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Exploring Collaborative Work for the Creation of Interdisciplinary Units Centered on Intercultural Citizenship

Manuela Wagner
University of Connecticut

Fabiana Cardetti
University of Connecticut

Michael Byram
Durham University, England

Abstract

In this work we report on a collaborative project at a large Northeastern University, in which we explored how to best collaborate to develop interdisciplinary teaching units, which integrate intercultural citizenship (Byram, 2008) into world languages, mathematics and social studies sixth grade curricula. We argue for the importance of addressing current critical areas in education. After introducing a framework that allows teachers to focus on the development of intercultural citizenship while at the same time fostering skills in the diverse content areas, we report on how we worked with a group of graduate students, teachers and administrators in order to co-design interdisciplinary units focused on intercultural citizenship. An example of such an interdisciplinary unit is provided along with lessons learned about how we can facilitate this type of interdisciplinary collaboration. Our recommendations are based on qualitative analyses of the notes, memos and observations documented by the authors. Specifically, we share four emergent themes that illustrate how this group of educators successfully collaborated in this project: (1) Respecting disciplinary identities and boundaries, (2) Extending the understanding beyond the disciplines, (3) Ensuring a collaborative learning environment, and (4) Offering opportunities to continue the work beyond the course.

Key words: *Interdisciplinary collaboration, intercultural citizenship, STEM, teacher education*

Introduction

The work presented in this chapter was motivated by two trends that occurred concurrently. Firstly, it is now more important than ever to prepare our students for an increasingly complex and interconnected world. Secondly, it is a much-lamented fact that U.S. students are behind many other countries in their performance on STEM

(science, technology, engineering, and mathematics) assessments. Here, we hope to offer an approach that can tackle both challenges by helping students understand the interconnectedness of the content they learn in schools. Our proposal is to find ways of linking subjects, such as world languages and mathematics, and education and life beyond the walls of the school, through the concept of "intercultural citizenship."

We will first discuss recent calls for educational programs that prepare students to meet the challenges they will face in a globalized world by building competence in intercultural citizenship and then discuss the challenges in K-16 education that are obstacles in meeting those challenges. Then, we introduce a theoretical and practical framework that can potentially address the challenges via collaborative and interdisciplinary efforts. After this we introduce one project that exemplifies one way to achieve these specific goals. Lastly we describe the processes experienced by the team to achieve the respective goals in the project.

It is important to note that we are not advocating a duplication of the project described in this paper because every collaboration may be different depending on the setting in which it will take place. However, we hope to provide the reader with a rationale for planning collaborative interdisciplinary projects focused on intercultural citizenship and some insight into the benefits as well as the complexities of a collaborative project of this kind.

We start with the concept of intercultural citizenship which as we will show later, is related to the more widespread and a much-invoked term "global citizenship." Because there are so many different definitions of global citizenship, the term remains vague. And yet many mission statements for schools and universities in the U.S. and abroad emphasize global citizenship as one of their major goals in educating their students. In addition, educators, administrators and parents tend to agree that students need to be prepared for a more globalized world. While there are a number of instrumental reasons for that sentiment, such as a well-served economy and an employable workforce, in the face of violent incidents worldwide, there are now also calls for an education that prepares students for peaceful negotiations, as can be seen in the quote below from U.S. Deputy Secretary of State Antony Blinken at an event on Preventing Violent Extremism through Education organized by the UNESCO on November 6, 2015. Mr. Blinken stressed that UNESCO's (2014) role as a guardian of shared humanity was needed more than ever:

> By arming young minds with a world perspective rooted in respect, social justice, diversity and critical thinking, we cannot only counter radicalization as it arises, but prevent its growth in the first place… .In the 21st century, what really defines the wealth of a nation is its human resource, and the ability to maximize the potential of that resource to be creative, to innovate, to think, to argue and to create. (¶ 4)

Many U.S. universities are now following up their mission statements by creating programs in global citizenship. For example, Webster University, in Missouri, described the rationale for their Global Citizenship Program as follows: "Living and working in the 21st century demands more complex skills and abilities than during previous eras. Expert thinking, complex communications skills, problem solving, and working with diverse teams are more important than ever" (Webster, n.d., ¶ 1).

