

Integrating Comparative Research on Global Instructional Practices in Pre-Service Early Childhood Education Science Course Instruction

Dorene Medlin, Ed.D.
Albany State University

Abstract

The purpose of this study was to determine the impact of internationalizing a curricular component of the class on preservice teachers. By realigning course objectives and including a content specific Albany State University internationalization initiative framework, the project evaluated the impact on preservice teacher knowledge of culturally relevant pedagogy. The early childhood education candidates, eligible for degrees in Early Childhood Education, researched educational practices on an international level and applied specific practices to instructional planning and delivery. The research question was: How do early childhood instructional practices in other countries align to early childhood instruction in Albany, Georgia?ⁱ

Keywords: international, curriculum change, science education, early childhood

The impact of the project was a demonstrated increase in candidate knowledge when designing lessons that were based on culturally relevant pedagogy. While several conclusions were reached, the overarching one was that Albany State University candidates learned from diverse international instructional practices and can now apply them to the diverse needs of our local student body.

Education in the United States is thought to be a societal equalizer (Roberts, 2007), one that promotes tolerance, embraces diversity, and fosters a sense of community. To be effective in the United States public school system, those factors will need to be instilled in the future teachers that we are preparing in our colleges, specifically in teacher preparation programs. To support a strong educational system, there is a need for teachers who understand how to relate to and teach diverse students.

Influenced by the increasing diversity in American public schools (Banks, 2004a; 2004b; Cushner, 2009; Goodwin, 2010), the purpose of Albany State University's (ASU) teacher preparation program is to prepare future teachers who can teach the diverse students who will occupy our classrooms. Given the increasing student diversity in the classrooms where they teach, the candidates in the early childhood education program at ASU need to understand the influences the children bring to the classroom. To create more global minded teachers, we must make candidates aware of the various histories, backgrounds, knowledge, languages and beliefs that diverse students possess (Sharma, et al., 2011) and influence the learning that occurs in the classroom. This process is also characterized as internationalizing the teacher preparatory program to infuse multicultural and international components, thereby helping to prepare future teachers who understand culturally responsive teaching when designing instructional activities. According to Santamaria (2009), cultural responsive teaching "is a collection of best teaching practices to enhance the academic success of students who are culturally different in classroom settings." With the specific goal of laying a foundation for preparing future teachers with an attitude that would be considered culturally responsive, specific internationalization based activities that allow the teacher candidates to gain a richer understanding of culturally responsive teaching have been incorporated into the target class for this study, ECEC 4354, Science for Young Children. In this paper the term "candidate" will refer to those students enrolled in ECEC 4354.

Internationalizing the Curriculum

According to Osakwe (2014), "the idea of internationalizing the curriculum in various academic fields reflects 21st century educational pedagogy." Albany State University (ASU) is located in rural southwest Georgia. It is a Historically Black University (HBCU) with approximately 3500 students. A core value of ASU's strategic plan is "to promote university-wide participation in global programs" (2012-2017 Strategic Plan). To support this goal, there has been a major emphasis on internationalizing the curriculum through faculty based instructional projects. As a result, ASU's faculty members were encouraged to participate in a content specific project that requires infusing international components into existing courses.

The rationale is that our institutional needs should mirror our cultural and regional needs. The specific needs of the region include the ideas that students in classrooms are becoming more diverse, so our teacher preparation programs need to meet the needs of this increasingly diverse student population in schools in Albany, Georgia. According to the most current US Census information (2015), the population of Albany has decreased steadily (-1.5%) over the past ten years and now is about 75,000. The breakdown of that population is approximately 71% African-American, 24% White, 2.5% Hispanic, and 2% Multiracial. The estimated median household income is \$28,303; the median household income in Georgia is \$47,829. Almost 40% of Albany residents live in poverty. These data demonstrate that Southwest Georgia, specifically Albany, is one of the poorest areas in Georgia (Stubbs, 2016). The student population in elementary schools in Albany (GA) reflect the census data, with 81% classified as economically disadvantaged and 87% self-identified as African-American (www.docoschools.org). While the ASU preservice teacher candidates are attending an HBCU, an informal survey of their backgrounds indicates that 75% are from metropolitan areas, were not classified as economically disadvantaged, and not all attended public school. To be effective in planning future instruction, the candidates need to understand their own cultural backgrounds to enable them to identify the cultural needs of the diverse student population.

