

## Webinar on the Status of STEM Education in Secondary Schools in Africa & Introduction to Interactive Simulations in Teaching & Learning

### CONCEPT NOTE

#### 1. INTRODUCTION

This concept note is for a proposed partnership between the Association for the Development of Education in Africa (ADEA) and PhET Interactive Simulations of the University of Colorado Boulder to conduct a joint webinar on the status of STEM education in secondary schools in Africa and introduction to interactive simulations for teaching and learning.

#### 2. BACKGROUND AND RATIONALE

The Association for the Development of Education in Africa (ADEA) is a forum for policy dialogue on education, hosted by the African Development Bank Group (AfDB) in Abidjan, Côte d'Ivoire. ADEA's mission is to serve as an open and flexible Pan-African organization that informs and facilitates the transformation of education and training to drive Africa's accelerated and sustainable development. It acts as a catalyst in promoting innovative policies and practices through the pooling of ideas, experiences, learning and knowledge. ADEA works through Inter-Country Quality Nodes (ICQN) such as the ICQN on Mathematics and Science Education (MSE) led by the Ministry of Education Kenya.

The ICQNs specifically facilitate:

- Sharing of knowledge and collaborative action on thematic issues in education.
- Forging of strategic partnerships for the roll out of identified strategies/programmes in specific areas.

The ICQN on Mathematics and Science Education (ICQN-MSE) focuses on promoting policies and practices among African Ministries of Education and strategic partners for advancing quality Science, Technology, Engineering and Mathematics (STEM) education in the African continent.

This joint webinar is one such partnership project to discuss the status of STEM education in secondary schools in Africa and demonstrate innovative teaching and learning resources using PhET Interactive Simulations.

#### 3. WEBINAR OBJECTIVES

- a. Discuss the status of STEM education resources in secondary schools in Africa.
- b. Demonstrate the use of PhET Interactive Simulations for teaching and learning.

#### 4. WEBINAR FORMAT

The webinar is scheduled for Wednesday 20<sup>th</sup> July 2022 at 2:30 - 4:30 pm EAT / 1:30 - 3:30 pm CAT / 12:30 - 2:30 pm WAT / 11:30 am - 1:30 pm GMT.

The webinar will be conducted in English with translations available in French and Portuguese via Zoom platform. All participants are expected to register for the webinar via the registration link and will receive confirmation details to the webinar.

To join the session, install Zoom software on your computer or smartphone and register using the link below.

Registration link : [https://cuboulder.zoom.us/webinar/register/WN\\_J\\_rkJXo6TamHc6cJ5S8s0w](https://cuboulder.zoom.us/webinar/register/WN_J_rkJXo6TamHc6cJ5S8s0w)

## 5. WEBINAR PROGRAM

TIME	ACTIVITY	FACILITATOR
2:30 - 2:55 pm EAT	Preliminaries (5 mins) Webinar objectives (5 mins) Opening remarks (15 mins)	High-level keynote speaker
2:55 - 3:20 pm EAT	Status of STEM education in secondary school level in Africa (25 mins)	Mary W. Sichangi, Coordinator, ICQN-MSE
3:20 - 3:50 pm EAT	Introduction to PhET Interactive Simulations (30 mins)	Zach Mbasu, Africa PhET Ambassador
3:50 - 4:20 pm EAT	Open discussions (30 mins)	Participants
4:20 - 4:30 pm EAT	Closing remarks (10 mins)	Albert Nsengiyumva, Executive Secretary, ADEA Helene Aminata Charpentier, Senior Projects Officer, ADEA

## 6. WEBINAR CONTENT

I. Preliminaries / Opening Remarks

II. Presentation by ADEA

- a. Study objectives, scope and respondent findings
- b. Findings on Status of STEM Education resources and pedagogical practices

III. Presentation by PhET Colorado

- a. Overview of the development of PhET Interactive Simulations
  - Example open play with a PhET simulation
- b. Research evidence of increased learning with PhET Interactive Simulations
  - Examples of PhET simulation use (contexts and competencies)
  - Examples of effective pedagogical strategies with PhET Interactive Simulations (open exploration, challenge prompts and concept questions)
- c. Teacher resources for PhET simulations (translations, Teacher Tips, lesson plans)
- d. Disciplinary break-out discussions (optional - if time remains)
- e. Invitation to collaborate on teacher capacity-building projects: Intro to PhET Simulations workshop (1-2 hours); Virtual Workshop Sequence (30-35 hours); Africa Share & Discuss Webinars, Translator Network, Africa PhET Fellowship, Commercial Licensing Partnerships

## 7. GUIDING QUESTIONS

- a. Based on findings on the status of STEM Education resources and pedagogy in Africa, how would you rate the quality of STEM education teaching and learning resources in your country or school?
- b. In view of the digital resources presented by PhET, what are the action steps you will take to institutionalize the STEM-based resources in your country or school for effective teaching and learning?

## 8. EXPECTED PARTICIPANTS

The webinar is open to ministry of education officials, school principals, teachers of STEM subjects, international development partners and civil society organizations with interest in STEM education. The list of countries to be invited for this webinar is annexed.

## 9. PARTNER CONTACTS

### **Association for the Development of Education in Africa (ADEA)**

African Development Bank Group (AfDB)  
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### **Inter-Country Quality Node on Mathematics and Science Education (ICQN-MSE)**

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### **The PhET Project**

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## LIST OF COUNTRIES

No	AU Regional Economic Block	No	Selected Countries	Director in Charge of STEM Education	School Principal	Teacher	Total per Country	Notes
1	ARAB MAGHREB UNION	1	EGYPT	1	3	6	10	Select each school principal with two M&S teachers in the same school
		2	TUNISIA	1	3	6	10	
		3	MOROCCO	1	3	6	10	
2	COMMON MARKET FOR EASTERN & SOUTHERN AFRICA	4	BURUNDI	1	3	6	10	
		5	ESWATINI	1	3	6	10	
		6	ETHIOPIA	1	3	6	10	
		7	MALAWI	1	3	6	10	
		8	ZAMBIA	1	3	6	10	
		9	ZIMBABWE	1	3	6	10	
		10	SEYCHELLES	1	3	6	10	
		11	MAURITIUS	1	3	6	10	
3	COMMUNITY OF SAHEL-SAHARAN STATES	12	BENIN	1	3	6	10	
		13	GHANA	1	3	6	10	
		14	THE GAMBIA	1	3	6	10	
4	EAST AFRICAN COMMUNITY	15	RWANDA	1	3	6	10	
		16	TANZANIA	1	3	6	10	
		17	KENYA	1	3	6	10	
		18	UGANDA	1	3	6	10	
5	ECONOMIC COMMUNITY OF CENTRAL AFRICAN STATES	19	SENEGAL	1	3	6	10	
		20	CAMEROON	1	3	6	10	
		21	NIGERIA	1	3	6	10	
6	INTER-GOVERNMENTAL AUTHORITY ON DEVELOPMENT	22	SOUTH SUDAN	1	3	6	10	
		23	ERITREA	1	3	6	10	
7	SOUTHERN AFRICAN DEVELOPMENT COMMUNITY	24	ANGOLA	1	3	6	10	
		25	DRC	1	3	6	10	
		26	BOTSWANA	1	3	6	10	
		27	SOUTH AFRICA	1	3	6	10	
		28	LESOTHO	1	3	6	10	
		29	NAMIBIA	1	3	6	10	
8	ECONOMIC COMMUNITY OF WEST AFRICAN STATES	30	MALI	1	3	6	10	
			<b>TOTAL</b>	<b>30</b>	<b>90</b>	<b>180</b>	<b>300</b>	