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STEM+C

Integrating Computing into Science Teaching and Learning in Grades 6-8: A Diverse Partnership to Develop an Evidence-Guided Model to Serve Rural Communities

About Our Project

In the fall of 2018, the RiSE Center was awarded $1.25 M to study how computer science can be successfully integrated into science instruction at the middle school level. This research study is a 3 year project during which 30 middle school science teachers will partner with researchers and staff at the RiSE Center to develop and implement science modules that include an integrated computer science component. Our hope is to gain an understanding of how computer science can be taught within a science program in a way that supports student learning in both the science discipline and computer science in addition to identifying what supports are needed to help teachers integrate computer science into their instruction successfully.

STEM+C Project

OUR TEAM

Leadership

Advisory Board

Partnering Schools

SUSAN MCKAY, PI

Professor of Physics and Director of the Maine Center for Research in STEM Education (RiSE Center), University of Maine (UMaine)

LAURA MILLAY

Project Research and Evaluation Coordinator, Maine Center for Research in STEM Education (RiSE Center), University of Maine (UMaine)

MARINA VAN DER EB

Project Coordinator, Maine Center for Research in STEM Education (RiSE Center), University of Maine (UMaine)

MITCHELL BRUCE, CO-PI

Professor, Department of Chemistry, and RiSE Center Member, UMaine

JIM FRATINI, CO-PI

Middle School Science Teacher, Hermon Middle School

SARA LINDSAY, CO-PI

Associate Professor, School of Marine Sciences, and RiSE Center Member, UMaine

HARLAN ONSRUD, CO-PI

Professor of Spatial Informatics and Director, School of Computing and Information Science, UMaine

JON DOTY

Director of Curriculum, Instruction, and Assessment, Regional School Unit 34

TORSTEN HAHMANN

Assistant Professor of Spatial Informatics, School of Computing and Information Science, University of Maine

CONNIE HOLDEN

Professor of Developmental Mathematics and Science, University of Maine Augusta

ANDRE KHALIL

Associate Professor of Chemical and Biomedical Engineering, Director of the CompuMAINE Lab, University of Maine

BETH MUNCEY

Professional Learning and Resource Coordinator, Maine Center for Research in STEM Education (RiSE Center), University of Maine

KATIE WRIGHT

Middle School Science Teacher, Houlton Middle School

PROJECT TIMELINE

This is a 3 year project that began in September of 2018. Districts participating in the project have been randomly assigned to either Cohort 1 or Cohort 2. Participation for both cohorts is laid out below.

	COHORT 1	COHORT 2
SPRING 2019	Spring Cohort Meeting: May 18, 9AM – 3PM Spring Cohort Meeting: June 1, 9AM – 3PM	No Participation
SUMMER 2019	Content Immersion in Computer Science: July 8-11 Integrated Module Design: July 22-24	No Participation
FALL 2019	Pilot Integrated Unit Attend two cohort meetings Attend Fall Summit: November 22 & 23	Teach standard units Attend two cohort meetings Attend Fall Summit
SPRING 2020	Pilot Integrated Unit Attend two cohort meetings	Teach standard units Attend two cohort meetings
SUMMER 2020	Content Immersion in Computer Science Integrated Module Modification	Content Immersion in Computer Science Integrated Module Modification
FALL 2020	Pilot Integrated Unit Attend two cohort meetings	Pilot Integrated Unit Attend two cohort meetings
SPRING 2021	Pilot Integrated Unit Attend two cohort meetings	Pilot Integrated Unit Attend two cohort meetings
SUMMER 2021	Integrated Module Modification	Integrated Module Modification

FAQS

FAQS

+ Are the integrated units compatible with different technology (Computers, iPads, Chromebooks)?

+ What are RiSE materials?

+ What units will be chosen?

+ Are the computer science materials provided?

+ Where and when will meetings be held?

STEM+C Community Members! Log in to view your community page and team resources.

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This work is supported by the National Science Foundation under Grant No. 1842359. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

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RiSE MAINE CENTER FOR RESEARCH IN STEM EDUCATION

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INSPIRES

Leveraging Intelligent Informatics and Smart Data for Improved Understanding of Northern Forest Ecosystem Resilience

Starting in fall of 2020, eight teachers and five researchers from the RiSE Center will work together to develop lessons for the classroom focused on forestry and Quantitative Reasoning in Context (QRC). This work will be done as apart of a larger grant awarded to a three state partnership between Maine, Vermont, and New Hampshire focused on researching the Northern Forest Region. This project will focus on one of the four project themes exploring how to support students' quantitative reasoning skills in the context of forestry.

Learn more about the broader INSPIRES research! ➡

This project is divided into four themes focused on different aspects of gathering, analyzing and utilizing data collected from across the Northern Forest Region. We will be leading the work within theme 4.

Theme 1: Advanced Sensing & Computing Technologies
Theme 2: Environmental Informatics & Analytics
Theme 3: Integrated Ecological Modeling
Theme 4: Quantitative Reasoning in Context

THEME 4 RESEARCH QUESTIONS

1. What types of knowledge and supports, including professional learning experiences, are helpful for teachers in teaching integrated modules to support student learning of quantitative reasoning in forestry contexts?

2. How does the design process contribute to teachers' knowledge and preparation to teach integrated modules?

3. In what ways do students benefit from the integrated modules?

THEME 4 TEAM MEMBERS

SUSAN MCKAY

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Associate Professor of Marine Science, RiSE Center Faculty University of Maine

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Project Director, Leitzel Center
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FRANZISKA PETERSON

Assistant Professor of
Mathematics, RiSE Center Faculty
University of Maine

REGINA TOOLIN

Associate Professor of Education
and Social Services
University of Vermont

MARINA VAN DER EB

Maine STEM Partnership
Coordinator, RiSE Center Staff
University of Maine

TEACHERS PARTNERS

- Heather Mitchell, Houlton High School
- Ruth Poland, Mount Desert Island High School
- Kate Drummond, Skowhegan Area High School
- Dylan Harry, Fryeburg Academy
- Laurie Spooner, Van Buren District School
- Susan Sieczkiewicz Linscott, Lee Academy
- Stephen Adams, Windham High School
- Amy Sidell, Hampden Academy

PROJECT PARTNERS

University of New Hampshire

NEST

THE UNIVERSITY OF MAINE

The University of Vermont

This work is supported by the National Science Foundation under Grant No. 1920908

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NSF TEACHING FELLOWS

The National Science Foundation (NSF) Teaching Fellowship Program,
funded through NSF's Noyce Program, is an opportunity for graduate
students in the Master of Science in Teaching program beginning their
teaching career as a science and/or mathematics teacher at a middle
school or high school in Maine.

THE PROGRAM

The goal of this program is to build a strong community of new science and mathematics teachers, along with experienced leading teachers who serve as mentors. This community meets regularly to share achievements and challenges of teaching STEM disciplines and works together to hone their craft of teaching in self-selected areas. This program supports early teachers in making a successful transition from pre-service teacher to teacher. In the later years of the program, these new teachers will have access to leadership training opportunities.

COMMUNITY MEMBERS

Ken Akiha	Mia Callahan	Grace Coffe	Erin Doran
Jennifer Dunham	Billy Ferm	Katie Flavin	Cameron Fudge
Gabrielle Holt	Nick Innis	Justin Lewin	Reilly Romanoski
David Rondeau	Chrissy Siddons	Lauren Swalec	Emma Toth
Betsy Trenckmann	Stephanie Virgilio	Joe Walter	Isaac Walton
Sam Ward			

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