

SBCTC Online Grant Management System

Printed By: Bill Moore, State Board for Community and Technical Colleges

Print Date: 2/17/2010 5:39 PM

**2010 Gates: Pre-College Math SPOKDO\_APP6328**  
**Status: Submitted**

**Applicant Information**

**Institution:** Spokane District Office  
**Consortium:** No

**Contact:**

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### **Section 1**

#### **Team Lead's Department**

Pete Wildman, 509-533-3481, peterw@spokanefalls.edu

#### **Core Team and Partners**

##### **1A. List other faculty/staff (including titles, departments, and email addresses) at the college who will be directly involved in leading and/or implementing the project.**

Pete Wildman – Tenured Instructor – Mathematics – peterw@spokanefalls.edu

Terry Souhrada – Tenured Instructor – Mathematics – terrys@spokanefalls.edu

Debbie Olson – Tenured Instructor – Mathematics – debrao@spokanefalls.edu

Mike Dirks – Adjunct Instructor – Mathematics – mikedi@spokanefalls.edu

##### **1B. Indicate which, if any, other departments or offices at the college or other schools or institutions that will play supportive roles in implementing the proposal. (optional)**

Institutional Research

## Section 2

### Existing Resources/Capacity

#### **2A. Describe the current program structure/format of your pre-college to college-level math offerings including number of full- and part-time faculty who teach courses in the program.**

**(max. characters: 2,000)**

The mathematics department at Spokane Falls Community College offers a comprehensive mathematics program that is focused primarily on transfer to a four-year-degree-granting institution. Courses are taught at all levels from arithmetic to differential equations by either full time or adjunct instructors in the department. Many of our courses, especially those at the pre-college level, are taught both in a traditional in-class format and as self-paced courses through the Math Learning Center (MLC). Additionally a number of courses are taught in an online format. Approximately 20% of students enrolled in our pre-college mathematics program on campus are enrolled in self-paced courses through the MLC or through online courses. Spokane Falls Community College (SFCC) is also offers a number of mathematics courses at outlying centers throughout the eastern part of Washington via the Institute for Extended Learning (IEL). These courses are taught in both face-to-face and ITV settings. The courses which are impacted by this grant are the core courses in our pre-college program.

These courses are

Math 90 Pre-Algebra

Math 91 Elementary Algebra I Math 93 Algebra I

Math 92 Elementary Algebra II Math 94 Algebra II

Math 99 Intermediate Algebra Math 98 Algebra III

The courses Math 93, Math 94 and Math 98 are new courses in our department that came about as a result of our new curriculum for our pre-college courses. The courses Math 91, Math 92 and Math 99 are still offered through only in our MLC and online. The focus of this grant will be on revision of the content and instruction in these core pre-college mathematics courses.

#### **2B. Summarize any local research findings you've reviewed on student success in the pre-college math sequence (from Adult Basic Education through developmental education) and in college-level math courses.**

**(max. characters: 2,000)**

For the years from 2000-2009, the mathematics department has requested a yearly math report from the SFCC Institutional Research Office. This yearly report measures a large number of student outcomes. Of particular interest are the student success rates in Math 91, 92 and 99 and the percentage of students who start in each course and complete the entire sequence. This data is of interest to us since students completing a degree at SFCC must show

intermediate algebra proficiency. Approximately 85% of incoming students place into a developmental math course, so completing this sequence is of paramount importance to them in completing their degrees. In the 2008 yearly report, a 6-year trend analysis was completed. For students who entered the sequence in Math 90, the percentage who completed Math 99 was about 8%. For students who entered the sequence at Math 91, the percentage that completed Math 99 averaged about 22%. For those who entered the sequence in Math 92, the percentage that completed Math 99 averaged about 35%. The student success rates in the developmental program over this six year period varied from 42% to 52%. Since such a large number of students enter our programs at this course level, this data encouraged the mathematics department to look at alternatives to these courses in terms of content and teaching practice.