Similarly, the Council of Europe (CoE), which comprises 47 member states and which was "set up to promote democracy and protect human rights and the rule of law in Europe" (CoE, n.d.), recognized in its *White Paper on Intercultural Dialogue. Living Together as Equals in Dignity* (CoE, 2008) the importance of competences required for democratic culture and intercultural dialogue. Using the *Common European Framework of Reference for Languages* (CEFR) (CoE, 2001) as a blueprint, a new initiative was started in 2014 to develop a model of democratic and intercultural competence that can be used, in all school subjects, to inform curriculum design, the development of new pedagogies, and new forms of assessment. The new "framework" will provide a model of 20 (intercultural and democratic) competences that each have a number of descriptors formulated as learning outcomes. It is intended that these descriptors will be placed on a scale, as are language competence indicators in the CEFR.

Although the CoE refers to "democratic and intercultural competence" due to its emphasis on its three basic values of "democracy, human rights and the rule of law", the term "global citizenship" is commonly used elsewhere, as in the example from Webster University above. It is, however important to note that Gordon (2014) observed a move away from the use of the term *global citizenship* and a shift towards the use of *intercultural competence* at the 2012 meeting of the Association for International Education Administrators. In his opinion, the reason for that shift is "the recognition that humans still organize and/or inhabit discrete societies, cultures, movements for self-determination, and nation states" (p. 61). In our work, intercultural competence is integrated into the concept of intercultural citizenship which focuses on the education required to prepare our students to engage in meaningful intercultural interactions, but before we elaborate more on the specifics of intercultural citizenship we want to introduce another problematic aspect of education.

Coffey (2009) makes an important observation about the fragmentation of content addressed in schools and the lack of connections between what students learn and real world applications:

> There are many topics that are not addressed in schools because of the breadth and depth of information that is accessible in a globalized, technological society. Much of the curriculum that is contained in textbooks is neither timely nor relevant to students' lives. Additionally, the daily schedule often fragments learning so that each teacher is given a defined time block to cover material that will likely be assessed on a state-mandated test. All of these hindrances make it difficult for teachers to engage students in studying any material in depth and to make connections between subject areas and topics. (¶ 2)

We argue that this lack of interdisciplinary curricula must have an impact on the preparedness of our students for a world in which they will need to become critical thinkers and problem solvers in complex situations not addressed solely within one discipline. It might not be a coincidence that U.S. K-12 students have most problems within STEM assessments when they are asked to apply their knowledge and skills to more complex problems.

Yet another problem we are faced with in education is a lack of articulation of instruction at the various levels. We are often surprised that our students cannot move from one level to the next in their proficiency as they study either mathematics or a world language, just to give two examples. Often students are registered for rather elementary world languages courses when they enter college or university after having studied languages for multiple years in their elementary and/or secondary education. Similarly, in mathematics, an alarming number of students enter higher education under-prepared to succeed in their mathematics courses. Almost every program has a mathematics requirement for their majors. The required courses are mostly entry-level mathematics courses that rely on fundamental understanding of concepts that are part of the K-12 mathematics curriculum; yet too many students fail to succeed in these courses because of their lack of necessary fundamental knowledge. This happens in spite of the supports offered by the institutions, such as free tutoring, one-on-one conferences with instructors and teaching assistants, as well as dedicated review sessions. These students end up dropping, withdrawing, or failing these basic courses, all of which affect, in smaller or larger ways, their plans of study.

Even within content-specific programs it is a challenge to plan and execute well-articulated course sequences. In order to help students with the transition from high school to college, secondary schools and colleges have formed partnerships, allowing students to gain college credit in high school courses that are coordinated with the respective programs in colleges. For example, at the University of Connecticut, that program is called Early College Experience (ECE) and is quite popular.

We have thus far introduced a number of challenges with which educators are faced in world language and mathematics education as examples of interdisciplinary thinking and as two subjects, which are crucial to students' university success. We now introduce a theoretical and practical framework, which can be used to address these challenges in collaborative projects and will then go on to illustrate how a group of educators from different disciplines and backgrounds collaborated in practice to integrate the skills, attitudes and knowledge that promote intercultural citizenship, into interdisciplinary units in order to help students experience connections within their school subjects (e.g., mathematics and world language education) and between their course subjects and problems beyond the confines of the educational institution. In specific, we report on the processes that built a community for the purpose of promoting intercultural citizenship in sixth grade students based on interdisciplinary units created by the collaborative efforts of public school teachers, district administrators, university faculty and graduate students across STEM disciplines, represented by mainly math, as well as other disciplines, i.e., world languages and social studies. Various sources, e.g. notes, observations and memos of first hand experiences were used to document collaboration and interdisciplinary perspectives throughout the process.

