

Techno-pedagogy and Graduates' Employability in Cameroon State Universities

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Abstract: - This study sets to demonstrate the place of techno-pedagogy on graduates' employability in Cameroon State universities. It stems from an empirical observation according to which this 21st Century pedagogic innovation is largely neglected in the public higher education arena. It is a survey; involving the random sampling technique. Krejcie and Morgan (1970)'s model was used to select 426 informants among Cameroon State university graduates, Lecturers and economic operators. Data was collected via questionnaires and the descriptive statistical and content analysis approaches were used to analyse and interpret the said data. The latter was done with the help of SPSS and Becker (1994)'s Human Capital theory and Rogers (2003)'s Diffusion of Innovations theory respectively. Findings revealed that techno-pedagogy greatly enhances graduates' employability in Cameroon State universities; for, according to informants, techno-pedagogy induces creativity and self-reliance (86.6%), multi-skilling and tasking (79.8%), professional excellence and productivity (95.5%) and finally, job flexibility and mobility among graduates (94.6%). The adoption of this pedagogical innovation is however marred by shortcomings at the levels of logistics, infrastructure, policies, users' skills and motivation; a situation that warrants remedial measures. In effect, some solutions for the effective adoption of techno-pedagogy in Cameroon State universities are proposed.

Key words: Technology; Pedagogy; Techno-pedagogy; Graduate and Employability.

I. INTRODUCTION

Addressing the employability crisis faced by higher education graduates in Cameroon today requires revisiting the mechanisms through which knowledge is disseminated to them while in school or university. This is so because the manner in which knowledge is imparted has an enormous impact on learners' skills and attitudes. A sound pedagogical system today is that which is technology-mediated. It must reflect and respond to the needs and aspirations of individual learners, countries, the global population and the job world at large (Knight and Yorke, 2004). This is imperative; given that the gap between the training that young people receive from school and their ability to grab gainful employment is increasingly wide.

According to Raynal and Rieunier (1997), technology is a set of discourses, values and social effects linked to a particular technique in a particular field. It can as well be defined as the study of tools, machines, procedures and methods applied in diverse artistic and industrial branches or a set of coherent knowledge and practices in a given domain that are based on scientific principles. Pedagogy on its

part refers to any activity that is deployed by a person to develop precised learning in an individual (Raynal and Rieunier, 1997). It can also be considered as a discipline that deals with the theory and practice of teaching and how these influence students' learning. To Pool and Sewell (2007), employability is a set of skills, knowledge, understanding and individual attributes that make an individual more likely to choose and secure occupations in which they are satisfied and successful. The principal question here however is that, what is the place of techno-pedagogy on graduates' employability? This study centers on this preoccupation.

Context

Ever since the drafting of the World's Declaration on Higher Education for the 21st Century in 1998, the holding of the Jomtien International Conference in 1999, the signing of the Dakar Framework for Action in the year 2000 as well as the signing of the Qingdao Declaration on the Post-2015 Education Goals, technologies, especially new information and communication technologies became a commonplace entity in education (Adu and Olatundun, 2013 and Apongnde, 2019). It has considerably transformed teaching-learning environments in terms of the quantum of material that learners are open to as well as the quality of knowledge that they acquire. Conscious of this, the government of Cameroon and higher educational stakeholders have not been at rest as a number of initiatives have been taken relating thereto.

Very fresh in our minds are: the National Education Forum (1995); the Head of State's messages to the Youths since February, 2001; Decree No 2002/004 of January 4th, 2002 creating the Pedagogical General Inspection in charge of teaching and computer use at all levels; the Sectoral Strategic Paper for Education (2006); the Cameroon e-National Higher Education Network of 18th July 2015; the Special Youth Plan on Higher Education prescribed by His Excellency, Paul Biya on 10th February 2016; the meeting of the Permanent Consultative Body of the Ministry of Higher Education on 21st November 2016 on the theme: the University of Tomorrow; the creation of the Institute for University Digital Governance amongst others relating to ICTs in education. All with the aim of assuring quality; and he who talks of quality in education talks of efficiency and above all, the productivity or employability of graduates.

