

**Developing a Reward Structure  
for Higher Education Faculty Involvement  
in K-12 Schools**

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### **Overview of PRISM**

PRISM (Partnership for Reform in Science and Mathematics) is an initiative to improve teaching and learning in science and mathematics (SM) in both K-12 and higher education in Georgia. Funded by the NSF in October 2003, PRISM is a partnership among the University System of Georgia (USG), the Georgia Department of Education, and four regional teams that include six USG colleges and universities and 15 public school districts. USG Associate Vice Chancellor Jan Kettlewell serves as PI and Ronald J. Henry, Provost at Georgia State University, is Co-PI.

The four PRISM regional teams represent Georgia's unique demographic, geographic, and cultural contexts. Each region has as a core partner an institution of higher education which prepares teachers.

- **Armstrong Atlantic State University** serves a large area of southeast coastal Georgia and is the 8<sup>th</sup> largest producer of teachers in Georgia, most of whom stay in the surrounding area.
- **Georgia Southern University** is a regional university serving largely rural school districts in the Georgia farm belt and is the 6<sup>th</sup> largest producer of teachers in the state.
- **Georgia State University** is a large Research II institution which serves metropolitan Atlanta, and is the top producer of African-American teachers and the 3<sup>rd</sup> largest producer of teachers in Georgia.
- **University of Georgia** is a large Research I institution and the state's flagship university, and is the largest producer of teachers in Georgia.

These four regional partners and their local partner school districts work together with state agencies to improve collaboration among science and mathematics higher education faculty and K-12 teachers to increase K-16 student achievement. Broad-based involvement over the five-year grant period includes approximately 170,000 K-12 students, 10,000 teachers, and 575 USG faculty.

Three PRISM goals guide the changes in practice needed to achieve results:

(1) Raise expectations and achievement in science and mathematics in K-12 schools, while closing the achievement gap;

(2) Raise student achievement in science and mathematics in K-12 schools through increasing and sustaining the number, quality, and diversity of K-12 teachers teaching science and mathematics; and

(3) Raise student achievement in science and mathematics in K-12 schools through increasing the responsiveness of higher education to the needs of K-12 schools.

There are 10 strategies for change addressed in PRISM:

1. Provide high quality professional development to K-12 teachers teaching science and mathematics.
2. Provide academic concentrations in science and mathematics for current K-8 teachers through two new University System of Georgia faculty consortia.
3. Engage higher education and K-12 faculty in learning communities.
4. Influence the quality of teacher preparation through changing how science and mathematics are taught to future K-12 teachers.
5. Prepare teachers in all University System of Georgia institutions in sufficient numbers and diversity and with the content and pedagogical knowledge and skills needed to teach the new Georgia Performance Standards (GPS).
6. Initiate new policies that provide incentives and improved working conditions for teaching science and mathematics in K-12 schools.
7. Implement regional strategies to recruit science and mathematics teachers.
8. Raise and align science and mathematics student-learning standards and curriculum, preschool through 2 years of college.
9. Conduct a public awareness campaign of the need for all K-12 students to have access to, to be prepared for, and to succeed in challenging courses and curricula in science and mathematics.
10. Provide a reward structure in universities to encourage faculty members to sustain involvement in improving science and mathematics teaching and learning in K-12 schools.

With such a large partnership and extensive scope of work, communication and collaboration from the outset have been vital to the success of PRISM. A State Leadership Team, comprising the PI, Co-PI, Project Director, leaders of state strategies, and members of the regional leadership group (Co-PIs and K-12 Coordinator) typically meet each month. Shared leadership between the state and regional levels has proven to be very effective in providing oversight to all of the different activities being implemented with numerous stakeholder groups.

### **PRISM Strategy 10**

All PRISM higher education core partners have K-12 teacher education programs, and until now their major focus was on graduating, certifying, and placing highly qualified teachers. In 1996, a concerted effort to improve teacher education by the USG Board of Regents P-16 Department brought together, in many institutions for the first time, faculty from colleges of arts and sciences and education. Local schools also became involved in this reform effort, with teachers speaking up about the realities of the classroom to better inform teacher preparation. However, the importance of higher education faculty involvement in these activities was not generally recognized in the workload/salary and

tenure/promotion policies of the higher education institutions. If PRISM was to succeed in making a positive impact on student learning in Georgia through increasing and sustaining collaborations of K-16 faculty, then changes to the reward system were needed. Developing effective and sustainable changes is the overarching goal of Strategy 10.

### **Early Design and Implementation of Strategy 10**

A state-level committee, co-chaired by the USG Vice Chancellor of Academic Affairs and the Executive Director of P-16, was formed in the first year of the project to guide the design and implementation of this strategy. The original proposal specified the composition of the committee, which included two vice presidents for academic affairs (from a state university and a two-year-college), an arts and sciences dean and an education dean, and a SM faculty member. Other members included a cultural anthropologist, whose role is to conduct an ethnographical study of the process, an external evaluator, and members of the PRISM staff. Early meetings of this group focused on developing a policy for a reward structure and identifying supportive intervention(s) that were necessary for change to occur at the institutional level. The committee needed input from higher education faculty about their views of collaborations with K-12 schools and incentives that could be used to sustain that involvement before they could address policy development.

The Strategy 10 Committee began its conversation with current and potential PRISM participants in August 2004. Sixty SM and 18 education faculty in each of the four PRISM regions responded to reflection questions on (1) student under-achievement in mathematics and science; (2) potential alliances among higher education and K-12 schools to improve SM education; (3) barriers to, and strategies for, productive SM partnerships; and (4) incentives and rewards that would encourage higher education faculty to help improve SM education. Ethnographic analysis was conducted to determine core themes within and across each category of participants.

Input from these faculty focus groups informed a day-long symposium in February 2005 during which 112 participants responded to a structured qualitative instrument that elicited input on (1) activities related to engagement in K-12 schools that faculty may incorporate into a preexisting academic workload in the categories of research, instruction, and service; and (2) incentives and rewards that would encourage sustainable participation by higher education faculty and students to participate in the improvement of K-16 mathematics and science education. The symposium was designed to continue the dialogue with the participants of the exploratory phase of the project, and to extend the conversation to a larger number of faculty and administrators from additional institutions. To ensure the highest degree of compatibility between faculty interests and PRISM requirements, discussions were organized according to the following categories: (a) academic discipline (e.g., mathematics, science, education), (b) professional title (e.g., chair, dean, provost), (c) rank (e.g., assistant/associate/full professor), and (4) sector (e.g., research university, community college).

Faculty at the symposium reported that barriers to participation in PRISM include lack of time, insufficient rewards, and lack of communication between science and mathematics faculty and K-12 educators. Incentives that would lead to participation in PRISM include (a) personal interests, e.g., concern for children who are denied a quality science and mathematics education, promotion of better students and teachers in local communities, and improvement of one's own teaching, and (b) professional interests, including external funding and mini-grants, support for instructional and research technology, and access to graduate assistantships and support staff. An overwhelming majority of participants reported that involvement in PRISM must be linked to tangible rewards, and that these rewards must be evident and accessible to drive participation. Analysis of participant responses revealed that the issue of faculty rewards is viewed differently by groups depending on their faculty rank, tenure status, and institutional sector (responses organized by sector follow).

