



Developing the Capacity of Middle-Level Tertiary Education in Preparing and Nurturing Young Entrepreneurs in Sub-Saharan Africa

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Acknowledgements

The Innovation in Agricultural Training and Education project—InnovATE—is tasked with compiling the best ideas on how to build the capacity of Agricultural Education and Training (AET) institutions and programs and disseminating them to AET practitioners around the world. As part of this effort, InnovATE issued a Call for Concept Notes to accept applications for discussion papers that address *Contemporary Challenges in Agricultural Education and Training*. These concept papers define the state of the art in the theory and practice of AET, in selected focus domains and explore promising strategies and practices for strengthening AET systems and institutions.

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Introduction

The purpose of this literature review is to frame the current state-of-affairs of middle-level tertiary institutions that offer academic programs to prepare entrepreneurs in Sub-Saharan Africa through a desktop review of literature in the context of the *Feed the Future* (2010) initiative to achieve sustainable food security, reduce poverty, promote rural innovation and stimulate employment by building human and institutional capacity. The InnovATE program focuses on all aspects of agricultural training and education including: youth, gender, and workforce development, at the primary, vocational/technical, university and post-graduate levels.

Problem Statement

The fundamental problem that this review addresses is the gap, based upon the literature, between current entrepreneurship education (EE) programs offered in middle-level tertiary institutions in Sub-Saharan Africa and ideal programs. The definition of ideal is a concept in the early stages of development, with numerous models being piloted in the ever changing environment of Sub-Saharan Africa. The World Bank (2000) states “[t]he vitality of higher education is a fundamental – and increasingly important – determinant of a nation’s position in the world economy. It contributes to labor productivity, entrepreneurial energy, and quality of life . . .” (p. 92). Higher education curriculum reform in Africa has been recommended by many agencies and organizations (*Board for International Food and Agricultural Development*, 2014; USAID, 2014). However, before curriculum is reformed, it is prudent to determine what currently exists, start a dialogue of what should exist, and propose recommendations to stakeholders as they develop strategic intents.

In Sub-Saharan Africa, many stakeholders believe that the supply of entrepreneurs can be augmented (Mahadea, Ramroop, & Zewotir, 2011). Herrington, Kew, and Kew (2010) contend that a culture of entrepreneurship could reveal the latent potential of the South African economy. The World Bank (2000) argues that qualitative, quantitative, and general observation all support the premise that higher education in developing countries is essential to income growth. This note will begin with a discussion of middle-level tertiary education programs followed by a description of EE. Two predominant academic delivery models will be

discussed in the context of their strengths and weaknesses. This section will be followed by a series of steps for program improvement and assessment. This note will conclude with a series of general recommendations, as well as a recommendation to fast-track program development.

Middle-Level Tertiary Institutions

The institutional focus of this literature review is middle-level tertiary institutions which are often referred to as post-secondary diploma-granting institutions. These institutions grant diplomas but do not grant bachelor's or higher level degree. Two-year diploma programs in the region are very similar to the Associate of Applied Science degree offered in the US, and four-year diploma programs are similar to the Bachelor of Applied Science degree. These applied degrees include major courses that are more workforce-oriented and a general academic core that is more technically-oriented (e.g. Technical Writing rather than English, and Applied Mathematics rather than College Algebra) than the academic transfer core in the Associate of Science or Bachelor of Science degrees. According to Mikhail (2008) "[t]ertiary education today includes most forms and levels of post-secondary education and is provided by both the conventional university sector and non-university institutions, which constitute an alternative sector" (p.1). Although Mikhail (2008) presents a typology of the alternative tertiary education sector involving three tiers, his examples are from developed countries. As many of the Sub-Saharan countries were colonized by France and the United Kingdom, Mikhail's (2008) typology for those two countries follow. In France, *Tier 1* institutions include *Grandes écoles*, *Tier 2* institutions are universities, and *Tier 3 Instituts universitaires de technologie* (IUT's) and *Brevet de technicien supérieur* (BTS). In the U.K., Tier 1 universities would include Oxford and 'Russell-group' universities, Tier 2 newer and polytechnic universities, and Tier 3 Further Education (FE) colleges. In the French system they are comparable to *Brevet de technicien supérieur* (BTS), in the UK, further education colleges, and in the U.S., they would equate to institutions granting both an Associate's of Applied Science (AAS), as well as a Bachelor's of Applied Technology (BAT) or Bachelor's of Applied Science (BAST) degree.

