

Comprehensive Program Review Self-Study
Online MAT Secondary Mathematics and Science

Columbus State University

April 2013

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EXECUTIVE SUMMARY - MAT/MEd Secondary Mathematics Education

Major Findings of the Program's Quality and Productivity

Program Quality: Very Strong

In February 2013, a continuing approval review of the Educator Preparation Unit at CSU was conducted by a Board of Examiners (BOE) consisting of representatives from the National Council for Accreditation of Teacher Education (NCATE) and the Georgia Professional Standards Commission (PSC). The 2008 NCATE Standards and the Georgia 2008 Standards were used to assess the unit and its programs. The BOE judged all standards to be met for the unit and for all initial and advanced programs. There were no areas for improvement cited, and the team noted multiple areas of strength.

Overall, the M.A.T. Secondary Math and Science program is very strong and prepares highly qualified mathematics and science teachers who have the knowledge, skills, and dispositions to help all students learn. This is demonstrated by GACE pass rates of 100%, consistent ratings of meets or exceeds expectations on performance evaluations, and overall GPAs of 3.0 or better.

Program Productivity: Above Average

The first cohort of students in the M.A.T. Math and Science program matriculated in Spring 2009. The number of declared majors increased during the first year of the program but then decreased as students began graduating from the program. Enrollment seems to have stabilized at about 24 students, but additional years of data are needed to see if this pattern continues. The average three-year enrollment in the M.A.T. in Math and Science program is 25, which is higher than the average enrollment in any other M.A.T. secondary education programs. Yearly enrollment is also higher than enrollment numbers in M.A.T. Secondary Mathematics and Secondary Science programs combined.

The number of M.A.T. degrees conferred each year in the online Math and Science program is small. However, the number of degrees conferred is comparable to other M.A.T. secondary education programs, and the M.A.T. Math and Science program has the largest three-year average, along with Secondary English. Of the five M.A.T. secondary education programs offered at CSU, the M.A.T. Math and Science program had the second highest graduation rate for the Fall 2009 cohort.

List of Recommendations for Improving Program Quality

The Online M.A.T. Consortium oversees the M.A.T. in Secondary Math and Science. This consortium consists of representatives from each of the institutions involved in the collaborative program. The group works to improve the curriculum, courses, and resources offered to students in the online M.A.T. program. Though the program quality is very strong, we continue to look for ways to make improvements. Current initiatives include:

- aligning the curriculum with the new Common Core Georgia Performance Standards for Mathematics and Next Generation Science Standards in an effort to help prepare teachers to teach with the new standards,
- implementing the edTPA during student teaching or internship,

- revising coursework prior to student teaching or internship to incorporate elements of edTPA.

List of Recommendations for Improving Program Productivity

Recommendations to improve program productivity are as follows.

- Seek grant funding to support graduate students in mathematics and science education.
- Explore possibility of admitting students from outside of Georgia into the online M.A.T. program.
- Work with the COEHP Recruitment Committee and Director of Graduate Studies to enhance recruitment efforts.

Conclusion about the Program's Viability at CSU

The M.A.T. Secondary Math and Science program at CSU is viable. As indicated by the evaluation of the NCATE/PSC Board of Examiners in February 2013, the quality of the programs is very strong. All NCATE/PSC standards were judged to be met for all initial and advanced programs with no areas for improvement and multiple areas of strength cited.

The viability of the program is also ensured by the sharing of resources among the secondary mathematics and science programs at CSU and among the four institutions involved in this collaborative program. The College of Education and Health Professions works with the other three institutions on the design and implementation of the online M.A.T. program.

Representatives from each institution meet annually to review data and discuss areas for improvement. The online M.A.T. program is a valuable resource for individuals who want to obtain a teaching certificate but are unable, for a variety of reasons, to enroll in an on-campus program.

Enrollment in the online M.A.T. program is comparable to enrollment in other graduate secondary education programs. The average three-year enrollment is 25, which is higher than the average enrollment in any other M.A.T. secondary education programs. Yearly enrollment is also higher than enrollment numbers in M.A.T. Secondary Mathematics and Secondary Science programs combined.

Though small, the number of degrees conferred is comparable to other M.A.T. secondary education programs and has the largest three-year average, along with Secondary English. As the only USG institution offering this online M.A.T. degree in Math and Science, CSU provides an opportunity for career-changers to enroll in a high quality program that prepares them to teach math or science in grades 6-12. There is a critical need for math and science teachers, and the online M.A.T. program is helping to meet that need.

Program Improvement Plan - This section should include plans for resource allocation and should be completed by the dean in consultation with the VPAA at the conclusion of the self-study conducted by the department. The following is a draft.

In response to the findings of the Comprehensive Program Review, program faculty propose the strategies outlined below to improve the quality, productivity and viability of the online M.A.T. program. These strategies will be facilitated by the Online M.A.T. Consortium.