- Research Universities:** To their standard workload, 15 science and mathematics faculty emphasized research, publication, and funding as *professional development* to improve the preparation of teachers, increase student-achievement, and advocate for policy and planning to enhance SM education, particularly in secondary and post-secondary institutions. *Instruction* focused on development of on-line courses and hands-on experiments, while *service* highlighted participation in college committees on K-16 education, teaching SM content in summer institutes, and demonstrating science and mathematics lessons in public schools. Five education faculty defined *professional development* as action research with teachers, publishing scholarship of teaching and learning with teachers, and supporting teachers in acquiring National Board Certification. *Instruction* would include more and better supervision of student teachers, teaching courses for certification programs, developing new courses for teachers in electronic communication technology, and providing summer "field schools" for teachers. Mentioned under *service* are activities such as advocating for an outreach program, raising public awareness of the need for SM education, and reexamining and improving entry-level programs to ensure compliance with standards.
- Regional Universities:** Within this sector, six science and mathematics faculty reported that PRISM activities related to *professional development* would consist of funded applied research in science and mathematics pedagogy, e.g., students' preconceived notions of science and ways to improve student learning, research results published for a broader audience to increase teachers' and children's enthusiasm for science and mathematics, and linking basic research on mathematics content with teaching and learning in the classroom. *Instruction* would constitute integration of K-12 content in college courses, modification of university-level labs for use in K-12, and revision of arts and sciences curricula with education criteria in mind. *Service* would include streamlining outreach to schools, developing web connections between professors and teachers, and participating in raising performance standards. Five education faculty emphasized collaborative research and publication on effective partnerships

between professors and teachers, and development of on-line content modules. *Instruction* would constitute integration of PRISM research in courses for pre-service teachers, teaching summer courses for teachers, and coordination of science and mathematics endorsement courses. *Service* activities would include development of a state-wide mentorship program between higher education faculty and K-12 teachers, facilitation of evaluations in public schools, involvement of faculty in a PRISM advisory board, and placement of pre-service students in science and mathematics departments.

- **State Colleges and Universities:** In addition to all the suggestions by their counterparts in the previous sectors, 20 science and mathematics faculty in state institutions proposed *professional development* that would include a scholarship of (PRISM-related) practice, co-authored grant proposals with teachers, undergraduate research, and participation in science and mathematics education societies and conferences. *Instruction* would include funded summer internships for high school students, adding audio-visual aids to labs, organized field trips to department classes and labs for K-12 students and teachers, and mentorship for education graduate assistants and interns. *Service* would constitute community involvement with parents and school boards to advocate science and mathematics education, sponsorship of science and math clubs to involve college students as classroom partners or tutors in schools, and development of a central mathematics department system to coordinate outreach activities to schools. Responses from 15 education faculty to *professional development* included pursuit of social science research on science and mathematics learning styles, application of education research findings concerning courses, and remaining current in content. *Instruction* would constitute co-teaching and faculty exchanges, participation in STEM (Science, Technology, Engineering, Mathematics) committees, and provision for seminars about the mandates for teacher preparation in Georgia. *Service* would include redefining workload and the reward structure in line with PRISM, chairing committees that oversee science and mathematics education programs, and serving on joint search committees.
- **Two-Year Colleges:** Of these participants, 11 identified themselves as science or mathematics faculty and one as a mathematics educator. For this group, *professional development* included securing funding to develop a science and mathematics in-service curriculum for teachers, promoting scholarship of teaching as a departmental initiative, and publishing papers in “on-line education” journals. *Instruction* would include teaching a hands-on science course for elementary/middle-school teachers, improving teaching of introductory courses, and developing courses for education majors. *Service* would include hosting regional science fairs, promoting learning communities, and visiting schools to assist teachers with the design, content, and implementation of science and mathematics lessons or modules.

Participants categorically recommended a reward structure comprised of time release, workload reduction, salary increase, summer salary, and credit toward promotion and/or

tenure. Priority of these rewards varied according to rank, but faculty and administrators from each sector, institution, and discipline, including those already engaged in PRISM, agreed that such rewards are most likely to encourage, increase, and sustain involvement in science and mathematics reform.

### **Evidence-Based Changes to Strategy 10 Design and Implementation**

After analyzing data from the symposium, several important changes occurred in the design and implementation of Strategy 10. To gain additional input from each PRISM region, the committee expanded its membership to include representatives from the regional teams (see Appendix A for a copy of the membership list). With its expanded membership, the committee created an Implementation Framework that addressed sustainable change in different organizational contexts. The Framework is intended to guide plans to change both policy and practice at four levels: system, institution, college, and department. The Framework identifies a number of indicators which, if successfully implemented, would facilitate policy change. See Appendix B for a copy of the Implementation Framework.

Each Strategy 10 Committee member reviewed his/her institution's promotion and tenure policies for opportunities, challenges, and barriers to working with K-12 schools. Administrator and faculty meetings were conducted to discuss the value that departments placed on criteria in promotion and tenure, as well as possible incentives for work with K-12 schools. Additional large focus groups were held at three of the PRISM institutions. Evidence from these meetings and focus groups demonstrated that there was no one right answer – for institutions, “one size did not fit all.” The Strategy 10 Committee recognized that changes to policy may not necessarily change practice – a change in culture also must occur by influencing departmental/individual norms, beliefs, and values. This change of culture must embrace the differences in mission among the various institutions.

At a retreat in April 2006, the Strategy 10 Committee paused to reflect on their task. They discussed literature that had influenced their thinking such as the “Policies and Procedures Supporting the Scholarship of Teaching and Learning in the Research University” by Research Universities Consortium for the Advancement of the Scholarship of Teaching and Learning (RUCASTL). Discussion about the scholarship of teaching and learning (SoTL) focused on developing a policy that STEM faculty could modify for their own personal and professional interests, and in accordance with the context of their institutions. They discussed the differences in campus cultures that permitted or nurtured widely-varying promotion and tenure decisions and the range of possibilities to adapt SoTL on each campus. The committee felt it was important to be sensitive to the differences that characterize the culture of each institution. They reviewed data from symposia and meetings so that they could reflect on incentives and rewards that faculty said were desirable and effective. They also reviewed the PRISM external evaluator's reports. A common understanding emerged within this diverse group of faculty and administrators from a variety of higher education institutions. Based on all the evidence collected they agreed that, if sustainability was the ultimate outcome, then there should be a continuum of support and recognition for the various forms of scholarship and public service.

### **Some Outcomes of Strategy 10 - Changing Policy**

To foster the sustainability of PRISM goals at the system, university, college and departmental levels, the Strategy 10 Committee used all of the evidence described above to develop a policy for the *USG Board of Regents Policy Manual*, which specifically advocates rewarding faculty for work in K-12 schools (see Appendix C). This policy will provide the umbrella for institutions to use in developing similar policies or procedures at the institutional, college and departmental levels. The policy has the flexibility to encompass all types of universities and local department values in decision-making for promotion and tenure, as well as to provide a continuum of definitions of scholarship. In addition, the committee designed guidelines for implementation of the policy, which will be located in the *University System of Georgia Academic Affairs Handbook* (see Appendix D). These guidelines charge each president with implementation of the new policy at the institutional level where he or she will be responsible for providing leadership for advocating, assessing and rewarding practices. The guidelines address sustainability with a variety of incentives. The USG Website will feature an additional resource for institutions that will contain definitions, examples of evidence, and case study exemplars for the following activities involving faculty work in the schools: *scholarly teaching, scholarship of teaching and learning, scholarship of engagement, scholarship of discovery, and service* (see Appendix E). The proposed policy has been approved by the Educator Preparation Academic Advisory Committee and the USG Board of Regents' Administrative Advisory Committee on Academic Affairs. The policy will be taken to the Board of Regents for final approval in the next few weeks.

### **Some Outcomes of Strategy 10 - Changing Culture**

The *USG Board of Regents' Principles for the Preparation of School Educators*, approved in 1998 and refined in 2001, mandated that institutions of higher education (colleges of arts and sciences and education) collaborate with K-12 school faculty in part to ensure the quality of future educators and increase student achievement in K-12 schools. Through the Georgia P-16 Initiative, connections were forged among faculty from arts and sciences, education, and K-12 schools.

PRISM builds on these state efforts to institutionalize the concept of working relationships among science and mathematics K-16 faculty to improve teaching and learning. While the Strategy 10 Committee was collecting evidence and drafting a new Board of Regents policy to support faculty work in K-16 efforts at the state level, the four PRISM institutions were providing opportunities for and encouraging collaboration at the regional level. In the following sections, each of the four PRISM regions describes how the work of Strategy 10 was promoted at the institutional level, and provides examples of activities implemented to encourage sustained involvement of STEM faculty with K-12 schools.

