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Technology-Driven Curriculum and Development of Employability Competencies amongst Students in the University of Bamenda: The Case of H.I.C.M.

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Abstract: *The study examines the relationship between Technology- driven Curriculum and Development of Employability Competencies amongst Students in the University of Bamenda (UBa): The case of H. I.C.M. The argument of this study is anchored on Connectivism learning theory of Seimen and Downes, Diffusion of Innovation (DOI) Theory by Rogers, and the Theory of Human Capital by Becker and Schultz. The study employed the causal comparative research designs with a sample of 200 students and 4 teachers, derived using the purposive sampling technique. The data was collected using a questionnaire. Pearson Product Moment Co-relation Coefficient was used to establish the nature of the relationship between variables. The regression analysis was used to further test the hypotheses at 0.05 level of significance. The findings of the study revealed a significant positive relationship between technology-driven curriculum content, experiences and assessment strategies and development of employability competencies as this was backed by the correlation coefficient and coefficient of determination results which stood at (0.771, 0.593), (0.447, 0.200) and (0.790, 0.624) respectively. From the findings, the study recommended that technology-driven curriculum be intensified in H.I.C.M. in UBa by policy makers and university authorities. A strong university-industry partnership should be created to help students match theory with practice and sufficient practical training be given to teachers who will be the ones to implement a technology-driven content.*

Keywords: *Technology, Curriculum, technology-driven curriculum, employability, competencies.*

INTRODUCTION

According to Iva (2019), digital technology has transformed many areas of the economy and will soon be at the core of most industries including education. It is for such reason that ICTs were officially introduced into education in 2001 by the president of Cameroon; computers donated to state universities students, a good number of decrees signed by the government. Nevertheless, it is important to teach students digital skills so they can become a generation that is ready to compete in a global market. The interactive approach of educational technology encourages students to obtain digital skills, which will be vital to succeed in the labour market. In order that education should fully transform the nation by people with competencies in technology, the curriculum has to be carefully handled. According to Endeley and Zama(2021), curriculum is a process that determines the knowledge, values, attitudes, and experiences that students acquire inside and outside the school. In order to ensure that students develop abilities that will enable them do things well in this digital age, the curriculum have to be technologically driven; reasons being that, technology is rapidly evolving. Technology-driven curriculum is therefore the integration of both software and hardware into the teaching learning process. The acquisition of knowledge and means of communication is easier and less time consuming due to the advanced technology

available (Kibinkiri, 2014). Hence, the world at large is moving towards a technology-driven curriculum. The reason behind this is to improve the effectiveness of the teaching and learning process in order to bring up citizens with competencies needed by the 21st century job market. This assertion is backed by Elington et al. (1993), as cited by Koh& Lim (2008), who state that, "Technology has been used in many diverse and innovative ways in education context".Koh& Lim highlighted four key technologies film, television, computers and internet have enabled the utilization of Information Technology (IT) for education. According to School of Education Online Programs (2020), through the use of technology, in and out of the classroom, students can gain 21st century employability competencies necessary for future occupations. Employability competencies are the acquisition of skills, abilities, and attitudes that make someone desirable for an organization. With the advent of technology and its supposed benefits, Cameroon has not relented its efforts, thus ensuring that students upon graduation from schools should develop competencies that will enable them integrate easily into the changing world of technology.

Statement of the Problem

Taking into cognizance the fact that technology is engulfing almost all spheres of life in the world including Cameroon, the educational system of the UBa specifically H.I.C.M. is not left out. To ensure that upon graduation students must have mastered skills, attitudes and abilities needed for the 21st century, the Head of State has donated laptops to students. UBa has equally created a central ICT laboratory and also put in place an online Learning Management System (LMS) to facilitate teaching and learning. In spite of all these efforts by the state and the authorities of the UBa to promote a technology-driven curriculum, it has been observed that, it remains unclear how these efforts have influenced students' acquisition of competencies for coping with life in the 21st century. It is against this back drop that this study sets out to investigate if technology driven curriculum has the potential to help students of the UBa specifically students of H.I.C.M. develop the competencies that will help them integrate smoothly in the technological world.

Research Questions

Main research question

What is the relationship between technology-driven curriculum and development of employability competencies amongst students?

