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Review

Reconceptualization of African vocational and technological education for emergent globalization, relevance and sustainable economic development

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This paper focuses on reconceptualizing vocational and technological education in Africa to make it more relevant and able to meet the emergent global and sustainable economy. The past and present operations of this system of education were x-rayed pointing out the problems and the expectations. The expectations were high. The problems are equally numerous and overwhelming such that as it is being presently operated the system can not meet both the local needs and international standard. This led the authors to propose both short and long term models and strategies anchored on holistic learning environment aimed at producing market relevant enterprising graduates for global economy and skilled workers for local needs.

Key word: Reconceptualization, vocational and technological education, short and long term model.

INTRODUCTION

The challenges facing many African nations today are slow economic development, prevalence of poverty, diseases and ignorance. The continent is also searching for how best to engage the teeming population of youth in technical and vocational skills, an effort which many scholars (Gazi, 2008; Omoifo, 2000; Psacharopolous, 1985; Yamada, 2001) agree is a panacea for many of the ills plaguing the region. Productive and self-employment achieved through properly grounded technical and vocational education could be the best weapons for fighting poverty and the numerous associated vices plaguing the region. Described as a theatre of war and conflict (African Union, 2007) a large number of deaths and injuries have been reported over the past two decades (African Union, 2007), and millions of people have been displaced from their homes. Young people and even children were at times drawn into combat as child soldiers. These youthful energies can be channeled to productive activities through properly planned and implemented quality technical and vocational skills development programs. The present level of technical and vocational education in some of the countries seems a failure for lack of proper planning, implementation and patronage. African governments often state that vocational education is the most efficient means to meet manpower demand in the labour market, but the justification is seldom supported by well thought-out and targeted efforts, neither is it matched with adequate funding (Durango, 2002; Alam et al., 2010; Suobere, 2008) nor grounded on sound empirical data and research (Bloom et al., 2006; Yamada, 2001). For all countries in the region, the median education expenditure as a share of GNP was 4.4% in 2006 (Education for All Global Monitoring Report, 2009). According to Durango (2002) the national fiscus in most countries is over-stretched by many diverse and ever increasing demands. Within the TVET (Technical and Vocational Education and Training System) sector itself there are no effective concepts, mechanism and procedures for prioritizing and justifying budgetary appropriations. In many cases this tends to break the small “cake” into too many small fragments thus reducing impact. Hence there were low rates of return (Yamada, 2001). The inter-national economic recession and ever increasing input costs have drastically reduced direct in-kind contributions by the private sector. The low incomes of many families in developing countries are unable to contribute significantly towards the financing of YVET. The charging of commercial fees

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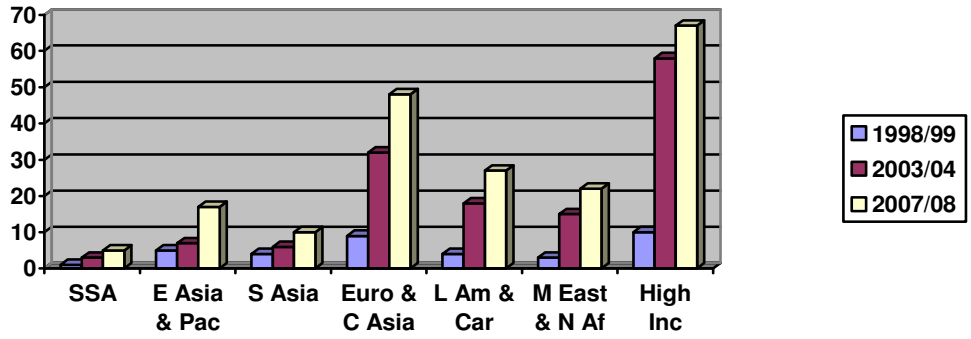

Figure 1. Enrolment into higher including vocational and technological education in some parts of the world. Source: Adapted from Bloom et al. (2006) Higher Education in Africa and Oloruntegbe et al. (2010) rethinking development and sustainability of African economy. Tertiary Gross Enrolment Ratio, Sub-Saharan Africa falls behind. SSA= Sub –Saharan Africa; E Asia & Pac= East. Asia and Pacific; S Asia= South Asia; Euro & C Asia=Europe and central Asia; L Am & Car=Latin America and Caribbean; M East & N Af=Middle East and North Africa.