In some Sub-Saharan Africa countries, middle-level tertiary education institutions serve large numbers of a diverse student body. These students include those who are place-bound, those who are not admissible into universities through standardized examination scores,

students who cannot afford university tuition, and students who prefer a specialized diploma program for workforce entry (Baker, Lawver, & Bassey, 2014). Thus, the author deemed it important to focus this InnovATE note on this relatively unexamined but important sector of higher education in the region.

As a whole, higher education in the region is facing a number of challenges. Greater demands are being placed on the higher education system by gains in basic education (Higher Education in Africa, 2008). Large numbers of incoming students have created faculty shortages and have overburdened physical resources on many campuses. More specifically, middle-level tertiary institutions have been criticized for their inability to provide graduates with adequate practical abilities. The World Bank (2010) indicates that the situation of relevant tertiary education is “dire” in many developing countries. Employers in Ghana and Nigeria have experienced frustration with the practical skill level of technology graduates (Larsen, Kim, and Theus, 2009, as cited in World Bank, 2010, p. 172; Zinnah, Steele, Carson, & Annor-Frempong, n.d.).

There are a number of functional and structural challenges in conducting research on middle-level tertiary programs in Sub-Saharan Africa. Functionally, in some countries middle-level tertiary education is rather a recent phenomenon (Mikhail, 2008). Another functional challenge is that much of the published research is by faculty who are employed by universities who have easy access to their own students. Thus their research in higher education has only limited generalizability to middle-level diploma students.

Structurally, in countries such as Kenya, there are both public and private institutions, with private institutions having access to greater resources (Oanada, Chege, & Wesonga, 2008). Private institutions may provide more financial scholarships attracting students with higher academic ability.

There are also administrative differences in country-level public middle-level tertiary education program structures, which influence their ideological purpose. In some cases, post-secondary vocational training colleges are situated administratively as a component of a larger vocational or workforce training system (Jones, 2013). Jones’s (2013) also reported that

technical and vocational education and training (TVET) is inclusive of general primary, secondary, non-formal, and traditional vocational colleges and certification programs and is often not clearly defined. TVET programs have been criticized for over-focusing on skill development with little regard for a broader general education (Green, 2010).

In other countries, middle level tertiary education programs are administratively more standalone entities, considered part of the higher education system. Such an administrative structure likely facilitates a more seamless transition into a country's university system, allowing diploma students to more easily transition into bachelor's and master's programs. This is accomplished by requiring coursework in the general education core.

In reality, entrepreneurs are educated by a variety of institutions. In Swaziland, Dlamini, Masuku, and Dlamini (2002) reported in their study of small- and medium-sized entrepreneurs that those who received formal training did so through commercial and agricultural business courses at the University of Swaziland (24%), vocational and business courses at the Swaziland College of Technology (10%), with the remaining enrolling in entrepreneurship courses at selected Industrial Training Centers, South African Technikons, and Vocational and Commercial Institutions.

Collectively, these challenges result in differing program orientations, divergent institutional definitions of programs, students, and completers, as well as conflicting assessment terminology. The paucity of publically-available data or empirical research on middle-level tertiary programs in Sub-Saharan Africa coupled with the challenges referenced above makes the topic of this review very timely.

Entrepreneurship Education

In the context of EE, the author has drawn from the youth EE literature which is limited (Chingunta, et al., 2005), as well as the literature about EE and higher education in Africa. The author attempted to limit the use of literature from the U.S. and Western Europe. Shane and Venkataraman (2000) defined EE as:

. . . [t]he scholarly examination of how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated, and

exploited. Consequently, the field involves the study of sources of opportunities; the process of discovery, evaluation, and exploitation of opportunities; and the set of individuals who discover, evaluate, and exploit them (p. 218).

A simple online search results in entrepreneurship being classified into many types (e.g. agricultural, social, global, large company, scalable start-up, trading, industrial). As this review focuses predominately on curriculum in higher education taught to novices, the contextual applications in which entrepreneurs operate was deemed of lesser value than the fundamental and powerful concepts or knowledge domains which undergirds the larger field of study.