Four colleges make up Albany State University, including the College of Education. The College of Education's Conceptual Framework sets the stage for internationalizing the curriculum at Albany State University. The Conceptual Framework reflects the philosophy of the teacher preparation program and consists of four tenets. The tenets address specific ideas that reflect best practices in teacher preparation. The first tenet is Reflective Practice that supports professional knowledge, assessment uses, and communication. Transformative Practice, tenet two, addresses instructional strategies, assessment strategies, and academically challenging environments. Instructional planning, differentiated instruction, positive learning environment, and professionalism are addressed in tenet three, Culturally Responsive Practice. The last tenet, Technologically Competent Practice addresses the integration, usage and application of technology by the candidate. It is the tenet describing the Culturally Responsive Practitioner

that most strongly supports internationalization. The four subareas identified, including instructional planning, differentiated instruction, a positive learning environment, and professionalism, are based on designing classroom instruction that meets the needs of the growing diverse student population. Differentiated instruction (DI) is identified as strategies that recognize differences in student ability and design instructional activities to address those differences and allow the students to master the specific content (Santamaria, 2009). The research in DI has mostly focused on special needs students, with less attention paid to culturally diverse students. In our current society, the candidates we prepare to work in classrooms, even those who never work with special needs children, will encounter a culturally diverse group of children. To support the candidates' ability to work with these diverse students, the ASU project on course internationalization aligns with the existing Conceptual Framework in the College of Education. A major focus is to help the candidates learn and use cultural knowledge to support student achievement and growth in the public-school classrooms in Albany (GA), with a specific emphasis in science.

The nature of science education focuses on a defined body of content knowledge. Georgia has developed its current teaching standards around content separated into characteristics of science, the nature of science and the content co-requisites of life, earth, and physical science (<https://www.georgiastandards.org>). Each content area is taught in isolation with little attention paid to the connections between each of the areas. However, when one looks at science from an integrated point of view, one sees that the candidates could be provided with opportunities to identify the relationships between the sciences, as well as with social studies, mathematics, and language arts. Using an integrated approach to teaching content would allow the candidates to examine the content. This would allow them to gain a deeper understanding of the connections that exist in our daily lives. The content areas integrated but, in schools they are taught as independent subjects. For example, ecosystems are taught in ecology (life science), but include living (plants, animals) and nonliving (energy, soil formation, water cycle) components.

With the intent of improving science education in elementary classrooms, teacher preparation programs should reassess the current instructional strategies and consider teaching science through an

internationalized, integrated curriculum that relates to student experiences. This new strategy would provide students with the opportunity to practice science and develop skills that are essential to future scientists. By internationalizing that same curriculum, students would have an “understanding of the connectedness of the world and the workings of the global economy” (West, 2014). Students need to see the connectedness between content areas, but also need to develop the skills to critically view global issues and identify possible solutions to those issues. With that challenge in mind, Science for Young Children (ECEC 4354) was redesigned to include an international integrated perspective. Science for Young Children, an upper level course, is offered to early childhood education majors during the junior year in their program of study. The course integrates pedagogy, standards-based content, and performance-based activities. Its major focus is pedagogical, with instructional design and content development practiced through peer teaching. The candidates plan standards-based integrated lessons based on knowledge from classroom observations in public school classrooms. This study focused on a specific pedagogical area: integrating global instructional practices into instructional activities to develop critical thinking through culturally responsive integrated instructional lessons.

Rationale for Internationalization of the Course

The idea for the internationalization project at Albany State University grew from candidate experiences while completing classroom observations during practicum. Each candidate was assigned to a specific school to complete classroom observations. During the peer teaching discussions, candidates often cited how classroom teachers addressed students who were culturally diverse. The candidates reflected that culturally diverse students did not always appear comfortable in the classrooms; they wondered if one reason could be the differences in classroom instruction in Albany, Georgia and the students’ home country. These observations and discussions laid the foundation for the research question: RQ: How do early childhood instructional practices in other countries align to early childhood instruction in Albany, Georgia?