According to the International Labor Organization (ILO, 2017) however, there are 75million 15-24 year olds looking for work across the globe and according to the World

Bank (2017), the unemployment rate in Cameroon has instead risen from 2.9% in 2007 to 4.5% in 2017. Practically speaking, the working population of Cameroon is about 12million and only a little over 200,000 people work in the public service; with government being the highest employer. Over 11.8million graduates are therefore not government-employed (InfoDev, 2017). Inadequate technology-based training has been largely blamed to be one of the contributing factors to the present graduates' unemployment predicament in Cameroon.

In fact, up to 66.2% of educational institutions in Cameroon have no computer and only 6.2% have more than one computer (RIA, 2012). Very few of the said institutions are connected to the internet (9.2%) and have a website (10.8%). Moreover, the level of computer use in Cameroon universities in general is 33.4% and the computer/student ratio in the higher education sector is very low; thereby being unable to support a favourable training environment on ICTs usage for all the students (Mbangwana and Membeh, 2006). Less than 5% of these students use ICTs in the learning process (RIA, 2012). How therefore can graduates' employability be guaranteed in this type of technologically thirsty environment? The effect of this *cankercorn* is ravaging and dragging the country's economy down. This will certainly go a long way to delay its much talked about emergence come 2035.

Some of these unemployed graduates resort to the search for *greener pastures* abroad; leading to migration and brain drain. For those other young graduates who are not daring enough, the end result is usually high crime waves, pre-marital pregnancies, sexual harassment, drug abuse, gambling, amongst other social ills. It is true that the Cameroon government is aware of the dangers posed by the growing rate of graduates' unemployment and has made moves in that regard. This can be seen through the Ministries of Youth Affairs and Civic Education and that of Employment and Vocational Training. Some programs designed by government via these ministries include: the Rural-Urban Youth Support Program known in its French acronym as PAJER-U, the Integrated Project for Manufacturing of Sporting Materials (PIFMAS), the National Employment Fund (NEF), the Integrated Support Project for Actors of the Informal Sector (PIAASI) and the Special Youth Triennial Program.

Despite all these efforts made by government, a lot more still has to be done; for there is a socio-economic and political urgency of responding to the challenge of graduates' unemployment as a precondition for poverty reduction, sustainable development and lasting peace nowadays. The place of techno-pedagogy thus cannot be over emphasized upon; given that it opens the graduate to a whole lot of job opportunities. Some African countries have recorded success stories in this venture and Cameroon will certainly not be an exception.

II. LITERATURE REVIEW

There is a growing interest through research on how higher education can become influential in economic growth and development as well as graduates' employability. Globally, there is a wide variety of studies on the phenomena of technology-mediated pedagogy and graduates' employability. Baudelot and Gollac (2003) make an analysis of the effects of what they call the *information society*; characterized by the use of ICTs on the evolution of work, training and qualification in the middle and long term perspectives. Hentea, Shea and Pennington (2003) in their study reveal that students who participate in computer-mediated, collaborative, Web-based learning perform significantly better than students using only Web-based learning methods. They therefore concluded that greater online presence by the instructor encourages learner participation in collaborative learning processes and leads to greater success of the online student.

According to Lim and Chai (2004), when the ICT-mediated lesson is well-managed, a conducive learning environment is created. To them, ICT in pedagogic practices makes teaching and learning flexible and therefore easy to understand. Rosario (2005) reveals that ICTs have witnessed a marked development nowadays and this concerns all domains of our society (education inclusive). In that light, Tchombe (2006) elaborates on the nature of the conditions in the context of Cameroon that favour the successful integration of information and communication technologies in the school system. Similarly, Preston and al., (2006) realize that nearly 70% of students are for the fact that they learn just as well in online learning communities such as *WhatsApp groups*, *Facebook communities*, *Twitter chats* and *Google+ communities*, as they do in lectures that are held in ordinary classrooms in the presence of other students. Stienen (2007) on his part assesses the opportunities and challenges that ICTs stand to face in the educational domain.