Experts agree that EE differs from small- or medium-size business development (Watson, 2001; Carland, Hoy, Boulton, & Carland, 1984). Entrepreneurs are distinguished by their cognitive style and innovative behavior. EE is also distinctive by its content. According to Vesper (1997, 2001) there are a number of general topics associated with EE (Table 1). These range from the thinking process to exiting the venture. The body of EE knowledge is evolving. It includes unique skills and behaviors of students, pedagogy, globalization, and there exists no region-wide accrediting body.

Table 1: Topics in Entrepreneurship Education

| # | Topic | # | Topic | # | Topic |
|----|--|----|---|----|------------------------------------|
| 1 | Occurrence & economics of entrepreneurship | 11 | Sources of personal equity | 21 | Beginning sales |
| 2 | The job of an entrepreneur | 12 | Borrowing | 22 | Beginning operations |
| 3 | Mentality & thinking | 13 | Accessing venture capital | 23 | Controlling operations & cash flow |
| 4 | Freedom to seek ideas | 14 | Public offerings | 24 | Updating the venture |
| 5 | Focusing a search | 15 | Idea protection | 25 | Locating acquisitions |
| 6 | Screening for physical & market feasibility | 16 | Legal formulation & government compliance | 26 | Dealing with a company seller |
| 7 | Screening for founder fit & financial attractiveness | 17 | Facilities | 27 | Franchise entry |
| 8 | Strategic business formulation | 18 | Location | 28 | Growth purchasing |
| 9 | Forecasting venture results | 19 | Founder team creation | 29 | Coping with growth |
| 10 | Developing the business plan | 20 | Obtaining external assistance | 30 | Venture exiting |

Source: (Vesper, 1997, 2001)

In 1961, psychological theorist David McClelland posited that individuals with strong desires for success demanded more of themselves, were motivated externally by earning money, and desired more directive leadership behaviors in their managers with frequent performance feedback. Similarly, Nieuwenhuizen and Kroon (2002) reported that a high student-level predictor of success as an entrepreneur is the student's need for achievement. Tertiary curriculum should be explicit in discussing this and other dispositions of successful entrepreneurs. Other attributes or skills include creative problem solving, work ethic, interpersonal skills, and the ability to learn on their own (World Bank, 2010). Tertiary institutions operating graduate entrepreneur cooperatives should identify students who are predisposed to display these attributes early in their program and nurture their development as entrepreneurs.

EE affects behavioral intent. In a summary of 17 program evaluation studies, Weber (2011) concluded that EE programs can motivate students towards entrepreneurial action. Researchers have also found other program benefits on students, faculty, and favorable policy structures. EE program participation has been related to better learner attitudes about learning and students' ability to set future goals (Rasheed & Howard-Vital, 2006). EE has been credited with changes in the mindset of students, where participants' shift their focus from becoming an employee to becoming employers themselves, providing participants' greater practical knowledge and skills in business through experiential learning (Davies, 2001).

Faculty teaching EE, with little to no formal academic background in entrepreneurship, have reported changes in their own mindsets, where they begin to think like entrepreneurs (Baker, Bassey, Jimoh, & Akande, 2015b). They also are likely to conduct research in applied entrepreneurship as a contextual area of study within their own academic disciplines (Davies, 2001).

Pinda Simao, the Education Minister of Angola posited that EE promotes positive attitudes, creativity, self-confidence, and promotes self-employment ("Entrepreneurship boosts," 2010). Uzomah and Okoye (2015) reported that EE programs in Nigerian universities are perceived by students to improve their creative ability and risk management skills. Boren (2010) hypothesized that a relationship exists between entrepreneurial creativity and

emotional intelligence. In Kenya, public support led to the establishment of an entrepreneurship development diploma program in middle-level tertiary colleges (Kenya National Exams Council, 2015). In an analysis of post-secondary TVET programs in developing countries, Jones (2013) included agricultural entrepreneurship as an opportunity, particularly for small- and medium-scale producers. She concluded by suggesting that EE could be easily incorporated into an existing curriculum.

EE has a unique pedagogy (Greene & Rice, 2007), balancing both theory and experiential learning with the goal of developing “reflexive practitioners” (p. xix). Team teaching pairing academicians with successful entrepreneurs is a recommended practice (McMullan & Gillin, 2001). Generally, EE is considered a lifelong process involving both formal and non-formal delivery affecting business start-up intention, as well as business feasibility and desirability (Garavan & O’Cinneide, 1994; Nafukho & Muyia, 2009; Linan, 2004; Weber, 2011).