Table 1. Public education expenditure in PPPS (Public-private partnerships) and as a percentage of GDP (gross domestic product) per region of the world (2004).

Region	Countries	Educational expenditure					
		As % of GDP		PPPs (in billions)		% of Regional Total	
		Total	Primary level	Total	Primary level	Total	Primary level
Arab States	20	4.9	1.7	77.8	27.0	3.2	3.6
Central and Eastern. Europe	20	4.2	1.1	164.0	41.2	6.7	5.6
Central Asia	9	2.8	0.6	7.7	1.8	0.3	0.2
East. Asia and Pacific	34	2.8	1.0	441.7	149.8	17.9	20.2
Latin America and Caribbean	41	4.4	1.6	186.5	68.8	7.6	9.3
North America and Western Europe	29	5.6	1.5	1,355.6	372.3	55.1	50.2
South and West Asia	9	3.6	1.2	169.1	54.6	6.9	7.4
Sub –Saharan Africa	45	4.5	2.1	59.9	27.9	7.4	3.8
World	207	4.4	1.3	2,462.2	743.1	100.0	100.0

Source: Global education digests 2007-comparing education statistics across the world.

further undermined equity and secluded the poor majority front getting quality vocational education and training (Durango, 2002). Furthermore, Sub-Saharan Africa lagged behind in enrolment into higher education vocational and techno-logical education just as it is the continent with least expenditure on education among other continents of the world, (Bloom et al., 2006; Oloruntegbe et al., 2008) (Figure 1 and Table 1). The programs most often witnessed a weak link to industry leading to graduate unemployment (Bloom et al., 2006). These and other problems and challenges call for a reconceptualization of the system and reorientation of the entire vocational education programs to make them more result oriented so that the nations can leap forward and join the rest of the world in sound and stable economic development.

An educational reform that ensures that all students, as well as out-of-school youth and adults, are prepared by the educational system, formal and non-formal, for wage employment or self-employment is more urgent now than ever. Equipping students, out-of-school youth and adults with appropriate knowledge, skills and attitudes has the potential of increasing labor productivity and economic performance. Furthermore, such an educational mission acknowledges that the educational enterprise is not separate from the world of work. Indeed, the time is now to bring the two worlds of work and education together into one for the overall benefits of African people.

Africa is blessed with abundant of human and natural resources (Omoifo, 2000). Although, it has been stated by many (Ogbu, 2004; Oloruntegbe, 2009) that natural resources is no longer a source of wealth but science and technology. There is abundant evidence that the material well being of the world in the last 20 years was driven by science and technology. A number of countries like Japan, Korea, Singapore and Thailand have significantly progressed recently through the use of their skilled

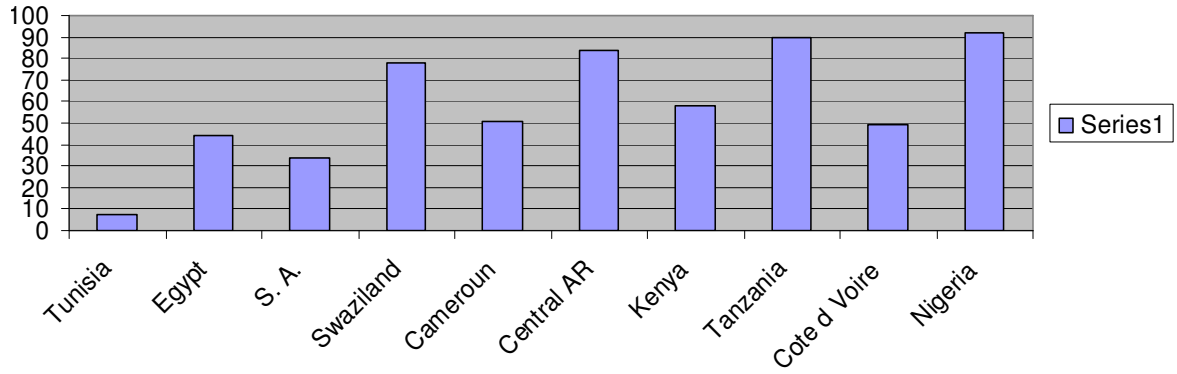

Figure 2. Percentages of African nations, two each from north, south, middle, east and west living below $2 a day (Source: 2008 Population Bureau Reference).

human resources. Progression of some other countries (that is, Bangladesh, Pakistan and Nepal) is very sluggish although they have invested a noteworthy amount of fund for the development of education (Alam and Shahmajal, 2008). Like these countries, if the resource endowment in Africa can be properly utilized and channeled it can create a means of achieving strong science and technological base with a resultant sound economic development in the long run. This present paper discusses a reconceptualization of technical and vocational education curriculum in African. It proposes models and ideas needed for mobilizing the teeming population of youth and the entire work-age bracket for skills acquisition and vocational employment in the region.