#### **• Armstrong Atlantic State University**

Armstrong Atlantic State University (AASU) is a comprehensive university serving over 6,700 students in southeast Georgia. Armstrong has 289 faculty of which 134 are from the College of Arts and Sciences and 36 are from the College of Education. The largest

proportion of any Armstrong faculty member's time is devoted to scholarly teaching. The remaining time is partitioned between service and scholarship and the percentages differ slightly from department to department. Nonetheless, all faculty must engage in both service and scholarship in order to achieve promotion and tenure.

Work in schools and related scholarship and service have always been valued for Arts and Sciences faculty at Armstrong. Indeed the Dean of the College of Arts and Sciences and former Interim Vice President for Academic Affairs (VPAA) as well as the previous department head of mathematics emphatically stated that "scholarship that improves science and mathematics education has been and will continue to be rewarded for all faculty." Nonetheless, prior to PRISM, such work had not necessarily been advocated for, save an internal funding opportunity for teaching and learning projects. Traditionally such work was done by faculty from the College of Education or by a very small number of STEM faculty designated as school outreach coordinators.

At Armstrong, faculty engage in collaborative work with teachers through any of four PRISM supported avenues: educational research mini-grants, a monthly scholarship of teaching and learning roundtable, opportunities to create and offer customized and needs-based professional development in science and mathematics, and participation in K-16 school-based learning communities. Since the inception of PRISM at Armstrong, 16 education faculty and 37 STEM faculty have been very significantly involved directly in work with K-12 schools through our 72 school-based learning communities. These faculty each dedicate between 50 and 100 hours of service and scholarship each semester to improving teaching and learning in science and mathematics at all levels. Over 25 faculty from across colleges have regularly attended the monthly roundtables. Seven faculty have engaged in classroom research in their own courses through mini-grants. Finally, through learning community connections, 43 faculty have worked collaboratively with teachers in the creation and delivery of customized ongoing science and mathematics professional development. Seventy-two such programs have been funded in the past two years with total participation nearing 1,500 regional teachers.

At an institution having less than 100 full time science, mathematics and education faculty, the participation numbers above are significant. This is largely due to (1) a high level of administrative support; (2) the efforts of the regional Co-PI to involve all parties, from teachers and faculty to the university president, in planning the regional PRISM program; and (3) the regional work in Strategy 10 led in part by the Vice President for Academic Affairs. Within these three components, the following steps have been identified as having the most impact at this institution. Prior to implementation of PRISM, the regional Co-PI visited all STEM departments and many individual faculty to gain input regarding faculty value of work in public schools as well as thoughts on overcoming barriers to faculty engagement in this type of work. A key component to involving this body of STEM faculty who have the desire to improve teaching and learning in science and mathematics but traditionally have little or no experience in working with schools was the creation of an official learning community position description called the *PRISM Associate*. This position was then given the full support of the VPAA and deans and approved for funding equivalent to one course in faculty

workload. The connections of the PRISM Associates to the schools are proactively facilitated by the Co-PI and P-12 Coordinator. Another key component to involving higher education faculty in collaborative work with K-12 schools was the creation of our regional Professional Development Mini-Grant program. Through this program, faculty work collaboratively with K-12 teachers on the evidence-based design, delivery, follow up, and assessment of classroom impact of customized professional development programs in science and mathematics.

Several key activities are direct results of the implementation of Strategy 10. On this campus, an open forum to discuss faculty rewards for PRISM-related work drew over 30 people and proved to be an incredibly successful avenue for implementing change. Faculty from both education and arts and sciences were well represented, and administrators at all levels were present from department heads to the university president. At this forum, ideas, concerns, and opinions were raised and openly discussed regarding how to recruit faculty to work with K-12 schools and how to make this work count toward tenure and promotion. A vital outcome of this meeting was that the VPAA prepared a *Draft Strategic Plan* for the purpose of establishing as policy that the university “will facilitate engagement between faculty from across colleges and a variety of disciplines with P-12 educational institutions and their teachers and students.” It is expected that this draft will become permanent policy this coming year. Key strategies of this plan include:

- AASU will implement a reward structure that promotes faculty, department, and college involvement in improving science and mathematics teaching and learning at the K-16 levels;
- The academic deans in the colleges of arts and sciences, education, health professions, and computing will be assessed on their effectiveness in promoting and achieving the objectives and goals identified by PRISM; and
- Faculty with an interest in working with schools will be encouraged to incorporate these activities into their Annual Professional Activity Reports (APAR). The activities of the faculty will then be used as a factor in the promotion and tenure decision process.

Armstrong Atlantic State University certainly had good potential for a culture change of this type and a change has indeed occurred regarding the scholarship of teaching and learning and work in schools. One could certainly point to the large number of faculty working with PRISM as evidence, but in addition to the change in the strategic plan, the following are also indicators of the potential for sustainable change at Armstrong:

- Collaborative work between education and STEM faculty is on the rise. For example, through PRISM learning community connections, the department of Middle Grades and Secondary Education called upon PRISM faculty from chemistry and physics to rewrite the science curriculum for the middle grades major. The same is happening in biology.
- Each year, the number of arts and sciences faculty working with PRISM increases and many of these faculty are traditional research scientists.

- The attendance at the Scholarship of Teaching and Learning Roundtable has been consistently high and faculty are requesting sessions which delve deeper into understanding the defining elements of this type of scholarly activity.
- The university will host an Annual Symposium on Partnerships for Science Education and will showcase the work of Armstrong's PRISM faculty in July 2007 in an effort to seek funds for sustaining this work.

#### • **Georgia State University**

The Metro Atlanta region consists of a partnership among Georgia State University (a Research II University), Georgia Institute of Technology, and the Atlanta Public Schools (a large urban school system). There are an additional six school districts in the Atlanta metropolitan area that are not part of PRISM.

Strong partnerships with local school districts already existed among departments and faculty in the College of Education at Georgia State, where a Professional Education Faculty (PEF) was formed in 1993. The PEF consists of the deans and associate deans of the College of Education and the College of Arts and Sciences (A&S), and of full-time faculty members of both colleges who are involved with courses taken by pre-service educators. Nevertheless, there has been little involvement of science and mathematics faculty from A&S in K-12 schools prior to the advent of PRISM. The Strategy 10 challenge is to find the proper mechanism(s) that will encourage and enable the involvement of higher education faculty with K-12 teachers and students to be recognized and rewarded.

Similar to the other regions, a mini-grant program was developed to involve higher education faculty in PRISM activities. In the Metro Atlanta region, the mini-grant program has served a dual purpose: (a) it has served as a catalyst for change in introductory college courses in science and mathematics and (b) it has been a vehicle for establishing learning communities that involve K-12 faculty and faculty from both the College of Education and the College of Arts and Sciences. A total of 29 mini-grant proposals have been received since the inception of the mini-grant program. Three grants are continuations and extensions for a second year of funding.

At the present time, there are seven learning communities that involve higher education faculty. Of these, five were programs which were initiated and funded through the mini-grants program. The impact of these programs is much broader than the numbers suggest. For example, three of these programs involve learning communities at 24 different schools.

The remaining mini-grant programs focused on innovative changes in college introductory science and mathematics courses and on developing or modifying new teacher training courses. The mini-grants were essential in providing the resources required to initiate the changes in these courses.

At the present time, there are 26 higher education faculty involved at some level with the learning communities in the Metro Atlanta region. For the majority of those involved, the mini-grant program served as the catalyst for their involvement. Most likely, the faculty who chose to become involved already had an interest in improving the educational experience for students in their classes and were concerned about the level of preparedness of those students. The key contribution that the Metro Atlanta PRISM mini-grants provided was the resources to allow that interest to be turned into a tangible result. The key conclusion to be drawn is that PRISM is not necessarily cultivating new interest on the part of faculty, but simply capturing, nurturing, and cultivating the interest that was already present.