The overall question we address is therefore: *How can a group of educators from different disciplines and backgrounds collaborate to integrate intercultural citizenship into interdisciplinary units in order to help students see connections within their subjects (e.g., mathematics and world language education) and between their subjects and real world problems?*

Theoretical Framework

The way we conceptualize the connections between world language education and mathematics education is based on Byram's (1997) model of Intercultural (Communicative) Competence and his concept of Intercultural Citizenship (Byram, 2008). Intercultural Communicative Competence combines the linguistic skills of communicative competence with (certain dimensions of) Intercultural Competence. The linguistic dimensions, familiar to language teachers, are defined as follows:

- *linguistic competence:* the ability to apply knowledge of the rules of a standard version of the language to produce and interpret spoken and written language;
- *sociolinguistic competence*: the ability to give to the language produced by the interlocutor – whether native speaker or not – meanings which are taken for granted by the interlocutor or which are negotiated and made explicit with the interlocutor;
- *discourse competence:* the ability to use, discover and negotiate strategies for the production and interpretation of monologue or dialogue texts which follow the conventions of the culture of an interlocutor or are negotiated as intercultural texts for particular purposes. (Byram, 1997, p. 48)

Intercultural competence has the following dimensions:

- *knowledge*: of social groups and their products and practices in one's own and in one's interlocutor's country or region, and of the general processes of societal and individual interaction (p. 51)
- *skills of interpreting and relating*: ability to interpret a document or event from another culture, to explain it and relate it to documents or events from one's own (p. 52)
- *skills of discovery and interaction*: ability to acquire new knowledge of a culture and cultural practices and the ability to operate knowledge, attitudes and skills under the constraints of real-time communication and interaction (p. 52)
- *attitudes:* curiosity and openness, readiness to suspend disbelief about other cultures and belief about one's own (p. 50)
- *critical cultural awareness*: an ability to evaluate, critically and on the basis of explicit criteria, perspectives, practices and products in one's own and other cultures and countries. (p. 53)

When linguistic, sociolinguistic, and discourse competences are combined with the dimensions of intercultural competence, we arrive at Intercultural Communicative Competence. The purpose of teaching, in world languages, Intercultural Communicative Competence and not just Communicative Competence is to enable students first to interpret and understand the cultural contexts of their interlocutors – whether native speakers or people using the language as a lingua franca – second to be able to interact with them accordingly, and third to act as mediators between two groups with mutually incomprehensible languages (and cultures).

On the other hand, Intercultural Competence is also required when speaking a shared language with someone from a different cultural context, someone from a different region of the same country or from a different country where the same

language is used (Americans speaking to Australians, for example). It is also important to note that some dimensions of Intercultural Competence (attitudes, skills of interpreting and relating, skills of discovery and interaction, knowledge, and critical cultural awareness) can also be taught in other subject areas. In mathematics, for example, it is now considered crucial to develop students' skills to communicate their ideas for solving problems (Kazemi & Stipek, 2001; NCTM, 2014) that move beyond simply "show and tell" (Ball, 2001). The goal is that learners can, through interacting with each other, gain access to multiple ways of finding solutions, and open up opportunities to discuss insights with each other, obtain clarity, and make connections to others' ideas. This helps to achieve a greater understanding of the mathematics involved and potentially develop new and/or more effective ways to solve problems. Orchestrating mathematics classroom discussions that result in these outcomes requires students to be competent in the skills and attitudes mentioned above for Intercultural Competence: from understanding themselves as thinkers of mathematics, to learning the range of accepted ways to communicate and discuss mathematical ideas, to understanding how to think critically about this information to solve the problem at hand.

Now that we have determined that we can theoretically teach the dimensions of intercultural competence in different subject areas, we want to take this thought a step further. With the help of the concept of Intercultural Citizenship (Byram, 2008), we can help our students become intercultural citizens in the here and now. This concept combines notions of citizenship education, which are taught in most education systems, and certainly in the U.S. context (U.S. Department of Education, 2012), with concepts of internationalism and interculturality. In other words, Byram (2008) found that while most curricula in many countries have as their main goal to prepare their students for citizenship in their respective nation country, we now also have the duty to prepare our students for a more interconnected and diverse world.
The skills acquired through such an approach can be applied to intercultural situations with someone with a different background than one's own in another country or in one's own community. Byram further claims that intercultural citizenship has the following characteristics: (1) a focus on the learners acquiring knowledge and understanding (not just information) about people who speak the language they are learning (not necessarily only native speakers) and a corresponding knowledge about learners themselves; (2) the encouragement and planned development of attitudes of curiosity and critical questioning; (3) the teaching-and-learning of skills of inquiry from which knowledge about self and others evolves, and secondly the skills of comparison as the juxtaposition from which understanding is derived; and (4) engagement and taking some type of action in the world outside the classroom in parallel with classroom work, to *improve* the world in however small a way.

