Application Form

Personal

Details

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***Primary Appointment Title:**	Assistant Professor, Mathematics
***Institution Name(s):**	Armstrong State University

Proposal Details

***Team Members (Name, Title, Department, Institutions if different, and email address for each):**

Jared Schlieper, Assistant Professor, Mathematics, Armstrong State University, jared.schlieper@armstrong.edu

Greg Knofczynski, Associate Professor, Mathematics, Armstrong State University, greg.knofczynski@armstrong.edu

Michael Tiemeyer, Assistant Professor, Mathematics, Armstrong State University, michael.tiemeyer@armstrong.edu

***Sponsor, (Name, Title, Department, Institution):**

James Brawner, Professor and Department Head, Mathematics, Armstrong State University, james.brawner@armstrong.edu

***Proposal Title:**	183

***Course Names, Course Numbers and Semesters Offered:**

Math 2200 Elementary Statistics Fall, Spring and Summer semesters with multiple sections.

***Final Semester of Instruction:**	Spring 2016
***Average Number of Students per Course Section:**	35
***Number of Course Sections Affected by Implementation in Academic Year:**	25-30
***Total Number of Students Affected by Implementation in Academic Year:**	1050
***List the original course materials for students (including title, whether optional or required, & cost for each item):**	Introduction to the Practice of Statistics by Moore, McCabe, Craig required $200
***Proposal Categories:**	No-Cost-to-Students Learning Materials
***Requested Amount of Funding:**	$15,800
***Original per Student Cost:**	$200
***Post-Proposal Projected Student Cost:**	less than $20
***Projected Per Student Savings:**	$180
***Plan for Hosting Materials:**	D2L

***Project Goals:**

The main goal of this transformation is to adopt a high quality open-source textbook for Elementary Statistics in order to ensure all students have access to the course textbook at the start of the course and to reduce the cost of higher education while maintaining academic integrity and success. Also, we wish to bring awareness of open-source materials to students, faculty, and administration so that others may introduce similar materials to further reduce costs.

***Statement of Transformation:**

In an academic year, an average of 1100 students take Elementary Statistics as a requirement for their degree program. Fortunately, like many math departments, the Armstrong math department has chosen a typical statistics book that is used in Math 2200. However, the current text costs $190--through the publisher's website, and it's approximately $225 at the campus bookstore--and it includes an access code to use its associated online homework system. One reason the department chose the current text was that the cost to students was lower compared to the previous text. The previous text is now similarly priced at $225--again, through the publisher's website--and it also includes access to its associated online homework system. Our current text is moving to a new edition in 2015 along with an expected price increase; every three to five years the publishers release new editions that are generally more expensive than previous ones.

This high price for one textbook is not new to higher education; a study has shown that the price of textbooks has increased four times higher than inflation in the past twenty years (Allen, 2010). In 2005, the Government Accountability Office found that the yearly cost of textbooks in college amounted to $900. So it is no wonder that many students will "wait to see if they need the textbook" or forgo purchasing it altogether. However, those that wait or opt out often find they need the resource too late into the course, and they find themselves at a severe disadvantage.

In Fall 2013, approximately 38% of our undergraduate population were first-generation college students and approximately 56% qualified for federal Title IV funding such as Pell Grants, subsidized loans, etc. Many non-traditional students also populate our Elementary Statistics course and they tend to have several financial obligations beyond those of traditional students. So roughly $200 for a textbook that students will use for only one course is unreasonable economically for our students. This undue financial burden can hinder academic progress regardless of academic ability.

Open-source textbooks can help relieve our students financial burden in the Elementary Statistics course as well as mitigate the delay in acquiring the textbook. Several sources are available for finding a quality open-source textbook including those mentioned in this call for proposals. One such source is The American Institute of Mathematics(AIM), which has an ongoing Open Textbook Initiative to identify open-source and open-access textbooks suitable for use in a traditional university course. Using AIM’s evaluation criteria and recommendations from our department colleagues as a guideline, we aim to adopt a no-cost open-source textbook for Elementary Statistics in order to alleviate part of our students' financial burden.