Small- and medium-sized business development in Sub-Saharan Africa is a fragile affair and fraught with numerous challenges. One such challenge involves the lure of small-business participation in the second economy or informal sector (Spring & McDade, 1998). This sector involves businesses which illegally distribute legal goods (e.g. they may sell legal goods on a cash basis and not report the sales in order to avoid owing sales tax). The second economy also includes businesses that illegally distribute illegal goods (e.g. selling contraband). These shadow or black market economies go unreported and untaxed, and their scale in the agricultural sector is really unknown.

A second challenge that these business sectors face involves well-intentioned development agencies and their programs’ unanticipated consequences. Philanthropies can damage or displace local entrepreneurs. Howard Buffet (2013) discusses this problem and encourages leaders of philanthropic efforts to closely examine the unintended damage or consequences that donor-driven projects might have on small- and medium-sized business development. Chambers (1997) refers to errors in development as errors that lead to learning or embedded errors which are often repeated. He states “[e]mbedded errors go deeper, last longer and do more damage” (Chambers, 1997, p.15). Top-down projects that are pre-planned in developed countries and disregard local knowledge, culture and circumstances are likely to

have numerous unintended negative consequences. Field-level participatory approaches to planning would likely reveal such deleterious effects on existing small- or medium sized entrepreneurs in a particular region.

In discussing the future directions for EE research, Greene and Rice (2007) posed a number of valid questions including: (1) how EE is related to other types of economic and social systems; (2) what is the relationship between EE and other academic disciplines and how can the other disciplines better inform EE; (3) do students learn from success, other entrepreneurs, or from the EE knowledge base as contexts change; (4) how informed is the EE knowledge base through global research findings; and (5) how can program assessment through accrediting bodies truly be used to inculcate the behavior of continuous academic improvement.

EE Delivery Models and Ideology

McMullan and Gillin (2001) trace EE's chronological academic path in Western countries from courses to concentrations to majors. In Sub-Saharan Africa, broadly speaking there appears to be two models of program delivery. These include the one-shot delivery model and more extensive immersion model. As in many other situations, there is a great deal of variability within each model and a number of very good reasons why an institution would select one delivery model over another including costs and faculty availability. In West Africa, the interest in EE programming continues to be high (M. Bassey, personal communication, September 15, 2015). This section will conclude with an examination of EE program ideology.

The One-Shot Delivery Model

Much of the EE programming in the region is predominately course-centric. According to Co and Mitchell (2006) representative course titles in South Africa include: (a) *Small-Business Management*, (b) *Small Business Finance*, (c) *New Venture Creation*, (d) *Franchising, Innovation and Technology*, and (e) *Growth Management*. One benefit of course-centric delivery is that it is not difficult for students to build EE into their programs of study as an elective course or for one course to be added to an academic major. This said, consideration should be given to the timing of the course in the overall curriculum. According to Co and Mitchell (2006) programs should help learners create a disposition towards entrepreneurship by teaching entrepreneurial traits, and thus they should be implemented early in the curriculum. By including the course

early in the program, learners have a foundational base of knowledge of EE in which they can construct their own knowledge from subsequent subject matter and personal experiences.

There are a number of limitations to the one-shot delivery model. Presently there is no agreement when a single course should be delivered in the curriculum, although some experts recommend that EE should occur early in the program (Co & Mitchell, 2006). However, completion of courses early in a program presents several issues. There is a danger of knowledge decay prior to program completion. Early courses are more likely to be theoretical rather than experiential. Finally, students cannot filter the content at the time of instruction through the more advanced coursework within their disciplines and coursework taught outside of their disciplines (in the general education or academic core, for example).

A 'one-shot' course would not likely provide the depth of application experiences as a program of sequenced courses and experiences. This delivery method lacks standardization of content, which presents difficulties in comparative analysis. Finally, internalization of knowledge often happens over time. Greenbank (2006) suggests that knowledge and skills are hierarchical and that programs should carefully scaffold knowledge objects based upon business start-up, provide time for application, and then teach students the fundamentals of business growth.

Extensive Immersion Model

Extensive immersion programs require EE coursework throughout a student's program of study and encourage hands-on experiences on- and/or off-campus. Recognizing the importance of EE, the federal government of Nigeria mandated that EE be included as a core or general education requirement in 2010 at all polytechnic colleges. Later it mandated the requirement in all tertiary institutions. The federal government also requires that students participate in the Student Industrial Work Experience Scheme (SIWES), a paid externship program, between their first and second years of study. SIWES program placements are typically outside the student's home state of residence.

