

Graduate Degrees in Geographic Education: Exploring an Online Model

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Abstract

The national demand for online teacher graduate degrees has led to a national explosion of pedagogically oriented curriculum and instruction master's degrees in private and public universities. Subject-matter-rich online graduate degrees for teachers have been slow to follow. This paper describes the design and implementation of the only online geography master's degree in geographic education in the United States. The collectively rich national bank of K-12 geography education materials makes this type of degree possible. In a partnership with College of Education faculty, the program of study combines 24 semester credits in geography and 6 credits in education leading to a capstone project.

Key words: Geography education, online education, learner-centered education, virtual learning environments, Blackboard™

Introduction

Michael Libbee (2006) at the National Council of Geographic Education meetings presented results of 500 surveyed teachers around the nation; nearly 60% responded that they had little or no preparation in geography. Just less than 35% of the same group responded as having "several courses," with the remaining split between "College minor," "Graduate work," and "College major." These data reveal clearly that many K-12 educators who teach geography lack formal coursework training.

Currently, Texas State University offers an accelerated Ph.D. in geographic education, blending on-campus doctoral courses during summer sessions and online coursework during fall and spring semesters. After two years of coursework, students complete off-site dissertation research, working with top-caliber faculty and the Grosvenor Center for Geographic Education. Texas State University formerly offered an online master's degree with a specialization in geographic education. The degree consisted of courses in research design, quantitative methods, contemporary issues in

geographic education, a seminar on theory and methods of geographic education, directed research, and electives including Geography for Teachers and innovative “Step Up to Geography Modules” in different world regions. The program blended courses intended to improve knowledge of world regional geography content, strengthen instructional skills, and complete requirements for a master’s degree.

The only other distance-learning master’s program in geographic education that we are aware of is offered by the Institute of Education at the University of London, England. The degree takes one year to complete as a full-time student, or two to four years for part-timers. Students take two-thirds of their course modules in a focused subject area, and the last third in either a research “dissertation” or a report plus a further module in the subject area.

Surveys of 455 K–12 teachers attending workshops of the Arizona Geographic Alliance in 2004 and 2005 revealed that a third of them desired online graduate teacher-education focusing on geography content. Almost one-fifth said that they would like to enroll in a master’s program in geographic education if it could be completed online. Given this demand, we coordinated the construction of a very different online graduate program to fulfill this need.

The Program

The Master of Advanced Study in Geographic Education (MAS-GE)¹ program, offered by the School of Geographical Sciences at Arizona State University (ASU), is a non-thesis, discipline-specific master’s degree designed expressly for working K–12 educators. All MAS-GE courses are taught online and on a nontraditional, K–12 school-year-friendly quarter schedule embedded within the semester framework of ASU. Although designed to be completed in 18 months, the program remains flexible, allowing students to finish in as few as 12 months or up to 24 months or longer. The program also allows K–12 teachers to become highly qualified in geography by completing 24 graduate hours in geography. All student assessments are individually focused on concepts, techniques, and applications of geography identified by the teacher for their respective educational context. The MAS-GE program consists of 30 semester-equivalent hours taken online, with two day-long sessions required at ASU Tempe Campus: an orientation session at the start of the program and presentation of an applied project at the end of the program.

¹The program Web site can be accessed at <http://geography.asu.edu/masge>.

The MAS-GE program attempts to rectify the setbacks Libbee (2006) identified by focusing on core geography themes: the physical and human environments, geo-techniques, and regional geography. Each geography content course (GCU 672–GCU 676, Table 1) was created with the idea that teachers need basic geography, but at a graduate level blending in geographic knowledge through the spectacles of pedagogy. Thus, while geography content courses cover basic associated elements, the course assessments require teachers to move beyond simple knowledge exercises, asking them to analyze and synthesize the lectures into meaningful and useful products.

Table 1. Current required courses for the MAS-GE program and their associated catalog description. Credit hours are listed in parentheses after course title.