Intercultural citizenship is, furthermore, related to initiatives to teach languages (and other subjects) for social justice (Osborn, 2006; Glynn, Wesely & Wassell, 2014). Students' development of *critical cultural awareness* (Byram 2008) as part of intercultural citizenship goes hand in hand with their understanding of social justice issues. By fostering our students' curiosity and a questioning attitude, we help them pose important questions about the world in which they live. More importantly, we provide tools for learners to judge events critically, from a variety of perspectives and

based on specific evidence. As we discussed above, these skills are crucial in light of our realization that we need to prepare our students with the tools to promote peaceful resolutions for growing conflicts around the world.

Connecting Mathematics and World Languages with Intercultural Citizenship

The teaching and learning of mathematics is complex and the discipline is not well understood by other educators and the general public. Most people view the learning of mathematics as rote memorization of rules, procedures, and results and the correct application of these to different abstract problems or to applied "real" problems that seem to have very little to do with life as experienced outside the classroom (Ellis & Robert, 2005). In addition, there is a widely-held belief that in mathematics there is always only *one* correct answer and only *one* way to arrive at the solution, that "you were either born to understand mathematics, or you were born to struggle with it" (e.g., Boaler, 2013). All of this however, is an oversimplification and narrow view of mathematics and what the teaching and learning of mathematics is really about. For, in fact, mathematicians find results following logical reasoning and sense making, develop procedures that help perform operations in an efficient manner based on the underlying structures of the operations (rather than mindlessly imposing rules), use different representations and take multiple perspectives into account to create new results. They are constantly building new knowledge with other experts from different areas within mathematics and/or between mathematicians and other scientists.

In this perspective on mathematics, achieving the levels of mathematical understanding that students need to succeed now requires much more than what was necessary in the 1900s. For example, given the modern advances in automation and instant access to information via the Internet, memorizing certain sets of facts is no longer a crucial skill (U.S. Department of Labor, 1991). In her account of what now counts as competent performance, Resnick states "Automated skill in performance of routines still matters, but 21st-century skills mostly focus on a person's ability to participate in argumentation and discussion" (2010, p. 186). As a consequence of such insights, research in mathematics education has been pointing for the past two decades at ways to teach mathematics more efficiently, with greater depth and understanding of concepts rather than breadth of content covered.

The research on effective teaching that would help us reach these goals highlights practices that go beyond rote memorization of rules and computational fluency. These research-based practices promote a classroom culture that more faithfully resembles how professional mathematicians construct mathematics knowledge, so that students can develop the skills they will need to be college and career ready in this new century. At the core of these effective practices lies the ability to create learning environments in which students can communicate their ideas to better understand their own and others' ways of thinking about mathematical concepts, engage in mathematical conversations that help them make sense of different approaches and compare them, and in turn help them reach deeper levels of understanding. Research has provided evidence of the positive impact on student learning when teachers use well orchestrated practices for facilitating mathematical discourse in the classroom (Lehrer & Schauble, 2002; Yackel & Cobb, 1996), as well as other effective

practices that support classroom interactions to deepen student understanding of important mathematical concepts (Chapin, O'Connor, & Anderson, 2009; Smith & Stein, 2011; Wood, 1998).

Currently, with the adoption of the new Common Core State Standards by the majority of states in the U.S., there is a renewed interest and wide-range need for changing school mathematics education to address the new standards. One significant difference between the Common Core State Standards for Mathematics (CCSSM; Common Core State Standards Initiative, 2010) and the independent standards previously used by each state, is that the CCSSM comprise not only mathematical *content* standards that delineate what students should know and be able to do at each grade level but also a set of standards for mathematical *practices* (SMP) that students should engage in as they learn mathematics in school. The eight practices are formulated as follows:

1. Make sense of problems and persevere in solving them
2. Reason abstractly and quantitatively
3. Construct viable arguments and critique the reasoning of others
4. Model with mathematics
5. Use appropriate tools strategically
6. Attend to precision
7. Look for and make use of structure
8. Look for and express regularity in repeated reasoning.