Specific Research Questions

- What is the relationship between Technology-driven curriculum content and the development of employability competencies amongst H. I.C.M students in the UBa?
- What is the relationship between Technology-driven curriculum experience and the development of employability competencies amongst H. I.C.M students in the UBa?
- What is the relationship between Technology-driven curriculum assessment strategies and the development of employability competencies amongst H. I.C.M students in the UBa?

Literature Review

Technology is fast gaining grounds in the world at large and it is emerging as an important catalyst for transformation of business, government, society and education in the 21st century. The curriculum in any educational institution is the roadmap for teachers and learners hence, it is imperative that for any curriculum created should be technology-driven. Twining et al (2021) and Nitin (2023), are of the view that higher education institutions need to incorporate technology into their curriculum in order to offer a dynamic and collaborative learning experience to students. Wixom & Watson (2001) confirmed that technology has facilitated packaging of information and sending the same information across the world at a minimal cost. In this light, to develop a

responsive approach considering technology driven curriculum, content, experience and assessment strategies should be appropriately used for the development of employability competencies in students.

Classroom Technology

The dynamic nature of technology has contributed to the existence of various definitions by different authors in relation to teaching and learning. Technology is a term dating back to the early 17th century that meant "systematic treatment". Technology is the application of scientific knowledge of the practical aims of human life. The use of technology in higher education such as digital learning platforms and interactive multimedia is already improving classroom engagement, educational outcomes as well as the employability competence in students. Thus higher education institution must focus on creating a technology-driven curriculum for students with the help of smart education apps as this can help students learn in a better and efficient manner. Technology advancements have led to significant changes in society as it has lowered barriers to communication and ushered in the knowledge economy. While technology contributes to economic development and improves human prosperity, it can also have it negative impact on it not properly managed.

Curriculum

The word curriculum is derived from the Latin words currus and cerrere. Currus is a noun meaning a racecourse, and cerrere is the infinitive verb which means to run. This may be translated literary as, "to run through a racecourse". Appling this to education and particularly to schooling, this will mean going through the educational route provided by a school for its students through its schedule of activities. Curriculum definitions are often perceived as debatable, problematic, and even confusing. Apparently, the term has a long history that has affected its conceptualization at various points in time, despite its constant use in education and the development of study areas in the field of curriculum. However, different perspectives abound in the definition of the word curriculum describing it as a subject, a plan, a product, a process, learning experiences among others Bilbao (2012) & Sweet land (2012). The definitions of curriculum can be stated in the prescriptive form or the descriptive form. Prescriptive definitions state what ought to happen, and usually take the form of a plan, an intended program, or the opinion of an expert about what need to take place in the course of the study. Descriptive definitions on the other hand, present the situation as it is in the classroom. Endeley& Zama (2021) viewed curriculum from the descriptive point as comprising all the planned and unplanned content activities implemented in the classroom as well as other school-related activities outside the classroom which directly or indirectly enrich learners' experiences". The concept of curriculum has different attributes and different dimensions. Some of these attributes according to Tambo, (2012) are the written curriculum, taught curriculum, tested curriculum, co-curriculum, hidden curriculum, and the null curriculum. Ornstein &Hunkins (2018), viewed curriculum as a development process which involves stages such as planning, designing, developing, implementing and evaluating the learning experiences in the schooling process. Another dimension of the concept of curriculum, is the components of the curriculum. There are four main components of a curriculum plan which include: goals and objectives, content or subject matter, experiences, and evaluation or assessment devices. This study is limited to the component of the curriculum; curriculum content or subject matter, curriculum experiences which comprises of instructional methods, instructional activities and instructional materials and curriculum assessment strategies.

Curriculum content can be defined as the integration of facts, concepts, principles, theories and laws, thinking skill, manipulative skills, values and attitudes, and generalizations that constitute the subject matter of each discipline, subject or area of study that combine to make up the entire curriculum of the school or school system (Tambo, 2012). Content is a medium through which objectives are realized. It is drawn on the bases of problems, themes, topics, subtopics and images. Chongwain (2016) and Cerezo (2020), are of the view that the curriculum content must be selected considering factors such as validity, significance, learner interest, learnability, and usefulness. The curriculum should not be too loaded with subject matter because of time constrain, availability of resources, and expert staff. Designing curriculum content according to Kopas-Vukašinović & Savic (2020) should include empowering the learner with the ability to think, explore, be involved in the learning process and express own creative potentials

