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Interview Article

An interview with Johannes Addido: NASA-Commissioned nway and scientists of the future

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Abstract

This interview with Johannes Addido highlights his role as Co-Investigator of the NASA-sponsored NWAY-II project, coordinated by the WEX Foundation in collaboration with Eastern New Mexico University (ENMU). Although not directly employed by NASA, Addido contributes by preparing pre-service teachers to deliver hands-on, NASA-themed STEM activities to middle school students in out-of-school programs. The NWAY (New Worlds Await You) initiative provides curriculum and resources to underserved communities, aiming to enhance STEM education and inspire future scientists. Addido emphasizes the evolving role of educators, particularly in equipping students with critical thinking, collaboration, and technological skills. He also stresses the importance of project-based learning and real-world applications in both elementary and high school settings. Despite financial limitations in academia, he notes successful partnerships with organizations like NASA. Addido concludes by expressing optimism about empowering young, diverse space scientists and the continuing importance of STEM collaboration.

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Michael F. Shaughnessy

I understand that you are involved with NASA. How did this come about?

Johannes Addido

So, I'm not directly involved with NASA. I'm the Co-Investigator of the NASA-sponsored Space-themed Out of School/After-School Project. The project is being led by the WEX Foundation which reached out to Eastern New Mexico University (ENMU) to be a partner in submitting the NASA Teams II grant proposal. As the elementary science and math methods instructor at the College of Education and Technology at ENMU, I was tasked with working on the grant proposal with the WEX Foundation. The Proposal was submitted in August 2023 and in April 2024 NASA awarded WEX Foundation and its partners $800,000 to start the NWAY-II program.

Michael F. Shaughnessy

You are involved with training pre-service teachers in an OST (Out of School Program) what is involved?

Johannes Addido

WEX foundation personnel will train teacher candidates (TCs) and provide them with experience implementing NASA-themed hands-on activities focused on the NWAY curriculum and related NASA resources. Trained TCs will be placed in local OST venues, such as after-school programs and clubs, to implement the curriculum with middle school-aged students. As University partners, ENMU personnel will be involved in the recruitment of pre-service

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teachers, assist with the training of pre-service teachers, and manage and support pre-service teachers in the implementation of the NWAY program.

Michael F. Shaughnessy

What exactly is NWAY?

Johannes Addido

New Worlds Await You (NWAY) is a high-quality Space-STEM program featuring unique partnerships with local, regional, and national networks of in-school and out-of-school time (OST) education providers. Designated by NASA as an Informal Education Community Anchor, the NWAY program provides curricula, multimedia resources, and activities focused on space exploration and architecture for middle school students. One of the aims of NWAY is to empower pre-service teachers and OST providers to implement quality Space-STEM programming accessible to students who are underserved and typically underrepresented in STEM fields.

Michael F. Shaughnessy

Will this be in person or online?

Johannes Addido

The project will be implemented in person at the sites provided by the participating middle schools in the out-of-school/after-school program.

Michael F. Shaughnessy

What do teachers of the future need to do to prepare future scientists and astronauts?

Johannes Addido

In preparing scientists and astronauts, future teachers need to think about ways to provide opportunities for hands-on experiences, such as building model rockets, and conducting experiments. These experiences not only make learning fun but also help students develop practical skills.

Future teachers must also teach students how to think critically, encourage students to ask questions, analyze data, and come up with innovative solutions. Thirdly, future teachers must foster collaboration and teamwork skills, as scientists and astronauts often work in multidisciplinary teams, and equipping students with collaborative skills will go a long way in adequately preparing them for group projects.

Michael F. Shaughnessy

The science teacher of the future will undoubtedly need different skills than 10 years ago- Are the schools keeping up with the demands?

Johannes Addido

The science teacher of the future will require a diverse range of skills to effectively prepare students for the challenges and opportunities of the future. I think the schools are doing their best to equip science teacher candidates with the knowledge to design and deliver engaging lessons that cater to different learning styles and abilities by creating hands-on activities, demonstrations, and experiments to make science come alive in the classroom. Moreover, pre-service teachers are being taught how to integrate technology into their teaching, including the use of multimedia resources, interactive simulations, and educational software to enhance students' learning experiences.

The teacher preparation programs are also focused on training future teachers to adapt their teaching methods and strategies to meet the needs of diverse learners and to accommodate changes in curriculum or technology. These programs aim to create a cohort of professionals who are equipped with the skills necessary to deliver quality education to their students.

Despite the challenges that arise, educational institutions are doing their best with the available resources to ensure that science teachers are prepared to meet the demands of the future. Through their efforts, science teachers are equipped with the knowledge, skills, and tools to deliver engaging, effective, and innovative instruction to their students.

Michael F. Shaughnessy

What do elementary teachers need to be doing differently to prepare young scientists for the next decade?

Johannes Addido

In the coming decade of education, I believe that elementary school teachers will need to adopt the role of facilitators of learning rather than simply providing information in the classroom. They will be required to link scientific concepts with practical, real-world contexts that are significant and relevant to young students. For instance, they could teach about water properties by focusing on water conservation or discuss animal adaptations by highlighting local wildlife. In addition to that, they should integrate educational technology tools and resources that enhance learning experiences like interactive simulations, educational apps, and multimedia resources that engage young learners.

Michael F. Shaughnessy

What do high school teachers need to be doing to prepare their students for the next 10 years?

Johannes Addido

In my opinion, what high school teachers need to do is not much different from what elementary teachers need to do. They should empower students to take charge of their own learning by implementing project-based learning approaches. This way, students will work on real-world, interdisciplinary projects that require critical thinking, problem-solving, and collaboration. This will prepare them for the complex challenges they may face in the future. It's also important to introduce students to Career and Technical Education programs that provide hands-on training. These programs can prepare students for immediate entry into the workforce or post-secondary education.

Michael F. Shaughnessy

Colleges and universities should be at the cutting edge of STEM- but are they?

Johannes Addido

I think that academic institutions find it difficult keeping up with the latest developments in STEM. This is primarily due to the prohibitive costs associated with cutting-edge STEM, which most colleges and universities cannot afford. The private sector and state agencies such as NASA often have a significant advantage over academic institutions in this regard. Nevertheless, there are some silver linings to this situation. Notably, there have been several successful collaborations between the private sector and organizations like NASA that have resulted in meaningful initiatives. One such example is the recent NASA grant awarded to the WEX Foundation and ENMU to implement the NWAY program. This program seeks to empower students in rural and underserved communities by providing them with access to STEM resources and opportunities that they would ordinarily lack.

Michael F. Shaughnessy

Young space scientists—what do they look like and what skills will they have and what skills do they need?

Johannes Addido

The young space scientists are a diverse group, hailing from various cultural, ethnic, and socioeconomic backgrounds. Their eyes are filled with enthusiasm and curiosity, fueled by their passion for space exploration and discovery. They are Innovative thinkers who always come up with new ideas and solutions, they are open to sharing ideas and adapting to changing circumstances and new challenges. They need skills to keep up with technological advancements, including robotics, and AI.

Michael F. Shaughnessy

What have I neglected to ask about this program and your involvement in it?

Johannes Addido

At the moment, I don't have anything in mind. However, please don't hesitate to contact me if you think of anything.

Biodata of Author

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