independence on July 4, and that handshaking in the U.S. is a common way of greeting people for the first time.

Social knowledge may represent important learning, but not the complex kinds of knowledge that might occur in understanding the reasons and the factors involved in America's Civil War, the applications of the principles of electro-magnetism, or the implications of probability theory. Kamii draws a parallel between these various kinds of knowledge and behaviorist versus constructivist views of learning when she describes the theories' relationship to one another. Constructivism, the more powerful theory, subsumes or incorporates behaviorist/empiricist theories of learning (Kamii, 1978). The direct teaching of social knowledge and the reinforcement of verbal kinds of learning such as memorization of the multiplication tables are not precluded in the constructivist classroom. In some instances, for example memorizing foreign language vocabulary and mastering English language spelling, direct teaching and practice might be entirely appropriate. But they should not be confused with the more important kinds of understanding that come about as a result of putting knowledge into relationship with other kinds of knowledge, modifying existing knowledge structures, and arriving at new knowledge that reflects the complex nature of learning. In other words, verbal learning should not be confused with the deep learning represented by knowledge construction.

Kamii used the example of attempts to teach young children the concept of specific gravity to high-

light the differences between constructivist and empiricist approaches to teaching and learning. For her, children's efforts to understand why a tennis ball floats in water while a key sinks to the bottom represent the reflective or constructive abstraction that leads to new knowledge structures. This kind of mental activity (considering and coordinating the variables of size, weight, density, etc.) is the means by which their thinking becomes increasingly structured. The underlying reasoning about why large balls float and small keys sink are not observable and must be constructed by the child internally after observing and interacting with these materials. As Kamii writes, "Without the structure of the class inclusion and seriation, the child cannot possibly construct this concept. Specific gravity is an example of knowledge created by the logico-mathematization of observable facts" (Kamii, 1978, p. 26). These are not just verbal behaviors represented by a student's ability to cite a rote definition of specific gravity, but an active construction of a relationship among the variables involved.

While the stage developmental aspects of Piaget's theory are emphasized in most educational psychology texts, as we have seen, these dimensions of the theory may not be the most significant in terms of their implications for instruction. Still, Hirsch's attacks on what he believes to be the influence of "romantic developmentalism" on American education could again be the result of misinterpreting or ignoring the real significance of Piaget's findings in this area. As mentioned earlier in this paper, Hirsch believes the root problem to be the sentimentalized philosophical vision of the thinkers such as Rousseau, Emerson, Thoreau, Pestalozzi and Froebel who firmly believed that formal schooling interfered with the learning that would occur naturally and spontaneously if the child were permitted to develop as freely from adult influence as possible. These critics of formal education believed that schooling was a corrupting influence in children's lives, one that lead them away from natural goodness. While this view could easily be dismissed as being romantic and naïve, it is important to remember the historical contexts in which these criticisms were being made. For most children who had access to education as it was practiced in public or common schools, rote learning and corporal punishment were the norm. Far from being student centered, the objective for many teachers in those times would have been to break the will and spirit of most of their young charges.

The legacy of "romantic developmentalism" for Hirsch is its contemporary manifestation as "progressivism." Progressive educational philosophy, he maintains, sees all learning as natural. Hands-on and project learning, cooperative teaching and learning arrangements, and discovery approaches are the teaching derivatives of progressivism and have undermined the need for a renewed emphasis on content knowledge or what he has described as "intellectual capital." But while his criticisms could legitimately be leveled at the misinterpretation or simplification of progressive educational philosophy, there would be considerable debate among teachers themselves as to whether Hirsch's version of progressivism, as manifested in "romantic developmentalism," has really taken hold in the public schools. With the exception of brief nods to progressivism in the form of "open" classrooms in the 70's and integrated curriculum, it has been my experience as a teacher and an educator of teachers that the organization of schools and instructional practice has remained amazingly consistent over the last fifty years. It is true that seats have been unbolted from the floors in classrooms, and that corporal punishment is no longer widely practiced in the schools, but curriculum is very definitely segmented by grade level and there has been an explicit extension of academic expectations into the kindergarten classroom, the original garden that Froebel and his followers envisioned for young children. Ironically, the only real foothold for the radical or romantic form of progressivism in education has been in the private sector where educators have felt more freedom to experiment with these ideas, largely with students whose upper middle class backgrounds would enable them to achieve regardless of the instructional approach. These are the Summerhills, the Waldorf Schools, and Montessori programs that dot the American educational landscape but certainly do not dominate it. Citing historian Ellen Lageman's remark in reference to the triumph of scientific and industrial progressivism in American education, "E.L Thorndike won and John Dewey lost," Linda Darling-Hammond (2006) has written that it is behavioral psychology with its "attempt to develop simple, unvarying laws for teachers to follow" (p. 77) that has really characterized the history of American education and education reform, rather than what Dewey advocated which was "knowledge of methods, students, and subjects that would empower teachers to make more intelligent,

flexible, and adaptive decisions – knowledge that would make teaching more individually responsive rather than more formulaic" (Darling-Hammond, 2006, p.77).