Goals	Projected Timeline	Resource Allocations
Align the curriculum with the new Common Core Georgia Performance Standards for Mathematics and Next Generation Science Standards.	2013-2014	Personnel resources
Implement the edTPA during student teaching/ internship.	2013-2014	Personnel resources
Revise coursework prior to student teaching or internship to incorporate elements of edTPA.	2013-2014	Personnel resources
Seek grant funding to support graduate students in mathematics education.	Ongoing	Financial and personnel resources
Explore possibility of admitting students from outside of Georgia into the online M.A.T. program.	2013-2014	Personnel resources
Work with the COEHP Recruitment Committee and Director of Graduate Studies to enhance recruitment efforts.	Ongoing	Financial and personnel resources

Summary Recommendation and Supporting Rationale

Recommendation for future of program: *Maintain the Program at the Current Level.* The program quality is very strong. Though the number of degrees conferred each year is small, it is comparable to other M.A.T. secondary education programs. The online M.A.T. program in Math and Science provides a valuable opportunity for career-changers to pursue certification in the critical need fields of secondary math or science. Many of the students enrolled in the program are working adults, stay-at-home parents, or provisional teachers whose schedules do not allow them to travel to a university campus to take courses. Without the online M.A.T. program, these individuals would probably not have the opportunity to participate in a teacher certification program that helps them to develop the knowledge, skills, and dispositions needed to work effectively with middle and high school students in diverse math and science classrooms.

THE PROGRAM'S DETAILED SELF-STUDY

Section One - Program Background and Overview

I. Brief Program Overview

The online M.A.T. program in Secondary Math and Science prepares highly qualified mathematics and science teachers who possess the knowledge, skills, and dispositions necessary to promote high levels of learning for all students in grades 6-12. In mathematics and science content courses, mathematics and science education courses, professional courses, and field experiences, candidates have multiple opportunities to demonstrate excellence in teaching, scholarship, and professionalism. Creating opportunities for candidates to demonstrate excellence in these three areas is consistent with the Educator Preparation Conceptual Framework and is reflected in the broad goals of the program. These goals are briefly summarized as:

M.A.T. graduates will be able to:

1. Demonstrate knowledge and understanding of mathematics and science content taught in middle and secondary classrooms,
2. Demonstrate continual growth and proficiency in planning instruction based on standards and knowledge of students,
3. Demonstrate proficiency in using a wide range of instructional strategies and differentiating instruction to help all students learn,
4. Demonstrate the ability to create positive learning environments by successfully implementing classroom management plans and fostering effective communication,
5. Demonstrate proficiencies related to selecting and using curricula, technology, and other materials to enhance the teaching and learning of mathematics and science,
6. Demonstrate proficiency in assessing student learning and using assessment data to improve teaching and learning,
7. Apply and add to the body of educational research related to the teaching and learning of mathematics and science,
8. Display ongoing reflection and growth regarding values, commitments, dispositions, and habits associated with effective and professional teaching.

M.A.T. candidates seeking initial teacher certification, develop proficiency in applying the knowledge, skills, and dispositions to impact P-12 student learning. They also begin to develop expertise in their teaching field through the completion of several advanced level courses.

The M.A.T. Math and Science program is closely aligned with CSU's mission of achieving academic excellence and preparing individuals for a life of success, leadership, and responsibility through community awareness, engagement, and service to others. Focusing on growth toward skillful "whole" performance rather than incremental mastery of discrete skills, candidates in the M.A.T. program demonstrate expertise as they develop, refine, and enhance their knowledge and skills to improve the learning of all students in grades 6-12.

Stakeholder's Satisfaction With the Program

Data from graduate and employer surveys administered annually by the University System of Georgia Board of Regents indicate that stakeholders are highly satisfied with the education programs at CSU. On the graduate survey, graduates are asked to rate their preparation in the areas of content and curriculum; knowledge of students, teaching, and learning; learning environment; classroom, program, and school-wide assessment; planning and instruction; and professionalism. Graduates consistently give high marks (i.e., ratings of Agree or Strongly Agree) on 91% or more of the items surveyed. Since 2008, the overall range of agreement to survey items was 76% to 100%.

Employers of CSU prepared teachers complete a similar survey. Since 2008, employers have given high marks (Agree or Strongly Agree) on 94% or more of the items surveyed. The overall range of agreement to survey items was 75% to 100%.

Periodically, we also receive feedback from university supervisors and online M.A.T. course instructors. Feedback from these groups has been very positive overall.

Section Two - Indicators of Program Quality

In February 2013, a continuing approval review of the Educator Preparation Unit at CSU was conducted by a Board of Examiners (BOE) consisting of representatives from the National Council for Accreditation of Teacher Education (NCATE) and the Georgia Professional Standards Commission (PSC). The 2008 NCATE Standards and the Georgia 2008 Standards were used to assess the unit and its programs. The BOE judged all standards to be met for the unit and for all initial and advanced programs, including the M.A.T. in Math and Science. There were no areas for improvement cited, and the team noted multiple areas of strength. Following are excerpts from the Institutional Report submitted to NCATE and findings taken from the BOE final report.

II A. Quality of Faculty

· Appropriateness of Faculty Credentials

Unit faculty have doctorates in their areas of expertise. School faculty are licensed in the areas that they teach and supervise. Clinical faculty have recent professional experiences in schools. Evidence indicates that the unit uses best practices in teaching to improve student learning in diverse P-12 classrooms and at the university level.

Unit faculty are highly knowledgeable about the content areas in which they teach. Their instruction emphasizes contemporary research practices and is designed to develop candidate proficiencies in line with professional, state and institutional standards. Unit faculty model good teaching by integrating diversity throughout the curriculum, employing technology and addressing different learning styles. Teaching is regularly assessed at the unit level through student evaluations. Emphasis on teaching quality is a part of the annual review process for both full time and part-time faculty.