Allen, N. (2010). A cover to cover solution: How open textbooks are the path to textbook affordability. The Student Public Interest Research Group. Retrieved from http://www.studentpirgs.org/sites/student/files/reports/A-Cover-To-Cover-Solution_4.pdf

U.S. Government Accountability Organization. (2005, July). College textbooks: Enhanced offerings appear to drive recent price increases (Publication No. GAO-05-806). Retrieved from http://www.gao.gov/new.items/d05806.pdf.

***Transformation Action Plan:**

We will identify the currently available open-source statistics textbooks. Several options include OpenIntro Statistics by David M. Diez, Christopher D. Barr, and Mine Çetinkaya-Rundel, SticiGui by Philip Stark, Online Statistics Education by David Lane, and Introductory Statistics offered by OpenStax. Of these and others we find, we will review each to determine if they cover the required content for Elementary Statistics in a fashion that is expected within the department. We will adopt the most suitable to our department.

Since we will adopt a text that would fit nicely with the current course design, there should be minimal redesign of the course.

Drs. Knofczynski, Schlieper and Tiemeyer are faculty members in the Department of Mathematics, and they are subject matter experts with respect to Elementary Statistics. All have extensive experience teaching Elementary Statistics, and Dr. Knofczynski designed the Online Elementary Statistics course. All will be responsible for identifying possible textbooks to adopt, and after a list has been made, each will independently review the textbooks. Afterwards, they will decide together which text to adopt based upon their reviews.

In order to provide open access to the new materials, they will be hosted publicly on a repository such as GitHub, or the address will be given if the materials are already available publicly. In addition, the materials will be made available in Desire2Learn.

***Quantitative & Qualitative Measures:**	To measure the quantitative impact of the transformation, we will compare the DFW rates of the transformed class to the historical average for the course as well as to the rates of the other sections offered during Spring 2016. To measure the qualitative impact of the open-source resources on the students, we will ask students to complete a survey and open-ended questionnaire about the resources, including questions such as “Are you satisfied with the quality of the textbook for this course?”, “Do you wish the instructors in your other courses would adopt open-source texts?”, and “How do you think the quality of the textbook may be improved?”

***Timeline:**

October 2015 - Kick-off Meeting; identification and review of open-source materials.
November 2015 - Identification and review of open-source materials.
December 2015 - Adoption of open-source materials; Midterm Status Report.
Spring 2016 - Implementation of open-source materials; generation of survey and questionnaire for quantitative and qualitative feedback.

May 2016 - Final Status Report.

***Budget:**

For this proposal we are requesting $15,800 for release time and travel. We request a two-course release for Drs. Knofczynski, Schlieper, and Tiemeyer where each course release costs $2,500, totaling 6 times $2,500 equals $15,000. We also request $800 to travel to the kick-off meeting.

***Sustainability Plan:**

Drs. Knofczynski, Schlieper, and Tiemeyer teach about 10 sections of Elementary Statistics per fall and spring semesters, so this transformation will have a lasting impact on the course. Each section seats about 35 students, so this transformation will save the students roughly $35,000 in textbook costs every semester. If the transformation is successful, then it may be possible to convince the department to adopt open-source materials for all sections of the course, which would save students even more.

During the first and subsequent semesters in which the new text will be used in the course, the students and other faculty will be asked for edits they wish to see to the text. Since the text is open source, it can be edited and re-distributed immediately.

To share our experience with open-source materials with our department, we will provide a presentation of our selection process and experience with the text at our biweekly department colloquium.

Add Other Email Addresses for Notifications

Enter recipient(s) email address(es): michael.tiemeyer@armstrong.edu,greg.knofczynski@armstrong.edu

textbook for our elementary statistics course, and edit the text as needed to fit our learning objectives. The text will be available to students at no cost. This will provide a tremendous benefit to our students, who often have to pay over $200 for a text. In addition to easing the financial burden of our students, the open-source text can be fine-tuned to meet the desired learning outcomes, and will be assessed to measure student improvement in elementary statistics. I heartily endorse this textbook transformation project and believe that it will be a model for future textbook transformations. Drs. Schlieper and Tiemeyer have previously adapted a no-cost calculus text that our students are currently using.

James N. Brawner, Ph.D.
Professor and Head of Mathematics
Armstrong State University