AALBORG UNIVERSITY

DENMARK

Institutional Capacities in E-learning and Problem Based Learning at Universities and University Colleges in Tanzania and Ghana

Dahms, Mona Lisa; Zakaria, Hanan Lassen

Institutional Capacities in E-learning and Problem Based Learning at Universities and University Colleges in Tanzania and Ghana

Mona Lisa Dahms and Hanan Lassen Zakaria
Aalborg University, 2015

Preface

This report provides a status of the use of e-learning and Problem Based Learning (PBL) at seven universities and university colleges in Tanzania and Ghana. It gives an overview of policies, strategies, resources and practices. It describes experiences as well as identified needs at these institutions to increase the use of these current teaching approaches.

Since the 1970's, PBL and other student activating teaching forms has gained increasing foothold at many universities especially in Northern Europe. Evidence is clear that students not only learn more by being active in problem solving in groups than by attending traditional lectures and readings; the competences they gain are absolutely necessary to be effective in today's increasingly competitive labor force.

More recently, the continuous development of the Internet and mobile net since the mid 1990's has also lead to a shift in the teaching modality at universities and schools. E.g. it opens for easy sharing of teaching resources, new ways of self-study and self-practices on flexible terms and an immense improvement of possibilities to use illustrations in teaching. But equally important it gives every teacher a possibility of rethinking the pedagogical aspects of a course.

In the Building Stronger Universities (BSU) project on E-learning and Problem Based Learning (2014-2016), funded by Danida, experience and teaching resources from three Danish Universities are used to support three universities and two university colleges in Tanzania and two universities in Ghana to build up their competences in teaching in these two areas through a range of activities. This publication forms the baseline for the project and emerges from a large collection of data from all universities and university colleges.

Contents

1. Introduction

The overall objective of the Building Stronger Universities (BSU) programme funded by the Danish International Development Agency (Danida) is to strengthen the research capacity of universities in selected Danida priority countries.

The BSU e-learning and PBL project which is carried out in partnership with 3 universities and 2 university colleges in Tanzania and 2 universities in Ghana was established to fulfill the following two development objectives:

- BSU South partner universities' institutional capacities in e-learning strengthened
- BSU South partner universities' institutional capacities in Problem Based Learning (PBL) strengthened.

In order to be able to measure to which extent institutional capacities have been strengthened by the project, a Mapping base line study was carried out as one of the first activities. The immediate objective of the Mapping was to have an:

- Overview of existing policies, strategies, practices (formal as well as informal), capacities, resources, experiences and needs in the areas of e-learning and PBL within BSU South partner universities established,

and the required output was:

- A report containing a comprehensive mapping survey of existing policies, strategies, practices (formal as well as in-

formal), capacities, resources, experiences and needs in the areas of e-learning and PBL within BSU South partner universities, based on a common framework.

This Mapping report constitutes the required output. The aim of the report is to draw together base line information on the status of e-learning and PBL at the South partner institutions in the initial phase of the project.

Throughout the BSU project there will be emphasis on establishing South – South – North networks about e-learning and PBL. The networking activities are highlighted in Work Package 4: Networks, but is in fact an integrated element in all parts of the project. This mapping report will support the networking processes by laying out the base line situation at all participating institutions, allowing partners to know where in the network to find support for and expertise on specific issues related to e-learning and PBL.

Another important consideration in the BSU project is the sustainability of the project, i.e. the continuation of the e-learning and PBL activities within the institutions after project completion in 2016. This sustainability can be secured by introducing strategies and policies for e-learning and PBL. Obviously, formulation of institutional strategies is the task of educational managers within the institutions but it is our plan that the base line study in this mapping report, together with an end line study by the end of the BSU project, will establish a good point of departure for formulating strategies, and thus contribute to the work in connection with Work Package 5: Strategies.

Finally, the mapping report is part of the documentation of the activities taking place within the BSU e-learning and PBL project, and thus contributing to Work Package 6: Monitoring and documentation together with the end line report.

The target groups of the Mapping Report are first and foremost the key stakeholders in the project i.e. staff and management at the partner institutions.

The report is divided into 6 chapters. The current introductory chapter constitutes Chapter 1. In chapter 2, each participating institution is presented shortly, including the Danish universities. Chapter 3 describes the methodology used in the Mapping survey. Chapter 4 presents the findings regarding the status on e-learning, structured in 5 sections according to the headings found in the project document, i.e. policies and strategies; resources (human and infrastructural); practices; experiences; needs. Each section contains a short summary of findings and a subsection per institution containing a short description of the situation at the institution. Chapter 5 presents the findings regarding the status on PBL, structured in the same way as chapter 4. The last chapter 6 is the overall summary, discussion and conclusion.

2. Presenting Participating Institutions

The information found in this section is based on information found on the institution's web page and confirmed by the Task Force Representative (TFR), or on information received directly from the TFR.

2.1 Kwame Nkrumah University of Science and Technology (KNUST)

The Kwame Nkrumah University of Science and Technology was established in October 1951. The University has 6 colleges: College of Science (CoS), College of Health Sciences (CoHS), College of Agriculture and Natural Resources (CoANR), College of Architecture and Planning (CoAP), College of Art and Social Sciences (CoASS) and College of Engineering (CoE).

The student population for the University currently stands at 45,580, out of which 38,439 are undergraduate students and 7,141 are graduate students. Staff includes Senior Members: 1,082, Senior Staff: 1,045, Junior Staff: 1,574 - a grand total of 3,701.

The participating departments in the BSU project come from 4 of the 6 Colleges. From CoS the following departments participate: Department of Computer Science, Department of Mathematics, Department of Food Science & Technology. From CoANR participating departments are: Department of Social Forestry, Department of Freshwater Fisheries and Watershed Management. From CoE participating departments are: Department of Civil Engineering, Department of Chemical Engineering, Department of Petroleum Engineering. From CoASS the following departments participate: Department of Religious Studies, Department of Painting and Sculp-

ture, Department of Marketing and Corporate Strategy. Other units participating in the BSU project are: Institute of Distance Learning (IDL), the University Library, University Information and Technology Services (UITS), International Programmes Office and the Quality Assurance and Planning Unit (QAPU).

The number of VIP participants (teachers, researchers, management) is 10 and the number of TAP (secretaries, technical/support staff) is 5.

2.2 University of Ghana (UG)

The University of Ghana was founded as the University College of the Gold Coast by ordinance on August 11, 1948. The University of Ghana is the oldest and largest of the six public Universities in Ghana. The objective of the University is to provide and promote university education, learning and research. The University has a mission of developing world class human resources and capabilities to meet national development needs and global challenges through quality teaching, learning, research and knowledge dissemination. The University, which comprises three campuses, offers academic learning and research through its 4 colleges: College of Health Sciences (CoHS), College of Basic and Applied Sciences (CoBAS), College of Humanities (CoH) and College of Education (CoE). These colleges comprise 19 schools and various other research institutes and centers, libraries, administrative offices, and other support services.

The student population as of September 2014 was 35,683 (with a male/female ratio of about 3:2). Senior Members, i.e. teaching and

research staff amounts to 865, whereas Senior Administrative and Professional staff are 128 – a grand total of 993.

University of Ghana Business School (UGBS) and School of Social Sciences (SSS), both from CoH, are the two schools participating in the BSU project. From SSS the participating department is Department of Geography and Resource Development, and from UGBS the following 5 departments participate in the BSU project: Department of Finance; Department of Marketing and Customer Management; Department of Public Administration and Health Services Management; Department of Operations and Management Information Systems; Department of Organization and Human Resource Management. The number of VIP (teachers, researchers, management) is 22 and the number of TAP (secretaries, technical/support staff) is 15.

2.3 University of Dar es Salaam (UDSM)

The University of Dar es Salaam is the oldest and biggest public university in Tanzania. It was established on 1st July 1970. The UDSM has a total of nine colleges and four schools, namely: College of Engineering and Technology (CoET), College of Natural and Applied Sciences (CoNAS), College of Humanities (CoHU), College of Social Sciences (CoSS), College of Health Sciences (CoHS), College of Agriculture and Aquatic Sciences (CoA&AS), all located at the main campus, and three off campus colleges; College of Information and Communication Technologies (CoICT), Mkwawa University College of Education (MUCE) and Dar es Salaam College of Education (DUCE). The UDSM also hosts four schools: The School of Law (UDSoL), School of Education (SoED), Business school (UDBS) and the School of Journalism and Mass Communication (SJMC).

The number of students enrolled at the University of Dar es Salaam has been increasing steadily, from 14 in 1961 to 21,440 (13,604 male and 7,836 female) undergraduate degree students in the 2012/2013 academic year. Female students constitute 37% of all undergraduate students. The University has 95 undergraduate programmes, 56 graduate programmes and 5 taught PhD programmes. There are 1,183 administrative staff and 1,111 academic staff.

The participating units in the BSU project include 9 departments from 5 Colleges and 2 schools. From CoET it is Department of Mechanical and Industrial Engineering; from CoNAS Department of Aquatic Sciences and Fisheries; from CoHU Department of Foreign Languages and Linguistics; from CoSS Department of Political Science and Department of Information Studies; from CoICT Department of Computer Science; from UDBS Department of General Management and Department of Marketing; from SoED Department of Psychology and Curriculum Studies. The number of VIP (teachers, researchers, management) is 11 and the number of TAP (secretaries, technical/support staff) is 2.

2.4 Sokoine University of Agriculture (SUA)

Sokoine University of Agriculture dates back to 1965 when it started as an Agricultural College offering diploma training in the discipline of agriculture. Currently, SUA has four faculties, namely: Faculty of Agriculture (FoA), Faculty of Forestry and Nature Conservation (FoF & NC), Faculty of Veterinary Medicine (FVM) and Faculty of Science (FoS). The latter was established in 2001. Other academic units include the Directorate of Research and Postgraduate Studies (DRPGS), Institute of Continuing Education (ICE), Development Studies Institute (DSI), Computer Centre (CC), Pest Management Centre (PMC), SUA Centre for Sustainable Rural Development (SCSRD) and the Sokoine National Agriculture Library (SNAL). SUA also hosts the African Seed Health Centre and Virtual Centre known as Southern African Centre for Infectious Disease Surveillance. The student population for the University currently stands at 8,000 students and less than 400 academic staff.