HISTORICAL PERSPECTIVES

Most African nations got independence from their colonial masters at different times but at about the middle of last century, Ghana in 1957, Nigeria 1960, Cote d Voire 1960, Zimbabwe 1980. In mid-2008, the population of the continent was estimated at 967 million, with about 400 million (42 percent) below age 15. This youthful population age structure provides momentum for continued growth. On the other hand, 39% were found to fall in the age-group of 15 - 39 years and, therefore, constituting the immediate clientele for the TVE system. With an annual growth rate of about 2.4 percent (high of 2.8 in Middle Africa and low of 0.8 in Southern Africa), the continent is projected to reach 1.9 billion by 2050. Africa is projected to account for 21 percent of world population by 2050, up from just 9 percent in 1950 (UN Population Division, World Population Prospects and the 2006 Version.)

Many of the countries, Ghana, Nigeria, Kenya and several others experienced a persistent decline in all sectors of the economy. Marked deterioration was noticed in critical infrastructure, including roads, railways, electricity, telecommunications, health and educational facilities as well as industrial plant, which showed visible signs of decline nationally. There was a decline in the production of cocoa, cotton, ground nut, beni seed, palm products, coffee which were once the nations' largest foreign exchange earners. Food production also fell, with a fourfold increase in food imports about the time. Similarly, there had been a drop in the production of minerals, the second major source of foreign exchange. Except for Nigeria and South Africa that were blessed with fossil fuel and diamond respectively, output of other minerals like iron ore, gold, bauxite and coal had fallen steadily. Energy supplies had failed to meet the growing needs of industry. The situation looks about the same in Sub-Saharan African nations but for different factors. For Kenya and other East African nations like Uganda drought, refugees' influx from neighboring countries, insecurity, poor economic management and external debt burden, structural adjustment programs (SAPs) were among other factors. The worldwide economic recession was another. Many are yet to have a breakthrough of the vicious circle of poverty and impoverishment. Information in Figure 2 is a testimony of the grave situation in the land. On the average, 50% of the population lives on less than $2 a day. Establishment of technical and vocational education in the region was borne out of the need to bail the region out of these economic problems that became prominent from the mid 1980s. Prior to this time and as handed over by the various colonial governments, general education remained the only system. The inherited grammar school type of education created mainly white collar jobs which tend to retard the force needed for viable economic development. Concerns at remedying this situation culminated into clarion calls for curriculum reforms aimed at diversification. The emerging diversified curricula for the secondary level were tailored after the British comprehensive type of school where the general and vocational educational programs were housed under the same umbrella - school compound. Later on the technical and vocational education and training were delivered at three levels: Basic education,

Table 2. Foreign efforts in education funding in Africa.