These practices are based on the aforementioned research and on research-based process standards from the National Council of Teachers of Mathematics (NCTM, 1989, 2000) along with the mathematical proficiency strands identified by the National Research Council for successful mathematics learning (NRC, 2001). The mathematical practices parallel the learning of mathematics in the schools with the most important habits inherent to the discipline—what mathematicians do.

For the project described in this paper, some of these practices become particularly relevant. For example, looking more closely at the description of SMP 3 "Construct viable arguments and critique the reasoning of others" (CCSSM, 2010, p. 9) it is clear that this practice entails two activities that demand (intercultural) communicative competence and a solid understanding of ways to discuss mathematics with others. On the one hand, *creating viable arguments* requires a student to be able to articulate the reasoning used to arrive at a certain conclusion or result, providing warranted evidence for their claims. Once students can express their ideas, then a door opens for others to analyze them and potentially benefit from each other's ways of thinking about the problem. Thus, on the other hand, *critiquing the reasoning of others*, calls for students to interpret and make sense of the explanations given by others to critique them not only in terms of mathematical correctness, but more importantly to compare different approaches, distinguishing between them, and analyzing the efficiency of the strategies used. Compare the skills required to complete such tasks to aspects of intercultural competence such as, taking different perspectives into account, practicing tolerance for ambiguity, interpreting and relating, discovery and interaction, among others.

The notion of taking alternate perspectives into consideration is further supported by SMP 6 "Attend to precision" (CCSSM, 2010, p. 7), which calls for students to use

mathematical precision. This practice standard references not only precision in computation, but more importantly, precision in communicating mathematically by using appropriate vocabulary, clear definitions, and precise use of symbols to help the learner and others understand the reasoning that is being discussed (compare to skills of interaction, linguistic competence, attitudes of curiosity and openness in Byram, 1997).

In addition, mathematics educators and researchers are also concerned with strengthening the connections between mathematics and other school subjects to enhance content knowledge of all subjects and to help students learn how to use the different disciplines as tools for problem solving and, more generally, for critical analysis of global situations. This vision is evident in the NCTM's *Principles and Standards* (NCTM, 2000) document and it is made explicit in the more recent *Principles to Actions* document (NCTM, 2014) that supports the CCSSM by describing key actions required to ensure that students learn. In particular, in discussing standards' design and curriculum it calls for the mathematics curriculum to "not only be coherent but also make connections from the mathematics curriculum to other disciplines" (NCTM, 2014, p. 75).

These examples provide evidence of some of the many ways in which the Common Core State Standards for mathematical practices have clear connections to our work. Both educators in mathematics and world languages are interested in enhancing their students' communication skills. Not only that, but we also have some deep rooted intentions for these heightened skills that go beyond the disciplinary interests, such as critical thinking, 21st century skills, and intercultural citizenship. In addition, we want to provide our students with situations in which they can apply their disciplinary knowledge and skills as well as their intercultural citizenship skills to real world problems.

The Collaborative Project

Over the past year we have been leading a project that has brought together world languages, mathematics and teacher education faculty (the authors of this chapter), graduate students and (pre-service) teachers of mathematics and world languages, as well as administrators and curriculum directors (in world languages, mathematics and social studies) from a local school district. Our overarching goal was to create a loosely defined community of practice using Wenger's (2006) definition "Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly" (p. 3). Our shared concern and passion was to create interdisciplinary units which contain the various elements discussed in the introduction to this chapter and apply the agreed theoretical framework explained above. Due to the scope of this chapter we will not describe the theory of communities of practice in detail. For now it suffices to know that the authors view learning as a social activity and designed learning activities which created opportunities for the graduate students to a) become inducted into the theoretical framework of intercultural citizenship within the disciplines, b) collaborate with a group of colleagues who learn from and with each other, and c) apply their knowledge in practice (to the K-12 curriculum in the partner school system).

In order to prepare our graduate students for the work, the authors planned two consecutive graduate courses, for a mixed group of graduate students from four

departments: mathematics, mathematics education, literatures, cultures, and languages, and world language education. These courses were mostly co-taught by the first two authors (see Table 1 for an overview of participants in the overall project). We will refer to the participants of the graduate courses as "graduate students" and our participants in the partner school system as "administrators and teachers" if they were involved in the planning and design of the project. We created most of the units for the students in the K-12 partner school system. We will refer to the students in the K-12 school system as "students".