**2C. Describe any current or recent projects, grants, campus initiatives, etc. that serve as a foundation for the work being proposed; what existing work are you building on in this proposal and how is it connected?**

**(max. characters: 2,000)**

We received a Title III grant awarded in 2007. The focus is to revise the content of Math 91, 92 and 99 using the Washington College Readiness Standards (CRS) as a guide. There is a greater focus on topics like probability, statistics, and geometry and less on manipulative skills. There is less focus on mastering technique and more on understanding concepts. The objective of the grant is to improve success in these courses by 5%. We spent the 2007 academic year discussing how to revise the content of these courses and finding materials. We selected a custom published textbook for these courses. We have had an extraordinary amount of input in the content of this text. Last year, the department ran a pilot program for the revised courses. These courses were taught by three full time faculty members. We piloted the use of a process that encourages students to come to class prepared for discussion of the material. There is a greater emphasis in the course on the use of technology and collaborative learning. The revisions to the curriculum were significant enough to create a new set of course numbers. These new courses are Math 93, Math 94 and Math 98. The department revised its placement process to better reflect the material in the CRS and more appropriately place students within the developmental math sequence. This year the department has fully implemented this new program. Instructors teaching these courses are asked to incorporate required pre-class preparation and technology. There have been a number of professional development activities to help instructors implement these changes. Two members of the department have been involved with the College Spark program team at SFCC. As part of this program, these faculty members developed multidisciplinary projects for the new course sequence. Four faculty members at SFCC are part of the RAMP project through WSU where they are involved in additional project development that can be used in these courses.

**2D. What professional development opportunities currently exist for pre-college math faculty (part-time as well as full-time)?****(max. characters: 1,000)**

There have been numerous professional development activities for the new courses. The department held a retreat which focused on the changes in the curriculum. Department faculty at SFCC and the IEL were introduced to the changes in the curriculum and their rationale. They also had an opportunity to experience some of the projects and material in the new course. At the beginning of the fall quarter, the department held a workshop for the new curriculum. This professional development gave instructors training in the content changes and practical techniques in implementing the pre-class preparation requirement and technology. During this academic year, instructors teaching in the new sequence have met weekly. During these meetings instructors have been able to discuss specific challenges, changes and implementation issues. The department has a course mentor for each course which leads these meetings. Adjuncts are involved in all these activities and are given a small stipend to attend.

**2E. Based on the evidence you have, what are the current strengths of the pre-college math program and what are the major issues/challenges that need to be addressed?****(max. characters: 2,000)**

Strength 1: We have made significant progress on restructuring the curriculum to better meet the college readiness standards. We have not only discussed curriculum changes, but have implemented change. Strength 2: We are fully committed to making changes in the pre-college mathematics curriculum. This commitment is demonstrated by the process outlined above. More than half of the faculty has now begun teaching the new sequence. Strength 3: We have the framework in place for ongoing professional development. The weekly meetings, summer professional development, and retreats provide faculty with support in implementing change. Strength 4: We have made progress in changing instructional techniques in developmental mathematics. By implementing a preparation requirement and the use of technology in these courses, we are moving towards techniques focused on student understanding and engagement. Challenge 1: Implement the changes in curriculum and pedagogy to the courses offered in the MLC, IEL and online. We need to address changes in curriculum and teaching practice in these areas. Challenge 2: To continue professional developmental and to encourage practices focused on student understanding and engagement. We have made some strides in content; we need to focus more on effective practices that encourage student understanding. Challenge 3: Implications for courses beyond the core sequence. We need to expand positive changes in courses at the college level that follow the pre-college sequence. The first step would be to assess the impact the changes have on students entering college-level courses from the new sequence. Challenge 4: Expand the evaluation of our program to evaluate student attitudes, understanding and faculty practice.

We need to develop evaluation methods to measure whether our preparation techniques are improving our students' attributes as learners. Additionally we need an evaluation process that measures student understanding of key concepts.

## Section 3

### Goals/Strategies/Activities

**3A. The overall long-term goal of the project is to increase student achievement in college-level math courses by improving student success in and progress through their pre-college math (ABE and Dev Ed) experience in Washington community and technical colleges. To achieve this goal participating colleges are asked to address core areas of educational practice: what math is taught (restructuring/redefining the curriculum), how it is taught (emphasizing student understanding and engagement), and how it is assessed (refining diagnostic and classroom-based assessments). Given these parameters and the description of your program's strengths and challenges in section 2, describe what you'd like to accomplish if your institution were selected to participate in this project.**

**(max. characters: 4,000)**

In the last several years, our department has spent a great deal of time and energy redesigning our developmental math sequence because of the poor success rates found among the students enrolled in those courses. We have restructured the content based on the Washington College Readiness Standards (CRS) and have created a text to address those standards and to enhance student understanding. We also implemented various teaching and learning strategies to help students gain better understanding and to create habits to ensure their continued success. Additionally we reinvented our placement process to facilitate proper student placement into and within the developmental series. During 2008-2009 the new curriculum was piloted. This year we have fully implemented the new courses into our lecture sections.