Endeley and Zama (2021), define curriculum experiences as the instructional strategies used to transmit organized knowledge. These curriculum experiences include instructional activities, methods and materials which convert the curriculum content into learning experiences and produce learning outcomes. Instructional method can as well be referred to the kinds of instructional ways or activities that are being used to guide the facilitation of learning in each stage of the instructional process. It requires aspects like: methodology that is appropriate for the class, provide balance of teacher/ student talk, make effective use of media, illustrations, resources, use effective questioning techniques, create new activities to ensure understanding of task, devote appropriate time to task. Curriculum assessment is a key component of the teaching learning process in that, it helps teacher and school system to know the extent to which the learners are achieving the learning objectives. It therefore refers to the process of measuring and judging the extent to which the planned courses, programs, learning activities which are express in the formal curriculum actually produce the expected results (Tambo, 2012).

Technology-driven curriculum

Technology-driven curriculum has been defined as inserting ICT into the formal curriculum to help teachers and students come to terms with the rich implications of digital literacy in order to prepare them for a number of technology related fields. A technology-driven curriculum can also be defined as a comprehensive collection of resources that are licked to learning standards and expectations, these resources come in the form of texts, video, images, audio, and interactive media (Buckingham and McFarlane, 2000).Technology-driven curriculum is a curriculum that focuses on technology-based teaching and learning in schools. According to Altrogge & Parks (2021), teaching and learning which can also be referred to as instructional engagement is enhanced using both hybrid, or distance learning approaches which is based on technology support as the way through which the learners engage with new information to be learned.

Technology is used to bring real-world examples into the classroom to promote concepts in the content/subject matter. It helps students learn by participating in classroom activities - doing, interacting, and exploring. NCES (2008). The use of technology includes simulations, Web experiments, and Web field trips which enable students to understand the concepts taught better. Some infrastructure required to operate and support technology integration in schools include at the basic level electricity, Internet service providers, routers, modems, and personnel to maintain the network, beyond the initial cost of the hardware and software. Technology integration is the incorporation of technological resources and technology-based practices into the daily routines works of schools management. Technological resources include computers, specialized software, network-based communication systems amongst others. Integrating technology according to Grinter & Edwards (2005) equips learners with knowledge and skills allows for easier learning. However, these technological resoureces require infrastructure, continual maintenance, and repair. One determining element, among many, in how these technologies can be used for curricula

purposes and whether or not they will be successful. Beaver & Moore (2004) are of the opinion that curriculum experts and educators need to focus on the integration and use of technology and technology-centered professional development which will improve the teachers' effectiveness and enhance learners understanding of concepts.

Effective technology integration into schools' curricula has the ability to improve student learning outcomes and provide technological and informational skills to compete in the 21st century. These skills include communication, collaboration, critical thinking, and creativity. Aslan& Chang (2015), are of the view that technology-enhanced learning experiences may also help student develop 21st century competencies such as critical thinking, communication and leadership skills, and innovativeness. These skills are essential and enhance employability competences in the 21st century learner.

Employability

Numerous studies have extensively investigated the concept of employability, and this given rise to extensive definitions of the concept. Employability, according to Yorke (2006), traces its roots back to education, focusing on related achievements and the graduates' ability to perform job functions; and contrary to popular belief, it is not all about securing a job. Therefore, according to educational institutes, employable graduates are those that have the skills and competencies that guarantee their employment. There are two broad categories under employability (Harvey, 2001); the student's ability to secure a job after graduating and empowering the student to become a life-long learner by equipping them with the necessary knowledge, skills, attitudes, and abilities. Many of the most highly-offered skills today are soft skills pertaining to your ability to communicate and work with a team or hard skills focused on technology. They demand skills that make you successful candidate for employment when you are job hunting or seeking for promotion (Alison, 2020).