The academic units participating in the BSU include 4 departments and 3 supporting academic units. From FoA Department of Animal Science and Production and Department of Agricultural Economics and Agribusiness participate; from FoS Department of Informatics; from FVM Department of Veterinary Surgery. The 3 supporting academic units are DSI, SNAL and CC. The number of VIP (teachers, researchers, management) is 12 and the number of TAP (secretaries, technical/support staff) is 3.

2.5 Kilimanjaro Christian Medical University College (KCMUCo) and National Institute for Medical Research (NIMR)

On 0ctober 1st 1997 the Kilimanjaro Christian Medical College was opened. KCMU College is a constituent college of Tumaini University which is a private University. KCMUCo has 3 faculties: Faculty of Medicine (FoM), Faculty of Nursing (FoN) and Faculty of Rehabilitation Medicine (FoRM), 2 institutes: Institute of Public Health (IPH) and Kilimanjaro Clinical Institute (KCI) and 2 directorates: Directorate of Postgraduate Studies (DPS) and Directorate of Research and

Consultancy (DRC). The 2015 student population stands at 1,450 full time students (undergraduate: 1,310, Masters: 117, PhDs: 23). The academic staff comprise 117, administrative staff 56 and technical staff 4 (ICT & Library).

The academic units participating in the BSU project include: DPS, DRC, Department of Obstetrics and Gynecology (FoM), Department of Behavioral Science (IPH) and KCI. The number of VIP participants (teachers, researchers, management) is 6 and the number of TAP participants (secretaries, technical/support staff) is 4.

The National Institute for Medical Research (NIMR) is included in this project, as a close collaborator of KCMUCo. They do not carry out university education as such, and therefore they are not further described in this report.

2.6 State University of Zanzibar (SUZA)

The State University of Zanzibar became operational in 2001 with only 55 students. Currently, the University comprises five schools, namely: School of Education (SE) with Department of Educational Foundation, Instruction And Leadership; School of Natural and Social Science

(SNSS) with Department of Natural Science, Department of Computer Science and Information Technology, and Department of Social Science; School of Continuing and Professional Education (SCOPE) with Department of Computing, Department of Secondary Education and Department of Professional Studies; School of Kiswahili and Foreign Languages (SKFL) with Department of Kiswahili, Department of Foreign Language and Department of Kiswahili for Foreigner; School of Medicine. Research centers are Center for Research and Graduate Studies and Tropical Research Center for Oceanography, Environment and Natural resources. In 2015, the University population stands as follows: Number of students is approximately 2,500, number of academic staff is 141 and number of administrative staff is 139.

The departments participating in the BSU project include: Department of Computer Science, Department of Educational Foundation, Instruction and Leadership and Department of Science. The number of VIP participants (teachers, researchers, management) is 8 and the number of TAP participants (secretaries, technical/support staff) is 3.

2.7 College of Health Sciences Zanzibar (CHSZ)

The College of Health Sciences Zanzibar (CHSZ) was established by the House of Representatives Act No. 10 of 1998 as a semi-autonomous organ. The College is a continuation of Zanzibar Health Training School which was established in 1938. It was official inaugurated in 1989 and is aiming at providing quality health services for improving the lives of people of Zanzibar. The College has its own governing bodies which are the Academic Board that deals with academic issues and the Council that is the sole responsible for all matters.

The college comprises 7 departments: Department of General Nursing; Department of Clinical Medicine; Department of Medical Laboratory Sciences; Department of Environmental Health; Department of Pharmaceutical Sciences; Department of Clinical Dental Therapy; Department of Biomedical Engineering.

The college of health sciences Zanzibar is a public institution which offers diploma level of health education. From November 2015, the college is expected to establish a nursing degree programme of 3years. The college has about 1000 students. Student/teacher ratio 22:1. Four staff members are involved in the BSU project E-learning and PBL training project, three academic staff from nursing and laboratory departments and 1 from IT. The College is in the process of merging with the State University of Zanzibar, under the School of Medicine

2.8 University of Copenhagen (UCPH)

University of Copenhagen is the oldest university in Denmark, established in 1479, and also the largest. It is a general university, spread physically out in several campuses in different parts of the capital. The University is an independent and self-governing institution under the Ministry of Higher Education and Science.

The UCPH Board of Governors and each of the Faculty Academic Boards have a majority of external members and they are the highest authorities of UCPH. They each determine guidelines for the organ-

ization, long-term activities and the development of the University and the Faculties. The Rector is employed by the UCPH Board of Governors. Rector employs two Pro-rectors, the University Director and the Deans, and the Deans employ the Heads of Departments, Directors of Studies etc., who together undertake the day-to-day management of the University.

The University is organized into six faculties (Faculty of Humanities, Faculty of Social Sciences, Faculty of Science, Faculty of Health and Medical Sciences, Faculty of Law and Faculty of Theology) and one Center and under those a total of 39 departments that are responsible for both education and research.

The total number of academic staff (in Danish: VIP, i.e. professors, associate professors, assistant professors and research assistants) in 2013 was 5,270, of which 4,823 full-time and 447 part time. The total number of administrative staff (in Danish: TAP, i.e. secretaries, technicians, service officers etc.) in 2013 was 4,382.

The number of students in 2013 was 40,866. The student/teacher ratio (calculated as the total number of students divided by the VIP time allocated for teaching (1,323 man-years per year)) at UCPH in 2013 was 31:1.

The three KU participants in the BSU e-learning and PBL project are employees of the Center for Online and Blended Learning at the Faculty of Health and Medical Sciences, the Department of Global Health and Department of Food and Resource Economics.

The overall management and coordination of the e-learning and PBL project is anchored in the Global Health Section, Department of Public Health at UCPH. The three UCPH work package resource persons in the BSU e-learning and PBL project are employees of the Center for Online and Blended Learning and the Global Health Section, at the Faculty of Health and Medical Sciences, and of the Department of Food and Resource Economics.

2.9 Roskilde University (RU)

Roskilde University (RU) is an independent and self-governing institution under the Ministry of Higher Education and Science. Roskilde University is a single campus located in the Trekroner section of the city of Roskilde, 30 km west of Copenhagen. Roskilde University was formed under the Act of Copenhagen University's Siting and University Centers of 1970 and held the name of Roskilde University Centre (RUC) until 2008, when the official name was changed to Roskilde University (RU).

The highest authority of RU is the RU Board of Governors with a majority of external members. The RUBoG determine the guidelines for the organization, long-term activities and the development of the University. RU has no faculties but six main departments: Department of Communication, Business and Information Technologies; Department of Culture and Identity; Department of Environmental, Social and Spatial Change; Department of Science, Systems and Models; Department of Psychology and Educational Studies; and Department of Society and Globalisation. The Rectorship is employed by the RU Board of Governors and consists of the Rector, the Pro-Rector and the University Director. The Rectorship employs the Heads of Departments, who in turn employ the Directors of the Study Programmes.

The most important task of Roskilde University is to contribute to experimental, innovative forms of learning and knowledge creation. The first batch of students, 723 of them, started at the University on 1st September 1972. The founders of the University wanted a different approach to education and science than what was already being practiced at the three older traditional Danish universities at the time. Thus RUC's first year was characterized by a completely new educational concept that included elements such as basic studies programmes, interdisciplinarity, problem orientation and group project work. Student defined project work (PBL) accounts for 50% of the curriculum in all study programmes of RUC. Today, the number of enrolled students has reached 7,956 (Oct. 2014). Based on the

academic staff time allocated for teaching, the student/teacher ratio at RU is 27:1 (2013).

The one RU participant in the BSU e-learning and PBL project is an associate professor at the Department of Environmental, Social and Spatial Change.

2.10 Aalborg University (AAU)

Aalborg University was established in 1974 as a so-called developmental university, the mission of which was to collaborate with the surrounding society to solve local problems of un(der)employment, underdevelopment etc. Thus, from the outset focus was on problem oriented and interactive research and teaching. Today, the University has three campuses, one in Aalborg, one in Esbjerg and one in Copenhagen. The University is an independent and self-governing institution under the Ministry of Higher Education and Science.

The AAU Board, with a majority of external members, is the highest authority of Aalborg University and determines guidelines for the organization, long-term activities and the development of the University. The Rectorate undertakes the day-to-day management of the University and consists of Rector, Pro-rector and the University Director.

The University is organized into four faculties (Faculty of Humanities, Faculty of Social Sciences, Faculty of Engineering and Science and Faculty of Medicine) and one institute (Danish Building Research Institute). A total of 20 departments are responsible for research while 11 schools are responsible for education. Departments and schools are organized in a matrix structure that allows for interdisciplinary teaching in the PBL study programmes. The educational approach at AAU is similar to the one found at RU, i.e. students use half of their study time on problem based and project organized group work.
The total number of academic staff (VIP) in 2014 was 2,820, of which 2,080 full-time and 740 part-time. The total number of administrative

staff (TAP) in 2014 was 1,447 full time employees and 381 part time employees.

The number of students in 2014 was the following: Regular students 20,115; international students 3,178; part-time students 2,012; PhD students 1,032. The student/teacher ratio at AAU in 2013 was 27:1.

The AAU participants in the BSU e-learning and PBL project are employees of the Aalborg Centre for Problem Based Learning in Engineering Science and Sustainability under the auspices of UNESCO, which is a research and teaching center located in Department of Development and Planning under the Faculty of Engineering and Science. There are two VIP participants while another two TAP participants are responsible for the administration of the project at AAU.

3. Mapping Methodology

The participating South institutions are quite diverse, as will have become clear from chapter 2. Therefore, in order to achieve comparable results of the institutional mapping a common framework was developed. This common framework is presented in the first section, while the second section shortly presents mapping methodology within each institution.

