From the Director

Welcome to the Fall 2022 Mallinson Institute for Science Education (MISE) newsletter!

Work at Western Michigan University slowly returned to something close to normal last year. Meetings and classes started to meet in person again. Eventually, masks and COVID testing were no longer required on campus. That is not to say that COVID did not continue to cause disruptions. Our students and staff continued to be flexible as people tested positive for COVID and had to self-quarantine. Some international students continued to have difficulties obtaining VISAs and arranging travel due to COVID policies.

On the positive side, we learned how to successfully operate classes where some students attend virtually and others in-person. Academic conferences started to resume, providing opportunities for graduate students and faculty to make presentations and network. As highlighted in this newsletter, MISE faculty and students continued to receive recognition for the work that we do. MISE had three PhD students and ten MA students graduate from the program last year. Faculty, staff, and students published 21 papers.

I hope you enjoy this issue of our newsletter.

Sincerely,

Dr. Charles Henderson
Mallinson Institute for Science Education

20 Years at Western Michigan University!

In honor of Dr. Charles Henderson's 20 years of service to Western Michigan University, the College of Arts and Sciences would like to express its gratitude and appreciation. As professor of physics and director of the Mallinson Institute for Science Education, Dr. Henderson has demonstrated a sincere, innovative, and enthusiastic dedication to University students and programs. The same can be said for his post as co-director of the WMU Center for Research on Instructional Change in Postsecondary Education (CRICPE), where his research focuses on understanding and promoting instructional change in higher education, with an emphasis on improving undergraduate STEM instruction. With Dr. Henderson’s leadership and passion, the College of Arts and Sciences and its students have been made better. Thank you and congratulations on 20 years at WMU.
Dr. David Rudge - 2022 College Science Teacher of the Year

Dr. Rudge began his career at Western Michigan University in August 1999. His innovative approach to teaching science shows students how stories from the history of science can explain scientific advancements and changes in the field. Dr. Rudge believes that "as instructors, we need to be innovative when it comes to how we teach." "There's a certain level of scientific literacy that everybody should have, and so we need to think of what things could we do to make science more interesting or relevant for the vast majority who aren't pursuing careers as scientists."

In 2018 he received the College of Arts and Sciences Faculty Achievement Award in Teaching. He currently serves on the board of the University's Center for the Humanities. He holds a joint appointment with Biological Sciences and the Mallinson Institute for Science Education, and he has a passion for working with the graduate students in science education.

"We live in a really challenging time, so it's nice to work with people whose eyes are filled with the promise of tomorrow," said Dr. Rudge. Dr. Rudge was honored at an awards ceremony during the 2022 Michigan Science Teacher Conference on Friday March 4, 2022.

Congratulations Dr. Rudge!

Graduate Student Spotlight: Kristen Foley

NAGT recognizes outstanding teaching assistants in geoscience education with up to 30 awards annually. Both undergraduate and graduate teaching assistants are eligible for the award. Award winners receive a one year membership in NAGT, which includes an online subscription to the Journal of Geoscience Education and our In The Trenches quarterly magazine. The yearly membership starts January 1st of the upcoming year and the graduate student awards are funded by NAGT.

Congratulations Kristen!
Hello, my name Esty Haryani and I received my PhD in Science Education from The Mallinson Institute for Science Education, Western Michigan University, in December 2020.

I am currently employed by the Vocational Secondary Schools Division of West Kalimantan Province’s Department of Education and Culture. Vocational Secondary Schools are designated for 10th grade students who pursue a career path. The Indonesia Ministry of Education, Culture, Research and Technology sets the goal that Vocational Secondary Schools must provide learning that prepare students for work, entrepreneurship, or college. Therefore, our division must plan and organize programs in order to meet the vocational education objectives.

West Kalimantan Province has 228 vocational secondary schools spread across 14 districts/cities. Our division is in charge of organizing programs to support relevant demand driven education and synergies between schools and industries. This program knowns as link and match, connects vocational education and industries. Each school must have an agreement with industries. The partnership between school and industries must include an agreement to develop curriculum, become guess lectures, provide internships for both teachers and students, a teaching factory, and a shared commitment to employ graduates who meet the employment criteria.

We are in charge of coordinating, organizing, supervising, evaluating, and reporting on the implementation of the link and match program. We invite industries, business association leaders, and all vocational school principals to participate.

In addition, we are working with other government agencies such as the Department of Labor, Department of Agricultural, Department of Industrial, Trade, Energy, and Mineral Resources to map industries and regional potential commodities (e.g., agriculture, fishery, forestry, mining) in order to recommend vocational programs/competencies that can be offered in each district/city.

Through Sekolah Pencetak Wirausaha, we also organized a workshop and program for teachers aimed at encouraging students’ entrepreneurship. Our division must also ensure that each school is actively tracing their alumni and receiving feedback from industries on employees who are Vocational Secondary School graduates via tracer study.

I believe that my educational background at MISE graduate program, Western Michigan University has given me a strong foundation for how to work in a team, plan and organize a program, be able to analyze data, and build my confidence to share ideas and speak in public as the Vocational Secondary Schools Division representative.

