Kenyan-German Centre of Excellence for Mining, Environmental Engineering and Resource Management

(CEMEREM)

Report On Pedagogy Training for Higher Learning

24TH-25TH OF NOVEMBER 2021

CEMEREM CONFERENCE HALL

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> **Key Highlights**
>
> ❖ *Contrary to what many lecturers think, lecture preparation requires more time that lecture delivers. A good lecturer should spent 80% of the time on preparation and only 20% on delivery*
> ❖ *Detailed course outline and clear objectives are critical tools for effectiveness of a lecturer*
> ❖ *Good examination is made up of a blend of easy, moderately difficult and difficult questions*
> ❖ *A good marking scheme should be sufficiently detailed such that even one who has not prepared it is able to use it effectively*
> ❖ *Digital tools are available and proper use of them makes teaching-learning process interestin and effective*

1. Background and rationale

The Centre of Excellence for Mining, Environmental Engineering and Resource Management (CEMEREM) is the 8th Centre of African Excellence, supported by the German Academic Exchange Service (DAAD) through the financial support of the Federal Foreign Office. CEMEREM is a joint project of Taita Taveta University (TTU), Voi, Kenya, the University of Applied Sciences, Dresden (HTWD) and TU Bergakademie, Freiberg (TUBAF). The main objective of CEMEREM is to promote sustainable development of the natural resources sub-sector in Kenya and East Africa.

Part of CEMEREM's mandate is to provide innovative training in the field of Mining and Natural Resource Management in TTU through capacity building of the academic force by offering academic sponsorships, summer schools and training. These are geared towards providing substantial and meaningful support in not only improving the curricula but also sharpening the lecturers into excellent instructors. Since its establishment, CEMEREM has been instrumental in facilitating the training of lecturers on how to adopt best pedagogical practices for effective learning.

Pedagogy involves specialized teaching skills necessary for effective dissemination of knowledge and the creation of enabling environment for learners. Rather than let lecturers rely

on personal experience, it is important to equip them with knowledge and skills for effective delivery of content and for improving student experiences.

The training was motivated by the following observations arising from evaluation of lecturers and lectures by the students:

a) Lack of detailed course outlines capable of guiding students for self study and even facilitating smooth transfer from one lecturer to another.
b) Poor presentation skills, limiting content delivery.
c) Lack of standardised examinations and marking schemes/guides.
d) Lack of ethical conduct in teaching and examination.

2. Implementation of the training

Driven by the goal to improve the quality of lectures in the education framework, the School of Mines and Engineering (SME), spearheaded by the Dean (Dr. Benard Alunda) proposed to the CEMEREM Project Manager, Professor Maurice Ogada, to offer pedagogy training for all the TTU Academic Staff. An organizing committee was established which was tasked with planning of the training to ensure the goal and objectives were successfully met. The organizing committee comprised of the following members:

Prof. Maurice Ogada	Project Manager, CEMEREM
Dr. Benard Alunda	Dean, SME
Mr. Mwakio Mwagandi	Chairman, EESS
Mr. Robert Ngeti	Project Finance Coordinator

To ensure the objectives of the training were successfully delivered, the organizing committee further selected seasoned pedagogy professionals to facilitate the training, which comprised of the following:

Dr. David Chikati	Chair, Education

Dr. Perminus Githui	Lecturer, Education
Dr. Esther Kiaruthis	Senior Lecturer, Moi University
Mr. Kibwana Zamani	Manager, ICT

The training took place on 24th and 25th of November 2021 at the CEMEREM conference room in a blended manner where some Academic Staff attended physically while others joined virtually via the zoom platform. The programme of the training is provided the **Annex**.

2.1 First day of pedagogy training

The first day of pedagogy training kicked off at exactly 9 am whereby the CEMEREM Project Manager briefly welcomed the participant and invited the Vice-Chancellor (VC), Professor Barasa Simiyu, to give opening and welcoming remarks, and to officially declare the training open. While on it, the VC explained the relevance of pedagogy in academia and therefore, thanked the brains behind the training- Professor Ogada and Dr. Benard Alunda for their thoughtful initiative.