Foreign Partners	Program Areas Covered	Beneficiary Countries
Bernard Van Leer Foundation	Early childhood, capacity building and strengthening institutions	Kenya, SA, Morocco, Tanzania, Uganda, Zimbabwe
Better Way Foundation, USA	Child and youth	Tanzania
Caris Foundation USA	Health and economic development	Congo, Ethiopia, Kenya, Rwanda, Uganda, Zambia
Carnegie Corporation, New York, USA	Higher education, libraries and information, strengthening Institutions	Ghana, Nigeria, SA, Tanzania, Uganda
Charles Stewart Mott Foundation	Democracy and governance, institutional capacity building and leadership	SA
Christian Aid, UK.	Children, youth, civil society, economic development and justice, education, emergency, relief, health, strengthening institutions	Angola, Burkina Faso, Burundi, CA, DRC, Ethiopia, Ghana, Kenya, Lesotho, Malawi, Mali, Mozambique, Niger, Nigeria, Rwanda, Senegal
David and Lucile Packard Foundation, USA	Leadership development, reproductive health, population, Sustainable development	Ethiopia, Nigeria
David Weekley Family Foundation, USA	Health, education, private enterprise development	DRC, Kenya, Rwanda, Tanzania
Draper Richards Foundation	Strengthening institutions, entrepreneurship, development	Africa-wide
Elma Philanthropies Service, Inc, USA.	Children and youth, health and education	Angola, Lesotho, Mozambique, Namibia, SA, Swaziland
Global Philanthropy Alliance, USA	Community development, youth empowerment	Kenya, Nigeria, SA
Mckinght Foundation, USA	Community development, economic empowerment, women	Tanzania, Uganda
Rockefeller Foundation	Agric, environment, development	Africa-wide
Trinity Church Wall Street, USA	Community development and technology/telecommunications	Africa-wide
USA for Africa, USA	Agric, children and youth, leadership Development, health, women	Ghana, Kenya, Mozambique, Uganda
Wallace Global Fund, USA	Women empowerment, population/ reproductive rights, environment	SA, Africa-wide
The Wood Family Trust, UK	Economic development, sustainable livelihoods, vocational training	Ghana, Kenya, Malawi, Tanzania, Uganda, Zambia

Source: Derived from AGAG (2008) selected profiles of funders represented at 2008 Africa grant makers affinity group conference and annual retreat, Johannesburg, South Africa.

Second-cycle and Tertiary education levels. At the Basic education level, technical and vocational education really starts from the junior secondary school. Technical and vocational education at the second-cycle level is provided in the secondary technical schools, Technical institutes, Vocational schools/training centers and other post-basic education training institutions as well as in some of the initial teacher training colleges.

Technical education at the tertiary level was delivered in the Universities, the Polytechnics and similar institutions. Foreign partnerships wielded a tremendous impact in the establishment and in funding of education, parti-

cularly vocational and technological education in Africa. The efforts were felt in several nations in Africa in form of youth empowerment, sustainable economic development, community development, capacity building, entrepreneurship and vocation training. A few of such efforts are listed on Table 2.

As shown in Table 2, these funds may not directly cover vocational and technological education, but areas like child and youth, youth and women empowerment, community development, sustainable livelihoods and others like that are implied in vocational education funding. Vocational education costs more to establish and manage than the general education (Alam and Shahjamal, 2008). However, the pattern and future trend of employment and labor market all over the world are strongly determined by nations' investment on this important form of education.

THE EXPECTED

One does not have to be a rocket scientist to understand that a great economy and a great educational system go hand in hand (Arora, 2000). With globalization lurking around in every sphere of human endeavor, we are expected to meet the international standard of living and doing things. Education seems to be the only fuel that can bring about improvement in the quality of life and the power engine for growth and development, for increasing effectiveness and efficiency of the labor force and for fostering socio-economic freedom. Vocational and technological education opens up a plethora of opportunities for human resource capital and enriched economies. Nations wishing to be relevant in the scheme of global economic development must prepare and provide a level playing ground for vocational and technological education to thrive. That seems to be the expectations globally.

No one doubted that over the past 20 years of globalization, African has fared far worse than other regions. However, the extent to which globalization was to blame for African numerous problems remain a matter of debate. The continent felt bypassed at one time and at another they felt abused and humiliated. The greater share of blame however, should go to Africa itself for failure to build trade, integrate with other economies and benefit from the positive aspects of globalization. Economic regression comes often as a product of poor governance as much as outside influences. However; many have come to recognize that globalization could lead to greater democracy, education and employment, more so as no nation can live in isolation. Africa had played a spectator role for too long. It is time for her to get to the mid-field of powerful economic play ground. This seems to be the only option. In terms of the general thrust of the African governments, vocational and technological education is expected to facilitate the implementation of the economic structural adjustment programs and all its associated policy commitments. The commitments include liberalization which entails decentralization and the establishment of a free market economy, raising the standard of living of the population, health for all, housing for all, provision of clean water for the rural and urban population, increased production, improved quality of products, increased energy supplies to the entire community, increased experts, establishment of a more effective public service, increased employment opportunities for both unemployed adults and school-leavers, increased communication and transport, infrastructural development, the advancement of science and technology and knowledge economy. To get all these done, urgent attention must be paid to the followings: focusing on career-based vocational and technical education, responding to dynamic changes and challenges impacting on information and communication technology and creating opportunities for school leavers and adult learners to acquire skills, knowledge and values for lifelong learning in a global economy.