The class involved in the project was a teacher preparation class in

the early childhood major program that focuses on developing science content knowledge pedagogy. There were twelve young women in the class, all in the same cohort, and all enrolled in the science and mathematics block. The class that was chosen to be internationalized was ECEC 4354: Science for Young Children. The course emphasizes the integration of science content with the other content areas studied throughout the program.

Specific activities were identified to develop candidates' understanding of how to design and teach lessons that integrate content. One activity that was identified as the foundation of integrated instruction is called "Going Bananas." The key focus of the activity was science, namely buoyancy (the ability to float in a liquid), however, there were multiple ways to integrate additional content areas and develop critical thinking skills. Indeed, there was a very specific focus on the candidates developing questions at multiple levels that help strengthen critical thinking skills. Every activity required the candidates to write a set of questions that were based on Bloom's taxonomy and that addressed critical thinking. Candidates were encouraged to design questions that may, or may not, have "correct" answers. The questions served as a springboard for class discussions; the discussions, in turn, led to questions that developed how to identify connections among content areas.

As the candidates performed inquiry-based activities to determine buoyancy, they also explored the relationship of the product (bananas) in a global environment. There were additional activities that included locating the countries that produce bananas, calculating the distance the product travels to arrive at our local markets, finding the percentage of the product that is edible, identifying the nutrients in the product, and, finally, examining how different varieties of bananas are used across global cultures. The candidates evaluated the role of food staples in different cultures and the issue of global hunger. Questions that arose from the lesson included how international problems impact our lives. The candidates analyzed how an event, like the tsunami in Japan, causes ocean pollution, how it impacts crop growth in other countries and how that event impacts the cost of products in Albany, Georgia. These kinds of science questions promote critical thinking and social awareness among students, enabling teachers to encourage the students develop into global citizens. After viewing how to integrate content, the candidates examined additional topics that could provide potential

lessons. They viewed local and regional issues and identified possible topics, including peanuts, cotton, and the Flint River, Michigan problem for future integrated lessons that have international impact. Learning science through integrated activities highlights the relationships between content areas and can help candidates and their students view science from an international perspective.

These activities support learning science content, the integration of curriculum, and the underlying ideas of an internationalized curriculum. For our candidate preparation, the ASU Conceptual Framework supports teaching an integrated instructional model that helps our candidates learn how to “differentiate instruction, plan student-centered lessons based on appropriate content and develop skills which address individual learning differences” (ASU Teacher Education Conceptual Framework). Preparing candidates to use a global perspective when planning lessons is one strategy that will help them provide their future students with opportunities to evaluate global issues, practice critical thinking skills, and synthesize possible solutions to international problems.

Methodology

Understanding “The Cohort Model” in Teacher Education

Early Childhood candidates enter the program as a cohort in either the fall or spring semester. Members of a cohort are enrolled in the same classes during each semester block, and the cohort progresses through the program together. The Early Childhood Education (ECEC) program is organized into specific content blocks, with the last being student teaching. For example, the block that includes one science course includes three mathematics courses, a mathematics pedagogy class, and one practicum course. The underlying premise is that candidates will experience similar content courses (science and mathematics) and have an opportunity to observe those content areas in a public-school classroom (practicum). The cohort model has increased the collegiality of the candidates, which was evidenced throughout the semester from reflective class discussions to out-of-class tutoring sessions. The candidates used “Group Me” to share notes, ideas, and announcements throughout the semester.

While the ECEC program prepares candidates in several content areas, my focus is science. The science class is in the first content block of the program, the science-mathematics block. The block includes one practicum course, which includes 60 hours of classroom observations, allowing candidates to analyze how theory is translated to practice. The experiences the candidates have in the classrooms provide topics for discussion in the pedagogy classes.

During the ECEC program of study, candidates enroll in the one science pedagogy class, but in no science content classes. Given the lack of science classes that develop content knowledge for early childhood candidates, the pedagogy class has evolved to include science content knowledge as well as pedagogical content knowledge. The content is organized according to grade level standards and content areas that candidates discuss and apply through performance-based activities. The pedagogical content knowledge is developed through discussions of best practice and alignment of age appropriate instructional strategies with specific content. One important aspect of the class is linking the content and pedagogy through practice. Pedagogical knowledge is applied as the candidates design lessons and practice teaching mini-lessons during peer teaching activities. Each candidate has the opportunity to complete three peer teaching experiences, during which each candidate designs a lesson, plans the age-appropriate activities that develop the standards-based content, and teaches the lesson to the class. The peers use a pre-discussed rubric to assess the lesson, providing specific feedback on strengths and areas for improvement. The candidates use specific examples from practicum classroom observations when providing feedback.