2.1.1 Introduction to pedagogy and its relevance in higher learning

Facilitated by Dr. David Chikati, this session started at 9:40 am where the participants were introduced to pedagogy as the art of teaching and science of learning to aid the learners to understand and apply knowledge imparted to them. Additionally, three major components of pedagogy were explained which entailed curriculum or the content to be taught, methodology of how learning is conducted and techniques of socializing with the learners. To further buttress the concept of teaching, four major learning systems were discussed which include andragogy (science and practise of adult learning), heutagogy (student-centred self-determined learning), synergogy (learning in which the members of small teams learn from one another through structured interactions) and pedagogy (method and practice of teaching, especially as an academic subject or theoretical concept).

The session further allowed the participants to discuss the most befitting mode of learning in higher education and it was agreed that pedagogy was the most effective style of learning if

harnessed correctly. This is majorly due to the advantage it offers of generally improving quality of learning in the academic framework as pedagogy offers a platform to allow students to participate in learning through a myriad of activities such as question and answer sessions, presentations, practical and class projects amongst others. Moreover, it was accepted that this does not only prompt the students to be more receptive during learning but also, ensures that the knowledge is imparted more effectively across a spectrum of learners and ultimately aids them to develop higher cognitive skills.

2.1.2 Important components, cycles and challenges of pedagogy

Facilitated by Dr. Perminus Githui, this session commenced at 10:40 am with a deeper discussion of the three crucial components of pedagogy implementation. Having curriculum as the backbone of pedagogy, it was explained that the learning content should be tailored to encourage and captivate the interest of students in order to develop their attention, memory and observation. Additionally, the relevance of coherent and engaging learning content was accepted to be a key driver in nurturing the students' cognitive skills such as reasoning, comparing, contrasting and classification. Once a good curriculum is established, it would require a well-coordinated teaching method to ensure that the content is delivered in an effective and efficient manner. Therefore, the methods of teachings, considered as skills, should be groomed in lecturers to ensure impactful teaching by training them how to prepare for classes to master their content and display great command of the subjects. The last component of pedagogy known as techniques was elaborated as cognitive social skills of a teacher needed in ensuring that the learners can relate to in order to create a conducive psychological learning environment.

To ensure that the learning dynamics are maintained at the required optimum balance, four cycles of pedagogy were explained with the aim of elaborating the responsibilities of the teacher and learners in a classroom. These include structure, question, response and react. With the teacher being the manager of a class, it is his/her responsibility to take charge of the students by offering information and direction. In addition to that, it is upon the teacher to pose questions to students to assess whether learners comprehend the subject under study. The students are then tasked to respond to the questions and finally, the teacher ought to react to the answer

diligently to guide the students. Whereas there exist guiding principles in pedagogy to promote conducive learning, it was discussed that pedagogy sometimes fails due to a number of drawbacks from both the teachers and learners. For example, some learners are disrespectful and uncooperative while in class while some teachers lack ethics and competence to teach. Therefore, this further indicated the need for pedagogy training in higher learning institutions to ensure that lecturers are well prepared prior to lecturing.

2.1.3 General and specific course objectives

Facilitated by Dr. Esther Kiaritha, this session started at 12:20 pm whereby the participants were thoroughly trained on how best to prepare course objectives and specific course objectives. Whereas course objectives are known to be general, specific objectives cover the nitty-gritty of each topic of the course, detailing the sub-topics and sub-sections. It was advised that the objectives should always be specific, measurable, attainable, relevant and time-bound (SMART).

2.1.4 Lecture preparation, use of teaching/learning materials and lecture structure

Presented by Dr. David Chikati, this session started at 14:50 in the afternoon where participants were trained on effective preparation and delivery of lectures. This session introduced the lecturers to the importance of adequate lecture preparation that ultimately ensures great mastery of the subject and command of content. To ensure effective dissemination of knowledge, the participants were advised to divide their lectures into four sections consisting of:

I. Revision phase where learners are reminded of the prerequisites of the topics.
II. Introduction phase to introduce the new concepts to the students.
III. Development phase to actually teach the students the scope of the topic.
IV. Recapitulation phase to conclude and recap what was lectured.

Furthermore, participants were trained on how to improve their oral presentation skills through pitch variations, good writing skills on the whiteboard and acceptable practises in correcting students when wrong. To further buttress the importance of having good presentation skills, Nashon Adero demonstrated key basic features of a good PowerPoint presentation and empasized usage of primacy-recency effect, six bullets and three colours on a slide.