Table 1
Overview of Project Participants

Participants at the university level	Faculty in in the Department of Mathematics
	Faculty in in the Department of Literatures, Cultures and Languages
	Emeritus faculty in teacher education (the three authors)
	Graduate students in the Department of Mathematics
	Graduate students in the Department of Literatures, Cultures and Languages
	Graduate students in Mathematics Education
	Pre-service teacher of French
Participants in partner school system	Curriculum coordinators of mathematics, world languages, and social studies

In the fall of 2014, the first graduate course was intended to facilitate our students' reflection on the nature of their disciplines in terms of commonalities but also differences. We also introduced important concepts of intercultural competence and classifications thereof. Some examples of concepts and authors discussed are Intercultural Communicative Competence and Intercultural Citizenship by Michael Byram, Third Culture and Symbolic Competence by Claire Kramsch, the model of Intercultural Competence by Darla Deardorff, the role of language in intercultural communicative competence by Alvino Fantini, the Developmental Model of Intercultural Sensitivity by Milton Bennett, linguistic approaches to intercultural communication by Ron Scollon and Suzanne Wong Scollon, and comparisons of educational models of intercultural competence, for example, by Brian Spitzberg and Gabrielle Changnon and by Paula Garrett-Rucks. We also took a look at models used in business such as the cultural dimensions by Geert Hofstede in order to understand differences in approaches to understanding and teaching intercultural competence, and theories of critical pedagogy and social justice by for example, Paolo Freire, Terry Osborn, and Timothy Reagan were an important part of our discussions. Cassandra Glynn, Pamela Wesely, Beth Wassell's ACTFL Publication (2014) *Words and Actions: Teaching Languages Through the Lens of Social Justice* was also consulted by students who focused on issues of social justice in their units. We explored topics surrounding mathematics teaching and learning by researchers such as Angela Barlow, Katherine

Gavin, Donna Kotsopoulos, and were concerned with publications on the role of the development of academic language in education by students and the understanding thereof by teachers (for example by Catherine Snow, Mary Schleppegrell, Paola Uccelli) and the interplay between mathematics and culture (for example, Beatriz d'Ambrosio and Sarah Lubienski). Equipped with background knowledge in this area, we looked for connections between intercultural competence and mathematics.

Concurrently, the authors and the graduate students worked with colleagues in a school district (hereon referred to as school partners or colleagues in the partner school system) and engaged in conversations on how to best collaborate in this project. We had several meetings with the school administrators and curriculum directors at the partner school and at the university in which we introduced and shared theory (e.g., by a presentations on intercultural citizenship by the third author during a campus and partner school visit), reviewed the partner school's goals and needs, analyzed the partner school's curriculum plans corresponding to the different subjects, and collaboratively envisioned potential teaching unit ideas.

The second course took place in Spring 2015, where the collaborative work focused on the development of the units, which were planned, revised, and modified according to feedback and input from all constituents. In order to create these interdisciplinary units, we worked in collaboration with our partner school to identify appropriate grade levels at which the school could implement the units. In an early conversation about possible places to implement this interdisciplinary intercultural citizenship we decided for a variety of reasons that mostly had to do with realities in the partner school district that the best connections can be made through the curriculum in social studies in sixth grade as teachers and administrators had been planning to focus on global citizenship. We then selected topics of interest that would cut across different content areas (social studies, world languages, and mathematics) and used the content knowledge that each subject covers around the same time in the academic year. Drafts were developed by teams of graduate students consisting of at least one member in mathematics and one member in foreign languages. In total there were four teams consisting of 2 to 3 students. One team did not include a graduate student in mathematics. Instead, the whole group as well as the faculty members helped ensure an interdisciplinary approach in this team's projects. All unit drafts were continuously revised based on insights, ideas, and feedback from all constituents (the authors, the school partner participants and the graduate students) to ensure meaningful learning experiences within each subject, authentic use of the theories we had already learned and additional customized readings specific to each unit, attention to school resources and needs, as well as inclusion of assessments throughout the units. This is also resulted in furthering shared goals as mentioned above. Note that three groups worked on units to be implemented at a later time in sixth grade in the partner school district while two units were created for a different context due to logistical considerations. By the end of the semester, five units had been created, and were presented in front of the university community and also at the school in front of teachers and administrators where more feedback and input was received (Please see Table 2 for an overview of units). It is important to mention that this was considered to facilitate plans for their future implementation in line with the plan to continue collaborations beyond the creation of the units. In the next

section we first offer a description of a sample unit that was created in this project to give the reader a sense of what was accomplished by this interdisciplinary community of practice. This is followed by a short reflection on the processes that facilitated the collaboration and ensured that the goals were met.