Applying “The Cohort Model”

The research was conducted in the cohort’s first block early childhood education science class. There were twelve candidates in the class, all majoring in early childhood education and all were in the first block of the cohort. Of the twelve, eight were African-American, one was over traditional age, six had outside jobs, eight were from outside the local area, and nine were traditional students living on or near campus. The candidates researched international early childhood education, including content and

pedagogical practices. The researched data were collected and reported qualitatively.

The candidates demonstrated an interest in a variety of countries whose education systems they wanted to know more about. The countries ultimately included in the candidate research were Australia, Brazil, Canada, France, Germany, Japan, Kenya, Nigeria, Spain, and the United Kingdom. Candidates researched content taught in the early childhood programs, as well as how the content was delivered in the classrooms. While the focus included identifying pedagogical practices that were common in the target country's educational system, the candidates were instructed to reflect on the instructional practices they observed in the local schools, and identify similar practices in international settings. The candidates were instructed to highlight specific best practices in science; however, if those could not be identified, the candidates were to focus on general instructional practices that appeared as best practices in early childhood instruction. To research the educational systems the candidates used Internet resources and at least two candidates conducted interviews with international faculty.

After completing the research, each candidate presented her findings to the class. The information served as the foundation for class discussion(s) that compared ASU teacher preparation with preparation in the focus country. Candidates discussed strategies observed in Albany, Georgia classrooms and how the candidate might have revised the instruction to include differentiated instruction and integrated instructional lessons.

The Initial Plan and Its Revisions

Initially, the plan was for the candidates to interact with a visiting scholar. The objective was to demonstrate a commitment to the school's mission by participating in professional growth opportunities and contributing to the profession through the internationalization of the curriculum that reflects the Conceptual Framework, tenet 3: Culturally Responsive Practice.

As the candidates were exploring science and the strategies they were being prepared to use when instructing in the content area, they wondered how other countries train future teachers to teach science to elementary students. A rich opportunity presented itself when ASU was fortunate to host a visiting scholar from Columbia, South America. This added another

dimension to the initial idea of studying integrated instructional planning. The candidates decided we should compare our teacher preparation with the preparation candidates in other countries receive prior to teaching in the elementary classroom.

The initial activities included the ASU candidates conducting research on the educational system of Medellin, Colombia's. After researching the educational system and interacting with the visiting scholar, the candidates were to write a whitepaper to compare and contrast educational systems. The focus of the whitepaper was to identify best practices in early childhood education and highlight at least two practices used in Medellin that could be implemented in Albany, Georgia. The final assessment would be to determine the impact of the instructional strategies on student learning in the Albany classrooms and to compare that with data from the classroom performance in Columbia. Unfortunately, the visiting scholar could not make the trip. This resulted in our initial plan needing revisions.

The objective of the project remained the same: to internationalize the curriculum. The candidates provided input and decided on a revised activity: They identified a focus country of interest to research the instructional practices used in teaching science in early childhood education. The candidates researched the instructional best practices and identified effective practices used in the focus countries of their research and then compared those practices to practices taught in ECEC 4354 (Science for Young Children) at Albany State University. The assessment was an evaluation of the comparative analysis of the instructional practices used in teaching science in the early grades in the focus country and Albany, Georgia. The candidates identified at least one international best practice and used practicum observation hours to identify its use in the local schools. The data included the individual candidate's comparison of the practices identified in early childhood education in the focus country with Albany, Georgia classroom practice.

Candidate Findings

The candidates each researched a focus country, identified instructional classroom practices and compiled a table of those practices. Their individual findings are collectively summarized in Table 1 below.