We now see many critical steps that need to be taken in the next three years. 1) We need to establish a consistent and sustainable assessment/evaluation plan. 2) We need to continue and strengthen our conversations and commitments to improving our individual instructional practices. 3) We need to move the curriculum change though all instructional modalities offered even though we have made much progress in implementing the new series into the lecture classes.

The evaluation of the newly implemented curriculum and teaching practices is critical. We must verify that what we are doing is working or gain insights into what must be done to improve student success. This assessment must be done at the program, classroom, and student levels and must be cyclic in nature to sustain student success. Any changes should be based on these evaluations with the intention of students gaining better understanding, becoming more engaged in their learning, and developing better study habits and skills. The ongoing cycle of assessment should include common tasks that require students to demonstrate their understanding through multiple representations, focus groups where

students share their evaluation of the program and analysis of current best pedagogical practices being used in the classroom.

In addition to assessing the program, a strong support for those teaching the courses needs to be in place. As part of our current ongoing support for faculty new to the developmental math curriculum, we have weekly discussions to ease their transition. However a stronger focus on the CRS with a research component would be more beneficial to improving instructional strategies. Through the development of Faculty Inquiry Groups (FIGs) this could more readily take place. The purpose of these groups is to foster scholarly collaboration to constantly improve individual practices to enhance student learning and understanding. These groups could deeply focus on a topic of interest brought about by the ongoing evaluation and assessment of the program. As a result of this inquiry, teaching and learning strategies could be explored, implemented, and evaluated to determine their effect on student understanding and success.

But program evaluation and faculty support in only one modality in which the new curriculum is presented would be short sighted. With the initial implementation of the new developmental math curriculum in place within the lecture classes, we need to address how best to change the content of our development courses in the MLC, in courses offered through the IEL, and in our online courses to better engage students and to focus on their understanding rather than memorization of algebraic techniques. Currently, the MLC, IEL, and online courses use the curriculum which was replaced with the new series. Changes to the approaches used in the MLC, IEL, and online would necessitate a continued, intentional, and collaborative professional development with those involved in teaching in these modalities.

As important as each of these goals are, the requirement that they be realistic in scope and sustainable in nature must be a paramount consideration.

**3B. Do you intend to address a particular aspect of your pre-college math program (e.g., a specific course or transition) rather than take a more global approach to the overall program?**

- Yes  
 No

**If you answered "yes" to 3B, please describe why you chose that aspect.  
(max. characters: 1,000)**

We have taken a global approach.

**3C. At this point what is your best thinking about pursuing what is described in 3A., i.e., what strategies or approaches seem most promising to you and why?**

**(max. characters: 2,000)**

The development and implementation of evaluation tools such as focus groups or common course tasks are areas in which we are unfamiliar. We see bringing in an assessment expert to teach evaluation methods for our program and students' understanding to be a necessity. This expert could assist us in the development of appropriate tasks and strategies for us to carry on our own assessments making the ongoing evaluation of student understanding, teaching strategies, and overall program quality self-sustaining. The final goal is a model that is easy to maintain that continues to give us information about our students, program, and teaching.

Continuing our commitment to improving faculty instructional and assessment practices should involve collaborative professional development. We are interested in further exploring the Faculty Inquire Group model and adapting it to suit our department. The focus of these groups would begin with classroom practices including student pre-class preparation, collaborative student groups, and development of rich activities. We feel strongly that given a clear and realistic protocol our department will respond to the challenge, both individually and as a whole, to improve upon classroom practices to enhance student understanding in a well-informed, reasonable, and intentional way. Part of this plan must also include time to plan and implement these groups.

MLC, IEL, and online courses need a comprehensive computer-based resource. Our new text is customized so this type of resource is very limited. We currently think the option that holds the most promise is to actively investigate texts that meet our needs: align with the CRS, engage students in their own learning, approach the content in a multi-representational manner, require the use of appropriate technology, and have complete and robust computer-based resources. Once resources are chosen, developing the new courses and supplemental materials will require a reasonable amount of time.