· Use of Part Time Faculty

Each semester, the unit calls on skilled practitioners to serve as part-time instructional faculty and/or university supervisors. The combination of full-time and part-time faculty creates a diverse and dynamic teaching staff that appropriately offers a balance between the pedagogical and practical challenges facing today's educators.

University supervisors and clinical faculty are qualified to supervise at the level and/or in the content field where they are assigned. These include a number of talented recent retirees from public schools (both classroom teachers and principals) employed specifically to work with student teachers and interns. All university supervisors, as well as full- and part-time faculty who supervise and evaluate teacher candidates during field experiences, have training in the consistent use of the Model of Appropriate Practice (MAP), the college's performance assessment instrument for initial teacher preparation programs.

Part-time faculty are evaluated annually on teaching and professionalism. As requested in the offsite report, the unit provided examples of evaluation instruments used to evaluate part-time faculty. The unit has implemented a process for the systematic evaluation of part-time faculty. Since 2009, instructional evaluations demonstrate that all part-time faculty meet performance expectations.

Full-time and part-time faculty engage in collaborative projects to improve candidate performance. This is evidenced by a freshman learning community which pairs education foundation courses with English courses designed to improve the level of writing.

· Diversity of Faculty

Candidates in educator preparation programs at CSU participate in multiple learning communities that are diverse in terms of faculty, candidates, and P-12 students. Of the 271 full-time instructional faculty at CSU in fall 2011, 68 (25.1%) were minorities, 154 (56.8%) male, and 117 (43.2%) female. In the COEHP, there were 35 professional education instructional faculty (excluding the Dean and two Associate Deans) who regularly provide instruction for candidates in educator preparation programs. Of those, seven were African-American (20%), one (3%) Hispanic, two (6%) Turkish, and one (3%) Japanese-American. Fourteen (40%) were male and 21 (60%) female. In the COEHP, every effort is made to recruit, hire, and maintain a faculty that is diverse in gender, ethnicity, and race and thus provide an opportunity for all candidates to experience and learn from divergent perspectives.

Data on the diversity of school faculty members who supervise candidates during field experiences and clinical practice were provided. A summary of the diversity of cooperating teachers and teacher demographic data for two partner school systems indicated that for the fall 2011, 59 of 96 (61.5 percent) and during the spring semester of 2012, 68 of 106 (64.2 percent) teachers completed and returned the forms. Out of these two groups, 13 of 127 (10.2 percent) were minorities. Various interviews with faculty and candidates provided evidence of the knowledge and experiences faculty members have to help candidates understand and work with students from diverse groups, including ELL, and students with exceptionalities.

The unit has worked to increase the number of minority faculty. Diverse faculty members have increased as a result of efforts by the unit and university. Evidence provided indicated that candidates have the opportunity to work with diverse school, unit, and other faculty from diverse ethnic, racial, and gender groups. During the poster session it was noted that there were candidates and faculty members from several different minority groups.

· Opportunities for Faculty Development

Unit faculty participate actively in professional development which includes their own further development through workshops and conference participation as well as the facilitation of professional development for both school and other unit faculty. The unit provides sufficient funding to facilitate professional development of faculty and staff. In interviews, faculty consistently confirmed satisfaction with the availability of funding for travel to professional meetings.

The Faculty Center for the Enhancement of Teaching and Learning provides professional development opportunities for faculty. The Center for Quality Teaching and Learning serves as an outreach center offering technology workshops and individual sessions for educators from Preschool through University Faculty, as well as providing technology-training opportunities for community partners. The Distance Learning Design and Delivery Department provides training and support in the design, development, delivery and assessment of instruction via online and distance learning technologies.

· Program Improvement Plans

A search is currently underway for a new mathematics education faculty member and program coordinator. A new hire in mathematics education will allow us to use fewer part-time faculty and provide greater consistency in program delivery. Several candidates under consideration are from minority groups and would strengthen the diversity of faculty in the program.

II B. Quality of the Teaching

· Indicators of Good Teaching

Faculty's utilization of best-practice methodology is a special emphasis in educator preparation programs. Some faculty use as their basis for "best practice" the constructs delineated in *Methods That Matter* (Zemelman, Daniels, & Hyde; Heinemann, 2005). This work is a synthesis of recommendations of national professional organizations, including the National Council of Teachers of Mathematics. Other faculty take their cue from an array of scientifically-based methods consistent with No Child Left Behind legislation or constructivist learning theory. Although these views of best practice may differ substantively, the climate among faculty is one that stimulates individual professors to think seriously about their own practice in light of their personal (and emerging) understanding of teaching strategies best suited to both teacher candidates and learners in school systems served by CSU. [*Perspectives in Learning*](#), the COEHP's professional journal, frequently publishes articles by faculty and students that highlight best-practice pedagogy.

Unit faculty are highly knowledgeable about the content areas in which they teach. Their instruction emphasizes contemporary research practices and is designed to develop candidate proficiencies in line with professional, state and institutional standards. Unit faculty model good teaching by integrating diversity throughout the curriculum, employing technology and addressing different learning styles. Teaching is regularly assessed at the unit level through student evaluations. Emphasis on teaching quality is a part of the annual review process for both full time and part-time faculty.