Let’s meet and discuss how we can work together.

Recent Alumni in the Spotlight: Samuel Nyarko

Written by: Samuel Nyarko

Hello MISE faculty,

You may have already heard about my Journal of Geoscience Education Outstanding Reviewer Award. I want to thank you all for the wonderful teachings and mentorship I had at MISE which has propelled me to win this award. I came to MISE with little to no knowledge about STEM education research but your guidance, patience, and zeal to see me succeed has made me one of the best in synthesizing how people learn and teach as well as ardent researcher and reviewer who now knows how best to learn. I dedicate this award to you all in MISE and I urge you to continue with the great work you’re doing to promote science education. You took a bauxite and turned into a shiny aluminum, and I hope to be a platinum soon (Heather will know more about minerals so ask her 😂 😂).

Thank you so much. I’ll continue to hold you all in high esteem for the wonderful work you continue to do for science education and raw talents like me.

Lots of love to you all.

Sammy.

Samuel Cornelius Nyarko, Ph.D. (He/Him/His)
The JEG (Journal of Geoscience Education) Outstanding Reviewer Award

The quality of the Journal of Geoscience Education is dependent on dedicated reviewers and editors. JGE Editorial Board would like to recognize those reviewers who: (1) provided reviews of exceptional quality, (2) completed reviews more quickly than average, and/or (3) completed more reviews than average. The award is based on the quality and quantity of reviews completed in the past year.

Distinguished Alum - 2022 Daniall Poulsen

Daniall Poulsen received her BA (2000) and MA (2006) in Science Education from WMU. Daniall has been a Science Teacher at Portage Northern High School since 2001 where she teaches International Baccalaureate Environmental Science, Earth Science, Biology, and Astronomy. Daniall is constantly working to improve her teaching and help others improve their teaching. For example, she was one of the 60 teachers chosen from 300 applicants to complete a two-year (2009-2010) program at the National Geographic National Teacher Leadership Academy that involved creating ocean curriculum and training other teachers to use the curriculum. She has been a mentor for four student teacher interns, three pre-interns. In 2011, she was named the Michigan Outstanding Earth Science Educator by the Michigan Earth Science Teachers Association. Daniall regularly attends and presents at state- and national-level science education conferences. Her former Department Chair at Portage Northern High School, Kathy Mirakovits, recounts encouraging Daniall and the other science teachers to make presentations at professional conferences. Mirakovits noted that Daniall initially felt she had nothing worthwhile or unique to share, but that she very quickly became an excellent presenter. So much so that at a Michigan Science Teachers Association meeting Mirakovits overheard a teacher say to her colleagues who were trying to decide which session to attend say, “Go to anything that Daniall Poulsen is presenting, it is always great!” She currently splits her time between Portage Northern High School and her photography business, Daniall Poulsen Photography.

New Laptops for MISE Science Teaching & Learning Labs

One of our important missions at the Mallinson Institute is to build and enrich the science literacy of the future K-8 teachers that come to our undergraduate classrooms/labs to learn science. These students will play a huge role in the quality of science education received by elementary and middle school students for years to come. These days, it is extremely helpful for teachers to know how to utilize the many kinds of technologies and applications that can help make science teaching and learning better and stronger (and sometimes even faster!). Here at MISE we have recently been able to update all the instructor and “student group” computers in our labs, and the new machines promise to become very useful as we explore gripping new online interactive science models and simulations, access up-to-date real world science data on trustworthy websites, record and analyze and report on computer-assisted observations and experiments in the labs, and communicate smoothly and effectively with other students and instructors through our university applications. We are continuously seeking (and finding) new ways to make the student experience the best it can be!
Updates From SAMPI

Science and Math Program Improvement (SAMPI), housed within the Mallinson Institute for Science Education, conducts client-centered, user-friendly program evaluations, research, and professional consultations for K-12 schools, institutions of higher education, government agencies, nonprofit organizations, and other education entities. SAMPI currently serves as evaluators for 11 primarily STEM-focused projects, totaling $350,000 of external support annually, funded by the state of Michigan, National Science Foundation, U.S. Department of Education, and National Institutes of Health.

SAMPI Project Highlights:

The **MiSTEM Network**, part of the Michigan Department of Labor and Economic Opportunity, coordinates a statewide effort to improve Michigan K-12 STEM education through problem-, project-, and placed-based instruction. As Network evaluators, SAMPI focuses on documenting MiSTEM partnerships between schools, business/industry, higher education, community organizations, and government agencies. SAMPI also collects and reports data from all 16 MiSTEM regions across the state related to efforts to provide high-quality STEM experiences to educators and students.

**Project English Learners and Teacher Education**—a five-year U.S. Department of Education (USDOE) project with faculty in the WMU Department of Special Education and Literacy Studies that seeks to increase the knowledge, skills, and dispositions of teachers working with English learners (ELs) and their families. SAMPI’s external evaluation is determining whether participants are increasing their understanding of teaching ELs and improving their practices inside and outside the classroom to better serve EL students. 100 teachers have been certified in English Second Language (ESL) education through the project, helping to address the teacher shortage in Michigan. The project PIs in collaboration with SAMPI recently received a new $2.96 million grant from USDOE to continue this work over the next 5-years.