The EE program at Federal Polytechnic, Ado-Ekiti, in Nigeria is delivered through its Center for Entrepreneurship Development and Vocational Studies (CEDVS) and has been

recognized as a model program (Baker, Bassey, Jimoh, & Akande, 2015a, Baker, et al., 2015b; Baker, et al., 2014; Kofarmatat, 2013). This program consists of a theory-based course required in the first and third semesters in the two-year National Diploma (ND) program and in the fifth and seventh semesters in the Higher National Diploma (HND) which takes an additional two years. Table 2 identifies the topics included in the Federal Polytechnic ND theory courses and Table 3 those topics in the two HND theory courses (A.A. Jimoh, personal communication, May 28, 2015).

Regardless of major, students self-select into on-campus priority skill acquisition or applied laboratories (Table 4). Once a student enrolls in a particular skill acquisition course of study (required every odd-semester), they are not allowed to transition into a different skill area. The premise for this policy is that students are better-served when they develop depth of skill acquisition, which is delivered through a series of sequentially-orchestrated activities over a period of years. These skill acquisition courses of study are institutionally determined based upon entrepreneurship opportunities upon graduation including low capital input, regional market appeal, and regional market value. Example skill acquisition experiences at Federal Polytechnic include: (a) aquaculture; (b) apiculture; (c) snailery; (d) tie dye/batik; (e) soap production; (f) crop production; (g) poultry production; and (h) welding and fabrication (A.A. Jimoh, personal communication, May 28, 2015). Table 5 presents contents of the two- (ND) and four-year (for HND students) aquaculture skill acquisition experiences at Federal Polytechnic, Ado-Ekiti, Nigeria (A.A. Jimoh, personal communication, May 28, 2015).

At Federal Polytechnic, the entrepreneurship faculty are embedded within their home or primary disciplinary department or unit. Hence, they are jointly hired by the CEDVS and their core academic disciplinary unit. They are then trained by a CEDVS associate director in EE content and pedagogy, and they teach students in their home academic majors. The positive side of this program is deep, sequenced immersion into the theory courses, a great deal of practical, hands-on training in a skill area, the management involved in operating the skill acquisition area, and encouragement to 'think big, start small' in the development of a part-time or full-time entrepreneurial operation. Many students establish home operations during their first or second year. The CEDVS is relatively new, and is not without implementation issues. A recent on-site evaluation of the program revealed that CEDVS faculty holding joint

appointments feel as if they are undercompensated for the added-duty of teaching outside of their home departments and some of the skill acquisition courses were over-crowded and/or did not have adequate equipment (Baker, et al, 2015a). However, these extensive immersion programs require a great deal of institutional investment and long-term buy-in from key institutional stakeholders.

Table 2: Topics in the National Diploma (ND) Theory Courses at Federal Polytechnic at Ado-Ekiti, Nigeria

| # | Course | Topics |
|---|-------------------------------------|---|
| 1 | EE 116 (ND first-year students) | <ol style="list-style-type: none"> 1. Meaning & scope of enterprise & entrepreneurship 2. History & governmental policy measures at promoting entrepreneurship in Nigeria 3. Types, characteristics & rationale of entrepreneurship 4. Role of entrepreneurship in economic development 5. Entrepreneurial characteristics & attitudes 6. Key competencies & determining factors for success in entrepreneurship 7. Motivational patterns of entrepreneurs 8. Generating business ideas 9. Improving students' business buying basics |
| 2 | EE 216 (ND second-year students) | <ol style="list-style-type: none"> 1. Techniques for generating business ideas 2. Evaluation of Business Ideas for Enterprise Development 3. Methods of product and service selection 4. Stock control basics 5. Process & procedure for starting an enterprise 6. Business planning basics 7. Operational techniques in managing a business, 8. Industries & support agencies in Nigeria 9. Role of commercial & development banks in small- & medium-scale industries development 10. Role of personal savings & portfolio investment in national economic development 11. Record keeping basics 12. Improvements in personal business buying |