Table 2
Overview of Interdisciplinary Units

Unit topic	**Main Team**[1]	**Grade Level**
Water shortage	2 graduate students in German Studies, 1 graduate student in mathematics	6th grade
Natural Disasters	1 graduate student in German Studies, 1 graduate studens in mathematics	6th grade
mathematics and Culture	1 graduate student in German Studies, 1 graduate student in mathematics Education	6th grade
City Spaces	1 graduate student in German Studies	Adult German education in Germany (university level)
Morocco	1 pre-service teacher in French Education	High School French

Example of unit plans.

We now share one sample unit which was developed for sixth grade for partner school district. The main topic of the unit, chosen from the social studies curriculum is water, as it relates naturally with the science curriculum on the water cycle, and provides a unique opportunity for students to use mathematics and world languages to explore and understand the topic in depth and in relation to global issues surrounding the global water crisis. In particular, using the lens of environmental justice, students look more deeply into important issues, such as water shortage, interdependence of factors, and cooperation between constituents.

The unit evolves from having students investigate their own ecological footprint with respect to their individual water consumption and compare their results with members in small groups, and with the entire class. Students are also engaged in several activities to explore global differences, including taking the perspectives of people in different regions around the world that suffer water shortage to help them start to develop critical cultural awareness around this issue. Content knowledge from each subject is embedded and intertwined to press for higher-order thinking (e.g., world languages to connect with different parts of the world, mathematics to understand crucial connections between data and real world problems). This helps them to determine what should be taken into account in their decisions according to the different regions' customs and economic and geographical resources. In a culminating hands-on project, students work in small groups to create solutions to either limit water

consumption or to solve water issues in places where not everyone has access to water. This engineering project is accompanied by a dissemination project in which students expose the community (students, parents and others) to concepts and conflicts about the use of water, pollution, water wars etc., and point to engineered solutions they designed (compare to the action component in Intercultural Citizenship).

Processes of collaboration.

We set out to explore *how a* group of educators from different disciplines and backgrounds can collaborate to integrate the skills, attitudes and knowledge of intercultural communication and intercultural citizenship into interdisciplinary units in order to help students see connections between their subjects (e.g., mathematics and world language education) and between their subjects and real world problems. To gain insight into the processes involved in our collaboration we analyzed our own notes, memos, and observations following the work of the group from the beginning of the project to the creation of the units. In specific, we looked into our notes, memos, and observations to identify the different happenings related to becoming part of the learning community, such as the quest to understand ourselves as members of our own groups (mathematicians, linguists, educators), as well as finding our identity as a whole group, while at the same time faithfully representing our individual disciplines and authentically integrating all of the subjects into common ground. We also analyzed the data focusing only on events that helped the group build trust and fully engage in the collaboration (e.g., jigsaw activities, intensive feedback sessions, in-class and public presentations). Comparing our data sources we were able to build themes around the different instances of the collaborative learning process that included envisioning the units, exploring possible outcomes, discussing ideas and going back to the drawing board many times until suitable ideas started to emerge, exploring targeted literature as well as giving and receiving feedback to reach the culminating products: interdisciplinary units which can be implemented in the respective contexts for which they were designed. We classified these themes to help us unpack the different support systems that facilitated the collaboration across the different groups that lead up to the successful creation of the units. We now share some insights into four prevalent themes emerging from our reflection. These themes are "respecting disciplinary identities and boundaries", "extending the understanding beyond the disciplines", "ensuring a collaborative learning environment", and "offering opportunities to continue the work beyond the course."

Respecting disciplinary identities and boundaries.

As we discussed above, the three authors agreed to ensure that the graduate students were able to first consider the role of intercultural competence and intercultural citizenship in their own disciplines. Therefore we held the first meetings of the first graduate course in the fall of 2014 separately. We also planned group work strategically so that sometimes mathematics and foreign language educators would work in separate groups in order to explore targeted discipline-specific questions.

Although we planned the lessons together we gave the participants the opportunity to become familiar with the concept of intercultural competence within their own disciplines before sharing their thoughts with the interdisciplinary group. This

"respect for disciplinary identities" helped participants develop and contribute their ideas about their discipline with confidence and in the understanding that everybody's contribution is important and heard.