There was no single way that this occurred. In some cases, it was as simple as purchasing the time which allowed the individual faculty member to pursue these activities. More often, the mini-grant provided resources to support graduate students or post-doctoral students, or purchases necessary supplies to implement these programs. It was, in fact, unique to each individual program and the “value added” by PRISM. The mini-grants allowed one to tailor the resources in a way that match the faculty’s needs.

Significant efforts were made to encourage interest in the PRISM project, including (a) promoting discussion of ideas at Regional Institutes and (b) the Co-PI meeting one-on-one with faculty members to encourage them and discuss how they might benefit from the program. Thus, faculty were made aware of the opportunity that the mini-grant program could provide for the development and support of their ideas and projects. However, this is only part of a necessary change in attitudes and culture.

The structure already exists in higher education to allow a faculty member to be recognized and rewarded for efforts such as those supported in PRISM. The associate dean of A&S at Georgia State and a member of the Strategy 10 Committee checked the college and departments’ promotion and tenure policies and found that the various activities supported by PRISM could be recognized and rewarded. However, in practice, most of this type of work was relegated to the service category. The key has been to correctly identify the categories where those activities can be included and recognized in an appropriate manner for consideration for the promotion and tenure of these faculty members. In addition to providing resources, PRISM mini-grants also provided a means of highlighting and recognizing a faculty member’s efforts by the inclusion of the PRISM mini-grants on the faculty member’s Annual Report.

#### • **Georgia Southern University**

The East-Central Region of PRISM has Georgia Southern University as its higher education partner, and includes the school systems of Bulloch, Evans, Screven, Effingham, Candler, and Toombs counties and the City of Vidalia. The region is largely rural as all these school systems lie within the Georgia farm belt. The College of Education on the Georgia Southern campus has been responsible for preparing many of the teachers who work in this seven-district region, and the ties between individuals and their home institution are correspondingly close. Furthermore, it isn’t unusual for a

teacher to come from a family whose history is deeply rooted in the region, and a particular teacher might teach more than one generation within a family.

Faculty at the university, by contrast, come from an increasingly wide range of places and bring a great variety of languages, cultures, experiences and expectations with them when they begin their teaching careers at Georgia Southern. This difference in the backgrounds of the public school and university faculties has not posed an obstacle to generating educational partnerships, but it is important to consider when one is trying to team university faculty with public school teachers in a mostly rural area.

The most significant problem faced at Georgia Southern University—and the greatest obstacle to getting university and public school faculties to collaborate—stemmed from the belief or fear among university personnel that, even if they really wanted to partner with K-12 schools, it would not count toward tenure, promotion, or salary improvement. Work in the public schools has long been an important part of Georgia Southern's mission; it was known as Georgia Normal School in 1924, and became South Georgia Teachers College in 1929. Ironically, that history of engagement with public schools failed to have a substantive effect on how work in schools was valued later in the 20<sup>th</sup> century, particularly among the science, mathematics, and technology programs. Thus, work in the schools and even publication in the pedagogical literature were not given the same credit as, for example, describing new mathematical models or conducting research on some peculiar group of organic compounds or invertebrates.

In keeping with the attainment of Regional University status in 1990, Georgia Southern and the roles and rewards of its faculty grew more complex. The institution always had a commitment to quality teaching, but, like many comprehensive institutions that have evolved from “normal schools,” expectations for faculty engagement in teaching, scholarship, and service changed along with the institutional identity. Driven by the institution's evolution, expectations for scholarly productivity rose, and the distribution of faculty effort changed. In recognition of the university's new identity, a Faculty Roles and Rewards initiative was undertaken in 2002 at the behest of the Provost. The Task Force's charge was to describe faculty roles as they then existed at Georgia Southern in order to recommend ways to better align faculty assignments with the institution's reward structure and to more effectively support faculty professionalism; the value assigned to work in public schools inevitably became a part of the discussion.

The Faculty Roles and Rewards Task Force recognized that the processes involved in extending tenure and promotion, and in recognizing a faculty member's value to a department or an institution, begin at the departmental level. The job facing the Task Force, and ultimately PRISM's Strategy 10 Committee, included persuading individuals as well as the departments to believe that there is value in teaching teachers, and that there is value in publishing in peer-reviewed educational journals as well as disciplinary journals. On the face of it, this would not appear to be such a difficult undertaking; in truth, it took some persuasion. Georgia Southern embarked on an effort to modify its tenure and promotion system to better reward faculty who work with teachers. That effort required the whole-hearted support of the deans and associate deans of the colleges

of education and science and technology. The support of the Provost was also essential because, without such administrative support, change could not have occurred.

The first significant changes in tenure and promotion policies took place in Georgia Southern's College of Science and Technology (COST). That this college was first to modify its policies was somewhat unexpected, in that it was generally believed that the COST faculty would be most resistant to acknowledging the teaching of teachers or elementary school children as highly-valued academic pursuits when it came to promotion and tenure. The culture that had developed in science and technology seemed to operate against valuing teaching as such; it seemed to be more important to discover new things about imaginary numbers, hypothetical compounds, invertebrates, machinery, behavior of light waves, lithologies, or population distributions. At the same time, the Georgia Southern University *Faculty Handbook* specified that teaching is the number one criterion for consideration for tenure and annual renewal. This clear difference in values needed resolution.

In the spring of 2006, the Dean and Associate Dean of COST distributed a new tenure and promotion document that advocated change in the faculty expectations and, among “Typical Sources of Evidence [within Criteria and Expectations for Faculty Evaluations]”, was “Development of materials that maximize student learning using the Georgia Performance Standards in primary and secondary education,” and “Frequency and quality of interaction with school teachers.” The policy changes advocated by the above statements were accepted and ratified without dispute; most faculty at Georgia Southern probably realized that it was a “teaching first” university in any case, so that was not a concern. Thus, working with teachers and students in public schools became a part of the litany of things that one might do in the process of achieving tenure and promotion. It was a simple matter of acknowledging the truth.

Subsequently, the College of Education (COE) did something similar. In an October 11, 2005 document sent to all college faculty, a new “Effort Assignment and Evaluation Policy” was presented for their consideration. Work in public schools was to be acknowledged under scholarship, where “... certain types of work in schools may lead to scholarly products and activities,” and it was to be identified under service where a faculty member might be “...working in schools to help improve instructional practices.” In COE as in COST the new wording and the implied meanings were accepted without contest.

Inviting university faculty to participate with public school teachers in cooperative teaching and research is one thing, and guaranteeing them recognition is wonderful, but bringing it all to fruition is something else again. There must be a hard connection and a certain amount of buy-in among the people involved, and cultural differences, alluded to above, must be seriously considered. Anything else will just lead to an unfulfilled promise. The East-Central PRISM region has successfully implemented a system of mini-grants and learning communities that have established a means by which the promise of cooperation has actually been fulfilled. Many funded projects are place-based and are the brain-children of the public school teachers and university faculty alike.

The policy change process at Georgia Southern University preceded and then merged with PRISM Strategy 10. It provides a good example of evidence-driven decision making by key stakeholders.

- **University of Georgia**

The University of Georgia (UGA) is a large Research I institution located in northeastern Georgia. The mission of the University of Georgia clearly states the commitment to excellence in research and scholarship, the promotion of high levels of student achievement, and the contribution of public service for the common good. UGA is home to faculty with national and international recognition, who bring their expertise to bear in this core tripartite mission of the university. UGA is the flagship institution in Georgia and approximately 90 percent of the highly qualified undergraduate students who are Georgia residents have earned the HOPE college scholarship program, which pays for tuition, books, and mandatory fees for maintaining a 3.0 average.