**3D. A critical component of this overall project is faculty leadership and program/department-wide ownership of the proposed efforts to improve pre-college math. How do you plan to involve a "critical mass" of faculty in the efforts you propose (full-time and part-time) and build a collective program commitment to collegial learning about effective educational practice in pre-college mathematics?**

**(max. characters: 2,000)**

The leadership involved in current efforts includes established faculty as well as those new to the department. These changes were only possible with full department support for the change over the past several years. There is department-wide support for the need to change the developmental math curriculum to address the CRS.

This commitment is demonstrated by the multi-year process we have followed culminating in

the current Title III grant. Under the original leadership, the department has followed a thorough process in implementing the planned changes. The department's commitment to this change is demonstrated by the fact that by the end of this academic year more than half of the faculty, including adjuncts, will have actually taught courses in the new developmental sequence.

While the department as a whole is supportive of current efforts, it is not without its detractors. In an effort to support those who are teaching these courses for the first time, we have weekly meetings offering support, teaching suggestions, sharing assessments, and talking through difficulties that arise. It is through these meetings that we are better able to build buy in by the faculty. In an effort to support these changes, we are proposing the use of video conferencing to include off-campus instructors.

In our last department meeting, we shared our thoughts about this grant proposal and received overwhelming support to further our current efforts through this grant. We already have over half of our faculty currently involved directly in our new courses. Our diversity of thought is one of our department's greatest assets. Greater still is the department's willingness to move together when a consensus is reached. We feel strongly that it is neither possible nor desirable that all instructors teach in one particular style or reflect one particular philosophy. The goal instead is to foster scholarly collaboration to constantly challenge and improve our individual practices.

**3E. What professional development, support and/or technical assistance would help you achieve your goals?**

**(max. characters: 2,000)**

The greatest single focus for us is the evaluation and assessment of the newly implemented developmental math program. As such we need technical assistance in the development, use, and analysis of instruments to best assess and evaluate the program, student understanding, teaching practices, and effectiveness of professional development and support. We feel that it will be necessary to bring outside evaluators in to assist in evaluating what we are currently doing. Additionally, we need someone to teach us how to best develop our own assessment tools and strategies so that we can sustain the assessment cycle for continued improvement.

As part of this support we hope to develop long-term models for both collaborative professional development and program evaluation and assessment. We feel confident the results of these efforts will be valuable to the other schools in the project that are embarking upon a similar overall redesign of their developmental sequence.

## Section 4

### Evaluation Plan

#### **4A. What evidence will you use to help assess the success of the work you propose and how do you intend to gather and use that evidence?**

**(max. characters: 2,000)**

As part of the evidence to assess the success of this work we will use pass rates, retention rates, and persistence which are gathered annually by the college. Additionally, we would create common end of course multi-representational tasks to assess student understanding of the key concepts for the course such as end of term projects.

We would also form student focus groups to assess the student perspective of which components of the program seem to be working best for them. We would ask an outside evaluator to conduct these groups to gain a more “honest” assessment of the classroom practices uses.

As outlined in Section 3, we would also form Faculty Inquiry Groups that would have a single content or pedagogical focus. They would research current practices, develop analysis tools, assess the outcomes, reflect on the results, make prescribed changes, and repeat the process.

Together these should form a solid assessment on which to base the analysis of student understanding, classroom practices, and the overall program.

#### **4B. What support/technical assistance do you envision needing in order to evaluate the impact of the work you propose?**

**(max. characters: 1,000)**

The support we would need to evaluate the impact would include outside evaluation of student perceptions of the program through focus groups. We would also need assistance in designing and implementing assessment tools for evaluating student understanding, effectiveness of planned professional development and inquiry groups.

## Section 5

### Sustainability Plan

**5A. What is the potential for continuing, and if possible scaling up, this work beyond the grant period, and how are you addressing directly this issue of sustainability as part of your proposed work?**

**(max. characters: 2,000)**

Our focus on implementing the successful components of the new developmental math curriculum into the other modalities offered (MLC, IEL, online) offers the most immediate possibility of scaling up. The research done within this grant will supply the information needed to move forward with the transition into the MLC, IEL, and online courses.