Source: A.A. Jimoh, personal communication, May 28, 2015

Table 3: Topics in the Higher National Diploma (HND) Theory Courses at Federal Polytechnic, Ado-Ekiti, Nigeria

| # | Course | Topics |
|---|--------------------------------------|--|
| 1 | EE 316 (HND third-year students) | <ol style="list-style-type: none"> 1. Entrepreneurship: An overview 2. Role of personal savings & portfolio investment 3. Business costing 4. Life skills needed by an entrepreneur 5. Sources of information for entrepreneurship development 6. Business planning basics 7. Organizations & agencies involved in promotion & development of entrepreneurship 8. Role of banks & financial institutions 9. Industrial associations in the development of small- and medium-sized enterprises 10. Business buying basics |
| 2 | EE 416 (HND fourth-year students) | <ol style="list-style-type: none"> 1. Functional business areas 2. Planning for business 3. Strategies for consolidation & expansion of business expertise 4. Management & business succession 5. Improving your buying basics |

Source: A.A. Jimoh, personal communication, May 28, 2015

Table 4: Skill Acquisition Courses offered at Federal Polytechnic, Ado-Ekiti, Nigeria

| Skill Acquisition Courses |
|---|
| 1. Aquaculture |
| 2. Apiculture |
| 3. Snailery |
| 4. Tie Die/Batik |
| 5. Soap production |
| 6. Vegetable/Plantain farming |
| 7. Turkey rearing |
| 8. Simple electrical gadgets |
| 9. Welding & fabrication |
| 10. Ceramics & tiles |
| 11. Bakery & confectionary |
| 12. Information/communications technology |
| 13. Hospitality & events management |
| 14. Concrete block manufacturing |

Source: A.A. Jimoh, personal communication, May 28, 2015

Table 5: Two-and Four-Year Curriculum in Aquaculture Skill Acquisition Unit at Federal Polytechnic, Ado-Ekiti, Nigeria

| Purpose: Provide students with the knowledge and skills for setting-up small-scale aquaculture. Graduates of this program also qualify for a diverse range of positions including aquaculture technician, hatchery technician, system supervisor, hatchery manager, assistant farm manager, & farm manager. | |
|--|--|
| Course | Topics |
| National Diploma (ND) I | Introduction to aquaculture, principles of fish aquaculture & aquatic animal health |
| ND II: | Catfish farming, decision to become a catfish farmer & small-scale catfish production |
| Higher National Diploma (HND) I: | Using existing farm ponds, marketing, economics, permits required for aquaculture operations in Nigeria, pond site selection & pond construction |
| HND II: | Stocking, feeding, water quality, fish diseases, weeds, harvesting, transporting & farm management |

Source: A.A. Jimoh, personal communication, May 28, 2015

Central to any discussion on EE program delivery is the need for open and frank discussions on institutional mission. Mass and Herrington (2011) report that an ideological battle is occurring in the context of EE between faculty and administrators who feel that their mission is career preparation in more established professions (e.g. accounting, sales, marketing, or management) versus those who advocate a central purpose of the mission should be the inclusion of business development and how to start-up and run a small-or medium-sized business. Regardless of where the tension exists, perhaps the best decisions are reached through a process of openness to ideas and some level of compromise.

In 2010, Block and Wagner examined the microeconomic impact of these two types of EE programs in Germany. They found that “specific vocationally oriented education is related to the earnings of necessity entrepreneurs but not to those of opportunity entrepreneurs” (p.155). Vocationally-oriented programs may have more focus on small business development than entrepreneurship development. Unfortunately, the author was unable to find a similar impact study in Sub-Saharan Africa. Likely many EE programs in Sub-Saharan Africa fall on a continuum between a one-shot delivery and extensive immersion. However, the lack of

scholarly information on existing program delivery models and their impact offers compelling evidence of why regional comprehensive studies are necessary.

Ideological Approach

Regardless of delivery model, DeJaeghere and Baxter (2014) contend that there are two distinctively different lenses in which EE curriculum is developed--either through a neo-liberal approach or through a capabilities approach. Turner (2008) asserted four neo-liberal principles undergird its ideology: (1) market orders are necessary for resource allocation and the protection of individual rights; (2) legal states have a duty to minimize conflicting relations among individual members of the state; (3) legal states should minimize interventions; and (4) private property ownership provides for social order. The capabilities approach is rooted in the works of Paulo Freire who advocated the emancipation of the more marginalized of society and against exploitation. Apple contends that neo-liberals are the “most powerful element within the conservative restoration” (Apple, 1999:9).

