# Evaluation of tablet-based medical e-learning as part of a sustainable blended-learning approach for medical licentiates improving the quality of medical education and healthcare in rural Zambia

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### Introduction

The Medical Licentiate (ML) Training Programme is a response to the severe shortage of doctors in the country and especially in the rural areas of Zambia. The ML Training Programme aims to provide theoretical and practical training in internal medicine, paediatrics, gynaecology and surgery, so that MLs are able to diagnose patients, perform a range of essential surgical operations as well as manage and run Level 1 hospitals. An additional focus of the ML training is on emergency care, which constitutes a big need in the periphery.



An essential part of the ML curriculum are the clinical rotations, during which students are attached to accredited practicum sites.

These hospitals are distributed throughout Zambia. Students undergo two years of clinical rotation. One of the shortcomings in the practicum sites is the shortage of medical teachers and the lack of clinical learning materials to blend with practical bedside learning and tutoring.







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## Objective

The aim is to improve health in the long run in rural areas by improving the quality of training for MLs and by building capacity in a sustainable way.

With this study, we evaluated the pilot phase of the ML e-learning platform in order to analyse the methodological approach, with regards to:

- feasibility
- contents needs assessment
- usability
- acceptance

### Methods

### **Technical Setup ML E-learning Overview:**



### Methods for Evaluation

Methods for evaluating the ML E-learning pilot phase:

- Questionnaires (ML Students, Lecturers/Site Consultants) - quantitative
- Learner's Diaries (ML Students) qualitative and quantitative
- Interviews (ML Students) qualitative

Evaluating the pilot phase of ML E-learning following:

- Information Success Model of DeLone and McLean
- Information Quality, Service Quality, System Quality, User Satisfaction, System Use, Net Benefits
- Technology Acceptance Model

### Results

### We present the **results of the pilot phase**

(01/2016 – 05/2016) of the ML E-learning, evaluated in May 2016:

- Average age ML students: 39,23 years (n = 52) Female: 37,07 years (n = 14), Male: 40,03 years (n = 38) Average years of uninterrupted medical practise of ML
- students: 13,39 years (n = 52)
- Female: 11,86 years (n = 14), Male: 13,95 years (n = 38)
- 65 tablets distributed during pilot phase
  - 20 tablets were returned
  - 45 ML E-learning tablets sold to ML students at subsidized rate  $\rightarrow$  base for sustainability of tablet-based learning

#### **Questionnaires, Learner's Diaries, Interviews:**

#### **Results Summary**

- ML Students Results
- tablet based learning fits learning style
  - fast way for ML students to access materials and information interacting with tablet is fairly easy
- perceive e-learning to have a direct positive impact on their later medical performance
- need for trainings, tutorials, more learning materials on E-learning



Graph shows the dimension Net System Benefits of the Information systems success model: overall value of the system - ML E-learning - to its users

ML Lecturers and Site Consultants – Results

- high agreement on e-learning as a useful tool for medical education e-learning can be established as a permanent part of the ML programme
- positive about improved learning outcomes for ML students confidence about using ML E-learning platform rated fairly positive need for a formal staff development for online teaching





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### **Conclusion and Outlook**

The ML E-learning with its tablet-based component offering offline learning has proven during the pilot phase to be a promising tool, as it was highly accepted by ML students and ML medical teaching staff. The ML E-learning proved as feasible for medical training within the ML programme. The integration of site consultants and lecturers in the process of content development was successfully initiated. The ongoing, multimethodological evaluation of the ML E-learning will look into effectiveness in terms of gaining medical knowledge and skills, students' satisfaction, attitudes and usability towards e-learning, also with respect to sustainability.



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