Table 1

Summary and Findings of International Instructional Practices

Country	Candidate Findings of ECEC Program in Focus Country
Australia	Candidate 1: In Australia, they teach the foundation of science. Their teachers ensure that students have the skills to study science. They do not have a strong focus on content, but on how they (the students) can understand science and apply it to everyday life.
<i>Candidate Overall Finding</i>	<i>International Instructional Practice Identified: Application of science to real life</i>
Brazil	Candidate 2: The teaching of science in secondary schools in Brazil was considered to be “bookish” and included little to no experiments or applications for educators during the late 1900’s. This led to science centers being established to develop teaching materials and train professors in the area of science. The teachers in the younger grades still have a very limited education in science, and they feel insecure about teaching scientific subjects, and even less comfortable about conducting experiments or research with children’s. The candidate found a bit of information on science for primary students. One author stated that there are many children learning physics in Brazil, beginning much earlier than children in the United States. It is said that much of science and math is “taught” but not much of it is learned.
<i>Candidate Overall Finding</i>	<i>International Instructional Practice Identified: Use of science centers</i>
Canada	Candidate 3: It seems that the students do more hands on activities in elementary school than they do in the US. This supports the idea that students learn more by doing rather than (by) just reading out of a book.
<i>Candidate Overall Finding</i>	<i>International Instructional Practice Identified: Use of hands-on activities</i>
France	Candidate 4: The Ministry of National Education regulates education in France. Students start school early (age 3). The curriculum is consistent in the primary schools and focuses on writing and reading skills. They focus more on teaching technology and computer science as opposed to natural sciences. Other content includes French, mathematics, science, and the humanities but these are studied later in the schooling. Classes are small and many exist throughout the country; some are very specialized. Primary school and kindergarten teachers usually have a master’s degree and work about 28 hours a week.
<i>Candidate Overall Finding</i>	<i>Instructional Practice Identified: Integration of literacy across the curriculum</i>

Germany	<p>Candidate 5: Kindergarten is optional but when compulsory education begins each “state” in Germany is in charge of the educational policies. Most children attend from age six to ten. Many early programs are run as Montessori schools, which means all subjects are taught within hands-on activities and students learn on their own while being guided by the teacher. Home schooling is illegal in Germany.</p>
<i>Candidate Overall Finding</i>	<i>International Instructional Practice Identified: Use of hands-on activities</i>
Japan	<p>Candidate 6: My favorite part about science in elementary schools in Japan is the fact that they have science gardens for each grade where the students have a chance to see firsthand the life cycle of a plant. It is hands on for the students, which is awesome and it is a great experience for each student.</p>
<i>Candidate Overall Finding</i>	<i>International Instructional Practice Identified: Integration of Science Gardens</i>
Kenya	<p>Candidate 7: Education in Kenya appears to be similar to that in the US. There are eight years of primary education and four years of secondary school. Like in the US, girls tend to perform better in reading, while boys perform better in math. Most of primary education focuses on literacy and mathematics. While there is a clear plan for education, the government has not really committed itself to the system due to shortages of teachers and money.</p>
<i>Candidate Overall Finding</i>	<i>International Instructional Practice Identified: Integration of literacy and mathematics across the curriculum</i>
Nigeria	<p>Candidate 8: Primary education focuses on mathematics, English language, religion, science, and at least one of the indigenous languages. Literacy rates tend to be higher in southern Nigeria but most of the country does not have high literacy rates. Not all teachers have undergraduate degrees and schools are not well funded.</p>
<i>Candidate Overall Finding</i>	<i>Instructional Practice Identified: Integration of literacy and mathematics across the curriculum</i>
Spain	<p>Candidate 9: “I liked that in Spain the school day schedule is based on what’s best for the students and community so in some cases the students have a long lunch break in the middle of the day.”</p>
<i>Candidate Overall Finding</i>	<i>International Instructional Practice Identified: Application of science to real life</i>

United Kingdom	Candidate 10: Education is compulsory for all children from ages 5 to 16. There is a national curriculum that focuses on reading and mathematics. The core courses are taught in the primary schools. The system is well structured and there is a 99% literacy rate among both men and women. Education occurs in academies, free schools and home schooling.
<i>Candidate Overall Finding</i>	<i>International Instructional Practice Identified: Integration of literacy and mathematics across the curriculum</i>