Are aspiring teachers reading Rousseau, Emerson, or even John Dewey? I have yet to encounter a teacher education program or an educational psychology course that includes source material from any of these writers, and there are few teacher candidates in the program in which I teach who could expound on the influence of any of these thinkers. What many critics of public education and teacher preparation programs attack as the progressivist stranglehold might really be the ongoing conflict engendered by scientific-industrial progressivism's emphasis on regimentation and efficiency. As Darling-Hammond (2006) has written, citing both Callahan (1962) and Tyack (1974) before her, "The confluence of behavioral learning theory and bureaucratic organizational theory in the early 1900's led to simultaneous efforts to deskill and control teaching by creating curricular edicts at the top of the system and hiring teachers to march through a prescribed curriculum" (p. 78).

Again, E.D. Hirsch maintains that our resistance to introducing rigorous academic content in preschool and kindergarten programs is a vestige of the progressivist movement in education   He believes that the seemingly intractable achievement gap that exists between middle class and poor children in this country can only be addressed by early intervention in the form of explicit academic content in early childhood programs. Citing France's Ecole Maternelle model, a universal preschool program for children from the age of two to five, as a potential model for the U.S., Hirsch has maintained that the French have been able to virtually eliminate the achievement gap between its more and less affluent citizens. Even a casual observer, however, might wonder whether France's educational system has been able to overcome the divide that separates French persons from different racial, ethnic, and socioeconomic backgrounds given the recent rioting in Arab and North African suburbs among disaffected and unemployed youth.

While the claims made for the French educational miracle are certainly over-stated, there are lessons to be learned from this model that Hirsch celebrates as a potential cure for what supposedly ails American education. Unfortunately, they are lessons that he largely ignores in his critique. For example,

while Hirsch emphasizes rigorous academic content and a national curriculum, he makes only passing reference to the heart of a system that elevates the status of preschool teachers to that of respected professionals - requiring a Master's degree - and compensates them accordingly. The heart of this system is the teacher. It is this variable that seems to be missing from Hirsch's and other critics' analyses of public education, except as a point of departure for their attacks. Standardized curricula, scripted reading programs, specifically prescribed academic standards and high-stakes tests do appear to be ways of "teacher proofing" the final outcomes of an education in public schools, but these measures ignore the essentially constructivist nature of teaching and learning that Piaget and other cognitive psychologists have discovered as a result of their research. Kamii (1984) wrote that the true aim of education is autonomy. This is true for the children we teach, but it is equally true for teachers themselves. Intellectual and moral autonomy require independent judgment and the courage of one's convictions, values that are nowhere to be found in Hirsch's *The Schools We Need*. The education that he and others propose for our children is essentialist, but could also be described as "addititve," a term that Herb Childress (2007) has coined in writing about the goals that appear to inform much of what passes for school reform in an age of renewed calls for human and intellectual capital.

Writing in the Phi Delta Kappan, Childress has described the recent accountability measures that focus so much time and effort on high stakes tests as a return to the assembly line model of instruction originally proposed by the behavioral scientists and bureaucrats in the "progressive" era of the early 20th century. In this model, the various specialists take the student (assembly) currently under construction and "screw" on a bit of algebra here and history there, and "in the end, they're screwed indeed. They're encased in this educational armor and have no experience in encountering and challenging their own communities, futures, or desires, because all that has been sublimated to the repetitive and mechanical structures that they have endured" (Childress, 2007, p. 107).

Our students will feel empowered to ask the important questions about their lives, their society, and their world only in as much as we, their teachers invite and prepare them to participate in what is really a conversation. Childress counters the metaphor of an additive education with his own proposal that we offer a

subtractive one – one in which, like Michelangelo, we see the angel in the stone and then carve until we set her free. Moving beyond metaphors, however, I would argue that a constructive education is the more precise and empirically based counterpoint to an additive education. As constructivism represents the more powerful learning theory, incorporating other theories such as behaviorism and social learning theory, so too does the intellectually and morally autonomous individual – able to think and act according to the dictates of her conscience – incorporate the lesser stick figure of the competitor-consumer-cog in the global economy.

So what is the lesson to be learned for those of us who are engaged in preparing future teachers to engage in this important conversation that is education? We have not been above reproach in our attempts to move teaching beyond the knowledge transmission model to which Essentialists like Hirsch would have us return. And we have not quite been able to transcend the charges leveled at us by those outside teacher education – including many of our own colleagues in the university – that the discipline lacks academic rigor and that teacher education often borders on the anti-intellectual. While many of these criticisms ignore the complexity of the teaching profession, especially at the elementary level, they may also be the result of our own rhetoric and our imprecision in the use of terms such as constructivism, hands-on learning, and teaching the "whole child" (has anyone attempted to teach a half child?). These concepts and techniques are in danger of becoming, if they haven't already, rhetorical catch phrases or mantras that one finds attached to mission statements or conceptual frameworks, but which may never find grounding in a close examination of theory and empirical evidence. It is our responsibility as teacher educators to lead our students in a serious examination of the philosophical and psychological underpinnings of their practice in the classroom. Where better to do that than in a graduate program geared primarily to working teachers who have come back to enhance and enrich their practice? How better to model the reflective abstraction that characterizes the constructive process that is education?