FILLING THE GAP

The level of unemployment worldwide calls for concern. Many are of the opinion that the jobs are not there. In reality there are jobs but only that majority of the applicants are unemployable. Of late Sergeant (2010) sounded an alarm that eight millions adult in United Kingdom alone are "economically inactive" and that the schools are churning out unemployable graduates. Terry Leahy cited in the same paper (Sergeant, 2010) puts it bluntly that "Too many children in United Kingdom have been leaving school after 11 or 13 years of compulsory education "without the basic skills to get on in life and hold down a job". He said five million adults were functionally illiterate and seventeen millions others could not add up properly. "On-the-job training" cannot act as a "bandage or sticking plaster" for "the failure of our education system". The above revelations point to the fact that the schools are not doing enough and have not come to term with the reality of the ever changing and growing global market economy. And if the situation is that bad in United Kingdom, one can best imagine what it would be like in Africa.

In order to train graduates at whatever level of education for the meaningful economic relevance, there is the need to strike a balance among economic needs, job market requirement and academic skills. Maintaining the balance entails varying the theory and practical contents and duration of training particularly for vocational skills. Different models and programs could be fashioned out depending on the economic needs and job requirements. One of such models (Figure 3.) considers a provision for a short term and as well as a long term vocational and technological training programs anchored on varying degrees of theoretical and practical academic contents. The proposal on Table 3 shows varied academic contents of different academic programs.

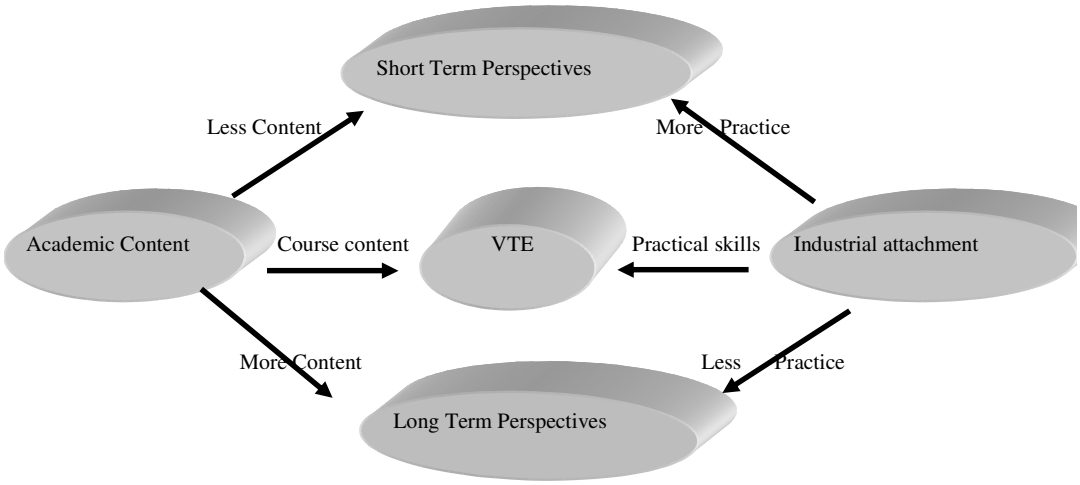

Figure 3. Embedded model for short and long term economic recovery through vocational technical education (Source: Derived from UNEVOC, 1996 - The development of technical and vocational education in Africa: Case studies from selected countries.

Table 3. Proposed varied academic contents of different vocational and technological programs.

Course	Theory	Practical
Artisan	10	90
Craft	20	80
Technician	40	60
Diploma	40	60
Higher diploma	60	40

Having determined this weighting, the next step is to decide on the relationship between course content and the community/industrial activities of the area, the most appropriate process of industrial attachment for the various levels of training and the most appropriate system of evaluating the trainees' learning process when on attachment. Once the above are determined, it will then be possible to design an appropriate skills training strategy which will have the desirable impact on the nations' economy. Such a strategy must be seen in both long and short term perspectives. This is necessary given the long process through which curricula for the various courses may be conceived, planned, developed and implemented.