UGA finds its home in the middle of the high-poverty city of Athens and surrounded by rural and suburban counties. The Clarke County School District in Athens has a greater average dropout rate when compared to the state average. In the past 10 years, Athens has had a substantial increase in its Hispanic population and is facing the challenge of providing a high-quality education to this population. On the other hand, students in nearby Oconee County have some of the highest standardized test scores in the area. Jackson County is a large rural county which borders the interstate into Atlanta and, therefore, is feeling the pressure of influx of industry and business, as well as a steady increase of Atlantans who are escaping the city environs for a better quality of life. Jackson County School District is being compelled to make broad-sweeping changes to its educational system to meet the demands of its new citizens.

Strong local public school partnerships already exist among departments and faculty in the College of Education (COE), as well as some departments in the Franklin College of Arts and Sciences (A&S) due, in part, to USG Board of Regents' nationally-acclaimed P-16 Initiative. The P-16 Initiative was created in 1995 to encourage institutions of higher education to work together with local partner K-12 schools to improve teacher education, and ultimately, improve K-12 student achievement. Additionally, an intra-institutional collaboration between COE and A&S in 1997 entitled, the "Deans' Forum," provided opportunities for dialog about issues to improve teaching and learning at the academy. Other national grants have built on the success of P-16 and the Deans' Forum at UGA to establish some very strong partnerships.

Although P-16, the Deans' Forum, and other initiatives started the conversations and collaborations, PRISM provided the impetus for ratcheting up discussion on the UGA campus about enabling faculty to be promoted, tenured, or rewarded for this work. UGA's Vice President of Instruction and member of the Strategy 10 Committee analyzed the UGA *Academic Affairs Policy Manual* for opportunities, challenges, and barriers to participating with public schools. It was found that there were no impediments to such involvement; rather, the policies encouraged such work if it was related to professional interests. However, there was no evidence that this kind of broad interpretation was

being used by departments in their decision-making. Input from faculty and department heads was needed to identify interest in public school collaborations as well as an understanding of what drives departmental decisions in promotion and tenure.

In September, 2005, approximately 55 UGA faculty members in science, mathematics, science education, and mathematics education met to discuss how to foster and sustain involvement in improving science and mathematics teaching and learning in K-16 education. Participants also included administrators, deans, division chairs, department heads, as well as invited guests from the Board of Regents PRISM grant and Strategy 10 Committee. Specifically, the charge was to propose, discuss, and prioritize incentives and various implementation strategies that could be used to encourage UGA faculty to participate in K-16 education activities. STEM faculty generally agreed that it was important for faculty to support teaching and learning in public schools. Most felt that at a Research I university such as UGA, it would be very difficult, but not impossible to make service count by rewarding participants in significant ways. However, a variety of incentives and rewards would be needed to encourage increased faculty participation with public school teachers and students. Almost all of the ideas generated were based on funding.

Some of the most important outcomes from the dialog were thoughtful ideas for rewards and incentives. Many faculty considered collaboration among the colleges on research, teaching, and grant-seeking to be the most important and immediately useful idea. Such collaboration would strengthen partnerships among colleges at UGA. Other recommendations included providing faculty release time, redefining some job descriptions, and creating new teaching and service-oriented faculty positions. These ideas suggested creative ways to balance teaching demands while maintaining excellence in research.

Faculty involvement at UGA from the inception of PRISM was good, with approximately 70 STEM faculty participating at some level. It would be presumptuous to say that subsequent to the September 2005 meeting faculty signed up in droves. Working in schools is not what UGA faculty were hired to do. However, a number of faculty sought out involvement—either as an outreach activity in the short-term or for a more sustained collaboration. For example, STEM faculty offer expertise and collaborations in K-12 classrooms by listing their profiles and areas of interest on the Northeast Georgia PRISM website. Faculty also chose to partner as a consultant or regular participant in PRISM learning communities, whose members collaborate on a sustained basis to explore teaching practices to improve student achievement.

The primary outcome of the meeting was not to enlist faculty into PRISM activities. Rather, as a catalyst to implement change, the discussion brought about an awareness of the need for participation in PRISM activities and the importance placed on STEM faculty engaging with K-12 schools in departmental decisions in promotion, tenure, and incentives. It also provided a forum to share the importance of UGA faculty to engage in scholarly teaching and the scholarship of teaching and learning.

Another opportunity for engaging faculty in PRISM at UGA is the successful small grants program which provides seed money to STEM faculty to improve instruction and student learning in undergraduate courses. To date, 57 grants have been awarded, which includes nine extensions. At the inception of the small grants program, funding was used to stimulate faculty engagement and the program has proved to be a powerful incentive. In 2006, the emphasis changed to one of evidence-based research and evaluation that documents impact on student learning. This is an opportunity for UGA faculty to conduct research on their teaching practices and collect data on student learning. Symposia are held each year, both at the local and state level, so that faculty may share their work and discuss what works best and why. Such dissemination publicizes local interest in the scholarship of teaching and learning.

Currently there is no guarantee that such involvement will count in promotion and tenure decisions and there are few funds to provide monetary incentives (the small grants program is a notable exception). Therefore, Northeast Georgia PRISM tries to find a role for faculty that builds on faculty strengths and relates to professional interests using a continuum of opportunities, based on the amount of time and work involved. STEM faculty are able to choose what is right for them. Unexpected benefits for higher education faculty include sharing a vision for improving student achievement, learning about each others' culture, and exploring effective K-16 teaching practices.

### **Some Lessons Learned**

The Strategy 10 Committee initially struggled with the challenges of changing faculty incentives and rewards in ways that would facilitate the engagement of higher education faculty in work with K-12 schools. Collecting and analyzing various sources of evidence provided valuable insight and direction, and ultimately led to the recognition that sustainable change requires both top-down (USG and institutional policies) and bottom-up (college and departmental cultures) approaches. Thus, **policy** and **culture** are two major higher order concepts that frame the major issues related to achieving positive change through PRISM.

The proposed advocacy policy on faculty work in K-12 schools and the associated guidelines for implementation of this policy will be considered by the USG Board of Regents in the near future. If adopted, these documents will provide a clear signal to higher education institutions in Georgia that this work is valued and should be appropriately rewarded. A frequently voiced concern among faculty in all four PRISM regions is the influence of any new rewards and incentive policy on the promotion and tenure process. This concern was not so much with emerging policy language, but rather with the existing beliefs, norms, and values of those (faculty and administrators) making these important personnel decisions. Accordingly, developing and sustaining cultural norms that reward faculty for work in K-12 schools, and making these norms visible within the organization, are important issues that currently are being addressed by each of the higher education institutions in the PRISM regions.

### **Where Are We Now?**

Has the process of developing an appropriate reward structure at the state system and local institution levels had the desired effect of increasing higher education faculty involvement in activities designed to improve SM teaching and learning in K-16 schools in Georgia? Evidence collected to date indicates that the answer to this question is a qualified “yes”. While the sustainability of this involvement has yet to be determined, initial indicators are promising.