3.1 Common mapping framework

Due to the emphasis on comparability between diverse institutions the initial focus in the mapping activity was on designing a common framework for the mapping activities. This common framework included two matrices, one for e-learning and one for PBL, with the five key aspects of the mapping (policies/strategies; resources (human and infrastructural); practices; experiences; needs) as rows and the main stakeholders (educational managers; teachers; students; e-learning experts, resp. educational/PBL experts; IT experts) as columns. Proposal for data collection methods was also included in the matrices, as were lists of proposed questions to be asked to respondents, one list per stakeholder group.

The intention was that the South institutions would use the matrices (incl. related lists of questions) for planning the mapping study. Based on the results presented from the South institutions it is the impression that this common framework was used by all institutions, while some of the institutions also supplemented with their own frameworks. Please find the common framework in Annex 1.

3.2 Institutional mapping methodology

This section gives a short summary of the mapping methodology employed in each institution. For further information about institutional mapping methodology please refer to the institutional mapping reports on the BSU learning home page. Please find links to mapping documents in Annex 2.

KNUST

At KNUST two mapping surveys were carried out. A total of 1.145 respondents were involved as respondents to the Draft Mapping Report. Of these 1.020 were students, selected from 33 different study programmes, 44 were educational managers, 70 were lecturers and 11 were IT experts. A multi-stage sampling technique was used. There are no PBL experts in KNUST but some of the respondents have some level of knowledge on PBL. Personal interviews were used for educational managers, lecturers and IT experts. Data from students were obtained through the transcription of electronic recordings and notes during focus group discussions. Permission was sought before any form of recordings was made. The data collected were both quantitative (age, years in service) and qualitative (gender, rank, education attainment, level of studies and responses from BSU matrix). Exploratory and inferential statistical analysis was performed to assess the state of e-learning and PBL at KNUST. Data were analyzed using Statistical Package for Social Sciences (SPSS) and Excel.

KNUST also carried out an online BSU E-learning and PBL Student Survey in Google Forms with 1450 student responses. The quantitative data were analyzed while the open-ended questions were not further processed.

UG

The study at UG employed a qualitative technique and purposively selected stakeholders for interviews and focus group discussions. Three educational managers were interviewed, one of whom doubled as an expert on both e-learning and PBL. Lecturers, including PBL experts were engaged in focus group discussions. Four IT experts, including heads of IT were interviewed. Students from the Business School were engaged in a focus group discussion while students from other schools filled questionnaires with open-ended questions. Interviews and focus group discussions were conducted by two persons, one asking questions, while the other was taking notes and monitoring recordings with the consent of the participants. Recordings were transcribed and analyzed thematically.

UDSM

A task force comprising 4 teaching staff and 1 technical staff was formed to carry out the mapping activity. Four sets of data collection instruments were developed. A survey was administered to 12 course instructors teaching online courses at the School of Education (SoED) and the College of Engineering and Technology (CoET), 42 postgraduate students pursuing online programmes and 4 IT support staff from Centre of Virtual Learning (CVL) and the University Computing Centre UCC). An in-depth interview was conducted with the UDSM ICT manager. Thus, a total of 37 respondents were involved in the mapping. Qualitative data were analyzed through content analysis while quantitative data were analyzed using SPSS.

SUA

For the e-learning mapping at SUA the following activities were carried out: A total of 24 educational managers (3 female, 21 male) were interviewed; lecturers (number not specified) filled questionnaires and some were interviewed; a total of 8 educational and/or e-learning experts (3 female, 5 male) were interviewed and/or participated in focus group discussions; IT experts (number not specified) were participating in a focus group discussion; 10 students from each of 9 different programmes, purposively selected and with focus on equal gender representation, were participating in focus group discussions and some interviews.

For the PBL mapping at SUA a total of 23 instructors (6 female, 17 male) were randomly sampled from different faculties, for interviews and for focus group discussions.

KCMUCo

A total of 17 participants (7 female, 10 male) were involved as respondents in the mapping at KCMUCo. In-depth interviews were conducted with three educational managers, five educational experts, four teachers and five students. All three faculties were involved: Nursing, Medicine and Rehabilitation Medicine. Data were analyzed manually using content approach.

SUZA

At SUZA the Deputy Vice Chancellor - Academics was interviewed, as were five Deans of Schools. Also, two teachers from each of six departments were interviewed. Students were participating in focus group discussions, five students from each of three departments. Furthermore, four IT experts were interviewed, one being the Head of ICT Services at SUZA, two were senior system administrators and one was computer technician at Center of ICT. Finally, two e-learning experts were interviewed. Thus, a total of 39 participants contributed to the mapping survey.

CHSZ

At CHSZ a total of 37 participants were involved in the mapping. Purposeful sampling was used to select the Chief Academic Officer, one IT person, five teachers, while simple sampling was used to select a total of 30 students from different cadres. The first three groups of stakeholders were interviewed while students participated in focus group discussions in five groups. All interviews were checked for completeness and consistency. Quantitative data were processed and analyzed using Excel software while qualitative data were narrated.

4. Findings on e-learning

This chapter presents the findings from the mapping study concerning e-learning. The chapter is organized in 5 sections according to the five key areas and each section is further divided into sub-sections, one per institution.

4.1 Policies and strategies on e-learning

Most of the institutions have a form of ICT strategy but only the three largest institutions (KNUST, UG and UDSM) have an e-learning policy of some kind. The policy has not been translated into an action plan for e-learning in any of the institutions and there is no imperative for teachers to use e-learning.

KNUST

The draft mapping report stated that 64% of the IT experts are of the opinion that the University has a policy on introducing e-learning. This view is only shared by 13% of the teachers and 16% of the educational managers, while hardly any students are aware of an e-learning policy. This finding might indicate that neither educational managers, nor teachers or students are aware of the existence of the e-learning policy.

UG

UG has a draft policy on e-learning which is yet to be finalized and approved. The draft policy has a work plan that includes sensitization, travel and incentive packages for staff who undertake e-learning. Only a few lecturers and IT experts have knowledge of the draft policy document and they lamented that little action has been taken

to date. An e-learning expert stated that after completing the draft policy, university authorities would be faced with a problem of inadequate resources to implement the policy.

UDSM

In terms of policies and procedures in support of ICT and e-learning, the ICT master plan from 2007, together with a draft e-learning operational policy were formulated to guide the implementation of ICTs in teaching and learning. The policies cover five broad areas: Assistance to academic units; course development for e-delivery; provision/delivery of e-programmes; LMS Management; research on e-learning developments. The existing documents have not been effective in terms of implementation of e-leaning activities at the University, maybe because the implementation of e-learning is discretionary. Thus there is a leeway for individual departments to decide whether to adopt e-learning or not, and since the University does not have neither a formal strategy to promote e-learning, nor a mechanism to assess the implementation and impact of e-learning in the few departments that run online programmes, the use of e-learning is limited.

SUA

SUA has an ICT policy but no explicit e-learning policy and the ICT policy does not adequately address e-learning. The lack of a specific action plan results in ineffective adoption and implementation of e-learning.

KCMUCo

KCMUCo does not have a stand-alone policy on e-learning, therefore teachers are not bound to use this approach as a method of teaching.

SUZA

SUZA has a strategy for improving ICT capacity and its effective utilization in teaching and learning but unfortunately most lecturers are not aware of this strategy. SUZA has no policy for e-learning. There is, however, an action plan at Deputy Vice Chancellor - Academic's office and some of the activities in the plan have been performed in BSU I, such as, e-learning training for   lecturers.

CHSZ

The Chief Academic Officer responded that no strategy nor policy concerning e-learning exists in ZCHS

4.2 Resources for e-learning

Some universities, such as e.g. UG, KCMUCo and UDSM, have recently expanded their ICT services, including e-learning, thanks to external funding. The perception of what constitutes infrastructural e-learning resources varies from institution to institution. In all institutions computers and Internet access is seen as the main resources for e-learning, while some institutions also include, for example, projectors and public address systems as e-learning resources. The bandwidth varies considerably, from 256 Kbps to 40 Mbps.

In almost all institutions, respondents agree on the insufficiency of resources for e-learning, in some institutions mainly the infrastructural resources, in others the human resources and in some both types of resources are in short supply.

KNUST

In response to a question about available resources for e-learning, respondents mentioned the following infrastructural resources: Projectors; Public Address system; ICT lab; electronic library and e-learning center; WIFI in lecture theatres; computer laboratory; printer; Internet facilities; desktop computers. In terms of human resources, lecturers and laboratory technicians are mentioned as the most important resources, but the number of lecturers employing e-learning is small and in most departments there are not enough technicians. According to the Draft Mapping Report respondents agreed that infrastructural resources for e-learning are insufficient.

The Student Survey indicated that 52% of the students had access to the Internet through their department and of these students, 62% were satisfied with the access. The Student Survey also indicated that although approximately half of the students answered that their departments provided them with computers, neither the number of computers nor the quality was satisfactory. By far the majority of students do, however, have their own personal computer and personal access to the Internet.

UG

Through a Chinese grant to the Government of Ghana, UG has received funds to establish an e-learning platform (SAKAI). Infrastructural resources include computers and computer labs; UG Computer System (UGCS), Research Commons, Knowledge Commons, WIFI Services and Staff Development and Learning Centre. UGCS has three chapters for training, browsing and a VIP chapter for faculty members. Research Commons which is located in the Balme Library is equipped with computers, discussion rooms and Internet services where graduate students can access the Internet using their laptops. The UG was able to increase its bandwidth from 13Mbps to 25Mbps to improve the speed of Internet access due to growing demands internally.

Educational managers, lecturers and IT experts mentioned some Learning Management Systems (LMS), such as, KEWL.NEXTGEN (KNG) and Sakai that are being used by few members of faculty. In the year 2004, the University introduced the Knowledge Environment for Web-based Learning (KEWL) now KEWL. NEXTGEN (KNG) as its e-learning platform. This platform, as noted by stakeholders, has been adopted by few members of faculty over the years.

Human resources cited by stakeholders were IT personnel, instructors and lecturers. Stakeholders perceive resources, human and infrastructural, to be inadequate for effective e-learning in UG.

