

**DRAFT: OUTREACH AND PRECOLLEGE PROGRAMS: CONTINUING EDUCATION AND UPDATE COURSES**

Inputs	Strategies	Outputs	Outcomes		Impacts (Long Term-Conditions)
			(Short Term-Learning)	(Medium Term-Action)	
High school and middle school teachers  W&M science faculty  Salary support from institution  Salary support from external funding (HHMI)  Topics developed in teacher-faculty partnerships  Teachers who participated in summer research to serve as lead teachers in continuing education and update courses  Free tuition and supplies for high school and middle school teachers  Website to disseminate all experiments and exercises developed in program  W&M School of Education students  W&M Biology students  Classroom and laboratory space  Equipment  Material for wet labs to be used in high school classrooms	Offer courses in winter and summer for in-service teachers  Use topics developed in teacher-faculty partnerships to disseminate material developed by teachers and allow other instructors to adopt materials through structured coursework  Teachers who participated in summer research participate as lead teacher in the course  Make wide range of wet lab materials available to teachers  W&M Education and Biology students visit the classroom and help to adapt materials to specific needs of teachers	Number of schools represented in course registrations  Number of teachers who complete courses  Emerging areas covered in courses  List of resources easily accessible and available to teachers  Graduate credits earned by teacher participants	Teachers adopt materials developed in summer research experience for use in individual high school classrooms  Teachers use wet lab materials in classrooms	Teachers modify lesson plans to introduce new materials and employ inquiry-based exercises in their teaching  Students acquire a deeper grasp of concepts for which exercises were developed  Material and laboratory exercises align with Virginia Standards of Learning  Teachers monitor student learning and adjust science-related activities as needed	Enhance middle school and high school science education experiences  Provide easily accessible and high quality resources to teachers  Teachers are engaged in emerging areas of science  Teachers introduce authentic laboratory experiences to excite students about science

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Evaluation Questions for OUTCOMES	Possible Indicators/Measures	Possible Data Collection Methods and Information Sources	Rank/Priority (include brief rationale)
<p>1. Are teachers able to adopt new materials disseminated in the courses and incorporate inquiry-based exercises in their teaching? Do teachers use wet lab materials and other resources in their classrooms?</p> <p>2. Do the courses engage middle school and high school science teachers in emerging areas of science?</p> <p>3. Do changes in classroom activities lead to enhanced student learning and enthusiasm about science?</p>	<p>1 a. Projects developed in summer Student-Teacher-Faculty Partnership program are adapted for use in high school classrooms</p> <p>b. Teachers adjust lesson plans to include modified projects in high school classroom activities</p> <p>c. Teachers align inquiry-based exercises with SOLs</p> <p>d. Teachers access web labs and other material for use in classroom</p> <p>2 a. Teachers value learning about emerging areas of</p> <p>b. Teachers introduce emerging areas of science into middle and high school classes</p> <p>3 a. Student learning is enhanced by introduction of inquiry-based exercises</p> <p>b. Exercises stimulate interest and enthusiasm for science</p> <p>c. Monitor changes made to classroom activities based on assessment results</p>	<p>1 a. Continuing education and update course syllabi</p> <p>b. Continuing education and update course evaluations</p> <p>c. Course assignments</p> <p>d. Pre- and post- course lesson plans</p> <p>e. Documentation of wet lab use by teachers</p> <p>f. Observations by W&amp;M Education and Biology students</p> <p>g. SOLs</p> <p>2 a. Teacher surveys</p> <p>b. Participation in subsequent workshops</p> <p>c. Course evaluations</p> <p>3 a. Standardized test scores</p> <p>b. Classroom-based test scores</p> <p>c. Student survey</p> <p>d. Revisions to science-related activities based on assessment results</p> <p>e. Interviews with teachers</p> <p>f. Observations by W&amp;M Education and Biology students</p> <p>g. Interviews with teachers</p> <p>h. Teacher survey</p>	<p>Evaluation questions are ranked in order of how quickly an effect is expected to be seen. However data for all outcomes will be collected simultaneously.</p>