If teachers are to understand and defend evidence-based best practice against political attacks and the faddism that characterizes much of educational reform, they need a thorough understanding of the role of theory and research in the field. We do them no

favors by skipping over the "boring" and so-called irrelevant theoretical issues that they are sometimes prone to dismiss as the stuff of the ivory tower. To the contrary, there may be good reason to lead students back to consideration of the source material – readings from Piaget and Vygotsky and the scholars who have investigated and researched their theories – as a way of reinforcing for them the significance of research and theory-building for education. The debate over education reform and how best to go about educating children for the 21st century is a heated one because the issues are viewed as important and vital to our survival as a democracy. It is time that we began to help teachers find their voices in this debate. Then, and only then will they be able to assume their rightful places in the discussion about educational reform, at the forefront of those responsible for creating policy for this century and beyond.

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Integrating Technology: Early Childhood Curriculum and Preservice Teacher Training

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Introduction

In primary classrooms, computer use is often limited to rote learning and skill and drill practice at learning centers while teachers manage individual reading groups. Early childhood preservice teachers at a public university in the Midwest rarely see technology integration or computer use at all in their field placements in local primary classrooms. The literature augments this observation.

Surveying 410 student teachers, Carlson and Gooden (1999) find that two thirds of their cooperating teachers use only word processing in their classrooms. Furthermore, only about half of all teachers in the United States use technology for classroom instruction, whereas anecdotal evidence from education technology specialists and proponents alike indicates that *effective* use of education technology is even less common (Starr, 2003). In fact, almost 70% of teachers reveal feeling ill-prepared to use computers and the Internet in their classrooms (Ertmer, Conklin, & Lewandowski, 2001). Preservice and student teachers often are more skilled with computer use and integration of technology than their cooperating teachers (Hall, 2006). As a result, student teachers often feel restricted by their cooperating teachers' lack of support in integrating computers into the classroom (McCoy, 2000). It has been suggested that university methods courses be a platform for the modeling of technology integration into classroom teaching (Howland & Wedman, 2004).

The authors have separately taught courses for early childhood preservice teachers that integrate the content areas and technology combined with field experience. Unfortunately the students rarely observe the use of technology in kindergarten through third grade classrooms and tend to assume that the technology they utilize is appropriate for early childhood students.

Barriers to Technology Integration

There are a number of impediments to the utilization of classroom technology. First order institutional barriers are described as: lack of access to technology; inadequate time to plan technology-integrated instruction; and lack of technical and administrative support. Second order barriers, which are personal and intrinsic to teachers include: beliefs about teaching and learning; ideas about technology; and reluctance to change (Ertmer, 1999).

Examples of these barriers are numerous. Many teachers have still not reached a level of computer literacy which would enable them to utilize the expensive technological equipment available in their classrooms. In addition, using technology can be time consuming, both for teacher and student exploration and learning, as well as alignment with current curriculum and content standards. In this age of high stakes testing, many teachers do not feel able to spare class time or even their own personal time for learning to utilize technology to integrate the curriculum. Searching for appropriate Web sites is frequently a protracted experience; implementing new technology often results in experiencing problems; and modification of curriculum to align with the structure and embedded features of software can require prolonged

effort (DeJean, Miller, & Olson, 1997). Choosing technology hardware and software that is developmentally appropriate and promotes effective learning may be confusing for educators. In addition to these concerns technology can occasionally fail to operate properly, consuming even more time and energy.

On the other hand, Internet safety concerns demand that teachers protect students from unsupervised exploration on the Internet and some of its inappropriate sites. In discussing the impact and risks of unrestricted use of various kinds of technology, Moll advocates "pulling the plug" on unlimited computer use for children, and recommends that unmonitored computer use is inappropriate for young children (2003, p. 600). Most teachers would agree with Moll's thoughts. Furthermore, locating developmentally appropriate Web sites can be time consuming and require some sort of storage to be accessible to young children.

Developmentally Appropriate Technology

Developmentally appropriate technology use in early childhood curriculum must always be compatible with how young children develop and learn as well as match their particular stages of development. It must also be of educational benefit (North West Regional Educational Laboratory, 2001). Educationally sound, developmentally appropriate technology must be interactive, help meet content standards, and benefit student learning in ways that are central to the curriculum rather than used only for enrichment or add-on equipment. As technology itself does not automatically promote effective learning styles and instructional patterns, it is important to use developmentally appropriate computer software to help children take a more active role in learning. Working in groups to share computer experiences can expand children's problem-solving and critical thinking capabilities (Haugland & Ruiz, 2002).

Since technology standards have been adopted nationally and in many states as well, they could at some point, become content for high stakes testing, as they currently are in North Carolina (Guerard, 2002). Utilizing computers, cameras, software, and the Internet in the classroom may become a necessity rather than a luxury, not to mention contributing to children's development and ultimate preparation for living and working in the 21st century. Children in today's classrooms need to be both familiar and comfortable with the use of technology to research and solve prob-

lems, especially if they do not have access to computers at home. Currently schools in higher socio-economic status (SES) districts, where students generally have home computers, tend to utilize technology more than their counterparts in urban areas, where students must depend upon the schools for their total experience with technology. This contributes an additional inequity, known as the digital divide in the education of children in these schools. However, even in schools in higher SES communities, students may still not be utilizing the available technology because of teacher unfamiliarity and discomfort.

Because some teachers are unaware of how and what to do to integrate the use of technology into the curriculum, professional development for teachers needs to be provided in ways that support and provide the structure for learning how to implement and integrate it successfully. Diverse educational viewpoints exist on the utilization of technology in the early childhood classroom.