Courses (semester credits)	Catalog Description
GCU 671 Introduction to Geographic Teaching (4)	An intensive course on history of geographic education; scientific method in research on geography education; research trends; resources for teaching; best practices.
GCU 672 Physical Geography for Teachers (3)	Transfer of matter and energy exhibited in Earth's climate, hydrology, soils, biogeography, and landforms; case studies; virtual field trips.
GCU 673 Human Geography for Teachers (3)	Analysis of cultural, economic, urban, historical, transportation, population, political, and development geography; case studies; virtual field trips.
GCU 674 Geographic Techniques for Teachers (4)	Introduction to geographic techniques, including GPS, GIS, remote sensing, cartography, qualitative and field methods.
GCU 675 World Geography for Teachers (3)	Systematic overview of geographic knowledge about different world regions.
GCU 676 North American Geography for Teachers (3)	Systematic overview of geographic knowledge about different North American regions.
GCU 677 Geography Across the Curriculum (4)	Intensive course on integrating reading, writing and mathematics standards with geography content; selected case studies; best practices.
COE 501 Introduction to Research (3)	Overview of educational inquiry from controlled, quantitative to qualitative, naturalistic. Emphasizes locating and critically interpreting published research.
SED 593 Applied Project (3)	Hands-on dialogue with College of Education faculty on the integration of geographic knowledge in a student's educational context.

From the very first class (GCU 671, Table 1), teachers are exposed to research, compiling a minimum of four, two- to four-page critical article summaries per geography course (Figure 1). Each summary must be from a “professional” source (e.g., peer-reviewed journal), follow specific guidelines developed by College of Education partners, and relate to the teacher’s “burning passion.” A course focusing on teaching geography across the curriculum (GCU 677, Table 1) rounds-out the geography content.

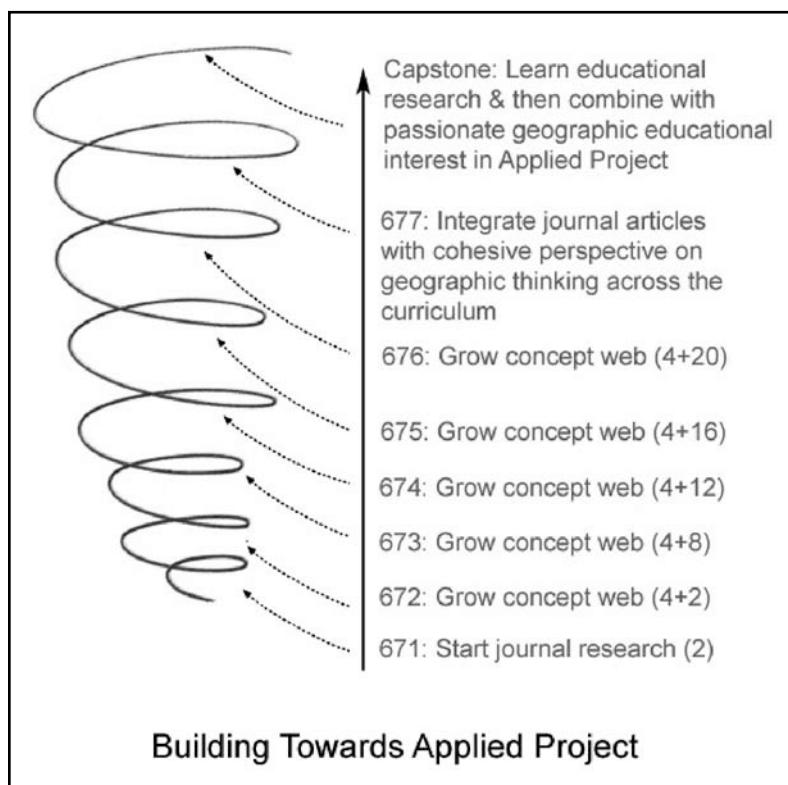


Figure 1.—MAS-GE students build a solid base of scholarly knowledge around their capstone project throughout the program, allowing their thoughts time to mature through building knowledge through 25 scholarly source reviews.