Employability skills are the core skills and traits needed in nearly every job. These are the general skills that make someone desirable to an organization. Some of these skills include: communication, ethics, team work, critical thinking, and computer skills among others. Therefore employability competencies are those attribute the students need for action when they entered the job market upon graduation. These attributes include: acquisition of communication skills, Collaborative skills, Problem solving, ICT literacy, Critical thinking, Team work, self-management, Initiative and enterprise planning, Learning skills

Competencies

Competencies refer to the knowledge that the students will acquire that will help them to easily integrate in the technological world and carry out the skills required of that student, and such skills include: communication skills, problem solving skills, literacy in ICTs among others. With this, it is only a technology-driven curriculum that will impact students with these competencies that are needed and which will help them to flow easily into the digital world. Garavan & McGuire (2001), acknowledged that the term "competence" has no generally acceptable operational definition. To them, competence is "an action, behaviour or outcome which a person should be able to demonstrate". This definition focuses on what a person can do, According to the National Post-Secondary Education Cooperative (2002), competency as the combination of skills, abilities, and knowledge needed to perform a specific task. According to UNESCO (2015), "competences describe the specific attributes individuals need for action and self-organization in various complex contexts and situations. They include cognitive, affective, volitional and motivational elements: hence they are interplay of knowledge, capacities and skills, motives and affective dispositions". Despite the variation in the definitions, the definitions stress the fact that

competence is both a physical and an intellectual ability to do something well through repeated experiences.

METHODOLOGY

This study adopted the causal comparative or expost-facto research design. The purpose of this research design is to identify functional relationship among phenomena by relating their occurrence to hypothesized factors or conditions. The population of this study was made up of all 1,162 students and all 17 permanent lecturers of High Institute of Commerce and Management (H.I.C.M) in the University of Bamenda (admission and records office H.I.C.M., 2022). The target population comprised final year students and permanent teachers of the High Institute of Commerce and Management. The accessible population was made up of all level 400 and level 600 students of the school. A sample size of 200 students and 4 teachers was obtained using the purposive sampling techniques.

A 4-point Likert scale questionnaire was used. The instrument was coded as follows: Strongly Agree (SA) = 4, Agree (A) =3, Disagree (D) =2 and Strongly Disagree (SD) =1. The instrument was validated through a pilot test using 25 level 300 HICM students of the University of Bamenda who were not part of the sample. The interview guide was also pretested using two level 300 teachers of HICM. Reliability was determined using the Cronbach Alpha (α) Coefficient and the analysis indicated acceptable reliability values of 0.81. The Pearson Product Moment correlation coefficient was used to establish the nature of the relationship between variables. Regression analysis was further used to establish the regression equation between the respective variables and to test the hypotheses at the 0.05 level of significance.

FINDINGS

Findings derived from data collected from the field on the relationship between Technology-driven curriculum and the development of employability competencies amongst students in the University of Bamenda (UBa): Case of H. I.C.M. Data was collected from 200 students and 4 teachers of the High Institute of Commerce and Management. The findings are presented based on the specific research question that guided the study.

Table 1: Coefficients of Regression Analysis showing Relationship Between Technology-Driven Curriculum Content and Development of Employability Competencies

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	12.396	1.258		9.857	.000
	Technology - driven curriculum content	.702	.041	.771	17.045	.000

Table 1 shows that the regression equation is given by *Development of Employability Competencies = 12.396 + 0.702* x *Technology-Driven Curriculum Content*. This suggests that when Technology-Driven Curriculum Content is zero, the Development of Employability Competencies by students is 12.396. When Technology-Driven Curriculum Content increases by one unit, the Development of Employability Competencies increase by 0.702.

The ANOVA Table from the regression analysis indicates that F = 290.536, giving p = 0.000 at 199 degrees of freedom. Thus the p-value is significant at the 5% level of significance. It can therefore be concluded that there is a significantly positive relationship between technology-driven curriculum content and the development of employability competencies amongst students.

Table 2: Coefficients of Regression Analysis showing Relationship Between Technology-Driven Curriculum Experiences and Development of Employability Competencies

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	23.374	1.485		15.741	.000
	Technology - driven curriculum experiences	.393	.056	.447	7.037	.000

Table2 shows that the regression equation is given by *Development of Employability Competencies = 23.374 + 0.393* x *Technology-Driven Curriculum Experiences*. This suggests that when Technology-Driven Curriculum Experiences is zero, the Development of Employability Competencies by students is 23.374. When Technology-Driven Curriculum Experiences increase by one unit, the Development of Employability Competencies increase by 0.393.