UDSM

The fiber optic network of the University main campus comprises approximately 8.2 km connecting all schools and colleges, a total of 28 buildings. The University is connected to the Internet at 256Kbps down link and 256Kbps up-link. This is due for upgrading to 1Mbps. It is also connected via VSAT at 256Kbps down-link and 64 Kbps up-link. Video conferencing facilities have been installed at the Centre for Virtual Learning (CVL) and at the University Computing Centre (UCC). A digital library was also developed as part of a recent ICT/e-learning initiative. In recent years, Moodle Learning Management System (LMS) was adopted for the few online courses. The commonly used operating systems include Windows 7 and above, Vista and Ubuntu (an open source operating system).

Staff PC ratio was 3:1 for academic staff and 3:1 for non-teaching staff. Almost all the teaching staff had a personal laptop or a tablet. Students' PC ratio was 10:1, with very few students having own laptops or tablets. For the majority of students, free access points located in the library was their main place of PC/Internet access. The management of ICT at the University is done by UCC while CVL provides technical and pedagogical support to all academic units in the design and provision of ICT-mediated distance learning programmes. Curriculum for online courses is developed by course instructors with support from CVL. It was notable that the Tanzania Commission for

Universities (TCU) has in place a University Qualification Framework (UQF) to guide implementation of online programmes. In terms of training on e-learning, in the past years, CVL has trained a number of academic staff on the use of Blackboard and later Moodle.

Each of the colleges and schools has an ICT unit managed by a graduate Systems Administrator who offers technical support to students and staff on IT related matters such as PC trouble shooting and routine maintenance of PCs and networks. Matters related to LMS, content development, course delivery and course management are done by CVL. It was, however learnt that both technical and pedagogic supports are only available on week days during working hours, i.e. 8am to 4pm, due to insufficient number of IT staff at the teaching departments.

In general, there is inadequate budget to support e-learning activities; consequently e-learning activities depend on donor funded projects which are hard to sustain after project period has phased out.

SUA

The University has a 40 Mbps Internet bandwidth, 6 computer labs and 177 PCs. It has a fiber optic network to most buildings, as well as a WLAN which is, however, not available in all learning areas. Provision has been made for an integrated student information system called SUASIS that contains an e-learning platform (Moodle), registration, accommodation etc. The University library subscribes to many online journals and data bases.

Students complain that the University wireless Internet is unreliable and extremely slow and not connected in the halls of residence. Furthermore, the electricity supply is unreliable with frequent power cuts and inadequate numbers of electricity outlets around the campus. Also, the number of computers in computer labs is too small compared to the number of students.

SUA has an adequate number of staff capable of using e-learning, incl. experts capable of training others. The number of IT-technicians is, however, small compared to the need.

KCMUCo

The college has state-of-the-art ICT facilities, mainly initiated through the Medical Education Partnership Initiative (MEPI) where KCMUCo collaborates with Duke University, USA, with funding from the US Government. The total bandwidth into KCMUCo is 16 Mbps, with advanced bandwidth control and filtering for priority applications. There is an optical fiber connection to all institutes, a lecture hall with advanced audio-visual equipment, video conferencing facilities and an e-library with 132 iMacs for the students to use. As part of the MEPI initiative all medical students are given an Android based tablet when they start their studies.

The learning management system platform used for e-learning is called LCMS+ and is developed by a specialist at Duke University, specifically aimed at the delivery of medical education curriculum. LCMS+ is mainly used for curriculum delivery and for sharing learning content. The LCMS+ is also used in connection with on-line assessment. The real time exam monitor allows immediate correction of possible errors in answers and gives immediate feedback to students.

A very strong ICT team and a well-trained Learning Management System (LMS) team are in place. The college, however, has very few teachers trained on e-learning.

SUZA

Basic infrastructure for e-learning is in place in SUZA, such as, computers labs, an ICT center, an e-learning platform (Moodle) and wireless Internet connection. A fiber connection from Tanzania Commission for Science and Technology (COSTECH) is expected.

Provision has been made for a person in charge of e-learning and some lecturers have been trained to use e-learning. The respondents agreed that the resources, both human and infrastructural, are insufficient compared to the number of students at the University.

CHSZ

The college has a computer room, but there are too few computers compared to the number of students. Furthermore, the Internet access is not permanent.

In terms of human resources only two staff members have been trained; one e-learning coordinator was trained through AMREF and one e-learning teacher was trained through BSU I. Thus, all respondents agreed that the college has inadequate infrastructural and human resources for e-learning.

4.3 Practices of e-learning

In general, e-learning courses are the efforts of individual lecturers in

certain departments. Moodle or similar LMS platforms are in place in most institutions and e-mails, websites, Facebook and other social media, such as, LinkedIn, Twitter and Instagram, are the most widely used e-learning applications. Most teachers are aware of e-learning but the use of e-learning is rather limited in most institutions, mainly due to the lack of training.

KNUST

While 82% of IT experts and 81% of lecturers interviewed said that they were aware of teaching practices including e-learning, only 21% of the educational managers said that they were aware of such practices. According to the Draft Mapping Report almost all students (98%) report that they have been exposed to e-learning, a finding that is not supported by the Student Survey in which only 48% of students answered 'Yes' to a question about awareness of e-learning being used in their own department, while 52% said 'No'. The mismatch may be caused by the use of different definitions of e-learning in the two surveys.

UG

In UG e-mails dominate e-learning practices, followed by web sites, social media and blogs. Out of 130 courses across 6 units (schools and faculties) 62 practiced some form of e-learning, with the UG Business School having the highest proportion of courses practicing some form of e-learning in 15 out of 27 courses.

The SAKAI platform is mainly being used by staff in the Institute of Continuing and Distance Education courses. Other platforms, such as KEWL.NEXTGEN is used by a few faculty members while other faculty members have developed course web sites and online videos. Also Word Press and Google sites are used. However, although faculty members over the years have initiated a number of e-learning practices, e-learning is yet to become institutionalized with the introduction of SAKAI.

UDSM

The two academic units surveyed (SoED and CoET) are the only units with online courses running on the Moodle platform. All faculty and student respondents were either conducting online courses or pursuing online courses.

The survey results indicate that the support of e-learning to faculty is limited to the provision of guidelines, e-learning skill training, provision of technical support through CVL and e-learning infrastructure. For the majority of faculty (78%), the most important support provided is provision of guidelines on the use of e-learning and training, and the TCU University Qualification Framework (UQF) is the key document used in developing online programmes.

Most of the faculty (67%) indicated that they have acquired knowledge about e-learning through training organized by the University, but a small but significant number (33%) reported that they self-acquired the knowledge, basically through peer coaching. It was further established that although a good number had indicated to be familiar with the e-learning system, a reasonable amount (42%) lacked adequate knowledge on how e-resources would benefit the students, although they admitted to be using electronic resources especially for research related activities. This finding suggests that instructors basically use e-resources for the personal rather than for students' benefit.

A majority of students regularly use e-mail (71%), Facebook (62%) and text messaging (55%). E-learning knowledge has either been acquired through institutional programs (31%) or by own studies (24%).

SUA

Moodle is the main e-learning application used. Some staff use Web 2.0 technologies, such as blogs, to interact with students. In 2013 four workshops on e-learning were conducted in connection with the University Teaching and Learning Improvement Programme (UTLIP). The findings showed that 3 out of 8 respondents were using e-learning in their teaching while the other 5 were not sure whether they were using e-learning or not in their teaching. It was further revealed that the use of e-learning was mainly through the projection of slides and visual objects, using computers.

Findings indicated that all student respondents pursuing a BSc. Informatics degree used e-learning in their studies. The findings also showed that they used e-learning for sending assignments, searching for relevant materials over the Internet, supplementing reading materials for their courses, chatting, making online applications and sharing learning materials.

KCMUCo

Not more than 10 staff members have been trained on e-learning. About 6 staff members were trained on Massive Open Online Courses (MOOC) through the MEPI initiative. A MOOC named 'Tropical Parasitology and entomology' has been developed by the Depart-

mnet of Parasitology in collaboration with Duke University. The Faculty of Rehabilitation is offering one course using e-learning. The program is supported by the Ministry of Health and Social Welfare.

SUZA

Most of the respondents reported that e-learning is practiced at SUZA. Regarding lecturers some of them said that they know there is an e-learning platform but they are not using it because they have not been trained. Others said that they had an e-learning account but is not using it because they have not been trained enough or because the infrastructure is poor. Two lecturers are known to be using e-learning. One expert is using KHAN Academy as an external platform. Also, the Moodle platform is used, but generally very few teachers (not more than 10%) use e-learning and the few who do are mainly from Computer Science Department. Some staff use e-mails as a mode of communication with their students.

CHSZ

All teachers are aware of e-learning but only two persons working in the e-learning department use e-learning regularly. Sometimes students learn by themselves through the Internet once given an assignment. The E-learning and IT expert indicated that they do not know any person capable of using e-learning.

4.4 Experiences with e-learning

The experiences from the South institutions are mixed, with some respondents in some of the institutions having positive experiences while other respondents in the same or other institutions have frustrating experiences. Several obstacles limit the growth of ICT and e-learning and contribute to the frustrating experiences, including: Unreliable power supply with frequent power outages and fluctuations; unreliable and/or slow Internet connectivity; lack of awareness of existing ICT services; lack of coordination across campuses and departments; lack of instructor incentives to integrate technology with teaching and research.

KNUST

In KNUST a majority of respondents among teachers and IT experts are utilizing e-learning (64% of teachers and 60% of IT experts). Teachers mentioned that they use the projectors for lectures and assignment presentation; public address systems for lecture delivery; laptops and PCs; online submission of assignments; typing and printing of assignments; searching and downloading research articles, books and other informative materials online; downloading video lectures online.

Some of the frustrating experiences for all respondents include: Poor Internet connectivity and accessibility; lack of awareness of existing ICT services; frequent power outages and fluctuations. Lecturers also find the lack of incentives to integrate technology in teaching and research frustrating, while students mentioned facilitators lacking experience in delivery and addressing questions from students as part of their frustrating experiences.

Senior lecturers were about 4 times more likely to utilize e-learning in teaching than junior lecturers. Similarly, there was a tendency towards lecturers with a Masters or a PhD degree being more likely to

utilize e-learning than lecturers with BSc qualifications although this finding was not statistically significant.

