

STEM-EIP Abstract

Armstrong State University

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As part of our Complete College Georgia Goals, Armstrong State University aims to increase our number overall of graduates by 0.5% per year through 2020 and to restructure instructional delivery to support educational excellence and success. In this STEM-EIP project, we will work to achieve these goals through a comprehensive faculty development program for both Armstrong STEM and COE faculty as well as STEM teachers at a local school, Hesse K-8, to improve the ability of faculty, Hesse STEM teachers and Armstrong pre-service teachers to impart STEM-specific 21st century skills to students including scientific literacy, reasoning and communication, critical thinking, problem solving, data interpretation, synthesis and analysis, teamwork and collaboration. We will focus on two goals: Goal 1: Improving Armstrong STEM student performance and retention in STEM core courses and majors through a STEM faculty development program and Goal 2: prepare and support P-12 STEM teachers in Georgia's classrooms by providing professional development for current teachers and authentic learning for our pre-service teachers through our College of Education's professional development schools (PDS). Students, both college and middle school, must be given the tools to succeed and develop 21st century skills such as critical thinking, problem solving, synthesizing information, research skills and practices, oral and written communication, teamwork, collaboration, cooperation, data interpretation and analysis, scientific literacy and reasoning and the scientific method. This program will assist faculty with modifying their teaching strategies to focus on improving scientific literacy through active learning. Improving STEM communication and literacy through professional development and active learning classroom environments can lead to higher success rates in STEM courses. Our STEM-Faculty development program that will focus on training faculty in active learning pedagogies that promote student engagement and literacy. We will provide development funds to send faculty who commit to incorporating active learning in their courses and commit to increasing a focus on, and subsequent assessment of, student's scientific literacy and communication skills after implementing engaged classroom sessions. It is envisioned that we will be able to improve DWF rates in core and majors courses, and increase STEM major retention and overall graduation rates for STEM majors by 0.5% per year of the funding. In addition to providing professional development for current Armstrong STEM faculty, this STEM-EIP will allow Armstrong STEM and COE faculty to prepare and support P-12 STEM teachers in Georgia's classrooms by providing, professional development for current teachers and authentic learning for our pre-service teachers through our College of Education's professional development school (PDS). PDS partnerships are designed to improve the quality of teaching and learning and prepare new teachers. They focus on faculty

development and improving practice through inquiry. They are developed and assessed through five governing standards: learning community, accountability, collaboration, equity and diversity and infrastructure. We will provide professional development in engaged learning strategies to the STEM teachers and our current teacher candidates, at the PDS School site. Method courses in STEM will be offered to Armstrong teacher candidates onsite at Hesse, so that Armstrong candidates can work directly with STEM teachers as well as K-8 students. This will result in demonstration lessons in STEM content areas for the Hesse faculty and focused course work for the Armstrong students who will collaborate with the Hesse teachers to apply that knowledge in a K-8 setting. We will also provide summer workshops to Hesse teachers, delivered by Armstrong faculty who have implemented active and engaged practices, to expand the STEM knowledge base and improve student critical thinking and STEM communication and literacy. The STEM faculty and Hesse teachers will continue to collaborate during the academic year in a professional learning community (PLC) focused on implementation and assessment of the strategies learned at the workshops