In addition to critical article summaries, each course requires formal course assessments. These focus entirely on teachers' perceived needs, while integrating information gained throughout the course. For example, as an assessment for the medical geography unit in GCU 673, one teacher created a lesson focused on the Spanish Flu

pandemic of 1918–1920, and how understanding the geography of that outbreak can lead to an understanding of disease diffusion today. The Binko-style lesson (a structure used by geographic alliances nationally; see Neubert and Binko 1991 and Binko and Neubert 1996) designed by this teacher came replete with a photo-rich PowerPoint, student assessment, and map project to track disease vectors—all useful tools easily integrated into their classroom.

The general structure of the geography coursework starts and ends with courses that blend geography content and pedagogy. Courses between provide teachers with a thorough base of knowledge in the core areas of physical geography, human geography, and geotechniques. In order to stimulate intellectual growth in regional geography, teachers develop a course in world regional geography at the community college level and explore a familiar subject (North America) at a much higher level. Figure 2 explains the program's strategy at enriching depth in geography education.

Each course also builds toward the “Capstone Experience” that includes courses taught by Education College colleagues. In this two-part series, teachers learn the basics of research in education (COE 501, Table 1) and create a formal written project (SED 593, Table 1), presented at a year-end academic function attended by fellow students, family members, friends, and faculty—one of only two required face-to-face meetings. This two-course culminating experience replaces a traditional thesis, with the goal being development of a detailed, sophisticated, and innovative project based on a real or potential issue of interest to the teacher—a “burning passion.” The capstone experience aims to create a framework whereby students discuss pertinent geographical issues, ideas for solutions, evaluate the feasibility of potential solutions, apply those solutions, and ultimately evaluate a project's success. Teachers receive continual guidance from instructors along the way to develop and enrich their capstone experience.

Pedagogical Interface

Although Blackboard™ was chosen as the initial platform because most students are familiar with its interface, the geography content courses (GCU 672–677) also have individual password-protected URLs. These Web sites consist of a syllabus with links to course lectures, assignment structure, course modules, extra readings, and other online resources. Although GCU 671 has a dedicated URL, it is run almost exclusively from Blackboard. The intent of the first Geographic Education

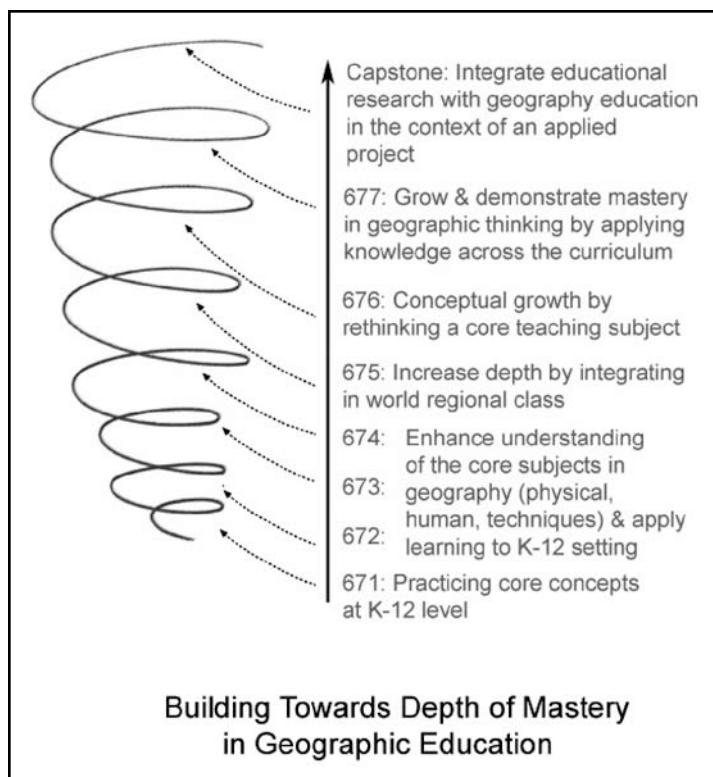
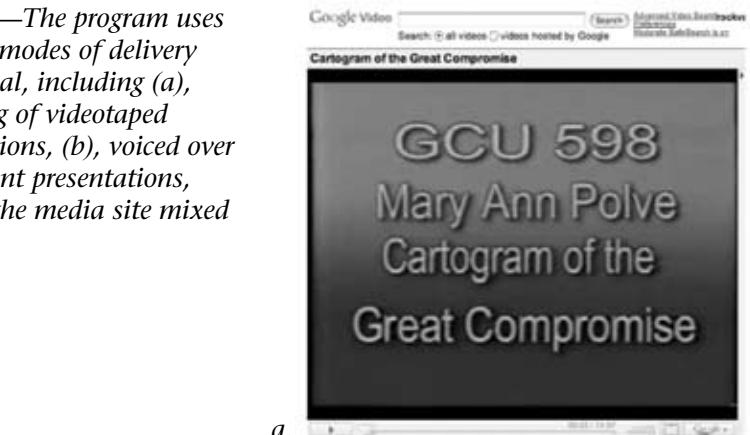