· Indicators of Good Advising

CSU's Graduate School and the COEHP Office of Graduate Studies oversee admission and orientation of graduate students. Professional Education Program Coordinators provide advisement to graduate students while the SAFE Office provides assistance with certification requirements.

Individuals seeking initial teacher certification through a Master of Arts in Teaching (MAT) program must have their transcripts evaluated to determine the courses needed for certification. To initiate this process, individuals must submit copies of all their transcripts to the College of Education and Health Professions Student Advising and Field Experiences Office (SAFE) and request a transcript evaluation in the intended area of certification. The SAFE Office sends the transcripts to the appropriate program coordinator or advisor, who then reviews the individual's previous coursework to determine if any of those courses can count toward certification. When the evaluation is complete, it is submitted to the Department of Teacher Education Office, and the individual is notified by letter and can set up an appointment with his/her advisor to discuss a program of study.

Prospective MAT students must also apply for admission to the university. Individuals desiring to enroll in graduate courses must apply for graduate admission and be admitted to a College of Education and Health Professions (COEHP) graduate program with regular or provisional admission status. Prospective students are referred to the CSU Admissions Office in University Hall or to the Admissions website at <http://admissions.columbusstate.edu/index.php>. Additional information on MAT programs is available at <http://te.columbusstate.edu/degrees.php>.

When a student completes the program of study for a degree, the student's advisor is asked to complete a degree progress sheet showing that the student has met all program requirements. Faculty maintain an updated degree progress sheet for each advisee to ensure that all requirements are being met. Notes from advising sessions are included on the degree progress sheet. Electronic copies of degree progress sheets are kept on file on the P-drive so that the department chair may access these files as needed to assist students.

Advisors are familiar with important deadlines (registration, course withdrawal, graduation, etc.) and inform their advisees appropriately. They are also familiar with the university appeals process and assist advisees, as needed, in resolving disputes. Matters related to student conduct are handled through the Office of the Dean of Students. Academic appeals are handled at the department level. When necessary, department decisions may be appealed to the appropriate Dean and then to the Provost.

· Departmental Reward System

Full time unit faculty undergo an annual review of performance during which teaching, scholarship, and service are evaluated. Performance evaluations are intended to improve the performance of the faculty member under review and are also used in making decisions regarding merit pay.

In recognition of the competence and expertise of COEHP faculty, three new awards were created in fall 2007 to bring greater attention to excellence in teaching, scholarship, and service-based leadership. Every spring, there is a college-wide vote on nominated finalists. Annually, each award has at least three qualified candidates who are nominated by administrators, students, and colleagues for their competence and professional merit.

· Program Improvement Plans

Teaching and advising is a strong component of the mathematics education programs. When a new hire is made, a faculty mentor will be assigned to the person to help guide him or her in establishing good teaching and advising practices.

II C. Quality of Research and Scholarship

· Opportunity for Student Research Projects

Throughout the program, candidates must reflect on and analyze their teaching. During student teaching/internship, they must complete a project that requires them to collect and analyze assessment data to inform their instructional decision-making. Through these projects, candidates demonstrate that they are meeting national, state, and institutional standards as they synthesize and apply the knowledge and skills developed in their course of studies. Data from the Model of Appropriate Practice (MAP), the college's performance assessment instrument for students in initial teacher certification programs show that candidates understand and can apply theories related to student learning and that they analyze student, classroom, and school performance data and make data-driven decisions. All candidates must meet or exceed expectations on all components of the MAP in order to successfully complete student teaching/internship.

Interviews with candidates and faculty confirmed that faculty regularly involve candidates in research which results in presentations at professional meetings and publications in refereed journals.

· Faculty Publications, Presentations, and Grants

CSU's professional education faculty is productive in terms of research, publications, and presentations. For example, in 2010-2011, COEHP professional education faculty published 1 book, 1 book chapter, 24 refereed journal articles, and 4 non-refereed journal articles. In addition, faculty wrote 23 major reports and produced 19 other types of scholarly work including grant proposals and manuscript reviews. Several faculty members are published in the COEHP peer reviewed journal, [*Perspectives in Learning*](#). The editorial board for *Perspectives in Learning* includes four professional education faculty members with one serving as the journal's

editor. The journal, which was first published in spring 2000, features scholarly contributions from faculty and from graduate and undergraduate students in collaboration with faculty, peers, and community partners. All publications relate to teaching and learning, and manuscripts may be submitted for review by authors both within and outside the university. See [Exhibit 5.3.d #9 \(i\)](#) for samples of faculty publications.

Much of the research generated by professional education faculty members is shared at professional conferences. Faculty present independently, collaboratively, and with their students at local, state, regional, and national/international conferences or meetings. During the 2010-2011 academic year, professional education faculty presented at 34 international/national conferences, 32 regional/state conferences, and 23 local conferences or meetings. See [Exhibit 5.3.d #9 \(ii\)](#) for samples of faculty presentations.

Faculty have also been successful in receiving external funding to support educator preparation. In 2010-2011, professional education faculty submitted 22 grant proposals with 13 being funded for annual awards totaling approximately \$564,393. Early in AY 2011-2012, CSU was awarded two large five-year grants ([UTeach Grant](#) worth \$1.4 million and [Robert Noyce Teacher Scholarship Grant](#) worth \$1.2 million) to support math and science teacher preparation. These two grants are a collaborative effort between professional education faculty in the COEHP and math and science faculty in the College of Letters and Sciences. See [Exhibit 5.3.d #9 \(i\)](#) for samples of faculty grant proposals.