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**Appendix A**

**Strategy 10 Committee**  
**Membership List**

## STRATEGY 10 COMMITTEE

Dr. Frank Butler	Vice Chancellor of Academics, Faculty & Student Affairs, BOR*
**Dr. Denise Battles	Associate Dean, College of Science & Technology, GaSoU
Dr. Lucinda Chance	Dean, College of Education, GaSoU
Dr. Sara Connor	Sr. Ex. Director, P-16 Special Initiatives & Operations, BOR
Dr. Delmer Dunn	Vice President for Instruction, UGA
Dr. Ronald J. Henry	Provost, GSU
Dr. Sabrina Hessinger	Associate Professor of Mathematics, AASU
Dr. Jan Kettlewell	Associate Vice Chancellor for P-16, BOR
Dr. Dale Kilhefner	Professor of Mathematics, AASU
Dr. Kathryn Kozaitis	Chair, Department of Anthropology, GSU
Dr. Charles Kutal	Associate Dean, College of Arts & Sciences, UGA
Dr. Ntgungwa Maasha	Professor of Geology, CGCC
Dr. Virginia Michelich	Vice President for Academic Affairs, GPC
Dr. William Nelson	Associate Dean, College of Arts & Sciences, GSU
Dr. Fredrick Rich	Professor of Geology & Geography, GaSoU
Dr. Sharon Taylor	Associate Professor of Mathematics, GSU
***Dr. Edward Thompson	Vice President & Dean of Faculty, AASU
Nancy Vandergrift	Program Specialist, UGA
Dr. Dorothy Zinsmeister	Assistant Vice Chancellor for Academic Affairs, BOR
<u>Other:</u> Chad Ellett	PRISM External Evaluator

### \*Abbreviations:

AASU- Armstrong Atlantic State University  
BOR- University System of Georgia Board of Regents  
CGCC- Coastal Georgia Community College  
GaSoU- Georgia Southern University  
GPC-Georgia Perimeter College  
GSU-Georgia State University  
UGA- University of Georgia

\*\*Dr. Battles took a position in Colorado but was an important asset to the committee as she chaired the Faculty Roles & Responsibilities Committee at Georgia Southern University.

\*\*\*Dr. Thompson is no longer in this position and will be replaced on the committee by Dr. Ellen Whitford. Dr. Thompson was very significant to the committee as he put rewards for faculty work in the schools in the Strategic Plan for Academic affairs at Armstrong Atlantic State University.

## **Appendix B**

### **Implementation Framework**

**\*\*\*\*DRAFT\*\*\*\*DRAFT\*\*\*\*DRAFT\*\*\*\***

**PRISM STRATEGY #10**

**IMPLEMENTATION FRAMEWORK  
ELEMENTS FOR CHANGE\***

<b>Level</b>	<b>POLICY</b>	<b>PRACTICE</b>
<b>USG</b>	<ul style="list-style-type: none"><li>• Advocacy Policy</li><li>• Regents Principles</li><li>• Strategic Plan</li></ul>	<ul style="list-style-type: none"><li>• Models</li><li>• Chancellor's Evaluation of Presidents</li><li>• Special Funding Initiatives</li><li>• Strategic Allocations</li><li>• Showcase of Faculty Success</li><li>• Showcase of Scholarship of Teaching</li><li>• Structure to Sustain: Advisory Council (? new role for EPAAC)</li></ul>
<b>Institution</b>	<ul style="list-style-type: none"><li>• Advocacy Policy</li><li>• Mission</li><li>• Strategic Plan</li><li>• Faculty Handbook</li></ul>	<ul style="list-style-type: none"><li>• P &amp; T results</li><li>• Financial Incentives (e.g. mini-grants)</li><li>• Showcase of Faculty Success</li><li>• VPAA as advocate</li></ul>
<b>College</b>	<ul style="list-style-type: none"><li>• Mission and Strategic Plan include advocacy of work to improve own teaching and work with teacher preparation</li><li>• P &amp; T Policy</li><li>• Workload Policy</li><li>• Salary Policy</li><li>• Post-tenure Review Policy</li></ul>	<ul style="list-style-type: none"><li>• P &amp; T results</li><li>• Salary increment results</li><li>• Showcase of Faculty Success</li><li>• Financial Incentives</li><li>• Deans as advocates</li></ul>
<b>Department</b>	<ul style="list-style-type: none"><li>• Advocacy work to improve teaching in higher education and K-12</li><li>• P &amp; T Policy</li><li>• Workload Policy</li><li>• Salary Policy</li><li>• Post-tenure Review Policy</li></ul>	<ul style="list-style-type: none"><li>• Work to improve teaching</li><li>• P &amp; T results</li><li>• Salary increment results</li><li>• Post-tenure Review results</li><li>• Financial Incentives</li><li>• Workload Incentives</li><li>• Chairs as advocates</li></ul>

**\*Elements for Change should be considered a menu of options because not all will apply at every institution. All policy and practice strategies share the same goal: to improve student achievement.**

## **Appendix C**

### **Proposed New Board of Regents Policy**

**\*DRAFT\***

# **DRAFT\*\*\*DRAFT\*\*\*DRAFT**

## **Strategy #10 Recommendations**

### **Proposed New Board of Regents' Policy**

#### **803.17 Work in the Schools**

Board of Regents' approval of University System of Georgia institutions to prepare teachers includes the expectation that state colleges and universities with a teacher preparation mission will collaborate with the K-12 schools. University System institutions that prepare teachers will support and reward all faculty who participate significantly in approved efforts in teacher preparation and in school improvement efforts through decisions in promotion and tenure, pre-tenure and post-tenure review, annual review and merit pay, workload, recognition, allocation of resources, and other rewards. Participation in teacher preparation and in school improvement may include documented efforts of these faculty in:

- Improving their own teaching so as to model effective teaching practices in courses taken by prospective teachers.
- Contributing scholarship that promotes and improves student learning and achievement in the schools and in the university.
- Collaborating with public schools to strengthen teaching quality and to increase student learning.

The Chancellor shall issue guidelines, to be published in the Academic Affairs Handbook, which serve to encourage formal institutional recognition and reward for all faculty in realizing the expectations embodied in this policy.

## **Appendix D**

### **Guidelines for New Board of Regents Policy**

**\*Draft\***

# DRAFT\*\*\*DRAFT\*\*\*DRAFT

## **GUIDELINES FOR POLICY 803.17 Work in the Schools** *(for Academic Affairs Handbook)*

The Board of Regents values University System faculty engagement with the K-12 schools. Through Policy #803.17, Work in the Schools, the Board expects faculty engagement with the public schools in institutions that prepare teachers. The Board expects presidents, provosts and academic vice presidents, and deans of colleges of education and arts and sciences in institutions that prepare teachers to advocate for, assess, recognize, and reward practices consistent with this policy.

Faculty effort under the provisions of this policy is anticipated in teaching, scholarship, and/or service. The University System of Georgia values all types of faculty scholarship, including the Scholarship of Discovery, the Scholarship of Teaching and Learning, and the Scholarship of Engagement. All faculty members are encouraged to enhance their classroom instruction by using scholarly teaching. It also is important for faculty to assist in improving teaching quality and student learning in K-12 classrooms by service to the schools. Definitions and examples of these various activities are provided below for illustrative purposes. See [www.XXXXXXXXXX](http://www.XXXXXXXXXX) for examples of faculty work in each of the three categories: Teaching, Scholarship, and Service.

### **TEACHING**

**Definition:** Scholarly teaching is teaching that focuses on student learning and is well grounded in the sources and resources appropriate to the field. The aim of scholarly teaching is to make transparent how faculty members have made learning possible (Shulman).

#### **Evidence of Scholarly Teaching:**

- Evidence that the faculty member reads the pedagogical literature, or attends instructional development sessions, in h/her own discipline and then branches out to the broader pedagogical literature.
- Evidence that the faculty member tries some of the teaching methods from the literature/instructional development sessions in h/her own classes.
- Evidence that the faculty member assesses whether or not h/she has been successful in increasing student learning by doing some formative evaluation with h/her students, adjusting h/her approach, asking a peer to come into the class to review the changes h/she has implemented.

### **SCHOLARSHIP**

#### **The Scholarship of Teaching and Learning**

**Definition:** The Scholarship of Teaching and Learning is the “systematic examination of issues about student learning and instructional conditions which promote the learning (i.e., building on previous scholarship and shared concerns), which is subjected to blind review by peers who represent the judgment of the profession, and, after review, is

disseminated to the professional community” (Research Universities Consortium for the Advancement of the Scholarship of Teaching and Learning).

**Evidence of the Scholarship of Teaching and Learning:**

- Evidence that the faculty member’s scholarship in the schools or in the university classroom is public, peer reviewed and critiqued.
- Evidence that the faculty member’s scholarship is exchanged with other members of professional communities through postings on websites, presentations to h/her department or college, presentations at professional conferences, and/or written up and published.
- Evidence that the scholarship builds upon previous scholarship and shared concerns.
- Evidence that the scholarship contributes new questions and knowledge about teaching and learning.