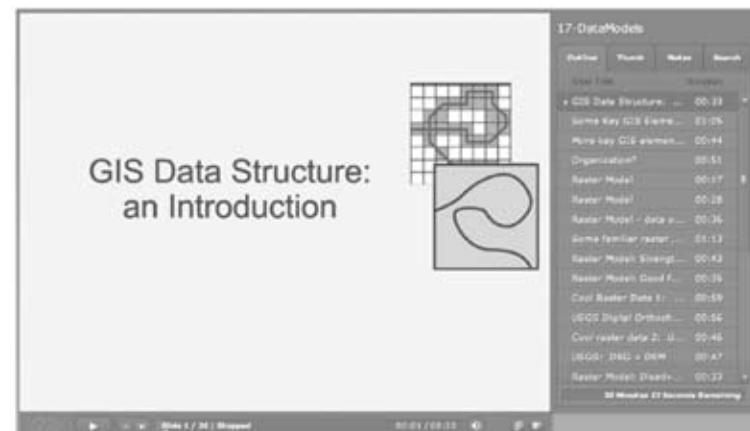
Figure 2.—Progression of courses intended to start by enriching the familiar of basic geography pedagogy and end by analyzing ways to integrate rich geography content across the entire K-12 curriculum.

GCU 671 course rests in introducing students to both the program structure and what will be expected of them. It focuses on learning why and how K-12 teachers teach geography. This course uses a bank of dozens of videotapings, conducted by the Arizona Geographic Alliance, of teachers from different grade levels explaining their lessons. These videos were then edited for content and time, converted to streaming quality, and uploaded as “non-public” to GoogleVideo (Figure 3a). This video bank also includes a few classroom tapings narrated by a pedagogical content expert—similar to a “Director’s Cut” edition DVD. Using Google as an interface, then, teachers watch the different presentations at their leisure and analyze and critique each “set” of lessons.

Figure 3.—The program uses different modes of delivery of material, including (a), streaming of videotaped presentations, (b), voiced over PowerPoint presentations, and (c), the media site mixed format.



a.



b.



c.

Owing to their focus on content specifically, the geography content courses boast a different delivery mode: Adobe Breeze Presenter (Figure 3b).

Presenter is, at its simplest, a voiced-over PowerPoint presentation. But it also allows instructors to embed multiple images/animations, hyperlinks, and even video alongside the voiced-over text. This delivery system was chosen for its ease-of-use, cross-platform ability (works on Macs and PCs), and lack of any extra end-user equipment (“plug-in”). Students merely “click” on the link provided in the online syllabus, and immediately the lecture plays on their computer.

While it also has an individual URL, GCU 675 (World Regional) uses mediasite for its pedagogical interface (Figure 3c). The point of this course focuses on teachers observing, studying, and critiquing an entire college-level world regional course (via mediasite). Using the world regional model provided, teachers are required to create their own world regional course that could be taught at the community college level. For many teachers, this represents a challenge; they must communicate content beyond the K-12 level, forcing them to think like a college instructor. This seemingly simple task of creating a college-level course enhances their pedagogical content knowledge and forces them to think about future pedagogical content applications—all while internalizing how geographers think about world regions.