Unit faculty actively engage in research. Interviews with candidates and faculty confirmed that faculty regularly involve candidates in research which results in presentations at professional meetings and publications in refereed journals. Unit faculty are successful in securing internal and external funding for their research including funding from the Ivey Foundation, UTeach Grant (\$1.4 million), and ARRA Early Head Start (\$2 million). The promotion and tenure process values and rewards active scholarship as demonstrated in the Rubric for Annual Performance Review.

· Program Improvement Plans

We plan to look for grants to support our M.A.T. candidates who are seeking initial teacher certification.

II D. Quality of Service

· Activities to Enhance Program, Department, College, Institution, Community and/or Region

Unit faculty are actively engaged in service to the university, the profession and the community. Unit faculty serve in leadership roles in state and national professional associations and agencies.

CSU professional educator preparation faculty display extensive and distinguished service on campus, in the community, in the Georgia/Alabama region, and nationally. Such service is highly consistent with the unit's mission and with the Conceptual Framework, serving the greater purpose of positively affecting student achievement, whether the achievement of teacher

candidates, counselors, and administrators or the achievement of children and adolescents. See [Exhibit 5.3.e](#) for examples of faculty service and collaborative activities.

- Program Improvement Plans

Quality of service is very strong, and no improvements are needed at this time. Faculty will continue to engage in service to the university, the profession, and the community.

II E. Quality of Faculty and Student Achievements

- Faculty Honors

In recognition of the competence and expertise of COEHP faculty, three new awards were created in fall 2007 to bring greater attention to excellence in teaching, scholarship, and service-based leadership. Although the award selection was originally designed to be the privilege of the Faculty Qualifications, Performance and Development committee, it became evident during the initial call for nominations that our college has many qualified and exemplary professionals based on the number of nominating letters. Every spring, there is a college-wide vote on nominated finalists. Annually, each award has at least three qualified candidates who are nominated by administrators, students, and colleagues for their competence and professional merit. Two years ago, a mathematics education faculty member received the excellence in teaching award.

- Student Honors

Outstanding graduate students in each education program are honored annually at the CSU Honors Convocation and at the COEHP Awards Ceremony. From time to time, education students are honored with scholarship awards to support their continuing education. For example, in 2012, one of our graduate students was awarded a Future Leader Initial NCTM Annual Meeting Award. This award allowed her to attend the NCTM Annual Conference

- Graduate Achievements (Licensure, Certification, Admission to Graduate School, Job Offers, etc.)

Graduates of the M.A.T. program in Math and Science are in high demand by Georgia school systems. Because mathematics and science are critical need areas, many M.A.T. students are offered teaching positions prior to admission to the program. After completing the M.A.T. degree program, they receive a clear renewable teaching certificate for Georgia.

II F. Quality of Curriculum

- Relationship Between Program's Curriculum and Its Outcomes

The M.A.T. program in Math and Science prepares highly qualified mathematics and science teachers who possess the knowledge, skills, and dispositions necessary to promote high levels of learning for all students in grades 6-12. In mathematics and science content courses, mathematics

and science education courses, professional courses, and field experiences, candidates have multiple opportunities to demonstrate excellence in teaching, scholarship, and professionalism. Creating opportunities for candidates to demonstrate excellence in these three areas is consistent with the Educator Preparation Conceptual Framework and is reflected in the broad goals of the M.A.T. Math and Science program.

M.A.T. candidates develop proficiency in applying the knowledge, skills, and dispositions to impact P-12 student learning. They also begin to develop expertise in their teaching field through the completion of several advanced level courses.

The M.A.T. program in Math and Science is closely aligned with CSU's mission of achieving academic excellence and preparing individuals for a life of success, leadership, and responsibility through community awareness, engagement, and service to others. Focusing on growth toward skillful "whole" performance rather than incremental mastery of discrete skills, candidates in the M.A.T. Math and Science program demonstrate expertise as they develop, refine, and enhance their knowledge and skills to improve the learning of all students in grades 6-12.

· Incorporation of Technology

Faculty have access to computer and printing resources, as well as to the most recent developments in technology including interactive boards, personal response systems (clickers), iPads, and classroom management software. Campus support services provide extensive library and technology support services. New faculty and adjunct faculty have access to orientations and seminars in teaching and learning and technology. Campus support services provide extensive technological support for distance learning and online course delivery systems.

Faculty, candidates, and staff have access to state-of-the-art facilities, multimedia classrooms, and up to date technology, which is used to help them advance unit objectives. The unit has developed an innovative model for providing advanced graduate coursework exclusively through on-line technology. Existing technology and data management will be enhanced by the implementation of the new LiveText data management system.

· Utilization of Multidisciplinary Approaches

By its very nature, the M.A.T. Math and Science program is multidisciplinary. This program includes candidates with different content area backgrounds and concentrations (i.e., biology, chemistry, earth and space science, physics, or mathematics) who take common core courses that cut across the disciplines (i.e., mathematics, science). As candidates work together on various projects and participate in class discussions, they have multiple opportunities to examine and critique educational theories and best practices from a multidisciplinary perspective.