As for the inquiry groups, the grant would allow us to deliberately transition our current weekly meetings from support meetings for instructors new to the sequence to collaborative gatherings clearly focused on challenging and improving our practices. In this way we will bring a wider audience to the structure already in place, continue to meet the changing needs of our faculty, and support new instructors as they join us in the future. In a sense these meetings are already institutionalized. It is the focus of the meetings that will change which eventually would not require further support to sustain.

Additionally, once we have been taught how best to design and implement assessment and evaluation tools, the ongoing assessment cycle could be carried on by the faculty either outside of or as part of the inquiry groups.

Besides the potential for scaling up within our own college, we also offer the unique potential to share with others the lessons we have learned to assist them in implementing similar changes on their campuses.

**5B. What support/technical assistance do you need in order to be able to address the long-term sustainability of the work you are proposing?**

**(max. characters: 1,000)**

Any time major changes are made; there is eventually an inevitable backlash to the change. With this backlash also often come a regression and a questioning of the change. The support and assistance we would need is in the development of a forum and method in which these concerns can be heard and addressed without distracting from the successes and continued fine-tuning of the changes made.

### VP of Instruction Approval

**5C. My college's Vice President of Instruction has reviewed and approved this application.**



## **Section 6**

### **Budget Narrative**

#### **6A. Description of how funds will be used for Project Development Salaries, Wages, and Benefits.**

Project development funds will be used to cover stipends for the project team and other mathematics department members who will be involved in the design and implementation of the project. These stipends will cover work such as designing and implementing inquiry groups, professional development, or evaluation methods. Additional funds will be needed for those team members who are planning for the expansion of existing work to the MLC, IEL, and online courses.

#### **6B. Description of how funds will be used for Project Development Goods and Services.**

There may be some costs associated for copying, book purchases, and other office supplies associated with professional developments that are created as part of the project.

#### **6C. Description of how funds will be used for Project Development Building Rental and Utilizations.**

The only foreseeable costs in this area would be for rental of a space for departmental retreats or possible professional development activities required for faculty new to the project.

#### **6D. Description of how funds will be used for Project Development Travel.**

Some funds will be needed to allow travel to RPM meetings, for meals, lodging and travel for an outside evaluator, and for other possible site visitations. Additional funds are needed for grant prescribed conference presentations.

#### **6E. Description of how funds will be used for Project Development Contracts.**

These funds will be used to hire an outside evaluator to conduct an evaluation of existing program. We would also professional assistance with developing some of our new common multi representational assessment tasks.

#### **6F. Description of how funds will be used for Instruction Salaries, Wages, and Benefits.**

Stipends may be provided to adjunct faculty who are teaching the course for the first time or as an incentive to participate in professional development.

#### **6G. Description of how funds will be used for Instruction Goods and Services.**

There may be some costs for copying, books, or other office supplies for adjuncts who are attending a professional development

**6H. Description of how funds will be used for Instruction Building Rental and Utilizations.****6I. Description of how funds will be used for Instruction Travel.**

Travel for IEL instructors to attend professional development

**6J. Description of how funds will be used for Instruction Contracts.****6K. Description of how funds will be used for Administration Salaries, Wages, and Benefits.**

Administration funds will be used to cover a stipend for the principle investigator who will oversee in the design and implementation of the project.

**6L. Description of how funds will be used for Administration Goods and Services.**

There may be some costs associated for copying, book purchases, and other office supplies associated with project supervision.

**6M. Description of how funds will be used for Administration Building Rental and Utilizations.****6N. Description of how funds will be used for Administration Travel.**

Some funds to will be needed to allow travel to RPM meetings, for meals, lodging and travel, and for other possible site visitations and grant prescribed conference presentations.

**6O. Description of how funds will be used for Administration Contracts.**

## Budget

### Institution: Spokane District Office

Activity	Salary and Wages	Employee Benefits	Goods and Services	Building Rental & Utilizations	Travel	Contracts	Total
Project Development	\$4,100.00	\$0.00	\$500.00	\$200.00	\$800.00	\$10,000.00	\$15,600.00
Instruction	\$2,000.00	\$0.00	\$200.00	\$0.00	\$200.00	\$0.00	\$2,400.00
Administration	\$1,000.00	\$0.00	\$200.00	\$0.00	\$800.00	\$0.00	\$2,000.00
Total	\$7,100.00	\$0.00	\$900.00	\$200.00	\$1,800.00	\$10,000.00	\$20,000.00