**Kalamazoo College Promoting Research, Inclusiveness, Mentoring, and Experience (PRIME) Scholars Program**—a 5-year NSF S-STEM funded effort to provide students from underrepresented groups and first-generation college students mentoring and support to encourage them to pursue STEM fields at Kalamazoo College. SAMPI collects quantitative and qualitative data from participating students related to their STEM and career interests and experiences as they progress through their college careers at Kalamazoo College.

**New Projects**—SAMPI recently received notice that NSF IUSE projects in collaboration with faculty at the University of Arkansas at Little Rock (UALR) and Alma College were funded. The UALR project will focus on scaling efforts to increase UALR STEM faculty use of research-based instructional practices. SAMPI will be evaluating the effectiveness of project summer workshops and documenting the development of communities of practice. The goal of the Alma College IUSE project is supporting pre-service elementary teachers’ (PSTs) to developing knowledge of STEM into their STEM teaching through progression-based modules about K-12 students’ science thinking. SAMPI will be assessing the effects of these learning modules on PSTs STEM understanding and teaching as well as documenting dissemination efforts through 2 project regional conferences.

If you are interested in collaborating with SAMPI on a STEM education project, [check out our flyer](#) to learn more!
MISE 2021 - 2022 Graduates

Ph.D. Graduates
Samuel Nyanki
Manal Ajran Almalki
Eran Listiani Asrn

Master’s Degree Graduates
Jason Jaloszynski
Joel Zellar
Rui Xiao
Kristen Garrett
Brent Sankey
Rebecca Pindzia
Dena Cooley
Douglas Wright
Laura Trombley
Kelly Erickson

Graduate Certificate
Sarah Pettrey

MISE degree programs: Help us spread the word!

Doctor of Philosophy in Science Education: This program is designed for those with a science or science education background who wish to pursue careers as college or university science teachers, science education researchers, science teacher educators, curriculum specialists, high school science department chairs, or professionals in government agencies or school districts.

Concurrent Program (Master’s + PhD): This special program is designed for those wishing to become college- or university-level science teachers or researchers in science education. The concurrent program allows students to be simultaneously admitted to a science master’s degree program in Biology, Chemistry, Physical Geography, Geology, or Physics, and the Mallinson doctoral program in science education.

College Science Teaching Certificate: This new 3-course certificate is intended to enhance the skills of individuals who wish to improve as instructors of science in a college setting. The program is open to current graduate students in science departments and to college-level instructors and faculty of science elsewhere.

Donations
Your support makes learning possible. Making a donation to the Mallinson Institute for Science Education ensures you are empowering the next generation of smart leaders, creative thinkers, and global citizens. Every gift has a direct impact on our students, empowering them with the tools and resources needed to become leaders and givers of tomorrow. Your support makes the extra margin of excellence in the Mallinson Institute for Science Education at Western Michigan University possible. With your contributions, you help graduate students with their science education research and professional development.

If you would like to donate please make your check out to Western Michigan University, Mallinson Institute, and send it to:

WMU Gift Processing
1903 W Michigan Ave
Kalamazoo MI 49008-5403 USA

You can also give directly via credit card to the Mallinson Institute for Science Education by following the link below.
https://secure.wmualumni.org/s/give?funds=D407

We greatly appreciate your support!
PEOPLE OF MISE

Dr. Charles Henderson – Director of the Mallinson Institute for Science Education and Professor of Physics
Dr. William Cobern – University Distinguished Professor of Biological Sciences and Science Education
Dr. Heather Petcovic – Chair of Geological and Environmental Sciences and Professor of Science Education
Dr. Brandy Pleasants – Faculty Specialist for Laboratory Instruction
Dr. Betty Adams – Laboratory Supervisor and Affiliate Faculty
Dr. David Rudge – Professor of Biological Sciences and Science Education
Dr. Megan Grunert Kowalske – Chair and Associate Professor of Chemistry and Associate Professor of Science Education
Mrs. Dawn Marquardt – Administrative Assistant

PEOPLE OF SAMPI

Dr. Cody Williams – Director of SAMPI
Mr. Mark Jenness – Emeritus Researcher
Ms. Ninah Miller – Research Data Analyst
Ms. Michelle Munetsi – Finance Assistant Senior
Dr. Robert Ruhf – Senior Research Associate
Mrs. Samantha Davis – Project Manager

2021-2022 MISE faculty and graduate student publications


• Woodcock, J., Henderson, C., Sheakley, M. To what extent do Faculty and Students Believe that Team-Based Learning Supports Important Goals of Undergraduate Medical Education? volume 32, pages1107–1116 (2022)


• Zhang, L., Cobern William, W., Sweller, J., & Kirschner, P. A. (in press). There is an Evidence Crisis in Science Educational Policy. Educational Psychology Review.