Developmentally Appropriate Technology Applications

There exist three prominent educational perspectives on computer use with young children. The first claims that technology is inherently detrimental and irrelevant for our youngest students and is better left for older children. The second asserts that because of the rapid change of technology, children should be prepared for the future and learn to use it without delay. The third viewpoint is that any computer use with young children must be developmentally appropriate (Koralek, 2003).

Integrating these points of view, Murphy, DePasquale, & McNamara (2003) list the following technology applications that enhance learning in the early childhood classroom: digital imagery, including still and video; word processing and writing tools; computer art programs; presentation software; research tools; and concept mapping software. For these applications to be appropriate for young learners, they must be chosen as the best tools for the job among a repertoire of teaching practices, and provide opportunities to "deepen children's engagement in meaningful and intellectually authentic curriculum" (p. 13). However, children must also be allowed to explore, experiment, and learn in their own time and at their own pace, developing comfort, knowledge, and skills with technology that they will later learn to use independently.

In utilizing these applications in the classroom, children need to have experienced "open-ended, developmentally appropriate software programs in a playful, supportive environment" in the preschool years (Murphy et al., 2003, p. 13). Then in the early primary years, not only can they use familiar technology with their class work, but they can also observe the use of technology modeled by adults in various ways. These applications can include using e-mail and word processing programs to communicate with families and others, publishing student work, and creating a classroom Web site. Other uses of technology by adults in the classroom include using digital still and video cameras to record events and provide reviews to encourage creative writing, drawing, or other forms of expression; creating electronic portfolios to document student work; locating needed information on Web sites or informational software; and helping children prepare multimedia slide shows or *PowerPoint* presentations for parent audiences. This modeling by adults helps to prepare children to learn to use these applications independently in later grades (Murphy et al., 2003).

Other uses of technology in the early years include developing media literacy, or the ability to read and write in electronic media; developing critical viewing skills, or learning to evaluate what is available; and using active media that children can control, such as videotaping, cameras, audio-taping, and developmentally appropriate software (National Association for the Education of Young Children, 1998), all that relate readily to language arts standards (Hesse & Lane, 2003).

There are various ways to safely steer students to pre-selected sites to research information for projects that integrate both content knowledge and technology into the curriculum. These include book marking appropriate Web sites; utilizing Track Star to accumulate and store appropriate Web sites for student access; and taking advantage of "web-based, 'fill-in-the-blanks' templates" such as hot lists, multimedia scrapbooks, treasure hunts, subject samplers and webquests at Filamentality (Stanger, 2006, ¶1). These learning support activities vary in complexity according to learning goals and also provide free web server space for posting.

Benefits of Technology Integration

The appropriate use of educational technology has been shown to improve student achievement and involvement (Hamilton, 2007). Clements and Sarama (2003b) report that research indicates computers can be a source of positive social interaction and emotional growth (Muller & Perlmutter, 1985), produce both social and cognitive interactions that benefit each other reciprocally (Genishi, McCollum, & Strand, 1985), inspire both creativity (Clements, 1995; Scardamalia & Bereiter, 1992) and improved language use, and provide a means of expression (Muhlstein & Croft, 1986). Computers can foster growth in prereading and reading skills, especially phonological awareness and other emergent literacy skills and knowledge (Foster, Erickson, Foster, Brinkman, & Torgesen, 1994; Hutinger, Bell, Beard, Bond, Johanson, & Terry, 1998), as well as process writing. Other benefits of computer use for children consist of using computer-assisted instruction to provide practice in arithmetic processes, fostering deeper conceptual thinking; and using computer math games and manipulatives to learn to understand and apply concepts, such as pattern, symmetry, and spatial order (Clements & Nastasi, 1993; Fletcher-Flinn & Gravatt, 1995; Wright, 1994). Furthermore, computers can develop problem-solving skills, decision-making abilities, understanding of cause and effect, and also produce longer attention spans (Clements & Sarama, 2003a). Equally important, technology can assist children with disabilities by offering individualized, well-structured tasks that provide calm, direct feedback with exploratory and language experiences as well as adaptive devices that assist communication and movement (Hutinger et al.,1998; Hutinger & Johanson, 2000).

Integrating technology into the curriculum for young children has significantly improved the educational program at every level in one K-2 school (Schwalje, 2001). Integration includes using technology to visit Web sites of favorite authors, enjoying interactive books and software for reading and content areas, in addition to working with creative software. As a result children made the most improvement in self-reliance and collaboration, with particular benefits for those children with learning disabilities.

Integrating Technology into Early Childhood Curriculum

A number of research studies involve the use of technology and mathematics, science, and social studies with young children. Developmentally appropriate software programs, such as *The Magic School Bus: Whales and Dolphins*, can provide opportunities

for children to participate in problem solving and watch information clips. *Graph Master,* can be used to teach students to collect data, create charts, and analyze data (Haugland & Ruiz, 2002).

Adult-guided groups of preschoolers learn about animals in the wild with photographs, video clips, and sounds of animals on CD-ROM. Kindergartners use *Kid Pix* software to draw parts of plants, and second graders use *Kid Pix* in mathematics, increasing their enthusiasm for learning (Gimbert & Cristol, 2004).

Teacher collaboration builds a technology-enhanced unit to accompany a field trip to a rural farm. The children choose topics of interest, such as animal families, farm machinery, jobs on the farm, and how we get our food. Topic groups then use technology to research and produce a large-scale map and robots to simulate machines using a mural making program, creating a farm scene illustrating farm jobs with a computer program, and collecting farm food recipes from the Internet (Wright, 1998).