**The Scholarship of Engagement**

**Definition:** The Scholarship of Engagement in schools is characterized by the following: 1) it is to be conducted as an academic engagement with the public schools; 2) it is to involve the responsible application of knowledge, theory and/or conceptual framework to consequential problems; 3) it should test a research question or hypothesis, 4) one must be able to use the results to improve practice and inform further questions, and 5) resulting work should be available for dissemination for peer review of results (Glassick, Huber and Maeroff).

**Evidence of the Scholarship of Engagement:**

- Evidence that the faculty member designs and implements a research agenda in at least one area of need recognized by the public schools.
- Evidence that the faculty member applies relevant knowledge toward resolution of the identified need.
- Evidence that the faculty member assesses the impact of the engagement.
- Evidence that the faculty member disseminates for peer review the results of the outreach.

**The Scholarship of Discovery**

**Definition:** The Scholarship of Discovery is basic research in the disciplines including the creative work of faculty in the literary, visual, and performing arts. It is the “pursuit of knowledge for its own sake, a fierce determination to give free rein to fair and honest inquiry, wherever it may lead” (Glassick, Huber and Maeroff). It contributes to the stock of human knowledge in the academic disciplines.

**Evidence of the Scholarship of Discovery:**

- Evidence that the faculty member’s research is innovative (as opposed to routine) as judged by peers at the institution and elsewhere.
- Evidence that the faculty member’s research represents quality, rather than mere quantity.
- Evidence of the faculty member’s publications in high quality refereed journals and the quality and quantity of citations and reprints of h/her research publications.

- If appropriate for the discipline, evidence of the ability to attract extramural funding.
- Evidence of invited seminars and presentations (abstracts), if travel funds are provided, are also an indication of the Scholarship of Discovery.

## **SERVICE**

**Definition:** service is outreach or engagement by higher education faculty for the purpose of contributing to the public good. Contributions to the public good may include faculty work that contributes to solutions to complex societal problems, to the quality of life of Georgia's citizens, and to the advancement of public higher education. In the case of service to the public schools, the intent should be for the improvement of teaching quality and student learning. The following activities might be included in work with the schools: involvement in Learning Communities, workshops given based on need, collaborative development of courses, unit writing for the new Georgia Performance Standards, design of field experiences to support existing courses, engagement in co-observation / vertical alignment, etc.

### **Evidence of Service:**

- Evidence that the faculty member links h/her work in some way to public contemporary issues and/or to improving the quality of life.
- Evidence that the faculty member, either through h/her scholarly work and/or service, applies h/her knowledge toward solutions to complex societal problems and human needs.
- Evidence that the faculty member contributes to the continuous improvement of public higher education.
- Evidence that the faculty member contributes in some way to the public good.

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## **Appendix E**

**Website for Use with Guidelines for Policy  
\*DRAFT\***

## **WEBSITE FOR USE WITH GUIDELINES FOR POLICY 803.17 Work in the Schools**

**PURPOSE OF THIS WEBSITE:** This website is intended to provide cases of faculty work in teaching, the various types of scholarship, and in service. These cases are for illustrative purposes only to assist institutions in implementation of Policy 803.17 and its Guidelines. Institutional Faculty Reward System policies are expected to vary by institutional sector.

## **DEFINITIONS, EXAMPLES OF EVIDENCE, AND ILLUSTRATIVE CASES**

### **TEACHING**

**Definition:** Scholarly teaching is teaching that focuses on student learning and is well grounded in the sources and resources appropriate to the field. The aim of scholarly teaching is to make transparent how faculty members have made learning possible (Shulman).

#### **Evidence of Scholarly Teaching:**

- Evidence that the faculty member reads the pedagogical literature, or attends instructional development sessions, in h/her own discipline and then branches out to the broader pedagogical literature.
- Evidence that the faculty member tries some of the teaching methods from the literature/instructional development sessions in h/her own classes.
- Evidence that the faculty member assesses whether or not h/she has been successful in increasing student learning by doing some formative evaluation with h/her students, adjusting h/her approach, asking a peer to come into the class to review the changes h/she has implemented.

#### **Cases of Scholarly Teaching**

**Case #1.** A mathematics faculty member read that time-on-task is a critical factor in student learning and, following formative evaluation, designed innovative web-based exercises to stimulate course-related student activity outside of class. Disciplinary colleagues at another university explored his course's website and, with the idea of possibly incorporating at least some features of the innovative course in their own courses, invited the mathematician to a seminar to explain the how and why of the innovations.

**Case #2.** A review of the pedagogical literature shows that teaching evolution effectively requires a simultaneous fostering of critical thinking, both within biology and about science in society. Evolution is the core of biology, and is central to public understanding and acceptance of basic science, but is rejected by a plurality of a public that accepts much pseudoscience. Data were gathered to determine whether student's initial acceptance of evolution affected their grades. In prior studies, initial rejection had been associated with lower grades. Several techniques were developed to reduce the conflict

for such students without sacrificing the core science. Initial acceptance now has no relation to grades in the course.

## **SCHOLARSHIP**

### **The Scholarship of Teaching and Learning**

**Definition:** The Scholarship of Teaching and Learning is the “systematic examination of issues about student learning and instructional conditions which promote the learning (i.e., building on previous scholarship and shared concerns), which is subjected to blind review by peers who represent the judgment of the profession, and, after review, is disseminated to the professional community” (Research Universities Consortium for the Advancement of Scholarship of Teaching and Learning).

### **Evidence of the Scholarship of Teaching and Learning:**

- Evidence that the faculty member’s scholarship in the schools or in the university classroom is public, peer reviewed and critiqued.
- Evidence that the faculty member’s scholarship is exchanged with other members of professional communities through postings on websites, presentations to h/her department or college, presentations at professional conferences, and/or written up and published.
- Evidence that the scholarship builds upon previous scholarship and shared concerns.
- Evidence that the scholarship contributes new questions and knowledge about teaching and learning.

### **Cases of the Scholarship of Teaching and Learning (SoTL)**

**Case #1.** This project addressed the problem that college-level required courses in introductory statistical analysis are generally unsuccessful in conveying the necessary concepts for students to apply or understand statistics. The project utilized digital video case studies of former students who took Statistical Techniques and who applied statistical tools in their workplace to solve significant problems. Each video addressed how the workplace problem originated and its characteristics, how statistical analysis was used to solve the problem, what the outcome was on the organization or environment, and the impact on the graduate’s job or career. The problem definition component of the video was placed on a Web site and streamed to small groups of students outside of class, who analyzed the issue and proposed statistical methods for addressing the issue. Each group’s proposed solution was shared in class to stimulate discussion. A major component of the project was the development and application of assessment tools to determine if the digital video case studies were successful in meeting these goals. Another project element was the dissemination of the results of this SOTL research to the large community of scholars who teach such courses.

**Case #2.** Two chemistry faculty were awarded an NSF-ILI grant for the purchase of several Silicon Graphics (SGIs) in the winter of 2003 for use in undergraduate physical chemistry laboratories. These workstations allow for high-level molecular modeling simulations and the computation of various electronic and thermodynamic variables. Working with a third faculty member, whose specialty is the teaching of chemistry, the faculty determined that an evaluation of how the SGIs were incorporated into the curriculum and used by students

would help improve the effectiveness of this technology as a teaching tool. The third faculty member observed the labs for two semesters, looking at types of student-student and student-faculty interactions. Students were also interviewed for 30-50 minutes each at three times during the year. Based on the results of the observations and the interviews, the computational portion of the laboratory was revised. The three faculty, with the assistance of a student, have also created a web-site for general chemistry and given papers on their project at regional and national meetings.