In terms of curriculum design, DeJaeghere and Baxter suggest that the neo-liberal approach is subject matter-centered where the capabilities approach is student-centered. They contend that EE framed through neo-liberal lenses is a behavioral or human capital approach, focusing on teaching knowledge and its application, creativity and business management, with little regard for a respective student’s situation (DeJaghere & Baxter, 2014).

A capabilities model would begin by considering both a student’s household livelihood situation (e.g. household composition, access to cash, gender roles, and biophysical resources) and individual strengths and weaknesses (academic ability, resources, personal attributes). Programs could then provide both EE knowledge and serve to build social networks. The program would then focus on expanding capabilities linking individual attributes and skills with how they could be applied for tapping into market demand. The program would then help the learner transform these capabilities into functions or active choices the learner would make with how the learner would manage profits through savings, spending for household needs, or spending to enhance their personal status among their peers.

EE framed through a capabilities approach is designed around the value of the student and illuminates the importance of how knowledge and resources are transferred. This

approach, sometimes referred to as a poverty reduction approach, focuses on meeting the basic needs of the learner, the development of positive social networks that teach a culture of delayed gratification and saving money. In a sense, the difference between the neo-liberal and capabilities approaches is one of an opportunity entrepreneurship perspective or a necessity entrepreneurship perspective and their respective differences in motivation. The Global Entrepreneurship Monitor in South Africa has made a distinction between opportunity and necessity entrepreneurship (Von Broembsen, 2005). Fundamentally, EE designed without regards to learner capabilities is less likely to help the most marginalized of society transition out of poverty.

New Directions for Program Expansion

Middle-level tertiary education providers in Sub-Saharan Africa should inculcate “an integrated entrepreneurial ecosystem” (Maas & Herrington, 2011, p. 278) into their institutional culture. This EE ecosystem should include: (a) an explicit mission for EE articulated in a strategic plan; (b) an international focus coupled with a purposive regional economic development action plan (think globally, act locally); (c) the cultivation of an interdisciplinary or cross disciplinary faculty accommodating individualized teaching styles within a centralized institutional curriculum that is carefully coordinated and integrated; (d) a faculty reward system for exploiting opportunities for innovation; and (e) a tripartite emphasis on teaching, scholarly activities, and entrepreneurial incubation and broader community outreach.

The *sine qua non* of future program reconfiguration or new program establishment is program quality. Regional tertiary institutional program standards for EE have not been articulated in Sub-Saharan Africa. Perhaps this is because programs are still in the developmental stage (Co & Mitchell, 2006). Yet, this is exactly when standards should be proposed. Vesper and Gartner (2007) reported the following indicators of North American program quality: (a) course-level content; (b) academic staff scholarship; (c) regional community impact; (d) alumni activities and entrepreneurial activity; (e) program-related technology transfer-related innovations; and (f) community outreach.

Relatedly, experts agree that EE programs in Sub-Saharan Africa should focus on economic contributions in their catchment or service areas (Gibb & Hannon, 2006; Maas, Court,

& Zeelie, 2001). On campus enterprise villages can easily become entrepreneurship laboratories to reinforce classroom concepts. Community and donor funds should be raised to support the establishment of an endowed corpus of funding. Ayodele (2006) recommended that: (a) local private and public sectors cooperate in contributing to small venture capital funds; (b) school-based mini-incubators be established to support school-based enterprises; (c) entrepreneur internship programs be used to match students with local entrepreneurs; and (d) skill acquisition centers be used to foster specific skill sets required.

Middle-level tertiary institutions that are serious about including EE in their curriculum need to model entrepreneurship (and the ability to turn a profit) in their own auxiliary operations (Herrmann, 2009). Baker, et al. (2015a) reported that at Federal Polytechnic, Ado-Ekiti in Nigeria, the CEDVS assumed farm management operations. Within a one-year period a cash surplus started accumulating. Prior to this time, the farm operation was 'outsourced' to private enterprise on a break-even basis. CEDVS quickly demonstrated its entrepreneurial prowess by reducing farm operation expenses and growing high value crops. The institution, recognizing the CEDVS's exemplary programming, is constructing a new building to house its joint faculty, academic classrooms and laboratories, community outreach facilities, and work-space to add value to the crops that it produces.