Integrating Technology into Teacher Education

In order to prepare tomorrow's teachers, technology is also integrated into an undergraduate course for early childhood preservice teachers. The course, Advanced Integrated Primary Curriculum is the second of two that integrate methods for teaching mathematics, science, social studies, and technology using state academic content standards for early childhood primary (grades K-3) preservice teachers. The course includes 26 field experience hours with student partners in local kindergarten to third grade classrooms and currently involves the use of Desire2Learn (formerly *WebCT*), a web-based learning management system. This system provides students access to course information and resources, drop boxes for submitting course assignments, access to their grades, and the ability to communicate with the instructor and peers through e-mail. Most of the projects in the course involve the field classroom and integrated technology. Students are required to locate standards-based best practice lesson plans on two state-sponsored websites, ohiorc.org and the Ohio Department of Education (research), adapting them to Praxis III learning cycle plans which they teach in their field placements (word processing). In addition, they create a *Microsoft Excel* grade sheet (for simulated students), a computer generated graphic organizer (concept mapping) for an integrated unit to accompany a related

WebQuest, and a parent newsletter (publishing) using *Microsoft Publisher* at the end of the semester. Videos addressing integrating technology into the early childhood classroom are also viewed and discussed. Another assignment is a letter to a congressperson advocating for equal funding for technology in public schools to eliminate the *digital divide*. All of these projects either provide technology training or mirror some of the types of uses appropriate to the early childhood classroom.

Conclusion

Technology and computer use in particular, when used effectively to support curriculum and learning in the early childhood classroom, impacts "social, emotional, language, and cognitive development" (Murphy et al., 2003, p. 18); has been shown to enhance creativity and critical thinking (Bergen, 2000); and results in "positive effects . . . on children's learning and development" (NAEYC, 1996, p. 1). For computers *to be chosen* to provide instruction, they must make a distinctive and significant contribution to young children's education (Clements & Sarama, 2003b). Preservice teachers who are competent and comfortable with technology use in their college methods courses will more likely use it in their future classrooms and teach students to use it as well.

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The Successes of an Unsuccessful Professional Development Program: Using the *Ohio Standards for Professional Development* to Rate Our Efforts

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In October, 2007, the State Board of Education "rolled-out" new *Standards for Ohio Educators* www.ode.state.oh.us which are "intended to drive conversations about the practices of teaching, educational leadership, and professional development" (p. 11). Within the scope of this paper we discuss our "unsuccessful" professional development program, *Mathematics Teacher Leadership* (*MTL*), using the Ohio Standards for Professional Development (OSPD), contained within the *Standards for Ohio Educators*, as a framework to guide our conversations and rate our efforts. We use this framework in order to answer our own questions about this grant-funded program, in which we participated during two consecutive academic years. The program was supposed to be funded for three or more years but because it was deemed not successful in comparison to similar programs at two other large urban school districts it was not funded for the third year.

This paper is organized in the same manner in which we had conversations about *MTL*. First we describe the program and write in general terms about what happened during the first two years. Next, we analyze the program using the OSPD to look back at what we did right and what we could have improved upon. Finally, we discuss the small successes we witnessed with individual teachers who participated in *MTL*.

Program Description

The Professional Development Program Goals for MTL

The professional development leadership group, based at other universities, first recruited local site teams. The local site teams, in three different states with culturally diverse urban school districts identified as "urban, urban … predominately African American, and predominately Hispanic"(program documents), selected high schools in their districts and met with teachers and administrators in these school districts to begin to develop specific plans for *MTL*. Subsequently, these school leaders were to create plans for professional development that would meet each individual school's needs and ultimately affect teachers' practice and student outcomes. Our *MTL* Ohio site team included the school district's curriculum coordinator, two mathematicians, two mathematics educators, and three graduate students. [Author 3] participated in year one; [Author 2] and [Author 1] participated in year two.

The *MTL* program specific outcomes were to gain administrative support where the model for professional development focused on developing certain practices: 1) teachers continue to learn and do mathematics; 2) teachers reflect upon and refine their practice; and, 3) teachers become resources to their colleagues and the profession (program documents).

Year One in Ohio

The Ohio site team envisioned a professional development program specifically tailored to each of three selected schools (A, B, and C). By creating individualized programs at each school, we hoped that teachers would be actively involved, have a vested interest in the program, and find the professional development valuable. At the begin-

ning of the school year, 2004-2005, the site team began by attending department meetings and talking with teachers at Schools A, B, and C. During these first meetings we initiated conversations about the types of professional development that teachers thought would be most useful to them. We projected after three or four months, each school, with our support, would have designed and begun to implement its own professional development program. After the creation of the professional development plans at each school, the site team intended to divide itself among the schools; the university professors would work with one school each, and the graduate assistants would help the professors as needed.