The candidates reviewed their findings from the international instructional practices and compared those practices to the instructional practices each candidate observed in local practice. The candidates found that science is not generally integrated during instruction, even when the opportunities are available. For example, reading instruction is often observed yet the reading selections rarely focus on science. Even when candidates see classroom teachers reading stories like *The Very Hungry Caterpillar*, little mention is made of insects or life cycles. The candidates indicated classroom teachers could integrate reading with science but inferred classroom teachers may not feel comfortable with that instructional strategy. Candidates did not observe classroom teachers applying content to “real life” and few classroom teachers allowed significant use of hands-on activities. The candidates discussed that classroom teachers indicated demonstrations allowed for better classroom control, while using hands-on activities increased management issues. The candidates indicated each felt better prepared to teach science through integrated instructional activities because they practiced the skill during their preparation program. In Table 2, below, the candidates summarized their comparisons between global instruction, local classroom instruction, and ECEC 4354 instruction.

Table 2
Comparison of Global and Local/Classroom ECEC Instructional Practices

<i>Country</i>	<i>International Instructional Practice Identified</i>	<i>Local Practice Observed</i>	<i>Practice Taught in ECEC 4354</i>
Australia	Application of science to real life	Not observed	Small group activities

Brazil	Use of science centers	Not observed	Not taught
Canada	Use of hands-on activities	Teacher demonstrations used on occasion	Laboratory Activities aligned to standards and performed by candidates
France	Integration of literacy across the curriculum	Reading taught as individual content area	Integration of all content areas in lesson planning
Germany	Use of hands-on activities	Teacher demonstrations used on occasion	Laboratory Activities aligned to standards and performed by candidates
Japan	Integration of science gardens	Two schools have science gardens but not used extensively as instructional activity	Not taught
Kenya	Integration of literacy and mathematics across the curriculum	Reading and mathematics taught as individual content areas	Integration of all content areas in lesson planning
Nigeria	Integration of literacy and mathematics across the curriculum	Reading and mathematics taught as individual content areas	Integration of all content areas in lesson planning
Spain	Application of science to real life	Not observed	Small group activities
United Kingdom	Integration of literacy and mathematics across the curriculum	Reading and mathematics taught as individual content areas	Integration of all content areas in lesson planning

To a large extent the focus in the classrooms in the local schools is reading and mathematics; science is almost an afterthought. When the candidates observed science during practicum observation hours, they saw an overwhelming number of teachers having the students read sections of the science book and answer the questions at the end of the section. Few candidates observed science being taught in the early years, specifically

kindergarten through first grade. The candidates were surprised at the lack of attention paid to science instruction in elementary school.

Table 3

Recommended Instructional Changes for Use in Local Classrooms Resulting from Internationalization Research

International Instructional Practice to be Integrated	Skill Developed
<i>Integration of literacy and mathematics across the curriculum</i>	Writing and Mathematics
<i>Use of hands-on activities Application of science to real life Use of science centers/Science Gardens</i>	Problem Solving and Critical Thinking

The candidates have studied early childhood development and developmentally appropriate practice and understand that young children have high levels of curiosity. After comparing the international strategies and the strategies used in local classrooms, we can proceed to Table 3, above, which shows how the candidates identified and ranked the following strategies they would like to implement into science instruction in the local classrooms.

Qualitative Data Collected from Candidates

During class discussions following the country reports, the candidates shared comments such as:

Science is universal; it doesn't matter what language they speak; every child can learn science!

In order for students to fully grasp the concept of science, teachers must equip students with experiences that last a lifetime. Teach science to students in a way that makes them wonder, makes them excited and makes them expand their minds. If they know more about the world, they will be more excited!

Compared to the US, specifically Dougherty County and other surrounding areas in South Georgia, Japan's science educational experience is definitely the better route to take. In Japan, the students get hands on activities and are able to actually experience science rather than just reading out of a book and answering questions.

Through science, students understand how major scientific ideas contribute to technological change, thus impacting on industry, business and medicine and improving quality of life. Students are taught to work scientifically by asking simple questions, performing experiments and tests, making observations, classifying and presenting data, analyzing functions, relationships and interactions, using evidence, reporting findings and drawing conclusions. Children start to develop a deeper understanding of a wide range of scientific ideas. They also begin to explore more abstract theories and recognize how these help them to understand and predict how the world operates. They also begin to recognize that scientific ideas change and develop over time.