According to the Draft Mapping Report, 98% of students said that they had been exposed to e-learning during their studies. As mentioned above this figure does not correspond to the figure found in the Student Survey. The mismatch may be caused by the use of different definitions of e-learning in the two surveys.

UG
In respect of experiences with E-learning, lecturers, IT experts and students alike shared frustrating experiences. Among the topical issues included is the challenge of inadequate resources and unreliable Internet connectivity. Some lecturers struggle with technical issues, especially those without a technical background. This possibly explains why some lecturers will not use e-learning in the first place.

Even though the ICT infrastructure is being upgraded, Internet users still experience unreliable and poor Internet services due to limited bandwidth. Students explained that the Internet access becomes particularly unreliable during the day time and often they have to move to the Business School to grapple with the poor Internet connectivity. IT experts attributed the problems to the growing number of Internet users on campus.

UDSM
The majority of faculty respondents reported positive experiences with e-learning. The most widespread use was providing feedback to students, directing students to library Internet resources and useful URLs. Faculty respondents reported that only a minority of students participate in online discussions.

The majority of student respondents had been using computers for more than 3 years while their frequency of using computers was stated as 'occasional'. Given that these were online students it was expected that they use the computer on a daily basis but only 12% reported daily use of the computer.

At the University at large, the majority of lecturers and students have little experience with E-learning. A few said they had experienced failures in e-learning associated with technology and infrastructure breakdowns. Lecturers' minimal use of e-learning is attributable to lack of systematic integration of technology into the teaching and learning process.

SUA
The majority of staff seems to complement e-learning with face-to-face learning. Most staff is using Power Point and accepting assignments online.

All the BSc Informatics students are using e-learning for sending assignments, searching for information, supplementary readings, chatting and sharing learning materials.

KCMUCo
In spite of the training associated with the MEPI initiative only a few staff members (about 10) have experience on e-learning. The majority of staff feels comfortable to use old methods of teaching instead of adapting new skills and methodology.

SUZA
One expert has received training on ICT pedagogical development through the Swedish Program for ICT in Developing Regions (SPIDER). Another expert received training through the BSU I on the Moodle platform and other platforms. He uses e-learning tools such as, Google+, Google Drive, Dropbox and YouTube.

Degree students used e-learning more often in semester 1 than in semester 2. For Diploma students it is the other way around. Some lecturers put notes on the e-learning chapter of the Student Information System Zalongwa.

CHSZ

At CHSZ there is limited knowledge and skills of developing e-learning content/module in platform. The e-learning department did arrange a one week short course of e-learning through AMREF but so far only 2 persons are practicing e-learning.

4.5 Needs for e-learning

The need for improvement of infrastructural resources (reliable power supply, working computers, increased band-width, reliable Internet connectivity, wireless Internet access) is common to most institutions. Also, the need for a university policy and/or action plan as well as for systematic integration of technology into teaching and learning is a common concern. Common to all institutions is the need for awareness-raising to overcome resistance and create motivation. Similarly, training on e-learning for teachers, students and e-learning experts alike is needed.

KNUST

At KNUST all respondents agreed that there is a need for constant and reliable power supply, including surge protectors and backup power supply, for example via solar energy. Another common need expressed is renovation and/or creation of more computer labs with working computers and with fast and accessible Internet connection. Educational managers and teachers agreed that there is a need for training for lecturers on e-learning. Students found that there is a need to integrate information literacy into ICT training and to expand technical support for e-learning instruction.

UG

Stakeholders were unequivocal on the need to provide more resources in the areas of infrastructure and human resources to boost e-Learning. Key needs expressed among stakeholders were faster and more reliable Internet connectivity, provision of more computers, sensitization and training of faculty and students on the importance of e-learning as well as provision of incentives for faculty adoption of

e-learning. Thus, there are major resource needs to be addressed in order to ensure effective e-learning in UG.

UDSM

At UDSM there is a need for systematic integration of technology into teaching and learning with inspiration from University management on e-learning. Other gaps identified include the following:

- Inadequacy of ICT Infrastructure, only a few lecture theatres are presently fitted with e-learning equipment
- Prohibitive cost of bandwidth
- Lack of formal recognition of e-programmes by TCU
- Low status accorded to online programmes
- Reliance on foreign funding; most e-learning programmes are externally funded thus the question of sustainability.
- Limited expertise in the field, consequently insufficient technical and pedagogic support for e-learning programmes.
- Unavailability of relevant university policies to support e-learning.

SUA

Some of the needs identified at SUA include: An effective and explicit e-learning action plan; improved ICT infrastructure, including reliable electricity supply and backup generators; faster and more accessible Internet through increased bandwidth (one IT-expert suggested that the bandwidth be increased to 155 Mbps); introduction of more e-learning tools; deployment of e-learning software; training of staff and students on use of available e-learning tools. Students mentioned the need for new computer labs with all necessary ICT tools, incl. relevant software. They also pointed to a need to hire more technicians to assist students with e-learning issues. Finally, students suggested that the course, CIT 100: Introduction to Computer Applications, should be taught to all undergraduate students, also those not majoring in ICT.

KCMUCo

The College needs to have a stand-alone policy on e-learning and e-learning activities must be integrated in the curriculum. Reliable Internet connectivity needs to be secured, so does reliable power supply. Also, adequate learning space and seminar rooms for group discussions must be constructed. Students and faculty members must be prepared for new methods of teaching and learning through training. Each faculty should have a core staff of about 4 well trained e-learning experts.

SUZA

At SUZA the need for capacity building and training on e-learning was expressed by most respondents. There is a need for well qualified experts on e-learning and for IT support staff, as well as a need for training of both lecturers and students on e-learning. There is also a need for improved infrastructure, such as, computer labs with necessary equipment, and reliable Internet connection with increased bandwidth and wireless service available in all three campuses of the University. Management should set up a strategy and establish policy and guideline for e-learning integration. E-learning should be emphasized during orientation week.

CHSZ

The Chief Academic Officer responded that the College needs to be strengthening e-learning programmes and staff agreed on this point of view because e-learning will provide quality health education to a large number of students and may reduce work overload of teachers. Also students agreed that e-learning is very important and very much needed to acquire knowledge and skills on health and to simplify the process of learning.

5. Findings on problem based learning (PBL)

This chapter presents the findings from the mapping study concerning PBL. The chapter is organized into 5 sections according to the five key areas and each section is further divided into sub-sections, one per institution.

5.1 Policies and strategies on PBL

By far the majority of stakeholders interviewed in the 7 institutions state that neither policy nor strategy on PBL or similar student-centered teaching approaches exists within the institution. In several universities stakeholders interviewed have expressed a need to have such policies and/or strategies.

KNUST

At KNUST 25% of educational managers state that policies for introducing PBL are in place. For the teachers the same figure is 9.5%. The question about policies/strategies was not asked to other stakeholders.

UG

University of Ghana has no policy on PBL although stakeholders interviewed expressed a strong need for one.

UDSM

The University of Dar es Salaam does not at present have a policy on PBL, and PBL or similar student-centered teaching/learning approaches seem to be almost non-existent in the University.

SUA

At present there is no policy/strategy on PBL at SUA but currently curricula are being reviewed to align with the University Qualification Framework (UQF) under Tanzania Commission for Universities (TCU) and this provides room for introducing PBL.

KCMUCo

Although PBL is stipulated in the curriculum KCMUCo does not have a policy on PBL or Team Based Learning (TBL). TBL is being promoted by college authorities but it is not integrated in the curriculum.

SUZA

No PBL policy is in place in SUZA. There is, however, an existing implementation of this approach to teaching and learning as a pilot project in the BSc Environmental Health programme. Interviewed managers were eager to have a PBL policy. At Department of Kiswahili teachers say that a student-centred approach is emphasized in the University pedagogy.

CHSZ

All groups of stakeholders interviewed in CHS agreed that neither policies nor strategies for PBL exist in the College.

5.2 Resources for PBL

The majority of respondents agreed that resources for PBL are insufficient. This is true for both human resources – not enough staff has sufficient knowledge about PBL – and for infrastructural resources,

where especially the number of computers and the reliability of Internet access seems to be unsatisfactory.

KNUST
To the question about which resources (human as well as infrastructural) are available for PBL, responses included the following:

- Lecturers
- General library
- Internet access
- Study space

When asked whether the existing resources were found to be sufficient, only 30% of educational managers found the resources to be sufficient. The proportion of teachers of the same opinion was 16% while 26% of students found the resources to be sufficient.

UG
Infrastructural resources such as research commons and departmental laboratories are mentioned in the mapping report from UG. Few departments have laboratories where students can do group work. Conc. human resources lecturers were mentioned as a key resource for PBL. Few lecturers were identified as having a PBL background and expertise in PBL.

Conc. sufficiency of resources it was generally agreed that UG does not have the needed resources, neither human resources nor infrastructural resources for effective PBL. Thus, there is a huge resource deficit of both infrastructural and human resources that should be addressed through provision of infrastructure and PBL training.

UDSM
Since PBL is almost non-existent at UDSM the UDSM mapping report does not mention any resources for PBL, nor does it specify anything about sufficiency of resources.

SUA
Infrastructural resources at SUA are not sufficient. There are not enough computers, the Internet connectivity is not reliable and there are not enough venues for handling group discussions in large classes. Human resources are also lacking, there are not enough instructors and many instructors are not aware of the concept of PBL.

KCMUCo
The college has very few teachers trained on PBL/TBL. However, all interviewed teachers were willing to be trained on TBL/PBL.

SUZA
Most lecturers at SUZA are aware of and integrate student-centered approaches to teaching and learning but there are no PBL experts in the University. The infrastructural resources are, however, limited. Among teachers there is agreement that resources are not sufficient while students interviewed are somewhat more positive conc. the availability of resources.

CHSZ
The college has good infrastructural resources for PBL. The human resources are also sufficient but the teachers do not have knowledge about PBL. The educational manager, teachers and students interviewed agreed on this.

5.3 Practices of PBL
The general situation concerning practices of PBL or similar student-centered teaching is that the majority of teachers in all institutions use traditional methods of teaching, i.e. lecturing. There are, however, in all institutions, possibly with the exception of UDSM, lecturers who apply PBL or other student-centered teaching approaches, sometimes without the lecturer being aware that this is what (s)he is doing. Also, such isolated cases are not scaled up to the entire institution anywhere.