However, the site team had not anticipated the difficulty of getting the teachers to take charge of creating and designing their own professional development. The first few months of meetings typically consisted of teachers sitting in a circle and talking about the challenges they faced at their respective schools and the strain that the No Child Left Behind Act of 2002 (Grobe & McCall, 2004) was placing on them. As the months wore on and no professional development programs were designated, teacher attendance at the monthly meetings began to decline, a circumstance indicative of low levels of administrative support. By the sixth month, the site team, desperate to get some type of professional development programs up and running, stepped in and attempted to implement some mathematics activities. At the end of the first year, all meetings at School A had stopped due to low attendance from the teachers. Through increased pressure from the site team, teachers at Schools B and C met the last months of the school year and created plans for professional development that were targeted to begin the following school year. While a plan was at least in place at each of these two schools, due to a lack of involvement from the teachers, they were mostly the ideas of the site team rather than the teachers at those schools.

Year Two in Ohio

In September 2005, [Author 1] was recruited to help with the five teachers at School C. Schools A and B were designated to other members of our site team; however, the professional development activities in both of those schools waned and eventually were discontinued. Only the work in School C continued, and for that reason, the remainder of this paper is devoted to conversations about School C.

Although teachers at School C had identified Japanese lesson-study as their professional development focus at the end of year one, we felt that this was not a plan the teachers were invested in. At the first meeting at School C, we reopened the discussion about what focus the teachers would find most helpful. A teacher in the group mentioned that students had difficulty solving equations. We offered to introduce the teacher to Hands-On Equations™ (www.borenson.com), a method for teaching equation-solving using manipulatives within the context of a balance scale. Other teachers expressed interest, and a Hands-On Equations™ demonstration was planned for the next department meeting.

The eventual theme for the grant work at School C was the Representation Standard, one of five Process Standards, newly added to the *Principles and Standards for School Mathematics* document published by the National Council of Teachers of Mathematics (NCTM, 2000). This theme seemed to grow out of the Hands-On Equations™ demonstration at the second monthly department meeting at which we shared Bruner's (1966) research, explaining that in order for students to fully grasp the symbolic representation and manipulation required to solve equations, they need to first experience concrete and pictorial representations. Three of the five teachers at School C were open to us modeling Hands-On Equations™ and other lessons with concrete and pictorial representations in their classrooms. [Author 1] and [Author 2] spent one day each week at School C and visited each of the five teachers' classrooms on a rotating basis. After a few weeks, three of the five teachers began to invite us into their rooms and asked us to co-teach or demonstrate other lessons with multiple representations. Typically these lessons dealt with algebra topics. The other two teachers invited us to observe, but not to co-teach or demonstrate lessons.

Based on this show of interest, we devised a research study and obtained approval to investigate changes in teachers' understanding and use of representation over the course of the school year. All five teachers participated by completing surveys and agreeing to pre- and post-interviews about their use of different forms of representation in lesson planning and implementation. We continued to visit School C weekly, modeling or observing lessons. Monthly department meetings were held for the purpose of having group discussions. Topics that we discussed included how the modeled lessons had worked with students,

articles and readings about using different types of representation, and mathematics activities.

Grant funds were used to provide teachers with books of lessons incorporating manipulatives such as geoboards, two-color counters, pattern blocks, and others. The site team used funds to lead two after-school "Representation Workshops" during which the teachers investigated mathematics problems incorporating concrete, pictorial, and symbolic representations. Funds were also used to buy two classroom sets of Hands-On Equations™, pay for one teacher to attend the Ohio Council of Teachers of Mathematics Annual Conference, and to cover the cost of a substitute teacher in order for a teacher at School C to observe mathematics teachers at other schools.

Data Analysis and Methodology

The data used for our discussion about *MTL* came from multiple sources including leadership team documents, field notes taken during monthly site team and department meetings, and field notes from two "Representation Workshops." We first analyzed *MTL* in School C using the OSPD to rate our efforts for each of the six Standards, and then talked about what we did right and what we could have improved upon. Next we focused on the "small successes" of individual teachers. We based this analysis on field notes from classroom observations, minutes taken during the monthly meetings and the two "Representation Workshops," monthly survey responses about teachers' use of representation in lessons, and pre- and post-interviews of the five teachers. We analyzed all of these data using an *inductive analysis*; we immersed ourselves in the details of the data in order to report our findings (Fraenkel & Wallen, 2000). We each read through the data for individual teachers and then had numerous conversations about our initial reactions, attempting to answer the following question: What small successes, "glimmers of hope," were evident for individual teachers?

Using the Ohio Standards for Professional Development to Discuss *MTL*

According to the standards-writers, the OSPD, "define the characteristics of High Quality Professional Development (HQPD). The big ideas emphasized in the standards are that HQPD is:

Standard 1 - Continuous: HQPD is a purposeful, structured, and continuous process that occurs over time.

Standard 2 - Data-Driven: HQPD is informed by multiple sources of data.

Standard 3 - Collaborative: HQPD is collaborative.

Standard 4 - Varied: HQPD includes varied learning experiences that accommodate individual educators' knowledge and skills.

Standard 5 - Evaluated: HQPD is evaluated by its short- and long-term impact on professional practice and achievement of all students.