· Utilization of Multicultural Perspectives

The Educator Preparation Conceptual Framework clearly articulates the unit's commitment to diversity. Excellence in teaching embodies the use of best practices to improve student learning in diverse P-12 classrooms as well as at the university level. Excellence in scholarship embodies

the seeking out and exploring of multiple viewpoints, embracing diversity as it enriches our intellectual lives and positively impacts our professional performances. Scholars engage in a life-long learning process, continually acquiring, integrating, and applying knowledge and skills to achieve excellence in teaching and to improve the learning of all students. Professionalism is demonstrated through in-depth knowledge of a field of study and an effort to meet the highest standards set forth by professional organizations. These standards include a commitment to diversity.

A commitment to diversity is also reflected in the 2011 InTASC Standards and NBPTS propositions upon which the Conceptual Framework is based. Curricula, instruction, field experiences, clinical practice, and assessments are aligned with these principles and standards and reflect a commitment to diversity in the following ways:

- All COEHP syllabi include a statement regarding our commitment to diversity.
- The diversity proficiencies initial candidates are expected to meet include the following dispositions: Interacts appropriately and positively with others; Treats others with courtesy, respect and open-mindedness; and Displays the ability to work with diverse individuals. ([Exhibit 1.3.e #1](#))
- The Model of Appropriate Practice (MAP) ([Exhibit 1.3.c.1 \(i\)](#)), the unit's performance assessment instrument used in all initial programs, is aligned with the 2011 InTASC Standards ([Exhibit I.5.c #6](#)) and includes the following diversity proficiencies initial candidates are expected to meet: 1b: Demonstrating knowledge of students; 1c: Selecting instructional goals (i.e., suitability for diverse students); 1d: Demonstrating knowledge of resources (i.e., resources for students); 2a: Creating an environment of respect and rapport; 2b: Establishing a culture for learning; 3a: Communicating clearly and accurately; 3b: Using questioning and discussion techniques; 3c: Engaging students in learning; 3e: Demonstrating flexibility and responsiveness (i.e., response to students); and 4c: Communicating with families.

In keeping with our commitment to diversity, the faculty designed curricula and experiences aimed at increasing all education candidates' knowledge of and sensitivity to the diverse nature of P-12 students ([Exhibit 4.3.b](#)). Educator preparation faculty believe teachers must be able to work successfully with a diverse population of colleagues and learners. Similarly, the faculty believe skillful beginning teachers are able to ensure that all adolescents with whom they work achieve significant academic growth.

In the M.A.T. Math and Science program, an analysis of syllabi provides evidence that faculty address diversity in courses throughout the program as well as through key assessments such as unit plans and the documenting student learning project. Examples showing how candidates are prepared to work with diverse groups of students are provided in [Exhibit 4.3.b #2 & 3](#).

· Program Improvement Plans

Program faculty will examine M.A.T. Math and Science courses to make sure they are aligned with the new Common Core Georgia Performance Standards for Mathematics and the Next Generation Science Standards, in an effort to help prepare teachers to teach with the new standards.

II G. Quality of Facilities and Equipment

· Availability of Classroom and Laboratory Space

Candidates have access to [facilities](#) on main campus to support their development as professional educators. Facilities used for educator preparation include 18 multimedia classrooms, three computer labs, and a conference center with three sophisticated classroom/laboratories equipped with interactive white boards and advanced computers capable of digital media productions.

· Availability of Equipment

Facilities used for educator preparation include 18 multimedia classrooms, three computer labs, and a conference center with three sophisticated classroom/laboratories equipped with interactive white boards and advanced computers capable of digital media productions. The Department of Distance Learning also makes available a variety of resources for teaching online (e.g., Tegrity, Wimba, Camtasia, and Respondus). Candidates also have opportunities to work with technology in P-12 schools that may include interactive boards, probeware, and free software such as Geogebra.

· Program Improvement Plans

The Department of Teacher Education and College of Education and Health Professions Dean's Office will continue to provide equipment and facilities to support the Secondary Mathematics Education programs.

Section Three - Indicators of Program Productivity

III A. Enrollment in Program for Past 3 Years

The enrollment pattern for the M.A.T. program in Math and Science is shown in Table 3.1.

Table 3.1 Number of Declared Majors in M.A.T. Math and Science

	2007-08	2008-09	2009-10	2010-11	2011-12	3 year average
Full-Time	NA	NA	11	9	1	7
Part-Time	NA	NA	9	23	23	18
<i>Total</i>	NA	NA	20	32	24	25

The first cohort of students in the M.A.T. Math and Science program matriculated in Spring 2009. The number of declared majors increased during the first year of the program but then decreased as students began graduating from the program. Enrollment seems to have stabilized at about 24 students, but additional years of data are needed to see if this pattern continues.

Table 3.2 shows the total enrollment in the M.A.T. in Math and Science program compared to enrollments in the M.A.T. secondary education programs at CSU. The average three-year enrollment in the M.A.T. in Math and Science program is 25, which is higher than the average

enrollment in any other M.A.T. secondary education program. Yearly enrollment is also higher than enrollment numbers in M.A.T. Secondary Mathematics and Secondary Science programs combined.

Table 3.2 Number of Declared Majors in M.A.T. Secondary Education Programs

	2009-10	2010-11	2011-12	3 year average
Math and Science (online)	20	32	24	25
Secondary English	18	19	20	19
Secondary Mathematics	12	13	8	11
Secondary Science	7	7	5	6
Secondary Social Science	6	8	7	7

III B. Degrees Awarded Over Past 5 Years

As indicated in Table 3.3, the number of M.A.T. degrees conferred each year in Math and Science is small. The number of degrees conferred is comparable to other M.A.T. secondary education programs and has the largest three-year average, along with Secondary English.