What I found most interesting was the fact that they don't teach science in elementary school. There is more focus on teaching technology than on natural science.

I was surprised that schools in Kenya are so similar to those in Albany (GA). I guess that shows how much alike we are even when we are in different countries.

Impact on Curricular Design of Science for Young Children

As a result of the project, the candidates had several conclusions. First, the candidates determined that science in Albany, Georgia, received as little attention as in the international schools they studied. They concluded that the main focus in Albany schools and in the international elementary education sites they researched is on literacy and mathematics. Second, in some cases, hands-on science instruction is emphasized, but it is not a consistent practice. This, again, reflects the Albany (GA) practice. Third, the

candidates were surprised that education is not compulsory in some other countries as it is in the state of Georgia. Fourth, the candidates inferred differences between teacher preparation abroad and teacher preparation at Albany State University.

Since there was no mention of differentiated instruction found during their research, the candidates inferred there is little attention paid to the strategy in the international curricula they researched. Finally, they also inferred that, while literacy and mathematics are integrated during instruction in France, Kenya and Nigeria, the practice of integrating content areas is not a common practice internationally.

The next steps for the project will result in the revision of ECEC 4354: Science for Young Children in several ways. First, in addition to researching countries and the candidates' sharing the research, the class will identify at least one site where we can conduct a classroom exchange. Through an international exchange, our candidates will be able to observe science instruction in the international classroom and compare it to the instruction observed in Albany (GA) classrooms. Second, the candidates will research a local and/or regional science topic. The candidates will identify specific topics of interest and outline an integrated curriculum module. They will work in teams to design integrated curriculum module that includes a topic that has a close relationship to the community, as well as international aspects, including the impact of those issues on the more global level. The central theme of the integrated unit will have a science focus.

Preparing candidates to use a global perspective when planning lessons is one strategy that will help them provide their future students with opportunities to evaluate global issues, practice critical thinking skills, and synthesize possible solutions to international problems. Understanding how different cultures address early childhood education, and using that knowledge to plan instruction for the diverse student population in the local schools, will support learning activities that are more relevant to the students in the Albany (GA) classrooms. An added, and unexpected, result of the activity is that two of the candidates in the class have decided they want to teach in an international school.

Limitations of “The Cohort Model”

While the candidates researched and compared international practices in early childhood science education with those practiced in Albany (GA) schools, there were some limitations that could have impacted their findings and conclusions. First, the candidates in the cohort each had different experiences, values, beliefs, and attitudes about education within and outside the local area. Any information each researched was filtered through that candidate’s personal biases. There is also the possibility that each candidate may have filtered the information according to personal experiences in the local schools.

It must be noted that the time limitation of one semester decreased possible discussions regarding how to view data while accounting for personal biases. Time constraints also limited the ability to determine each candidate’s pre-and post-attitudes about internationalization of the curriculum. The assignment was a single experience in internationalization for the candidates. A longitudinal study would provide a more comprehensive view of the impact of internationalizing the curriculum.

Third, the initial plan had to be changed and that impacted the sources and resources available to the candidates. While the revision modeled planning flexibility for the candidates, having a visiting scholar would have ensured the candidates had access to a primary source for data collection. Without a clearly identified primary source, the candidates used a variety of sources and resources. Some candidates indicated they interviewed professors from the assigned country (primary source), while other candidates used secondary sources (articles, internet sources). While we discussed the types of sources and available resources, the limitation of faculty oversight into candidate resources is an important aspect of internationalization. Since the sources/resources were not consistent, dated resources or biased sources may have impacted the candidates’ conclusions.

Conclusion

Having our candidates research instructional early childhood educational practices in other countries taught them several important lessons. First, they found that schools and students may have different cultures but educational systems have similar goals regarding the education of the country’s children. While diverse instructional practices exist in

schools, there seems to be a common goal for educating the youth of the focus country(ies). Second, integrating content has a positive impact on student learning and the lessons are richer when they have an international foundational support. Third, when candidates are aware of and understand different cultures, they have the knowledge and opportunity to become stronger teachers through the use of culturally relevant pedagogical strategies. And, finally, Albany State University candidates can learn from diverse international instructional practices and apply them to the diverse needs of our local student body.