The long term perspective would be to create and design a holistic learning environment leading to production of market relevance enterprising graduates for global market economy in addition to meeting local needs. The model on Figure 4 spells out the type of learning environment appropriate for achieving global market economy. Typified in the model are 'Hands-on', 'Minds-on' and 'Hearts-on' paradigms representing respectively a system of practice-oriented curriculum, process-oriented curriculum and holistic student development. Such a system allows for diversification and entails a constant review of courses so as to accommodate the changing local and global technological and economic situations. At higher levels of providing skill training, emphasis could be shifted from production of fewer technicians to more technologists who would create knowledge and design materials using the present state of art technology for global relevance. The existing courses outlined in (Oni, 2007 and Seng, 2006) can be strengthened with more relevant ones like biotechnology, informatics and green education intro-duced to cater for the present environmental realities. Also, in this system there will be need for periodical needs assessment so as to facilitate the review of programs, courses contents, structure and the delivery methods.

In the short term perspective of meeting local needs, the gap between formal training institutions and prevalent economic needs should be bridged through mounting non-certificate training courses geared towards upgrading the productive skills of artisans and technicians. These courses should be based on the needs identified. For this reason, the training needs must be established through either needs assessments carried out among the industries/the community or requests from those who need the skills. To achieve the desired future situation, there is the need to learn from the experiences of other developed nations of the world. The need to make use of these experiences, as well as the findings and recommendations from several studies on the possible way forward becomes highly imperative. Knowledge economy works well for informed and enlightened society.

CONCLUSION

Education particularly vocational and technological

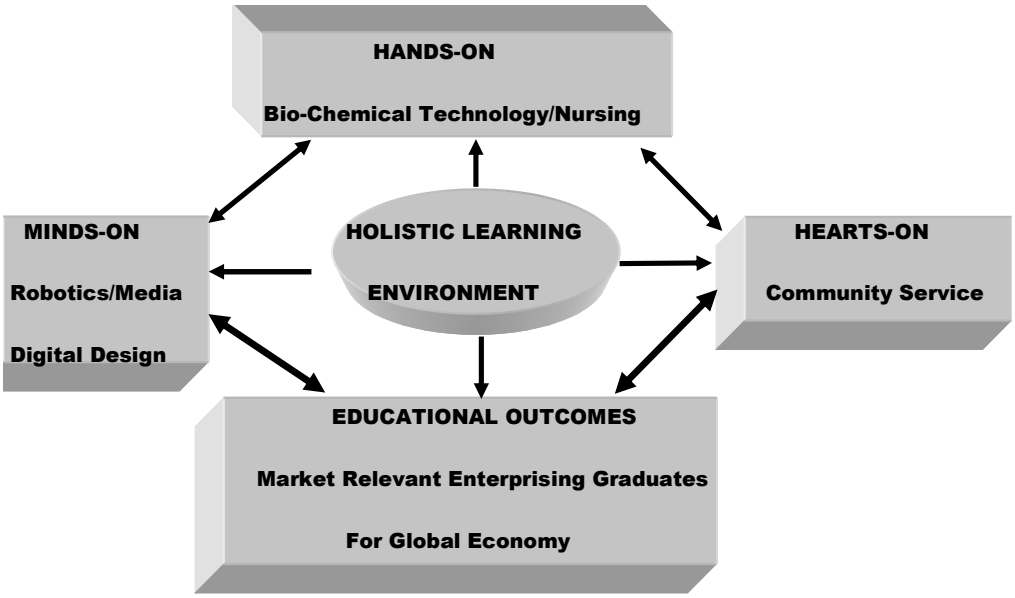

Figure 4. Long term holistic model of VTE for global economy. Source: Adapted form Seng (2006) A world class vocational technical educational system.

education is the power engine for sustainable economic development, relevance and globalization. Every nation of the world had long realized this but not many have come to term with how to use this engine effectively and efficiently to achieve prescribed objectives. This is the main reason why some nations appear developed and many others remain underdeveloped. As seen in this paper, almost all Sub-Saharan African nations belong to the latter category. Reasons for this were clearly stated in this paper. The historical background and the need of vocational and technological education in the region were given. The present level and future expectations were highlighted. Strategies to bridge the perceived disconnect between the present levels and future expectations were proposed through two models. Specifically, the models focus on both short and long term perspectives anchored on holistic learning environment aimed at producing market relevant enterprising graduates for global economy as well as meeting the local needs of the immediate community. It is the belief of these authors that any nation stands to benefit immensely by making use of the strategies proposed in this paper.

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