Table 3.3 Number of Degrees Conferred

	2009-10	2010-11	2011-12	3 year average
Math and Science (online)	4	9	4	6
Secondary English	7	5	8	6
Secondary Mathematics	1	2	4	2
Secondary Science	1	4	1	2
Secondary Social Science	0	2	6	3

III C. Comparison With CSU & University System of Georgia Programs

There are no other institutions in the University System of Georgia that offer the M.A.T. degree in Math and Science. The M.A.T. in Math and Science is an online degree offered cooperatively by four institutions: Columbus State University, Georgia Southern University, Kennesaw State University, and Valdosta State University, but Columbus State is the only degree-granting institution.

III D. Retention Rates

Data on retention rates are limited, but thus far, the retention rates for the M.A.T. in Math and Science are higher than 60%. Some students have difficulty with online coursework and drop out because of low grades. In Fall 2012, CSU began requiring students to take the SmarterMeasure Assessment prior to registering for online courses. We will continue to monitor retention rates to see if requiring this assessment affects retention rates by giving students information on their strengths and weaknesses relative to online coursework.

Table 3.5 Retention Rate

	Fall 2009		Fall 2010	
	# in cohort	Number returning in Fall 2010	# in cohort	Number returning in Fall 2011
Math and Science (online)	15	13 (86.7%)	17	11 (64.7%)
Secondary English	17	15 (88.2%)	11	7 (50%)
Secondary Math	9	8 (88.9%)	8	4 (50%)
Secondary Science	7	5 (71.4%)	4	4 (100%)
Secondary Social Science	7	7 (100%)	5	5 (100%)

III E. Student Learning Indicators (using a variety of data sources)

Key assessments for M.A.T. Math and Science students include the following:

- GPA
- Georgia Assessments for Certification of Educators (GACE) tests
- Model of Appropriate Practice (MAP) for Teacher Candidates, a teaching performance assessment
- Dispositions
- Documenting Student Performance

Data indicate that M.A.T. candidates know the content they teach and can explain important principles and concepts. Average GPAs from 2009-2012 ranged from 3.38-3.88 at program exit. Also, the pass rate on the Georgia Assessment for Certification of Educators (GACE) math or science tests from 2009-2011 was 100%. The GACE is used to assess the knowledge and skills of prospective Georgia public school secondary mathematics or science teachers. The tests are criterion-referenced, objective-based assessments designed to measure a candidate's knowledge and skills in relation to established standards, and are aligned with National Council of Teachers of Mathematics standards, National Science Teachers Association standards, and state standards for the P-12 student curriculum (Georgia Performance Standards). The passing score for each test is established by the Georgia Professional Standards Commission and is based on the professional judgments and recommendations of Georgia educators.

Teacher candidates in the M.A.T. Math and Science program understand the relationship of content and content-specific pedagogy and can apply the professional and pedagogical knowledge and skills delineated in the standards to facilitate learning. CSU's Model of Appropriate Practice (MAP) is used to assess planning and preparation, classroom environment, instruction, and professional responsibilities. An analysis of MAP data over the last three years (2009-2012) showed that on each component, 90% or more of the candidates evaluated prior to entering clinical practice met or exceeded expectations, while 100% of the candidates evaluated at exit from clinical practice met or exceeded expectations.

Data show that teacher candidates focus on student learning. They assess and analyze student learning, make adjustments to instruction, and monitor student progress. Candidates are evaluated throughout their field experiences on student learning related MAP components. During clinical practice, all candidates must complete the Documenting Student Performance (DSP) project wherein candidates design and deliver a unit of instruction, assess P-12 student performance on pre- and post-tests, analyze the results of the assessment, and provide a plan for intervention. An analysis of data from student learning related components of the MAP at exit

from clinical practice revealed that the percentage of candidates rated as meeting or exceeding expectations was 100%.

III F. Graduation Rate of Program

Table 3.6 shows the three-year graduation rate for the M.A.T. Math and Science program in comparison to the graduation rates for other M.A.T./M.Ed. Secondary Education programs. Of the five programs, the M.A.T. Math and Science program had the second highest graduation rate for the Fall 2009 cohort.

Table 3.6 Three-Year Graduation Rate (*)

	Fall 2009	
	# in cohort	Graduating by 2012
Math and Science	15	11 (73.3%)
Secondary English	17	11 (64.7%)
Secondary Math	9	4 (44.4%)
Secondary Science	7	4 (57.1%)
Secondary Social Science	7	6 (85.7%)

* The cohorts above are degree-seeking graduate students who entered a CSU graduate program in the fall (or previous summer) semester. Graduation rate calculated based on number of students completing program within three-year time period.

III G. Cost Effectiveness of Instructional Delivery

Students in the M.A.T. Math and Science program pay \$385 per credit hour. A significant portion of the revenue generated by this program comes back to the college to support instructional delivery as well as other college initiatives, making it a very cost effective program.