As a result, the group could then tackle theories of intercultural competence, intercultural citizenship, social justice, mathematics discourse and the common core of mathematics together as a group while at the same time feeling comfortable to bring in their own experiences and disciplinary knowledge.

This in turn resulted in an understanding of each other's content areas and also how the various theories can inform the development of interdisciplinary units that incorporate the various disciplines as well as intercultural citizenship in meaningful ways.

Extending the understanding beyond the disciplines.

By stretching our students' (and our own) understanding of disciplinary boundaries, we were able to gain a deeper understanding of intercultural citizenship and its impact on our own disciplines, and also on education in general. The interdisciplinary graduate student partnerships consisting of at least one graduate student from mathematics and one from foreign language education, as well as our work together as a whole group, and the collaboration with the school district resulted in situations in which we were inspired, but also ones in which we had to overcome hurdles. Groups had to negotiate their sometimes-different understandings of the project. There were also logistical challenges that had to be overcome. Such situations necessarily led the participants to challenge some of their preconceived notions and thereby might well have contributed to their own continued development of intercultural competence. As we often advised our students to facilitate and welcome potentially controversial situations and even conflicts in order to challenge our beliefs, we in turn welcomed these "bumps in the road" as teachable moments and learning opportunities.

The lessons learned in such interactions which at times caused frustration (because university students might not immediately have grasped why they could not implement their unit in a certain way, for example) ultimately led to a better understanding of articulations, and sometimes the lack thereof, between school and university curricula. We concluded that in order to address the lack of articulation we first must understand the underlying reasons of the problem. Our graduate students shared with us that they were surprised by how much they learned about K-12 schools during the planning of their project. In turn, school administrators and teachers were exposed to discussions and academic presentations at the university level (for example, a presentation on the development of intercultural citizenship and criticality by Michael Byram during his visit at UCONN as part of the project) which in turn ensured their connection to the university level.

Ensuring a collaborative learning environment.

In the collaboration on developing interdisciplinary units we encouraged the teams to take advantage of different perspectives related to disciplines, educational settings, but also personalities. The teams accepted offers to meet in person in class as well as online with the graduate course instructors as well as with the creator of the theory of intercultural citizenship and with colleagues from the public school district. We also facilitated the sharing of developed material in an online platform and

strongly encouraged groups to provide each other with constructive feedback and questions on reflections on theoretical aspects we were pondering as a group as well as on the projects each group was developing. Participants emphasized the importance of this collaborative environment in their reflections and in conversations. All agreed that the units would not have been the same if they had been created alone or even cooperatively (meaning without creating meaning together but merely dividing the tasks). The collaborative nature of the learning environment provided a number of affordances, which we will explore in later publications.

Offering opportunities to continue the work beyond the course.

The last theme pertains to creating an extended community of practice of sorts. It is clear that the three faculty members were committed to continuing their community of practice beyond the two-course sequence as they are already working on preparing the implementations of the planned units in schools, applying the findings to a variety of contexts including new disciplines, disseminating the findings, and securing funding to continue the work. It is important to note, however, that the graduate student groups also bought into this extended model as they created websites with their curricula in order to share their products with interested educators. We also have plans as a group to spread the word in various publications, which will be mentored by the three faculty members.

Conclusion

The goal of this chapter was to share how a group of educators from different disciplines and backgrounds can collaborate to thoughtfully integrate intercultural citizenship into interdisciplinary units in order to help students see connections within their subjects (e.g., mathematics, world languages, and social studies) and between their subjects and real world problems. We hope to have a) convinced the reader of the importance of collaborative endeavors in order to teach intercultural citizenship and b) provided the reader with a glimpse into the complexities as well as the rewards of such an initiative, which was considered a success by the participants involved. The developed units integrate theory of intercultural competence and social justice into the curriculum in mathematics, world languages and social studies. Moreover, we shared some insights into how such collaborations can be facilitated. We also highlight the importance of respecting disciplinary boundaries as well as identities while also fostering a truly collaborative (learning) environment. It might be of interest to the reader to know that we are currently working on the implementations of the units as well as on studying the impact on student outcomes concerning their development of intercultural citizenship and their understanding of content knowledge in the different disciplines and their interconnections. It is our goal to continue to develop or modify units and to conduct studies of their effects in a variety of educational contexts.

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(Footnotes)

1 Note that the authors and core members of the partner school district participated in all teams.