KNUST

Participants in the mapping were asked whether they were aware of any teaching practices involving PBL or similar student centered teaching and learning approaches. To this 54% of the educational managers answered positively while only 19% of the teachers reported that they were aware of such practices. There are no PBL experts in KNUST but some of the respondents have some level of knowledge on PBL.

In the Student Survey 23% of student respondents said that they had been exposed to a student-centred teaching/learning approach in their studies.

UG

The Geography Department at UG is engaged in PBL practices more so than other departments, partly because many courses in the

Department involve practical field work, partly because a number of lecturers at the department have a PBL background. In general, however, the extent of PBL in UG is minimal, with only few lecturers reporting that they use it, while most say they do not use PBL. There appears to be limited knowledge on PBL, hence basic techniques such as case studies, term papers and group work are being practiced, while real industry based problem solving is not being practiced. Large class sizes and lack of discussion rooms tend to discourage PBL practices.

UDSM

From the mapping report it appears that the only student-centered teaching practices in UDSM are post graduate students doing social research in connection with writing their dissertations. There is little comprehension of what PBL actually is and the lack of knowledge and awareness suggested that PBL is not implemented in UDSM.

SUA

Most instructors use traditional methods of teaching, i.e. lecturing and students feel that they have no freedom to express their ideas in class. There are, however, instructors who give students assignments with topical issues related to existing problems in their locality, where students are supposed to find ways to solve the problem. Also case studies are used in SUA.

KCMUCo

The MEPI project mentioned above offers regular training on team based learning (TBL) but so far not more than 10 staff members have been trained on TBL. Some staff members are using TBL or PBL in their regular teaching but this has not been scaled up to the entire College, only the Departments of Anatomy, Parasitology and Community Health have adapted TBL/PBL as the mode of teaching.

SUZA

Some lecturers from Department of Education apply PBL in their teaching. This is confirmed by the students from the department

who indicate that most of the lecturers use student-centered approaches to teaching, giving students assignments where they have to find solutions. Also, one of the lecturers from Department of Kiswahili and two lecturers from Department of Secondary School are using student-centered approaches in many of their courses. In the Department of Medicine students have been doing group work in groups of 3 – 4 students, with the teacher as facilitator. In Department of Education second year students do projects that they present to their colleagues in class in the presence of the teacher.

CHSZ

The educational manager interviewed mentioned case study in the clinical area as an example of PBL practice. Out of the five teachers interviewed three say they are aware of PBL and one is practicing PBL by giving students case studies. Most students responded that they do not know problem based learning apart from the case study mentioned.

5.4 Experiences with PBL

The distinction between practices and experiences does not stand out clearly in the mapping reports, possibly because the common framework was not explicit on this distinction. There are positive comments from students who have been exposed to PBL and student-centered teaching about the suitability of such approaches. There are, however, also negative expressions from students about group work, in the form of complaints about lazy group members who do not participate in the work but are also not excluded from the group.

KNUST

The teachers and students were asked whether they have experience with practicing PBL or have been exposed to PBL. To this question 24% of teachers said that they have been utilizing PBL in their teaching and 38% of the students indicated that they have been exposed to PBL in the studies. The proportion of students exposed to PBL

varied considerably from study programme to study programme. From the Student Survey it appeared that the majority of the students who had been exposed to PBL were positive towards this experience.

UG

Experiences with PBL in UG are mixed. Students mentioned that working in teams helped them learn from colleagues, learn how to do team work, delegate tasks and make a presentation. Lecturers generally agreed with these positive statements about the impact of PBL. However, all stakeholders bemoaned the large class sizes that discourage PBL. Thus, large class sizes appear to be a key hindrance for effective PBL in UG. Another barrier is that there is no formal training on PBL for faculty in UG.

An issue brought up by students was that sometimes due to lack of time students do not go out of the University to gather data but instead 'manufacture data' at their desktop. Besides, students complained that sometimes group work was performed by only a few members while other group members only showed up to add their name and index number to the report shortly before handing in. There seems to be a problem with the formation of groups, because students tend to form groups with close friends and therefore they cannot or will not exclude the non-performers.

UDSM

No experiences with PBL have been reported from UDSM.

SUA

Generally, teaching at SUA is not prioritized, academic staff is more research driven and most instructors feel that they teach too much. Students, on their side, feel that the current curriculum has many courses in a semester and thus fear that introducing PBL will be an added burden as they will have several different problems to tend to at the same time. An interesting comment in the report points out that with the use of PBL there may be room for instructors to deliver

contents more effectively and thus getting more time for research while at the same time students have enough time to dig deep and learn independently trying to solve the given problem.

KCMUCo
Only few staff members have been trained on TBL/PBL and therefore only a few teachers (about 10) have experience with such teaching approaches. The majority of staff feel comfortable to use the old methods of teaching. Student respondents said that TBL helps slow learners.

SUZA
In Department of Education both teachers and students indicate that PBL is part of the teaching methodology used in most of the courses. Also in Department of Computer Science PBL is used, depending upon the nature of the course. In Department of Secondary School about 10 % of course work marks are obtained from PBL activities.

CHSZ
Please see section 5.3.

5.5 Needs for PBL
In most of the participating institutions stakeholders agreed on the need to have clearly formulated policies/strategies for PBL to ensure a university-wide roll-out of the PBL teaching approach. Other needs commonly agreed on were the following: Training of teachers on PBL; incentives for teachers who practice PBL and similar student-centered teaching approaches; reliable Internet connectivity; designated discussion rooms; laboratory equipment and materials for project work.

KNUST
Survey respondents (educational managers, teachers, students) were asked to express what in their opinion were the greatest needs concerning the introduction of PBL. All three groups of respondents agreed on the following two points as being important: Connecting students to industries; making materials needed for projects accessible and less expensive. Another need mentioned by educational managers was laboratory apparatus and equipment, while teaching staff pointed to the need for specific libraries for specific departments. Students found the greatest need to be computers with reliable Internet access.

UG
Among key needs expressed by all stakeholders were: Designated discussion rooms; smaller class sizes; incentive packages for lecturers for using PBL; training and orientation for lecturers and students. Educational managers indicated that the greatest need for PBL in UG was changing the mindset of teachers. This obviously calls for intensive orientation and training of teachers to understand the need for PBL. One expert mentioned that even though there are not enough lecturers with expertise in PBL, UG can make better use of those who are available to do more and to bring in more and more people in a snow ball effect. There is also a need to sensitize students to PBL.

Lecturers indicated that for PBL to be effective it should as a matter of policy be part of student assessment. The general assertion

among lecturers was that 30% marks on students' assessment compared to the 70 % final exam marks do not leave enough room to award students doing PBL adequately. Lecturers were therefore calling for more marks allocation to assessment so that PBL can be adequately rewarded.

UDSM

The needs formulated by stakeholders under the heading of Policies and guidelines include: A stand-alone policy on PBL; PBL activities integrated into the university curriculum; an incentive package put in place to reward PBL efforts at departmental and university levels; PBL should be made mandatory. Other needs formulated include intensive pedagogic training programme on PBL, designed to impart and refresh knowledge and skills to newly recruited teaching staff and to in-service teaching staff, respectively.

SUA

The recommendations from the PBL working Group at SUA who carried out the mapping survey are the following: Laws, policies and regulations of SUA and TCU in general should stipulate guiding framework on the use of PBL; thorough training is required before formally introducing PBL at SUA; the current curriculum include many subjects per semester and there is a need to reduce the number of courses undertaken per semester, f.ex. by introducing modular or block teaching/learning.

KCMUCo

The greatest needs identified at KCMUCo are the following: A stand-alone policy on PBL/TBL; training courses on TBL and PBL to prepare faculty members and students for new methods; TBL and PBL activities must be integrated in the curriculum and scaled up to the entire college, not only to medical doctor students; learning space and seminar rooms must be available if all students are to use TBL/PBL.

SUZA

Educational managers at SUZA are eager to have a PBL policy. Most teachers expressed a need for PBL training and for modifying the existing curriculum to PBL. Also the need for computers with reliable Internet access was commonly agreed. Other needs expressed by teachers from Department of Education were textbooks for referencing and labs for practicals. Students all agreed on the need for permanent and effective Internet connectivity and availability and accessibility of computers at any time. They also expressed the need for training of lecturers on PBL as well as for PBL expertise that students can use effectively.

CHSZ

The educational manager at CHSZ indicated that there is a need to introduce PBL so as to help students to explore ideas in real life situations. This sentiment was shared by teachers and the IT expert, with a variety of arguments: It will help the College to utilize the resources available; it will reduce the work load; it will help the students to gain broad knowledge and skills on the subject matter; it will teach the students critical thinking and problem solving; it will help teachers to concentrate on other activities; it will provide quality health education.

6. Conclusion

This last chapter summarizes and concludes on the mapping study. In the first section findings concerning e-learning are summarized, followed by the second section that contains a short discussion on the status of e-learning. In the third section the findings concerning PBL are summarized, followed by section 4 that contains a discussion on the status of PBL. In the fifth and last section an overall discussion and conclusion is presented.

6.1 Summary of findings on e-learning

The findings on e-learning from chapter 4 are repeated below.

Policies and strategies on e-learning

Most of the institutions have a form of ICT strategy but only the three largest institutions (KNUST, UG and UDSM) have an e-learning policy of some kind. The policy has not been translated into an action plan for e-learning in any of the institutions and there is no imperative for teachers to use e-learning.

Resources for e-learning

Some universities, such as e.g. UG, KCMUCo and UDSM, have recently expanded their ICT services, including e-learning, thanks to external funding. The perception of what constitutes infrastructural e-learning resources varies from institution to institution. In all institutions computers and Internet access is seen as the main resources for e-learning, while some institutions also include, for example, projectors and public address systems as e-learning resources. The bandwidth varies considerably, from 256 Kbps to 40 Mbps.