As shown below in Tables 3.7 and 3.9, the budget for the Department of Teacher Education represented approximately 6-7% of the total instructional costs for Columbus State University (CSU) from 2008 to 2010. In Fall 2011, 911 (11%) of the 8307 students enrolled at CSU were majoring in a program offered in the Department of Teacher Education. In addition, the department budget helps support undergraduate teacher education programs (i.e., secondary education, foreign language, and fine arts) housed in other colleges. This suggests that teacher education programs as a whole are cost effective.

From 2008 to 2012, the Department of Teacher Education budget was supplemented by grant funds ranging from approximately \$42,000 to \$132,000. During this time period, there was a 15% decrease in state funding for the department, even though the number of education majors and credit hour production increased.

Table 3.7 Department of Teacher Education Budget

	2008	2009	2010	2011	2012
State Funds	\$2,340,134	\$2,162,502	\$1,993,635	\$1,823,652	\$1,977,860
Grant Funds	\$41,841	\$61,223	\$131,963	\$129,421	\$102,877
<i>Total</i>	<i>\$2,381,975</i>	<i>\$2,223,725</i>	<i>\$2,125,598</i>	<i>\$1,953,073</i>	<i>\$2,080,737</i>

Table 3.8 MAT Math and Science Credit Hour Production – Fall Semester

	2007-08	2008-09	2009-10	2010-11	2011-12	3 year average
6000 Level Courses	NA	NA	94	203	93	130

Table 3.9 Total Instructional Costs per Credit Hour and Headcount at CSU

	2008	2009	2010
Instructional Costs	\$31,868,466	\$31,193,232	\$34,596,532
Total Credit Hours Generated	164,732	171,280	178,470
Total Headcount	7,590	7,953	8,179
Cost per Credit Hour	\$193	\$182	\$194
Cost per Headcount	\$4,199	\$3,922	\$4,230

As shown in Table 3.10, average course enrollment in graduate courses for the M.A.T. in Math and Science is below 15. In Fall 2010, a cohort model was implemented with program admission in fall term only, so that required courses could be offered on a one-year cycle. This helped make the courses more cost-effective.

Table 3.10 Average Course Enrollment - Fall Semester

	2009-10	2010-11	2011-12	3 year average
6000 Level Courses	12	11	8	10

Number of Faculty

	2009-10	2010-11	2011-12	3 year average
Full-Time Faculty	1	1	1	1
Part-Time Faculty	2	3	3	3

Section Four - Program Viability**IV A. Summary of Program's Viability**

The M.A.T. Math and Science program at CSU is viable. As indicated by the evaluation of the NCATE/PSC Board of Examiners in February 2013, the quality of the program is very strong. All NCATE/PSC standards were judged to be met for all initial and advanced programs. There were no areas for improvement and multiple strengths were cited.

The viability of the program is also ensured by the sharing of resources among the secondary mathematics and science programs at CSU and among the four institutions involved in this collaborative program. The College of Education and Health Professions works with the other three institutions on the design and implementation of the online M.A.T. program. Representatives from each institution meet annually to review data and discuss areas for improvement. The online M.A.T. program is a valuable resource for individuals who want to obtain a teaching certificate but are unable, for a variety of reasons, to enroll in an on-campus program.

Enrollment in the online M.A.T. program is comparable to enrollment in other graduate

secondary education programs. The average three-year enrollment is 25, which is higher than the average enrollment in any other M.A.T. secondary education programs. Yearly enrollment is also higher than enrollment numbers in M.A.T. Secondary Mathematics and Secondary Science programs combined.

Though small, the number of degrees conferred is comparable to other M.A.T. secondary education programs and has the largest three-year average, along with Secondary English. As the only USG institution offering this online M.A.T. degree in Math and Science, CSU provides an opportunity for career-changers to enroll in a high quality program that prepares them to teach math or science in grades 6-12. There is a critical need for math and science teachers, and the online M.A.T. program is helping to meet that need.

Recommendation for future of program: *Maintain the Program at the Current Level.* The program quality is very strong. Though the number of degrees conferred each year is small, it is comparable to other M.A.T. secondary education programs. The online M.A.T. program in Math and Science provides a valuable opportunity for career-changers to pursue certification in the critical need fields of secondary math or science. Many of the students enrolled in the program are working adults, stay-at-home parents, or provisional teachers whose schedules do not allow them to travel to a university campus to take courses. Without the online M.A.T. program, these individuals would probably not have the opportunity to participate in a teacher certification program that helps them to develop the knowledge, skills, and dispositions needed to work effectively with middle and high school students in diverse math and science classrooms.

IV B. Summary of Program Improvement Plan

The Online M.A.T. Consortium oversees the M.A.T. program in Math and Science and works to improve the curriculum, courses, and resources offered to students. Recommendations to improve program quality, productivity, and viability are as follows.

Goals	Projected Timeline	Resource Allocations
Align the curriculum with the new Common Core Georgia Performance Standards for Mathematics and Next Generation Science Standards.	2013-2014	Personnel resources
Implement the edTPA during student teaching/ internship.	2013-2014	Personnel resources
Revise coursework prior to student teaching or internship to incorporate elements of edTPA.	2013-2014	Personnel resources
Seek grant funding to support graduate students in mathematics education.	Ongoing	Financial and personnel resources
Explore possibility of admitting students from outside of Georgia into the online M.A.T. program.	2013-2014	Personnel resources
Work with the COEHP Recruitment Committee and Director of Graduate Studies to enhance recruitment efforts.	Ongoing	Financial and personnel resources