Standard 6 - Results-Oriented: HQPD results in the acquisition, enhancement, or refinement of skills and knowledge" (p. 91)

We decided to analyze *MTL* by using these six Standards and the "Elements" and "Indicators" within each Standard to guide our discussion about School C. For example, Standard 3 includes three Elements. One of these, "3.1, Professional development provides ongoing opportunities for educators to work together," has three indicators:

a. Educators have the knowledge and skills needed to collaborate in teams successfully.

b. Collaboration is supported by creating opportunities for flexible scheduling of participants.

c. Participants are provided opportunities to meet regularly in collaborative teams to focus on improving practice and student achievement. (p. 68)

We created a rating scale to evaluate our performance against each individual standard: Pass; C; or, Fail. A designation of "Pass" indicated that our efforts addressed and met the characteristics of the standard for HQPD. A "C" designated that our efforts addressed some characteristics of the standard for HQPD but did not address or meet others. A "Fail" indicated that we were completely unsatisfied with our efforts and did not meet the characteristics of the HQPD standard. To summarize our ratings (below) and in an effort to keep the length of this paper reasonable, we discuss some, but not all, of the Elements and Indicators in each of the Standards. Please note that we found overlap in Indicators; for example, the fact that we had a weekly presence in the school and were working with individual teachers fit within Indicators for Standards 1, 3, 4, and 6.

Standard 1: Rating = C

HQPD includes multiple steps, "planning, implementation, reflection, evaluation, and revision" (p. 62). The participants are involved in the planning. This is exactly what we envisioned would happen during year one of *MTL*. At School C our decision to focus on the theme of the Representation Standard (NCTM, 2000) was guided by the teachers' consensus that their students had trouble solving equations. This gave teachers some ownership of the idea but not complete buy-in.

HQPD participants must also be provided with time "to apply new ideas and to reflect on changes in their practice" (p. 62). We feel as though opportunities for this to happen abounded because we had a weekly presence. After our classroom visits we attempted to engage in reflective conversations about the teaching and learning; also, at the monthly meetings we endeavored to facilitate discussions about using multiple forms of representation to teach mathematical concepts and skills.

HQPD resources are "made available and allocated" (p. 62) so that the teachers can implement their new skills and knowledge. If they needed manipulatives or books or other supplies we purchased these for the teachers through program funds. HQPD leaders also identify and make salient the goals of the program. In hindsight, the three of us were not clear about the goals of *MTL* so it is obvious to us now that the teachers did not know the goals.

Standard 2: Rating = Fail

The ultimate goal of HQPD is to increase student performance. Data that reveal student performance should be analyzed and any gaps should be addressed. "To ensure that educators perceive the value and relevance of professional development, educators must be involved in analyzing data, research, and best practices to determine the focus of the professional development" (p. 65). Because our focus on NCTM's Representation Standard resulted from a teacher comment about students not being able to solve "simple" algebraic equations like $4x + 8 = 20$, it was not data-driven in the form of students' standardized test scores.

When we gave the teachers readings about best-practice and the use of representation we hoped these would inform our discussions during the monthly meetings; during post-interviews we found that most of the teachers either did not read or did not remember the readings. One teacher said she did not have time nor did she want to read about representation.

Standard 3: Rating = C

HQPD must provide "ongoing opportunities for educators to work together" (p. 68). This standard aligns with *MTL*'s goal of "teachers become resources to their colleagues." We met monthly to discuss how some of the lessons that incorporated multiple representations had impacted students' learning. We met twice to investigate mathematical content during the "Representation Workshops." Additionally, two teachers collaborated to co-teach a lesson which incorporated multiple representations.

HQPD should also be planned, delivered, and evaluated by a diverse team of educators. Teachers were given opportunities to evaluate what impact the introduction of multiple representations had on students' understanding. There were forums for teachers to share and discuss their classroom experiences with colleagues during monthly department meetings, to provide feedback on the activities during workshops, and to share their thought about what they found to be valuable or not during interviews with the site team. However, just as teachers were reluctant to participate in the creation of the professional development focus, they did not seem inclined to evaluate the overall program or suggest adjustments that could be made to make it more valuable. While the site team made every effort to create an atmosphere in which the teachers considered themselves as co-creators and co-evaluators of *MTL*, we do not think this was realized.

Standard 4: Rating = Pass

HQPD must both meet the needs of individuals and the group as a whole. Our site team worked with both individual teachers and the entire group of five teachers and tried to help teachers "refine or replace previous knowledge and skills" (p. 70).

HQPD experiences should be matched not only with the identified needs, but also with the knowledge and skills of the educators. During the discussions that followed the teachers' identification of solving equations as troublesome for their students, we discovered that the teachers were not familiar with NCTM's Representation Standard, the work of Bruner (1966), or teaching methods using manipulatives. Based upon this information we tailored the *MTL* around these areas of best practice and varied our role

in individual teacher's classrooms depending on the level of comfort each of them showed with regard to teaching using multiple representations. In some classrooms, we first taught a lesson, modeling techniques, while in other classrooms we acted to support teachers when they used new manipulatives or representations. Post-interviews conducted six months after our work at School C ended revealed that all but one teacher reported their continued use of multiple representations.

Standard 5: Rating = C

HQPD ought to be delivered with an evaluation plan in place to measure the impact of the experience on levels of: teacher participation, satisfaction, learning, and implementation; student learning; and, school culture. Looking back, it is clear that we did not have a structured evaluation plan in place, one that was informed by the overall goals of the grant. Our evaluation plan was primarily guided by our research questions, investigating changes in teachers' understanding and use of representation over the course of the school year.

