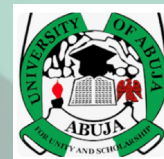


MOOC



Teaching Science with Technology (TSTM00C)

13 MAY TO 14 JUNE 2024

Who should take this course?

This course is open to teachers, teacher trainees, teacher educators, and instructional designers from anywhere in the world. You will gain insight into the latest advancements in educational technology and learn how to develop interactive learning experiences for your students through an enriched science lesson plan. This course equips you with the knowledge and skills to incorporate virtual laboratories, harness the power of simulations, and effectively integrate technology into your science teaching. Subscribe now and join us in shaping the future of science education and preparing the next generation of innovators!

Course overview

This course will introduce participants to interactive science simulations through PhET and other open educational resources (OERs). Throughout the course, participants will explore a range of scientific concepts. With PhET interactive simulations as our primary tool, participants will have the opportunity to manipulate variables, conduct experiments, and visualize abstract concepts, fostering a deeper understanding of fundamental principles across various scientific disciplines and at all levels, primary, secondary, and post-secondary.

From physics and chemistry to biology and mathematics, participants will learn how simulations can bring complex theories to life and uncover the interconnectedness of scientific phenomena, enhancing their critical thinking and problem-solving skills along the way. Participants will also learn how to access and evaluate OERs, expanding their resource toolkit. TSTM00C emphasizes active learning and collaboration, with opportunities for group discussions, peer-to-peer teaching, and project-based assessments. Over the duration of the course, science and pedagogy experts will guide participants through the development of PhET simulation activity plans and worksheets that can be implemented in the science classroom. By the end of the course, participants will not only

have a newfound appreciation for the power of simulations and OERs in education but also possess the skills to leverage these resources effectively in their academic and professional pursuits.

At a glance

Schedule	Start Date: 13 May 2024 End Date: 14 June 2024
Intended audience	Primary, Secondary and Tertiary Science teachers, student teachers, teacher educators, and instructional designers
Language	English
Duration	5 weeks for coursework 1 week for revision and examination Total 6 Weeks
Expected workload	3 to 5 hours per week (25 hours in total)
Challenge level	Introductory
Prerequisites	None
Certification	Certificate of Participation or Certificate of Completion at no charge

Certification

Two levels of certification are available based on your level of participation and completion of tasks/activities:

- **Certificate of Participation** requires 70% or more on each quiz and participation in at least three discussion forums.
- **Certificate of Completion** requires 70% or more on each quiz, participation in at least three discussion forums, and successful completion of a technology-enabled Science Lesson Plan.

Certificates are made available at no charge as verifiable PDF documents.

Course outline

Week 1 Introduction to Science and Technology

- 1.1. Key concepts, inquiry-based learning, and participant roles
- 1.2. Scientific method and online learning
- 1.3. Introduction to PhET interactive simulations in science

Week 2 Using PhET Simulations and OER

- 2.1 Simulation and active learning in science
- 2.2 Application and examples of PhET in science teaching
- 2.3 OER and Creative Commons licenses

Week 3 Application of Blended Learning & PhET Activities

- 3.1 Introduction to blended learning for science teaching
- 3.2 Guidelines for using PhET simulations in blended learning
- 3.3 Planning simulation lessons in science using PhET

Week 4 Planning for Activities in Science

- 4.1. Designing simulation lesson plans in science
- 4.2. Assessment of simulations in science
- 4.3. Other technology tools for science teaching

Week 5 TST Course Review

- 5.1. Evaluating lesson plans in science
- 5.2. Reflections on science teaching with technology

Registration

For registration, go to: <https://www.tstmooc.org/>



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Instructors' bio



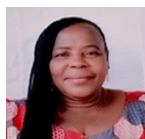
Professor Hauwa Imam, PhD, leads TSTMOOC development and is the Director of the Institute of Education at the University of Abuja. A versatile researcher, administrator, and educator, she is an ardent promoter of blended learning, integrating online technology into teaching and learning. She has 40+ years of diverse experience in teaching and administration.



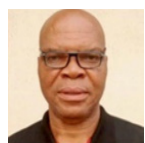
Professor Uche Scholastica Anaduaka, PhD, teaches Science Education (Mathematics) at the University of Abuja, with 30+ years of teaching experience at various levels. She emphasizes student-centered, tech-enhanced learning.



Professor Olumide Owolabi, PhD, specializes in databases, machine learning, and technology, with 30+ years of experience. Director at the Centre of Competence in Digital Education.



Maria Apochi, PhD, Associate Professor at the University of Abuja, specializes in Science Education, focusing on curriculum development and promoting scientific literacy. Advocate of online instruction using technology.



Nwokedirioha Onyemaechi Orji, PhD, Senior Lecturer at the University of Abuja, specializes in Science Education (Physics), engaging in professional development and promoting online learning using technology.



Osagie Abel Uyimwen, PhD, Senior Lecturer University of Abuja. Specialises in Seismology is skilled in online instruction and develops seismic algorithms.



Zainab Abubakar, Lecturer I at the University of Abuja, specializes in Science Education (Biology), focusing on virtual learning resources.



Chukwuemeka Emeka Joshua, PhD in Educational Technology, specializes in instructional design and online course creation. Microsoft Certified Technology Specialist.



Busayo Aregbesola, PhD in Science Education (Chemistry), advocates for innovative science education, integrating technology.

PhET simulations are OER, developed by the University of Colorado, licensed under CC-BY 4.0.



This course has been developed with support from the Commonwealth of Learning and is OER under CC-BY-SA 4.0.