White and al. (2008) however report that the use of information and communication technologies in education is relatively a new phenomenon. To them, the advent of the Internet and the World Wide Web have pressured new productivity and service demands as well as expectations on these endeavours; but he regrets that research to guide best practices remains scanty and elusive. Chen and Pen (2008) examine the basic relationship between the internet use of university students and their academic performance, interpersonal relationships, psychosocial adjustment and self-evaluations. PanAf (2009) reports in the context of Cameroon that at the University, the objectives are to train graduates who are able to use ICTs in all sectors to improve management and to create a regional hub. In a study conducted by Yu and al. (2010), online discussions between students through social learning communities networked through an artifact such as mobile learning communities, clearly improve students' social connections; improves their self-esteem and boosts their learning performance. Karsenti, Collin and Harper-Merett

(2012) paint a clear picture of the challenging ICTs situation in the African context and open perspectives relating thereto; that is, in terms of outcomes and capacity to replace traditional instruction methods. Apongnde (2019) carries out the same study in the context of Cameroon State Universities and realizes that a lot needs to be done to effectively integrate the use of ICTs in education information systems management, as the process is gripped with a panoply of challenges.

The series of studies done by Knight and Yorke (2002) are instrumental in shaping the concept of employability from its early ideas. Brown and al. (2003) however puts forward that studies have focused on the preoccupation of academics with regard to developing generic skills and resulting increases in employability. They also question the thinking behind the development of key skills, cost effectiveness of such development initiatives while questioning the practicality of major curriculum changes in a context of limited funding, and suggests more attention to be given towards post-graduate induction programs than pre-graduation period. Rae (2007) reports that students see a need to develop more aggressive and proactive labour market strategies surpassing the achievements in formal education settings. To him, studies have explored the connection between the enterprise education in universities and subsequent employability and career development and identified a clear link between individual learning and institutional integration.

Clarke (2008) reports on suggestions that were made on managing employability and careers at individual and organizational levels. He states that since employability is clearly dependent on organizational context as well as on individual responsibility, current focus towards individual employees must change and organizations must consider new ways to support their employees to manage employability and careers. Wellman (2010) questions the value of university degree in employability and reveals that less than half of employers demand a university degree and less than quarter require a degree in marketing while prioritizing experience. Wickramasinghe and Pereira (2010) reports on the perceptions that employers, university lecturers and graduates have towards employability and say that they are different.

Harvey (2010) on his part presents employability as the propensity of students to obtain a job while providing supportive evidence from existing employability literature and according to Storen and Aamodt (2010), the quality characteristic appears to have minor effects on the chances of getting a job but appears to have a significant effect on doing the job. The employability study carried out by Wyatt-Smith and al. (2014) however highlight the problems in employability; noting the lack of clear conceptualization and theoretical control over employability since there is no agreement about a universal employability definition. It can therefore be realized that technologies in education offers a lot

of opportunities to learners amongst which is graduates' employability; even though its integration and effective use in the teaching-learning process is usually marred by a number of loopholes.

Dong and Fozing (2016) question the causes of youth unemployment in Cameroon and accuse poor assistance to students in the consolidation of their professional aspirations as well as the guarantee of socio-professional insertion. They also realize that consulting with a guidance counselor does not influence the types of professional aspirations entertained by students in a significant way. To them, initiation to self-awareness, the personal qualities of a guidance counselor, information on the realities of the job market, as well as the world of employment contribute in developing in students more realistic professional aspirations. In his quest to analyze the evolution of the labour market and grasp the main determinants of workers' activity earnings, Fozing (2016) states that structural adjustment programs of the 1990s imposed educational adjustments in Cameroon as an immediate reaction to economic adjustment, imposed by the austerity programs of the Bretton Woods Institutions. These distortions according to him have dealt a blow to participation in the labour market of most youths in search of employment and especially on income generated. He however noted that wage differences as well as income observed over the period under study, that is 1996, 2001 and 2005 were relatively low. To him, the level of education, age and professional experience as well as the institutional sector are fundamental elements that have a significant impact on earnings.