In almost all institutions, respondents agree on the insufficiency of resources for e-learning, in some institutions mainly the infrastructural resources, in others the human resources and in some both types of resources are in short supply.

Practices of e-learning

In general, e-learning courses are the efforts of individual lecturers in certain departments. Moodle or similar LMS platforms are in place in most institutions and e-mails, websites, Facebook and other social media, such as, LinkedIn, Twitter and Instagram, are the most widely used e-learning applications. Most teachers are aware of e-learning but the use of e-learning is rather limited in most institutions, mainly due to the lack of training.

Experiences with e-learning

The experiences from the South institutions are mixed, with some respondents in some of the institutions having positive experiences while other respondents in the same or other institutions have frustrating experiences. Several obstacles limit the growth of ICT and e-learning and contribute to the frustrating experiences, including: Unreliable power supply with frequent power outages and fluctuations; unreliable and/or slow Internet connectivity; lack of awareness of existing ICT services; lack of coordination across campuses and departments; lack of instructor incentives to integrate technology with teaching and research.

Needs for e-learning

The need for improvement of infrastructural resources (reliable power supply, working computers, increased bandwidth, reliable Internet

35

connectivity, Internet wireless access) is common to most institutions. Also, the need for a university policy and/or action plan as well as for systematic integration of technology into teaching and learning is a common concern. Common to all institutions is the need for awareness-raising to overcome resistance and create motivation. Similarly, training on e-learning for teachers, students and e-learning experts alike is needed.

6.2 Status of e-learning

The level of awareness about e-learning is fairly high in all institutions, although the perception of what comprises e-learning varies and not all lecturers are familiar with the concept. However, the actual use of e-learning seems to be fairly limited and to be mainly the initiative of individual lecturers in certain departments, and in a number of institutions with support from external funding. The majority of lecturers in the institutions do not use e-learning.

The main barriers to the introduction and enhanced use of e-learning are: The lack of a clear e-learning policy supplemented by an action plan from university management; insufficiency of infrastructural resources, spanning from reliable electricity supply to fast, reliable and accessible Internet connectivity; insufficiency of human resources, including lecturers with e-learning experience, e-learning specialists and IT technicians; lack of incentives for lecturers who introduce e-learning and other new approaches to teaching.

6.3 Summary of findings on PBL

The findings on PBL from chapter 5 are repeated below.

Policies and strategies on PBL

By far the majority of stakeholders interviewed in the 7 institutions state that neither policy nor strategy on PBL or similar student-centered teaching approaches exists within the institution. In several universities stakeholders interviewed have expressed a need to have such policies or strategies.

Resources for PBL

The majority of respondents agreed that resources for PBL are insufficient. This is true for both human resources – not enough staff has sufficient knowledge about PBL – and for infrastructural resources, where especially the number of computers and the reliability of Internet access seems to be unsatisfactory.

Practices of PBL

The general situation concerning practices of PBL or similar student-centered teaching is that the majority of teachers in all institutions use traditional methods of teaching, i.e. lecturing. However, in all institutions, possibly with the exception of UDSM, there are lecturers who apply PBL or other student-centered teaching approaches, sometimes without the lecturer being aware that this is what (s)he is doing. Also, such isolated cases are not scaled up to the entire institution anywhere.

Experiences with PBL

The distinction between practices and experiences does not stand out clearly in the mapping reports, possibly because the common framework was not explicit on this distinction. There are positive comments from students who have been exposed to PBL and student-centered teaching about the suitability of such approaches. There are, however, also negative expressions from students who have been exposed to group work, in the form of complaints about lazy group members who do not participate in the work but are also not excluded from the group for this reason.

Needs for PBL

In most of the participating institutions stakeholders agreed on the need to have clearly formulated policies/strategies for PBL to ensure a university-wide roll-out of the PBL teaching approach. Other needs commonly agreed on were the following: Training of teach-

ers on PBL; incentives for teachers who practice PBL and similar student-centered teaching approaches; reliable Internet connectivity; designated discussion rooms; laboratory equipment and materials for project work.

6.4 Status of PBL

The level of awareness and knowledge about PBL is rather low at all institutions although an encouraging curiosity and interest in learning about PBL was demonstrated by lecturer respondents in most institutions. In spite of the low level of awareness, isolated pockets of PBL or similar student-centered teaching approaches are found in all institutions, sometimes without the lecturer being aware that (s)he is practicing what might be called PBL. However, these isolated cases are given little credit, if any at all, and are not scaled up to the level of the entire institution anywhere.

Main barriers identified to the introduction of PBL or similar student-centered approaches to teaching are: Lack of a policy and an action plan for the introduction and use of student-centered teaching methods; lack of awareness about these teaching methods; lack of pedagogical training in general and on student-centered teaching approaches specifically; lack of incentives for lecturers who on their own initiative introduce such teaching approaches.

6.5 Discussion and conclusion on e-learning and PBL

Based on the findings summarized and discussed above it can be concluded that, generally speaking, the awareness of e-learning in the institutions is higher than the awareness of PBL and the use of e-learning is also more widespread than the use of PBL. In some instances, teaching activities that might not qualify as e-learning in a more restricted definition, such as using projectors or public address systems, is included in the findings. In other instances, it appears that some teachers are using teaching approaches that might qualify as PBL although the lecturer may not be aware of PBL.

Overall, there seems to be consensus among the participants in the BSU e-learning and PBL project about the usefulness of e-learning and PBL and the need to introduce these approaches to teaching and learning in African universities. There are, however, a number of issues that need to be addressed before effective use of e-learning and PBL can be implemented within the institutions. One such issue is the lack of resources, specifically the lack of adequate infrastructural resources, such as computers, Internet connectivity etc. that may hamper effective use of e–learning. Also, the lack of well trained and knowledgeable teaching staff for e-learning and PBL is an issue that needs to be considered, together with the lack of e-learning and PBL expertise within the institutions.

Some institutions mention the lack of infrastructural resources, such as computers, Internet access and discussion rooms as barriers to introducing PBL. In the opinion of the authors of this report, the lack of such resources is not necessarily a valid reason for not introducing

PBL. PBL was applied in universities long before the Internet was invented. When motivated by working on real life problems students will find suitable locations for group discussions without necessarily having a group room of their own.

Rather than focusing only on the resources lacking, a more constructive approach might be to focus also on what is already available in terms of those lecturers in every institution who, in the face of all the above obstacles, practice e-learning and PBL and who obtain positive results with their students when doing so. These individual initiatives should be supported, knowledge about them should be shared across the institution and the initiatives should be scaled up to university-wide application.

Annex 1. Common Mapping Framework

Instrument for e-learning mapping

The proposed matrix for mapping of e-learning is shown in Table 1.

	A. Educational managers	B. Teachers	C. Students	D. Experts (e-learning /education)	E. IT experts
1. Policies and strategies	X	X		X	X
2. Resources (human and infrastructure)	X	X	X	X	X
3. Practices	X	X	X	X	X
4. Experiences		X	X	X	X
5. Needs	X	X	X	X	X
Data collection methods	Individual interviews	Individual/focus group interviews	Focus group interviews	Individual interviews	Individual interviews

Table 1: Proposed matrix for the e-learning instrument

A. List of questions to educational managers

1. Background information (position, educational background, work experience etc.).
2. Does the university/college/department (u/c/d) have a policy and/or a strategy for introducing e-learning? If Yes, please elaborate – if possible please provide a written copy of the policy/strategy. If no, do you feel there is a need to get one?
3. If yes in no. 2: Has the policy/strategy resulted in an action plan? If yes, please elaborate – if possible please provide a written copy of the action plan.
4. Could you please tell us which resources, both human and infrastructural, the u/c/d has at present for e-learning?
5. Does the u/c/d in your opinion have sufficient resources, both human and infrastructural, for e-learning?
6. Are you aware of any teaching practices including e-learning within the u/c/d? If Yes, please elaborate - if possible please provide names of teachers working with e-learning.
7. What are in your opinion the greatest needs conc. introduction of e-learning within the u/c/d?

B. List of questions to teachers

1. Background information (position, educational background, work experience etc.).
2. Are you aware of any policy and/or strategy of this u/c/d for introducing e-learning? If Yes, please elaborate. If no, do you feel there is a need to get one?
3. If yes in no. 2: Are you aware of any action plan resulting from such policy/strategy? If Yes, please elaborate.
4. Are you using e-learning in any of your teaching activities? If Yes, please elaborate on your experiences.
5. Are you aware of any colleagues who use e-learning in their teaching? If yes, please elaborate.
6. Could you please tell us which resources for e-learning, both

human and infrastructural, you are aware of within the u/c/d?
7. Does the u/c/d in your opinion have sufficient resources, both human and infrastructural resources, for e-learning?
8. What are in your opinion the greatest needs conc. introduction of e-learning within the u/c/d?

C. List of questions to students

1. Background information (study programme and semester level).
2. Have you been using or are you at present using e-learning in any of your study activities? If Yes, please elaborate on your experiences – please include institutional and teacher support for such activities. If no, would you like to be able to have access to e-learning opportunities in the future?
3. Could you please tell us which resources for e-learning, both human and infrastructural, you are aware of within the u/c/d?
4. Does the u/c/d in your opinion have sufficient resources, both human and infrastructural resources, for e-learning?
5. What are in your opinion the greatest needs conc. e-learning within the u/c/d?

D. List of questions to e-learning and/or educational experts

1. Background information (position, educational background, work experience etc.).
2. Are you aware of any policy and/or strategy of this u/c/d for introducing e-learning? If Yes, please elaborate. If no, do you feel there is a need to get one?
3. If yes in no. 2: To which extent have you as an expert on e-learning/education been involved in formulating the policy/strategy?
4. If yes in no. 2: Are you aware of any action plan resulting from such policy/strategy? If Yes, please elaborate.

5. If yes in no. 4: To which extent have you as an expert on e-learning/education been involved in formulating the action plan?
6. Are you involved in training teachers in the u/c/d to use e-learning in their teaching activities? Would you be willing to participate as a trainer in the BSU e-learning and PBL project?
7. Are you using e-learning in any of your own teaching activities? If Yes, please elaborate on your experiences.
8. Are you aware of any colleagues who use e-learning in their teaching? If yes, please elaborate.
9. Could you please tell us which resources for e-learning, both human and infrastructural, you are aware of within the u/c/d?
10. Does the u/c/d in your opinion have sufficient resources, both human and infrastructural resources, for e-learning?
11. What are in your opinion the greatest needs conc. introduction of e-learning within the u/c/d?