**Case #3.** Two biology colleagues teach courses that follow one another in sequence. Students do not seem to be able to apply in one course what they learned in the previous one. Looking for ways to help students hone this skill, the biologists reviewed the literature on how students learn science, especially as it relates to the application of previously learned information to new situations. They decided to introduce the use of case studies into the courses, providing students opportunities to apply previously learned knowledge to new formats. At the end of the second semester, the faculty compared grades in the two courses (DFW grades), with grades from biology courses that did not use case studies. The work led to the development of a campus-wide workshop on the effective use of case studies to improve student learning (and retention), facilitated by the two biologists. The biologists subsequently submitted a paper to the *Journal of Biology Teaching* on their work.

### **The Scholarship of Engagement**

**Definition:** The Scholarship of Engagement in schools is characterized by the following: 1) it is to be conducted as an academic engagement with the public schools; 2) it is to involve the responsible application of knowledge, theory and/or conceptual framework to consequential problems; 3) it should test a research question or hypothesis, 4) one must be able to use the results to improve practice and inform further questions, and 5) resulting work should be available for dissemination for peer review of results (Glassick, Huber and Maeroff).

### **Evidence of the Scholarship of Engagement:**

- Evidence that the faculty member designs and implements a research agenda in at least one area of need recognized by the public schools.
- Evidence that the faculty member applies relevant knowledge toward resolution of the identified need.
- Evidence that the faculty member assesses the impact of the engagement.
- Evidence that the faculty member disseminates for peer review the results of the outreach.

### **Cases of the Scholarship of Engagement**

#### **Case #1:**

Faculty and students in Colleges of Arts and Sciences collaborated with faculty and students of local high schools in a structured, discipline-based Learning Community to improve the quality of teaching and learning of the discipline. Through a service-learning course, students who were mentored by college faculty worked with teachers to design and implement lessons with up-to-date content, constructivist teaching strategies, and

learning outcomes appropriate to the grade level of the students. The research question was: To what extent does the placement of mentored undergraduate majors and graduate students in high school classrooms, working as partners to teachers, improve the quality of teaching and learning science and mathematics? Findings of each classroom were analyzed and applied to enhance the feasibility and quality of the learning community, and to increase the likelihood of replication and sustainability. Results of this Learning Community were shared statewide and nationally. With the leadership of College faculty, papers were co-authored by members in the learning community and published in peer-reviewed journals.

### **Case #2:**

Higher Education faculty contributed to the scholarship of engagement by applying their knowledge and expertise within a collaboration to improve teaching and learning in a K-12 course. The research question was: What are the results of a K-12 & higher education faculty collaborative that is designed to assess areas for improvement, develop strategies and team teach a K-12 course? A team of K-12 and higher education faculty worked together to assess and redesign a course. Strategies and course changes were based upon study of curricula, classroom observations and student data. The weakest areas of student learning as indicated by these data were the points of focus for analysis, study of related literature and development of effective classroom strategies. The experimental course was team taught collaboratively integrating content knowledge, pedagogical knowledge and teacher practice knowledge into the delivery. The team collected and analyzed data to measure increased student learning. Data were fine enough to identify which strategies worked and which need refinement. This information was used to further improve and redeliver the course. The redesigned course and the procedure for course development and improvement were presented at regional conferences. Course and delivery format were adopted by district administrations.

### **The Scholarship of Discovery**

**Definition:** The Scholarship of Discovery is basic research in the disciplines including the creative work of faculty in the literary, visual, and performing arts. It is the “pursuit of knowledge for its own sake, a fierce determination to give free rein to fair and honest inquiry, wherever it may lead” (Glassick, Huber and Maeroff). It contributes to the stock of human knowledge in the academic disciplines.

### **Evidence of the Scholarship of Discovery:**

- Evidence that the faculty member’s research is innovative (as opposed to routine) as judged by peers at the institution and elsewhere.
- Evidence that the faculty member’s research represents quality, rather than mere quantity.
- Evidence of the faculty member’s publications in high quality refereed journals and the quality and quantity of citations and reprints of h/her research publications. If appropriate for the discipline, evidence of the ability to attract extramural funding.
- Evidence of invited seminars and presentations (abstracts), if travel funds are provided, are also an indication of the Scholarship of Discovery.

## **Cases of the Scholarship of Discovery**

### **Case #1:**

This project was motivated by a perceived application of algebraic group theory to solving large classes of differential equations. Historically, engineers and others needing to solve differential equations in their work must rely upon approximation methods as most differential equations are considered unsolvable. Hence, the project had the potential not only to contribute to the base of knowledge in the field, but also to aid those who use mathematics in their field. The investigator undertook study to become more knowledgeable about the area of differential equations. An initial hypothesis was investigated through support from an internal research grant. It was discovered that finite algebraic groups are connected to differential equations having a very specific type of solution. The results of the work were presented at a subsequent conference and published in a refereed journal. They have since been used in proving consequential results in a new and growing field of mathematics and in the development of software used to solve differential equations.

### **Case #2:**

A research project dealing with the hydrology of a region was formulated when the researcher learned of the presence of springs during an agricultural workshop. None of the springs had ever been described or their waters analyzed, so the project had the potential for bringing substantial revision to the hydrology of the region. A small development grant was awarded for the purchase of analytical equipment. Students were engaged to periodically conduct carefully controlled assays of water chemistry and quality. Following two years of data gathering, a report was submitted to and was accepted by the State Geologic Survey as a water supply bulletin. The collaborative work with students was described and accepted for publication in a peer-reviewed journal on science teaching.

## **SERVICE**

**Definition:** service is outreach or engagement by higher education faculty for the purpose of contributing to the public good. Contributions to the public good may include faculty work that contributes to solutions to complex societal problems, to the quality of life of Georgia's citizens, and to the advancement of public higher education. In the case of service to the public schools, the intent should be for the improvement of teaching quality and student learning. The following activities might be included in work with the schools: involvement in Learning Communities, workshops given based on need, collaborative development of courses, unit writing for the new Georgia Performance Standards, design of field experiences to support existing courses, engagement in co-observation / vertical alignment, etc.

### **Evidence of Service:**

- Evidence that the faculty member links h/her work in some way to public contemporary issues and/or to improving the quality of life.
- Evidence that the faculty member, either through h/her scholarly work and/or service, applies h/her knowledge toward solutions to complex societal problems and human needs.

- Evidence that the faculty member contributes to the continuous improvement of public higher education.
- Evidence that the faculty member contributes in some way to the public good.

### **Cases of Service to the Schools**

#### **Case #1:**

A professor of mathematics collaborated with high school teachers to construct effective learning modules, inclusive of a focal problem, content, design, implementation, and assessment, related to the topical expertise of the faculty. The development of each module was based on the needs specific to a grade level and classroom, including the resource base of the classroom, level of interest and competency of the teacher, and level of competency and required knowledge of the students. The professor prepared the module and guided the teacher in its implementation. In turn, the teacher and students provided feedback on the feasibility and compatibility of the module to each classroom culture.

#### **Case #2:**

Higher Education faculty regularly engaged in group discussions via a Professional Learning Community with K-12 faculty. These groups studied student data, review literature on best practices, and shared experiences with teaching and learning. One of the main accomplishments was collaborative planning of customized professional learning for teachers. The learning community also provided a forum for ongoing discussion about classroom implementation of the professional learning.

#### **Case #3:**

Higher education faculty and high school physics & physical science teachers met to discuss and develop seamless alignment of the curricula. Student content knowledge, study skills, and conceptual understanding were all discussed. High school and higher education faculty observed each other teaching similar or aligned topics for the purpose and applied lessons learned to the development of better aligned curriculum.

#### **Works Cited:**

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Shulman, Lee. (1998). Course anatomy: The Dissection and Analysis of Knowledge Through Teaching. In P. Hutchings (ed.), *The course portfolio: How faculty can examine their teaching to advance practice and improve student learning*. (pp.5-12). Washington, DC: American Association for Higher Education.