III. METHODS AND TOOLS

This study is a survey and involves the use of both qualitative and quantitative analyses. The population constituted of State university graduates seeking for jobs via the National Employment Fund, Lecturers who have been teaching for more than two (02) years in more than one public higher institution of learning in Cameroon and economic operators/employers based in Yaounde, Cameroon. A random sampling technique involving Krejcie and Morgan (1970) model was used to select 392 graduates, 14 Lecturers and 20 economic operators/heads of enterprises; making a total of 426 respondents. Cameroon State universities were purposively chosen; based on the fact that they are the ones that produce a majority of job seekers in Cameroon today.

The main instrument used for data collection is questionnaire; addressed to graduates, Lecturers and employers. Questions on the questionnaires were both open-ended and close-ended. This approach helped us to get respondents' opinion on certain issues related to technopedagogy and graduates' employability in the Cameroonian context. Data collected was analyzed using the descriptive statistical and content analysis approaches. This was done with the help of the Statistical Package for Social Sciences (SPSS) and the Human Capital Theory of Becker (1994) and

the Theory of Diffusion of Innovations of Rogers (2003) respectively.

The descriptive statistical approach is represented mathematically as such:

$$\text{Percentage Count (\%)} = \frac{\text{Frequency Count}}{\text{Total Count}} \times \frac{100}{1}$$

$$\text{Implying, PC} = \frac{\text{FC}}{\text{TC}} \times \frac{100}{1}$$

Where PC = Percentage Count, FC = Frequency Count and TC = Total Count.

The Human Capital Theory is a group of individual dispositions of a person in the form of source of knowledge and skills that reflect education and experience of the individual person. Ideally, the labour market uses those who can be sufficiently adaptable to the varied conditions so that a potential employer is attracted to the person; for, the better human capital of the employee, the higher appreciation of the investment for the employer. The theory of Diffusion of Innovation seeks to explain how, why and at what rate new ideas and technology spread through cultures. In other words, it is a set of generalizations regarding the typical spread of innovations within a social system. Here, there exist five basic qualities that render an innovation successful. They include: relative advantage, compatibility with existing values and practices, simplicity and ease of use, triable and observable results.

IV. RESULTS AND DISCUSSIONS

The table below illustrates respondents’ opinions relating to our research pre-occupations. The presentation and analyses are made based on the specific hypotheses of the study.

Hypotheses		Yes	No	No idea
01	Techno-pedagogy elicits creativity and self-reliance in graduates	<i>Freq.</i> 369	44	13
		% 86.6	10.3	3.0
02	Techno-pedagogy leads to multi-skilling and tasking among graduates	<i>Freq.</i> 340	12	74
		% 79.8	2.8	17.3
03	Techno-pedagogy induces professional excellence and productivity in graduates	<i>Freq.</i> 407	05	14
		% 95.5	1.1	3.2
04	Techno-pedagogy enhances job flexibility and mobility in graduates	<i>Freq.</i> 403	03	20
		% 94.6	0.7	4.6

Fig. 01: Respondents’ opinion on the role of techno-pedagogy in graduates’ employability

Source: Field data (2019)

Techno-pedagogy and creativity/self-reliance in graduates

The results above indicate that 86.6% of the respondents agreed that techno-pedagogy elicits creativity and

self-reliance among graduates. However, 10.3% rebut the said affirmation and 3.0% of them do not have any idea relating thereto. This therefore means that the act of integration technology in public higher education pedagogical systems stirs up the ability of students to not only create jobs or secure some for themselves and/or others, but also to rely on themselves upon graduation. It is no news that creativity and self-reliance are values that are encouraged in today’s job-challenging society, where the public service is steadily becoming unable to retain the ever escalating number of graduates that are leaving our institutions of higher learning today. In fact, techno-pedagogy has lately been seen as one of those reliable tools that can boost these potentials in graduates, especially in those from Cameroon State universities that are renowned of flooding the job market every now and then.