E. List of questions to IT-experts

1. Background information (position, educational background, work experience etc.).
2. Are you aware of any policy and/or strategy of this u/c/d for introducing e-learning? If Yes, please elaborate. If no, do you feel there is a need to get one?
3. If yes in no. 2: To which extent have you as an IT expert been involved in formulating the policy/strategy?
4. If yes in no. 2: Are you aware of any action plan resulting from such policy/strategy? If Yes, please elaborate.
5. If yes in no. 4: To which extent have you as an IT expert been involved in formulating the action plan?
6. Are you involved in training teachers in the u/c/d to use e-learning in their teaching activities? Would you be willing to participate as a trainer in the BSU e-learning and PBL project?

7. If you are teaching yourself: Are you using e-learning in any of your own teaching activities? If Yes, please elaborate on your experiences.
8. Are you aware of colleagues who use e-learning I their teaching? If yes, please elaborate.
9. Could you please describe the infrastructural resources that are presently available in the u/c/d for e-learning?
10. Does the u/c/d in your opinion have sufficient infrastructural resources for e-learning?
11. What are in your opinion the greatest needs conc. introduction of e-learning within the u/c/d?

Instrument for problem based learning (PBL) mapping

The proposed matrix for mapping of PBL is shown in Table 2.

	A. Educational managers	B. Teachers	C. Students	D. Experts (PBL/education)
1. Policies and strategies	X	X		X
2. Resources (human and infrastructure)	X	X	X	X
3. Practices	X	X	X	X
4. Experiences		X	X	x
5. Needs	X	X	X	X
Data collection methods	Individual inter-views	Individual/focu s group inter-views	Focus group interviews	Individual inter-views

Table 2: Proposed matrix for the PBL instrument

A. List of questions to educational managers

1. Background information (position, educational background, work experience etc.).
2. Does the university/college/department (u/c/d) have a policy and/or strategy for introducing problem based learning (PBL) or similar student centered teaching and learning? If Yes, please elaborate – if possible get a written copy of the policy/strategy. If no, do you think there is a need to get one?
3. If yes in no. 2: Has the policy/strategy resulted in an action plan? If yes, please elaborate – if possible get a written copy of the action plan.
4. Could you please tell us which resources, both human and infrastructural, the u/c/d has at present for PBL or similar student centered teaching and learning (for example, teachers trained to undertake such teaching; infrastructural resources, such as libraries, study space for teams, computers with Internet connection etc.)?
5. Does the u/c/d have sufficient human and infrastructural resources for PBL or similar student centered teaching and learning?
6. Are you aware of any teaching practices including PBL or similar student centered teaching and learning within the u/c/d? If Yes, please elaborate - if possible please provide names of teachers practicing such teaching.
7. What are in your opinion the greatest needs for PBL or similar student centered teaching and learning within the u/c/d?

B. List of questions to teachers

1. Background information (position, educational background, work experience etc.).
2. Are you aware of any policy and/or strategy of this u/c/d for introducing PBL or similar student centered teaching and learning? If Yes, please elaborate. If no, do you feel there is a need to get one?
3. If yes in no. 2: Are you aware of any action plan resulting from such policy/strategy? If Yes, please elaborate.
4. Are you practicing any form of PBL or similar student centered teaching and learning in any of your teaching activities? If Yes, please elaborate on your experiences. If no, please explain your opinion on the utility of/need for PBL or similar student centered teaching and learning approaches.
5. Are you aware of any colleagues who practice PBL or similar student centered teaching and learning? If yes, please elaborate.
6. Could you please tell us which resources for PBL or similar student centered teaching and learning, both human and infrastructural, you are aware of within the u/c/d (for example, teachers trained to undertake such teaching; infrastructural resources, such as libraries, study space for teams, computers with Internet connection etc.)?
7. Does the u/c/d in your opinion have sufficient resources for PBL or similar student centered teaching and learning?
8. What are in your opinion the greatest needs conc. introduction of more student centered teaching and learning approaches within the u/c/d?

C. List of questions to students

1. Background information (study programme and semester level).
2. Have you at any time in connection with your studies here at the u/c/d been exposed to student centered teaching/learning, i.e. a situation where you as a student were working together with other students on analyzing and solving a real life problem? If Yes, please elaborate on your experiences, including institutional and teacher support for such activities.
3. Could you please tell us which resources for PBL or similar student centered teaching and learning, both human and in-

frastructural, you are aware of within the u/c/d (for example, teachers trained to undertake such teaching; infrastructural resources, such as libraries, study space for teams, computers with Internet connection etc.)?

4. Does the u/c/d in your opinion have sufficient resources for practicing student centered teaching and learning (for example, teachers trained to undertake such teaching; infrastructural resources, such as libraries, study space for teams, computers with Internet connection etc.)?

5. What are in your opinion the greatest needs conc. introduction of more student centered teaching and learning approaches within the u/c/d?

D. List of questions to PBL and/or educational experts

1. Background information (position, educational background, work experience etc.).

2. Are you aware of any policy and/or strategy of this u/c/d for introducing PBL or similar student centered teaching and learning? If Yes, please elaborate. If no, do you feel there is a need to get one?

3. If yes in no. 2: To which extent have you as an expert on PBL /education been involved in formulating the policy/strategy?

4. If yes in no. 2: Are you aware of any action plan resulting from such policy/strategy? If Yes, please elaborate.

5. If yes in no. 4: To which extent have you as an expert on PBL/ education been involved in formulating the action plan?

6. Are you involved in training teachers in the u/c/d to use PBL or similar student centered teaching and learning in their teaching activities? Would you be willing to participate as a trainer in the BSU e-learning and PBL project?

7. Are you using PBL or similar student centered teaching and learning in any of your own teaching activities? If Yes, please elaborate on your experiences.

8. Are you aware of colleagues who use PBL or similar student

centered teaching and learning in their teaching? If yes, please elaborate.

9. Could you please tell us which resources for PBL or similar student centered teaching and learning, both human and infrastructural, you are aware of within the u/c/d (for example, teachers trained to undertake such teaching; infrastructural resources, such as libraries, study space for teams, computers with Internet connection etc.)?

10. Does the u/c/d in your opinion have sufficient resources for practicing student centered teaching and learning (for example, teachers trained to undertake such teaching and infrastructural resources, such as libraries, study space for teams, computers with Internet connection etc.)?

11. What are in your opinion the greatest needs conc. introduction of more student centered teaching and learning approaches within the u/c/d?

Annex 2: Table of Mapping Documents

Institution	Mapping Briefs	Mapping Reports
KNUST	Student survey – link: https://docs.google.com/forms/d/1p-k2LXZtrENH7hpsszPcunuUtQPoaKLxir1geUa-iHSk/viewanalytics	Draft Report on Mapping of e-Learning and Problem Based Learning (PBL) at KNUST – link: https://bsulearning.org/pluginfile.php/1037/mod_folder/content/0/KNUST-MAPPING%20REPORT%20E-Learning-PBL.docx?forcedownload=1
UG	Summary - BSU UG II Progress of Work – link: https://bsu-learning.org/pluginfile.php/573/mod_folder/content/0/Ghana%2C%20UG/UG%20ELPBL%20Update.docx?forcedown-load=1	Building Stronger Universities (BSU) Mapping Study on Problem Based Learning (PBL) in the University of Ghana – link: https://bsulearning.org/pluginfile.php/1037/mod_folder/content/0/UG_PBL%20MAPPING%20STUDY.pdf?forcedownload=1 BSU Mapping Study on the State of e-Learning in the University of Ghana, Legon – link: https://bsulearning.org/pluginfile.php/1037/mod_folder/content/0/UG_
UDSM	Brief on Mapping e-Learning /PBL at University of Dar es Sa-laam – link: https://bsulearning.org/pluginfile.php/573/mod_folder/content/0/Tanzania%2C%20UDSM/Brief%20on%20Mapping%20E.doc?forcedownload=1	BSU e-Learning /PBL/TBL Project – UDSM Mapping Report - link: https://bsulearn-ing.org/pluginfile.php/1037/mod_folder/content/0/Comprehensive%20map-ping%20report.UDSM.doc?forcedownload=1
SUA		BSU Electronic Learning (e-Learning) and Problem Based Learning (PBL) Project – e-Learning Working Group – link: https://bsulearning.org/pluginfile.php/1037/mod_folder/content/0/SUA_BSU%20report_e-learning%20working%20group%20ver4.pdf?forcedownload=1 BSU e-Learning and Problem Based Learning (PBL) Project – PBL Working Group – link: https://bsulearning.org/pluginfile.php/1037/mod_folder/content/0/SUA_PBL_
KCMUCo		BSU/KCMUCo e-Learning /PBL/TBP Project – KCMUCo Mapping Report – link: https://bsulearning.org/pluginfile.php/1037/mod_folder/content/0/KCMC_map-ping%20report.docx?forcedownload=1
SUZA	PBL Brief Mapping Report – link: https://bsulearning.org/pluginfile.php/573/mod_folder/content/0/Tanzania%2C%20SUZA/PBL%20BREIF%20MAPPING%20REPORT.docx?force-download=1	Mapping Highlight Report – link: https://bsulearning.org/pluginfile.php/1037/mod_folder/content/0/SUZA_MAPPING%20HIGHLIGHT_SUZA_AND_ZCHS.docx?-forcedownload=1
CHSZ		Mapping Highlight Report – link: https://bsulearning.org/pluginfile.php/1037/mod_folder/content/0/SUZA_MAPPING%20HIGHLIGHT SUZA_AND_ZCHS.docx?- forcedownload=1 E-Learning and Problem Based Learning Report – link: https://bsulearning.org/pluginfile.php/1037/mod_folder/content/0/CHS%20MAPPING%20ACTIVITIES%20RESULTS%202015_SL.doc?forcedownload=1