Alongside the Blackboard, Presenter, and mediasite interfaces are other resources. Several faculty members outside Arizona State contributed short video presentations of key concepts in geography. For example, in GCU 673, geographer J. P. Jones III (University of Arizona) contributed a short introduction to the socio-spatial dialectic—still a key concept in geographic thought. This inter-institutional cooperation not only results in a richer learning experience for teachers, but also exposes teachers to cutting-edge geography. Case in point: for the capstone experience, one student’s focus rests on addressing the human-physical geography divide—a noble effort for a nontraditional student teaching full-time in a middle school K-12 classroom.

Most interactions between teacher and instructor occur via heavy one-on-one e-mail traffic (e.g., multiple e-mails per student, per quarter). While this can be frustrating for a geo-techniques course,

the program was designed to be flexible and fit into a K–12 teacher’s lifestyle. If problems cannot be remedied via e-mail, the instructor may opt for a site visit. These meetings can be individual or in a small group, and take place wherever is convenient for the teacher, such as at a school site, in a park to accommodate a teacher’s children, or at a coffee shop. Throughout the first cohort, two *optional* face-to-face meetings were scheduled to address teachers’ specific needs. These were both well attended and held at teachers’ requests. One disadvantage to these meetings was that they mostly excluded non-local teachers. Yet teachers recognize that this *is* an online program, and as such, they do not expect face-to-face time, though the instructors make every effort to accommodate such requests.

Geography content courses are sandwiched between an in-person orientation at the beginning of the program and capstone presentations at the end. These bookends represent the only regularly scheduled on-campus events. While attendance at orientation is strongly suggested, non-local students are not required to be there. Likewise, the program’s flexibility even extends to the capstone experience, as non-local students may submit their presentations via a virtual Web conference, or even a Breeze presentation of their own. The program’s bottom line rests in flexibility and accommodation of the K–12 teacher lifestyle.

Assessment

Four main components frame our assessment: individual assessment *during* courses, a course-culminating “capstone” project, assessment of the courses themselves, and assessment of the program. Since the program is designed with the K–12 teacher in mind, many choices are possible for each class’s units. Unit assessments for GCU 671, 674, 675, and 677 are slightly different, owing to the specific content in each. For GCU 672, 673, and 676, however, teachers can take three “take-home” essay exams (an option that no student has yet explored), or choose six options from a list (Table 2). In addition to these options for each geography content course, and to help prepare for the capstone experience, teachers are tasked with completing two connections to the capstone experience: critical article summaries (discussed above) and creation of a concept map that displays their evolving burning passion.

An integral part of the degree experience, capstone projects exhibit a wide-ranging (and tasty) geography-laden buffet. For example, first cohort capstone projects include a plethora of subjects, such as:

- Addressing the human-physical geography divide in K–12 education
- A geography of breast cancer (locational analysis of breast cancer occurrences)
- The impact of field experiences on K–12 classrooms (how teachers use personal field experiences and how technology can help encourage geographic thinking)
- A “City-First” approach to the study of regional geography in North America
- Battlefield preservation and reconstruction
- The diametrical opposition of environmental impact and romanticizing of tumbleweeds in the American West
- Incorporating travel study experiences into the classroom

While only a sample of the first cohort’s burning passions, these topics exemplify teachers’ willingness to complete work at the graduate level, moving from the role of consumer of knowledge to producer. This transformation is monitored through the various formative and summative assessments for the program.

In addition to summative end-of-course surveys, the program values formative teacher feedback. For example, the “Discussion Thread Leader” course assessment option (Table 2) resulted when a teacher wanted to discuss pertinent issues with colleagues. While it can be overlooked, Blackboard has proven effective as a learning community in graduate-level geography courses (Lukinbeal and Allen 2007). For this program specifically, Blackboard provides a complementary interface that enhances critical thinking (cf. Deloach and Greenlaw 2005; Francescato et al. 2005), inquiry, and collegial communication (cf. Gokhale 1995; Bradshaw 2002; Francescato et al. 2005; and Frederickson et al. 2005). Yet aside from the course survey (below), the discussion-thread leader option represents the only other use of Blackboard’s assessment features.

Table 2. The six assessment options available for GCU 672, 673, and 676. Teachers are instructed to select the six assessments that best improve their teaching. In this table, "Limit" represents how many times an option may be selected for a single course.