2.2 Second day of pedagogy training

The second day of the pedagogy training took place on 25th of November, 2021and the various sessions of this day are explained in the subsequent sub-sections.

2.2.1 Teaching/learning assessment

Facilitated by Dr. Esther Kiarithia, this session started at exactly 8:30 am where participants were trained on how best to deliver lectures by knowing what to do before, during and after the lectures. To have an effective class, it was stated that 80% of the lecturer's effort should be focused on preparation and the remaining 20% on delivering the lecture. During the lectures, the lecturers were advised to first introduce the lectures in a way to arouse learners' interest and connect to previous knowledge on the same subject matter while focusing on the topic under study. Thereafter, the lecturers should utilize modelled instructions through lectures, worked examples and flipped classrooms to pass on knowledge.

Additionally, it was emphasized that adopting guided practice would actually improve understanding amongst learners through students having group discussions and presentations. Furthermore, independent practice would further allow learners to have a better grasp of various concepts by allowing them to relate the subject matter to independent understanding. Finally, yet importantly, it was advised to wrap up lectures by summarizing and clarifying lectured topics as this would allow the learners to still think of the taught concepts even after the lecture is over.

2.2.2 Ethics in higher learning

This session started at 9:30 am and was facilitated by Dr. Perminus Githui. Essentially, the session covered acceptable professional codes of conduct for lecturers in order to maintain a conducive environment.

2.2.2 Use of digital tools in higher learning

Facilitated by TTU ICT Manager, Mr. Kibwana Zamani, this session started at 11:30 am and focused on the aspect of integrating digital tools to facilitate learning. During this session, the participants were trained on how to utilize various digital tools such as text creation using canvas,

presentation recording using Flashback express recorder, image manipulation using Pixlr, assessment and integrity digital tools. Furthermore, the participants were enlightened to register for the various available licensed software in the TTU and create time for training of the same.

3. Recommendations

The participating lecturers appreciated the training and indicated that they had learnt a number of things which they had initially taken for granted. They underscored the importance of pedagogy training for all academic staff and indicated that this should be offered every year and should be allocated more time for a more detailed tackling of the various aspects. The lecturers expressed the need for a more detailed training in e-learning and delivery of lectures to cover:

a) Content creation
b) Examination proctoring
c) Effective use of e-learning/teaching tools
d) Tapping into e-resources.
e) Teaching of STEM subjects through Moodle.
f) Making e-learning more interesting and maintaining learners attention.

ANNEX

Table 1: Programme for pedagogy training for higher learning

DAY 1 WED 24TH NOVEMBER 2021		
TIME	**ACTIVITY**	**FACILITATOR**
8.30-9.00 9.00-9.30	Registration Opening Remarks • Dean SME • DVC ARO • VC	Prof. Maurice Ogada
9.30-10.00	• Introduction to Pedagogy. • Need for Pedagogy for Higher Education Lecturers	Dr. David Chikati
10.00-10.30	• Important components of Pedagogy • The pedagogy cycle • Pedagogic Challenges	Dr. Perminus Githui
10.30-11.00	TEA BREAK	
11.00-12.30	Domains of Learning	Dr. Perminus Githui
12.30-1.00	General Course Objectives and Specific Learning Objectives	Dr. Esther Kiaritha
2.00-3.30	• Lecture Preparation: Course Outline • Use of Teaching/Learning Materials • Lecture /Practical/Workshop Structure	Dr. David Chikati

3.30-4.00	Interactive Session (QA)	Prof. Maurice Ogada
DAY 2 THURSDAY 25TH NOVEMBER 2021		
8.30-9.30	Lecture Delivery	Dr. Esther Kiaritha
9.30-10.30	TEACHING/LEARNING ASSESSMENT: Setting of Examinations, Marking Schemes, Marking and Feedback	Dr. Esther Kiaritha
10:30-11.00	TEA BREAK	
11.00-12.30	Use of Digital Tools in Higher Education	Mr. Kibwana Zamani
12.30-1.00	Ethics in higher education teaching	Dr. Perminus Githui
1.00-1.30	Closing Session	Prof. Maurice Ogada