The learning did not stop with the candidates. Using the data collected by the candidates, the faculty member analyzed and evaluated the course content and identified several gaps in the course content. As a result, the course will be revised to include instruction on how to make use science centers and science gardens during instruction. In addition, the internationalization assignment has been revised to incorporate activities the candidates can use during practicum small group instruction. Finally, an additional course is now being used in the internationalization project.

The success of our teacher preparation program depends on our ability in the College of Education to continually improve and change our program to understand not only the cultural diversity of the students, but the diverse instructional needs of the students in the classroom. In order to be more viable world citizens, students must develop multicultural literacy--that is, an ability to understand the multiple sources of, and contributors to, human knowledge (Banks, 2003; 2004a). Our candidates are our future teachers and will be educating an increasingly diverse student body. To address that increasing diversity our candidates will need to, understand not only the cultural diversity of the students, but their diverse instructional needs.

References

- Albany State University Strategic Plan. (2012- 2017). www.asurams.edu.
- Banks, J. A. (2003). Teaching strategies for ethnic studies, 7th ed. Boston: Allyn and Bacon.
- Banks, J. A., ed. (2004a). Diversity and citizenship education: Global perspectives. San Francisco: Jossey-Bass.
- Banks, J. A. (2004b). Teaching for social justice, diversity, and citizenship in a global world. *The Educational Forum*, 68, 289-298.

- Cushner, K. (2009). *The role of study abroad in the preparation of globally responsible teachers*. In L. Ross (Ed.) *Study abroad and the making of global citizens: Higher education and the quest for global citizenship*. NY: Routledge.
- Dougherty County Schools Demographic Data.
[Http://www.docoschools.org/apps/pages/index.jsp?uREC_ID=446189&type=d&pREC_ID=962263](http://www.docoschools.org/apps/pages/index.jsp?uREC_ID=446189&type=d&pREC_ID=962263).
- Dugger, W. E., Jr. (2010). Evolution of STEM in the United States.
www.researchgate.net.
- Georgia Performance Standards <https://www.georgiastandards.org>.
- Goodwin, L. (2010). Globalization and the preparation of quality teachers: Rethinking knowledge domains for teaching. *Teaching Education*, 21(1), 19-32.
- Osakwe, N. N. (2014). Internationalizing pedagogy using African literature: Teaching composition lessons with Chimamanda Adichie's *My Mother the Crazy African*." At the Crossroads Readings of the Postcolonial and the Global in African Literature and Visual Art. Ed. Ghirmai Negash, Andrea Frohne and Samuel Zadi. Trenton, New Jersey: Africa World Press, 2014, 241-256.
- Roberts, A. (2007). Global dimensions of schooling: Implications for internationalizing teacher education. *Teacher Education Quarterly*, Winter: 9-26.
- Santamaria, L.J. (2009). Culturally responsive differentiated instruction: Narrowing gaps between best pedagogical practices benefiting all learners. *Teachers College Record*, 111(1): 214-247.
- Sharma, S., Aglazor, G. N., Malewski, E., Phillion, J. (2011). Preparing global minded teachers for U.S. American classrooms through international cross-cultural field experiences. *Delhi Business Review*, 12(2), 33-44.
- Stubbs, K. (2016). *The Georgia County Guide* (34th ed.). Athens, GA: University of Georgia. Cooperative Extension Service.
- U.S. Census Bureau. (2015). QuickFacts: *Dougherty County*. Retrieved from <http://www.census.gov/quickfacts/table/PST045215/13095,00>.
- West, C. (2014) Integrating internationalization into STEM education. NAFSA e-Publication. NAFSA 2nd Annual Colloquium on Internationalizing the STEM Fields.

About the Author

Professor Dorene Rojas Medlin has over forty years of educational experience working in public schools and higher education. During that time, she taught science courses from middle school through higher education. She served as science curriculum supervisor and trained teachers from kindergarten through twelfth grade. Currently she is Assistant Professor of Middle Grades Education and Coordinator of Early Childhood Education and Science Education at Albany State University, Albany, Georgia. There she teaches education courses in the College of Education, Department of Teacher Education and science courses in the Department of Natural Sciences.

¹ In this article, all references to Albany are of Albany, Georgia or Albany State University.