

Proposal for an online practical work platform for improving the teaching of STEM

Kokou GAGLO*, Massamba SECK**, Samuel OUYA*, Gervais Mendy*

*Laboratory LIRT, Ecole Supérieure Polytechnique
Université Cheikh Anta DIOP (U.C.A.D.), Sénégal

**Département des Technologies de l'Information et de la Communication
Université Alioune Diop de Bambey (UADB), Sénégal

freemanpolys@gmail.com, massamba.seck@uadb.edu.sn, samuel.ouya@gmail.com, grvmendy@gmail.com

Abstract— This paper presents an online practice platform for improving STEM teaching, allowing actors from traditional and virtual universities that are geographically distant to collaborate on practical work.

In the context of universities operating in the field of STEM, particularly in the field of ICT, practical work is necessary to assimilate skills.

This paper provides a preconfigured environment of practical work to the various actors of these virtual and traditional universities who make ELearning.

Our platform has an administration interface to manage the rights and the allocation of the preconfigured virtual machines to the different actors who access remotely to the different virtual machines through a browser.

To achieve our goals, we used the WebSocket, VNC protocols and the noVNC client.

We show in this work how teachers and students in the field of STEM used our platform to carry out their practical work in networks and programming.

Keywords— Online Practice Platform, STEM Teaching, Virtual University, VNC



Kokou GAGLO is currently a PhD student at Computer, Network and Telecom Laboratory (LIRT) at University Cheikh Anta DIOP of Dakar.

Holder a Master's degree in Research "Engineering Sciences" from the University Cheikh Anta Diop (UCAD) of Dakar-Senegal. He is interested in applications of innovative telecom services to virtual organizations.



Massamba SECK is currently a PhD student at Computer, Network and Telecom Laboratory (LIRT) at University Cheikh Anta DIOP of Dakar.

Holder a Master's degree in Applied Mathematics, a Diploma of Aptitude in Secondary Education, a degree in Computer Engineering, and a Master's Degree in Computer Modeling Research from Cheikh Anta DIOP University of Dakar, he is currently assistant lecturer-researcher and Director of the IT Resources Center of Alioune DIOP University of Bambey. His research interests are in innovative telecom applications and services for e-learning, service learning, and community service.



Pr. Samuel Ouya is currently the Director of Computer, Network and Telecom Laboratory (LIRT) at University Cheikh Anta DIOP of Dakar. He was from 2013 to May 2017 the first Director of Infrastructure and Information System of the first virtual university of Senegal (UVS).

Holder of a Thesis in Applied Mathematics from the Gaston Berger University of Saint-Louis in Senegal and a Telecommunications Thesis from the Cheikh Anta Diop University (UCAD) in Dakar-Senegal, he is interested in Applications of innovative telecom services to virtual organizations



Pr. Gervais MENDY is a researcher-scientist at the Polytechnic School of Cheikh Anta DIOP University of Dakar where he was head of the IT department from 2012 to 2016. Holder of a PhD in Computer Science from Paris-Sud XI University, his research interests are in Computer Combinatory, Social Network Analysis, Internet of Things (IoT) and IT Security. He is a member of the Laboratory of Computer Science, Networks and Telecoms (LIRT) of Cheikh Anta Diop University of Dakar.