In meetings with teachers, we asked for their assessment of the impact of lessons we modeled or assisted with on student learning. In a post-interview, one teacher talked about how students liked the activities and asked when we were coming back. A teacher who had fully implemented Hands-On Equations™ shared the belief that students had a much better grasp of the "concept" of equation-solving because of using the balance representation. Another teacher told us that a lesson we modeled using two-color counters "hadn't worked" but later admitted it had worked for at least one student. Teachers remained positive or seemed more positive about teaching methods when they saw an explicit impact on students' attitudes and/or learning.

Standard 6: Rating = C

HQPD must have an impact on professional practice by enabling teachers to increase their knowledge of content and pedagogy and supporting them in putting what they have learned into practice. We focused on research-based best practices and provided numerous examples of applications to the classroom; we were also available to support teachers each week. Some of the positive changes we observed in teachers, listed in the next section, were changes in classroom practice. One teacher adopted the Hands-On Equa-

tions™ method for solving equations. This same teacher paired with another teacher to plan and teach a lesson on population growth using concrete representations and did so without seeking assistance from the site team. A teacher who had previously believed that students should not need manipulatives to understand problems began to at least *show* students concrete representations. Other positive changes we observed, also noted below, could possibly be interpreted as evidence of potential "groundwork" being laid.

Small Successes with Individual Teachers

Because *MTL* was not funded for a third year, our initial feelings were that of failure and disappointment. After time had passed we were able to analyze the program and talk about what had gone wrong. Through the process of looking more closely at the data, we were able to see that in fact there were successes. Subsequent to evaluating the program as a whole, we took a closer look at what, if any, effect the professional development had on the individual teachers. Based on this analysis we created Figure 1.

Teacher	Successes
1	Allowed site team members to demonstrate lessons to students; co-taught a "representations" lesson with teacher #2; co-presented at the Ohio Council of Teachers of Mathematics with one of the site team members; began to take a leadership role in creating minutes for the monthly meetings
2	Used Hands-On Equations™ extensively; co-taught a "representations" lesson with teacher #1; took a "calculus for teachers" course; became more vocal at monthly department meetings; continues to stay-in-touch with one site team member
3	Explicitly "liked" the "Representation Workshops"; became more open to letting site team members observe some lessons; taught a lesson, using a concrete representation, gleaned from *The Mathematics Teacher*
4	Became less vocal about students' weak skills, poor work habits, etc.; began to demonstrate concepts using concrete models
5	Allowed site team members to demonstrate lessons to students; allowed site team complete access to the classroom; came to some meetings in year two (did not attend any meetings in year one); seemed to value participating in the research aspect of *MTL*; admitted that a two-color counter lesson related to integer operations "helped one student" (although this may seem trivial it seemed a major breakthrough for us!)

Figure 1. Small Successes with Individual Teachers

Although we viewed these as "small successes" we are left wondering if this language does justice to our efforts. Perhaps some "small successes" are actually evidence of greater shifts in teachers' thoughts about teaching and learning mathematics than we can confirm with the data we collected.

Conclusion

According to OSPD, HQPD must be continuous, data-driven, collaborative, varied, evaluated, and results-oriented. We used the Ohio Standards for Professional Development (OSPD), contained within the *Standards for Ohio Educators*, as a framework to guide our conversations about *MTL*, relying on hindsight to guide our evaluation. Using these "hindsight" conversations, we now wonder if our unsuccessful program would have been more successful if these things had happened:

- the goals of *MTL*, as created by the professional development leadership team, had been made more salient to our local site team and we had, subsequently, made them more salient to teachers at Schools A, B, and C.
- the professional development activities had been data-driven and focused on specific content identified by student performance on standardized tests.
- the evaluation plan had included measures to assess student learning as a result of teacher practices.
- the grant had been funded for a third year, allowing us to help teachers' build on their initial successes.
- we had used the OSPD beforehand, as we were envisioning and designing *MTL*.

After considering the last bulleted item in our "if" list, we found suggestions within the OSPD document for a "five-step process for professional development planning" (p. 92) which include:

Step 1: **Examine Data** - Educators should self-assess and evaluate the available data to determine the needs of their students, school, district, and state.

Step 2: **Determine Learning Priorities** - Educators should analyze the data collected in Step 1 to identify specific goals for professional learning.

Step 3: **Align Initiatives** - Educators should use the information gained from Steps 1 and 2 to identify specific actions and activities that will allow for professional learning.

Step 4: **Develop Implementation Strategies** - Given the results of the work done in Steps 1 through 3, educators should develop specific implementation strategies and plans for evaluation.

Step 5: **Monitor, Assess, Reflect** - Educators should plan the ways in which they will evaluate the effectiveness of their professional development efforts. (p. 92)

The OSPD writers note that these five steps describe a continuous cycle of professional development. If we had started our planning by examining data as suggested in Step 1 (note that this was the area in which we rated our efforts as "Fail") and had used this five-step process throughout the entire two years would our efforts have been deemed successful? The OSPD give us reason to believe that we would have. Ultimately, would those "small successes" with individual teachers have made a difference in student learning at School C?

Finally, Standard 1 of the OSPD underscores the importance of administrative support and school culture in creating professional development that impacts classroom practice. Lack of administrative support was a major reason cited for withdrawal of funds, in spite of progress that we reported at School C. Our experience has confirmed that professional development leaders who enter a school with little administrative support and no learning community, as we did at School C, can, with concerted effort, have some impact. How much greater might the impact have been if the administration, both district- and school-level, had been active members of this community?

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