Option	Limit	Description
Bulletin Board for Classroom (or Hallway Display)	2	Prepare a hallway display or classroom bulletin board that incorporates most of the elements from the lessons in this module. You will send in (e-mail, if you have a digital camera) photographs of the display.
Design your own assessment	1	Your assessment must involve synthesizing the information presented. There must be criteria for grading this performance assessment. It must link to the standards that you teach, and it most important, it should involve an outcome that would improve your teaching.
Discussion Thread Leader	2	The blackboard web interface has a feature that allows students to discuss the material in a flowing thread. If you are greatly interested in a particular topic, this assessment encourages you to lead a discussion thread that goes into depth on that topic. The key to this assessment option is enthusiasm for a topic and working with the instructor.
Journal Article Analysis	2	Find a journal article from ASU's library on a topic that was covered in lecture. Summarize the article, and compare the article's content to the presentation that you watched. This summary should be in the following form: <ul style="list-style-type: none"> • 1/2 page of brainstorming how this material might be used in your educational setting. • 1/2 page of Summary of journal article • 1 page of comparison
Lesson – Binko Style	6	Write a "Binko"-style lesson. Remember, the "Binko" style is the lesson format used by geographic alliances and illustrated extensively in the GCU 671 class. The only addition is that you would add a new section: "Background Information." In this background information section, you would provide your notes and research on the lesson. The notes and research might come from the class materials, the readings, independent sources, or a mixture. The Background Information might also be a reading that the students would use in order to complete the tasks in the lesson.
Online Lesson Analysis and Adaptation	2	There exists a plethora of lessons on the internet. Some present incorrect information on a topic, but have the core of a great student activity. Others have outstanding content but were designed by scientists with little real classroom experience. This assessment involves you taking an internet lesson that relates to the unit being covered, doing the research to determine if the content is valid, and then modifying the lesson to improve deficiencies.

Continued

Table 2 continued

Option	Limit	Description
Powerpoint presentation	6	Make a PowerPoint presentation (or modify the presented powerpoint) to fit your grade level. You must submit your performance objectives for the powerpoint, and provide the materials for student assessment of your powerpoint (quiz, notetaking sheet, worksheet, or other student activity) along with the answer key.
Student Readings	2	Find grade appropriate readings/literature on the subject matter. Then, develop the complete assignment that you would give your own students, including handouts, instructions, worksheets, keys, or other items that would make this "ready to use tomorrow."
Study Guide and Test	2	Develop a study guide and test for your own classroom for when you would teach the material in this module.

The end-of-course surveys use Blackboard's survey feature. Although initially time-consuming to create, these surveys have provided constructive comments from teachers regarding the course layouts, designs, and level of content. From these surveys, it is clear that while the courses are "Very Challenging" for a majority of teachers, they found the content and workload acceptable. Further, teacher responses about what they learned ran the gamut of positives, from "I think that this course helped me teach better this year and will help me in the years to come" to "I was challenged to see things in a different light and apply what I learned."

In addition, two other qualitative summative assessments should be mentioned. First, halfway through the program's first cohort (started in September 2007), we reached the point of deciding whether or not to continue the program and recruit a second cohort (starting in September 2008). Thus, we asked the harshest question possible to all teachers in the cohort: did they feel the program worthy of recruiting a second group? We made it clear that, no matter what, we were committed to helping them complete their degrees. However, we honestly wanted to know the ultimate summative assessment of a program. Table 3 provides representative responses of the feedback received, edited to reduce journal space, but presented in a way that retains the assessment's flavor.

We also undertook qualitative summative evaluations at two well-attended optional face-to-face meetings. We learned that there is an overwhelming preference for Adobe Breeze Presenter as the mode of instruction. Teachers cited several reasons for this inclination:

ability to review material, ability to stop and go whenever convenient, and ability to take notes while both seeing and listening to the presentation.

Table 3. Summative assessment of the MAS-GE program after its first year, undertaken by asking an honest question of “whether we should continue this program. In other words, do you think that it is worthwhile for other teachers?” If the answers were negative, we were fully prepared to close the program after the first cohort completed their degrees. This table compiles segments of their responses.