The ANOVA Table from the regression analysis indicates that F = 49.517, giving p = 0.000 at 199 degrees of freedom. Thus the p-value is significant at the 5% level of significance. It can therefore be concluded that a significantly positive relationship exists between technology driven curriculum experiences and the development of employability competencies amongst students.

Table 3: Coefficients of Regression Analysis showing Relationship Between Technology-Driven Curriculum Assessment Strategies and Development of Employability Competencies

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	23.989	.546		43.949	.000
	Technology-driven curriculum assessment strategies	.446	.025	.790	18.111	.000

Table 3 shows that the regression equation is given by *Development of Employability Competencies = 23.989 + 0.446* x *Technology-Driven Curriculum Assessment Strategies*. This suggests that when Technology-Driven Curriculum Assessment Strategies is zero, the Development of Employability Competencies by students is 23.989. When Technology-Driven Curriculum Assessment Strategies increase by one unit, the Development of Employability Competencies increase by 0.446.

The ANOVA Table from the regression analysis indicates that F = 327.992, giving p = 0.000 at 199 degrees of freedom. Thus the p-value is significant at the 5% level of significance. It can therefore be concluded that there is a significantly positive relationship between technology driven curriculum assessment strategies and the development of employability competencies amongst students.

DISCUSSION OF FINDINGS

The findings revealed that there is a significant positive relationship between technology-driven curriculum content and the development of employability competences amongst students. This suggests that the more the use of technology-driven curriculum content in H.I.C.M. in the

University of Bamenda, the more H.I.C.M. students develop their employability competencies. This finding is in line with that of the Scottish Government (2015) who found that the use of digital technologies to present content is an appropriate means to improve basic literacy and numeracy skills. The findings also specified that there is a significant positive relationship between technology-driven curriculum experiences and the development of employability competences amongst students. This suggests that the more the use of technology-driven curriculum experiences in H.I.C.M. in the University of Bamenda, the more H.I.C.M. students develop their employability competencies. The results are similar to the study of Kelly (2013) who confirms that there are many instructional approaches or methods that technology is helping to make possible, or bring to a new level in classrooms and schools across the world. A good number of instructional methods which are being technologically driven include instructional methods like "student created content". With this, students are able to show something they made either for an assignment like a digital booklet or a video they shot.

The findings equally revealed that there is a significantly positive relationship between technology-driven curriculum assessment strategies and development of employability competencies amongst students. This suggests that the more the use of technology-driven curriculum assessment strategies in H.I.C.M. in the University of Bamenda, the more H.I.C.M. students develop their employability competencies. This finding agrees with that of Pellegrino (2010) who found that the integration of technology and assessment greatly affected students' learning positively. This was supported by Winkley (2010) who opined that technology enhanced assessment is often simply associated with on-screen testing or automated marking and responses to students' test (often known as "Computer Assisted Assessment" or CAA).He added that, the most commonly used and technically developed form is on-screen testing, most of which uses multiple choice questions (MCQs) and automated marking.

CONCLUSION

From the findings of the study, it can be concluded that there is a significant positive relationship between technology-driven curriculum at the levels of curriculum content, curriculum experiences and curriculum assessment strategies and the development of employability competencies amongst students in the University of Bamenda: Case of H.I.C.M.

RECOMMENDATIONS

Based on the findings, the study recommended that Policy makers, the university administration, departments and lecturers should encourage and intensify the use of technology-driven curriculum content in H.I.C.M. in the University of Bamenda, as this will greatly help students develop employability competencies needed in the 21st century workplace. In addition, Heads of Departments should reinvigorate in the students the relevance of technology-driven curriculum experiences in H.I.C.M. in the University of Bamenda, this will serve as a way of meeting the requirements of employability within a highly competitive and highly digitalized knowledge society. Moreover, the UBa administration should organize frequent and practical seminars and workshop to help teachers up-skill and reskill their knowledge and skills in technology use as well as providing teachers with the needed support which will allow them to understand the benefits and applications of digital technologies. By so doing this will encourage and enable them to use technology varied assessment strategies effectively as they implement the curriculum. Concurrently, a strong university-industry partnership that will permit students match content with practices, gain experiences and to constantly assess and develop 21st century workplace knowledge and skills thereby assuring their employability competencies should be maintained.

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