Techno-pedagogy and multi-skilling/tasking among graduates

While 79.8% of the respondents are for the opinion that techno-pedagogy leads to multi-skilling and tasking among graduates, 2.8% are not for the idea and 17.3% do not have any idea. This directly indicates that students who are taught with the use of technological devices are liable to acquire skills that can permit them to execute a certain number of tasks at a time once they graduate from university. In fact, it is commonplace in our societies nowadays to see that most graduates that were technologically-instructed can execute very many activities at a blow. Apart from executing their normal jobs, they usually involved in peripheral activities like typesetting, editing, sending and receiving of electronic envoys/emails amongst other activities; all of which are tasks that usually warrant specific stills and are assigned to different persons in most organizations.

Techno-pedagogy and professional excellence/productivity in graduates

According to the results, 95.5% of the respondents are for the fact that techno-pedagogy induces professional excellence and productivity in graduates. A meager number of 1.1% refuted the opinion and 3.2% do not have any idea relating thereto. There is no gainsaying in affirming with these respondents that technologically-skillful persons dominate today’s modern and global society. Nowadays, almost all of man’s basic activities are steadily experiencing digitalization and any person that possesses skills in such an area is bound to excel and produce higher than he who is not grounded with such potentials.

Techno-pedagogy and job flexibility/mobility

The results of the present study indicate that a majority of research participants are for the opinion that techno-pedagogy enhances job flexibility and mobility (94%). While 0.7% of them are not for this reasoning, 4.6% of them do not have any idea on the said opinion. When we look at our immediate entourage today, we can vividly realize that those who are more versed with technological devices or operations

easily meander from one job to the other and can easily adapt than those who are not grounded with such knowledge. In fact, those who have undertaken courses such as computerized accounting or project management can easily mutate from their normal jobs to say secretariat duties or office assistance and vice versa.

The above results are very telling. Informants' opinion on the zeal for technological devices to be integrated in the teaching-learning process is explicit; given the opportunities that it stands to offer. There is therefore no gain say in affirming that techno-pedagogy stands a better chance to guarantee graduates' employability, reading from the opinions of a majority of the respondents. In brief, informants made it abundantly clear that if schools and universities devise adequate techno-pedagogical policies/reforms, make provision for techno-pedagogical tools, digitalize or computerize their teaching-learning processes, create virtual teaching-learning their teaching-learning platforms/forums, train both teachers and students on techno-pedagogical approaches or render them skillful and motivated; ensure regular energy supply in their schools, put in place interactive whiteboards in classrooms as well as accommodative multi-media/high-tech centers and broad-band internet connectivity in their schools/universities; install free Wi-Fi service and video projectors in classrooms or amphi theatres, relate theory-based training with digitalized practical exercises; create workable partnerships with economic operators/organizations and relay students to external High-tech centers for internships and continuous training, this will considerably lead to graduates' creativity and self-reliance, multi-skilling and tasking, professional excellence and productivity and job flexibility and mobility; hence, guaranteeing employability. In this case, we talk of *techno-pedagogy-induced employment*. See illustration below:

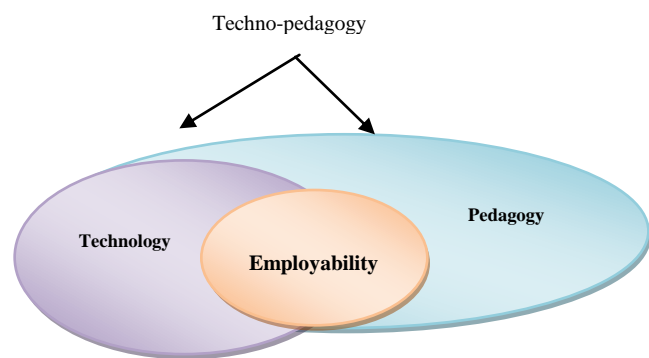


Fig. 02: Model showing how techno-pedagogy can enhance employability

Source: Field data (2019)

The diagram above illustrates that when technology is adopted in a teaching-learning process, it gives birth to graduates' employability. This has to do with one's ability to create or pick up a job after school. In as much as technology plays a preponderant role in the guarantee of graduates' employability, there is need for this 21st Century innovation to

be adequately integrated in pedagogical activities in Cameroon today (Mbangwana, and Membeh, 2006 and RIA, 2012). The issue however is that the wish is not backed by a sound and sustainable ability to realize this educational dream of the present time, given that there are a lot of shortcomings relating to techno-pedagogical logistics, infrastructure, policies, users' skills and motivation as earlier mentioned. This situation has been making thousands and millions of young graduates to continue galloping in the usual drag nets of unemployment that their predecessors have been suffering from for the past decades. Becker (1994) believes that the source of an individual's knowledge matters a lot as far as his predispositions in the accomplishment of a task are concern. The unanswered question therefore is that, how reliable is the source of what graduates acquire today as knowledge? This question is fundamental at a time when most students leave school/university with little or no knowledge on emerging technologies.

If we go by Rogers (2003)'s reasoning, we will not be wrong to affirm that the relative advantage of today's technology, its compatibility with existing values and practices, its simplicity and ease of use, not leaving out its triability and observability in terms of palpable results within the school and university setup is yet to be noticed. To Gollac and al. (2003), today's *information society* is characterized by the use of ICTs on the evolution of work, training and qualification in the middle and long term perspectives and the advent of the internet and the World Wide Web (WWW) have pressured new productivity and service demands as well as expectations on these endeavours (White, 2008).

In effect, students need to develop more aggressive and proactive labour market strategies, surpassing the achievements in formal education settings (Rae, 2007); since employability is dependent on both educational context as well as on individual responsibility. Present day focus towards individual employees must also change in favour of technological adoption and schools/universities must as well consider new ways to support their student to manage employability and career related issues (Clarke, 2008). Techno-pedagogy is therefore an imperative and not an option in Cameroon State universities today; for its employability potentials cannot be underestimated (Kerr, 1999).

V. CONCLUSION

The adoption of technological innovations in the teaching-learning process in Cameroon today is not more a matter of choice. The train is on the move in other countries and the earlier Cameroon prepares herself to join the success caravan, the better. In fact, educational activities the World over are now run in a way that if one is not technologically literate, he is preparing for his doom. The role of techno-pedagogy can therefore not be over emphasized upon; for it is praised for enhancing graduates' creativity and self-reliance, multi-skilling and tasking, professional excellence and

productivity and above all, job flexibility and mobility as earlier mentioned. But the dilemma is that the adoption of this technological innovation in the teaching-learning process in Cameroon State universities is marred by some shortcomings. They are related to logistics, infrastructure, policies, skills and users' motivation; a situation that warrants remedial measures.

To that effect, there is the need for the holding of a Grand National Forum on the integration and effective use of technologies in education, the computerization of the teaching and learning of all courses, the provision of spacious, staffed and well equipped multi-media centers and/or High-tech centers, access to free and high debit Wi-Fi services, interactive whiteboards and video projectors in amphitheatres, broad-band internet service and electricity back-up systems in the form of stand-by generators, solar and wind energy systems, et cetera. Lecturers should do well to upgrade their skills on emerging technologies via seminars or in-service training, adopt the technology-mediated pedagogy culture, relate theory with practise, drill students on how to use techno-pedagogical tools and relay them to external High-tech centers for out of class exercises and internships.

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