Teachers' Responses

- Absolutely! ...The content courses were my favorite and am sad that we will soon start turning from that.
- I've wanted a Masters for some time but had the greatest reluctance to subject myself to the typical masters programs that teachers usually do. This program has offered a real alternative to the mind numbing standards of typical masters programs, indeed, this would be a great advantage in recruitment as far as I'm concerned.
- I think it's very cool. I recommend keeping the program. Yes, it involves a lot of time and work, but it is online, so that helps so much with flexibility.
- It has gotten me thinking about what else I might want to do, now that I have a course almost prepared for an adult audience.
- I think it is a worthwhile program because I wanted a degree in geography and I waited forever (okay, 8 years) and there was never a program that suited in this area.
- The different assessments for each course got me excited! Requiring us to create our own world regional course and learning to create maps and simple GISs well, now, instead of just telling my AP students about GIS, they can make an easy map using it. That is worthwhile in itself.
- For me personally it has been a valuable experience. Some of my colleagues are doing master's in Curriculum and Instruction or Admin, and though they seem to have less of a work load than I do, I think I am receiving something more valuable: content training that can be used in the classroom.
- Not only will I be one of the few teachers Highly Qualified in Geography but I am being prepared to teach a course at the Community College level. My colleagues with their C & I degree will not be able to do that.

Continued

Table 3 continued

Teachers' Responses
<ul style="list-style-type: none">• As a teacher, this program has not only inspired me and provided the tools to integrate geography into the subjects I teach the most (History and Civics), it has helped me evolve as an educator.• My lesson plans are infinitely more structured and executable. My confidence in the classroom is much higher, because I possess the tools and now have practice delivering more three-dimensional lessons.• The program has given me both a sense of specialization and has broadened me, at the same time. As a result of the program, so far, I see content and curriculum differently. Not only do I see geography in everything, I have learned how to "think" about geography standards not as something I have to do, but as an imperative to provide perspective for students.• I feel illuminated and challenged, by the program. It's intoxicating. Now, when I look out of an airplane, leaving Albuquerque, I look for the "calcrete duri-crust" around the river valley and analyze the clouds building over Flagstaff.• I would encourage you to persist. I believe you and your staff have created something special. If you were to offer a PhD sister program, I would be the first to sign up.• I LOVE this program! I have no complaints at all (so far), and would "sell" this program to anyone! I'm learning so many new things, and I'm also inspired to discover more.• I found all of the classes helpful. My overall impression is very positive.• I have been telling many people about this program, recommending it to those who have an interest in geography.• All grad programs place stress on the teachers enrolled in them. Stress from the MAS-GE program, however, comes from the work involved, not from the logistics of participating in and completing the program. That's a big difference.

Continued

Table 3 continued

Teachers' Responses
<ul style="list-style-type: none">• I would highly recommend the MAS-GE program at ASU! It allows for a reasonable amount of flexibility into a teachers schedule, especially with breaks and summer without a rigorous commute for evening classes, weekends, etc.• The degree is from ASU and not a little heard of or possibly questionable online school.• The faculty is most attentive and I truly feel their desire for success to all those involved in the cohort.• The workload is no pushover, but assignments are focused on materials you can create and use in any classroom.• This program is completely worth it. I have used so much of what we have done for the classes in this program in my classroom this year.• Please continue the program.• This has not been a waste at all. I can use this in my classroom!• Someone commented to me that it would be wonderful to see the history department do something similar.• It would be a shame to not see others follow behind us in this program.

Future Plans

No graduate program properly assessing its learner objectives can truly predict its future. This program's future rests in continued assessment from each cohort and from the external evaluators examining formative and summative assessments. Still, based on existing feedback, we anticipate programmatic growth with at least three themes. First, we hope to establish a cycle of professional growth, employing recent graduates as course instructors and as individuals improving course content. Second, we hope to add history, political science, and economics courses to develop a concentration in social studies education. Third, we hope to add courses to develop a concentration in geographic techniques for teachers. One great hurdle to this program rests in keeping down costs. As ASU increases its tuition rates, the cost of the program rises. Of course, the greatest hurdle to any innovative program rests in the changing dynamics of academic administrations.

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