Another noteworthy example is from Tanzania's Sokoine University of Agriculture's Graduate Entrepreneurs Cooperative (SUGECO) (K.M. Moore, personal communication, August 17, 2015). Housed within the Department of Agricultural Economics, the CRDB Bank (the central bank and banking regulator of the country) partnered with SUGECO as a vehicle to link donor credits with qualified borrowers. SUGECO is staffed by a volunteer manager (an unpaid intern), accountant, and a managerial team of faculty and former students. Graduates of any department are qualified to participate in the cooperative as long as they agree to satisfactorily complete training in entrepreneurship and business plan development. The SUGECO not only trains and serves as a conduit for loans, but it also serves as an advocate during the business start-up process and makes campus land available to young entrepreneurs. Business start-ups have ranged from staple and specialty crop processing to livestock production and marketing.

Gouws (2002) reported that Technicon Natal (now Durban Institute of Technology) in South Africa established a community outreach program for entrepreneurship. Technicon Natal's Business Clinic in Kwa-Zulu-Natal has the goal of developing community-based entrepreneurs in a high unemployment region. To date, no publicly available indicators of Technicon Natal's Business Clinic have been made available.

Next Steps for the Program Assessment

EE academic staff and stakeholders must articulate program outcomes and invest resources in program assessment. Weber (2011) clearly stated that "[n]ew investments in EE at tertiary institutions are only justified when the results meet the goals of fund providers" (p.4). It is important that program evaluation includes surveillance of program needs, diligent program implementation monitoring, as well as impact-related assessments complete with cost-effectiveness and cost-efficiency indicators (Fitzpatrick, Sanders, & Worthen, 2011; Rossi, Lipsey, & Freeman, 2004). In terms of program needs, little is known about innovation space for small business in Sub-Saharan Africa, which according to Naude (2012) is likely great.

As for *ex post* related program impacts, there is insufficient empirical evidence of the nature and magnitude of existing program effects (Cox, Mueller, & Moss, 2002; Souitaris, Zerbinati, & Al-Laham., 2007; Weber, 2011). In context of youth entrepreneurship programs in Sub-Saharan Africa, Chingunta, et al. (2005) revealed that it is questionable whether the programs are reducing poverty or increasing employment. Similarly, Nafuko and Muyia (2009) are unsure if the reported socio-economic impacts of EE programs in Africa are reality or myth. In 2011, Weber concluded his quasi-experimental evaluation study of German programs by suggesting that programs should also be considered successful when they help students discover that they are unwilling to become an entrepreneur, rather than the students failing in the attempt to become entrepreneurs.

Success would vary by program delivery model and ideological approach. Quality indicators for one-shot programs would measure success by attitudinal appreciation or intent, having more proximal indicators. Extensive immersion programs would include both short-term outcomes such as number of students beginning small-scale or backyard enterprises during the program, or shortly after completion, while longer-term distal measures would likely focus on

regional economic impact, cost effectiveness, and cost-efficiency. A capabilities approach for either delivery model would include a student services component, in much the same manner that special programs in the US provide support for academic remediation, counseling, and enhanced engagement activities for first generation students. These programs have up-front expenses and add to overall program delivery costs. Thus, it is critical to determine their long-term cost-effectiveness and cost-efficiency.

General Conclusions and Recommendations

In this literature review, the author has provided background on middle-level tertiary institutions in Sub-Saharan Africa, as well as on EE theory, delivery models, and ideological approaches. Diploma granting colleges are the forgotten sector in the literature, but serve as a critical bridge between secondary education and university programs for some students and as a fundamental TVET conduit into the world of work for many others. EE programming continues to resonate with policy makers, regional leaders, and students, holding promise for future economic prosperity to countries with high unemployment.

In some countries, EE has been mandated as a subject in both compulsory (secondary) and tertiary education. There are two major delivery models providing EE: one-shot programs and extensive immersion programs for entrepreneurship. The developmental or capacity-based approach takes a more holistic view of EE and offers hope to the more marginalized of society. This approach teaches delayed gratification, and is sensitive to basic household and social networking needs as students transition out of poverty into business ownership. Their distal impact on economic development has not been established by rigorous, long-term quantitative research. In most respects, program development is in its infancy, because Sub-Saharan-centric EE research, informing its knowledge base, is in its infancy.

In many countries, opportunities abound for small enterprise development. The ‘think big, start small’ philosophy advocated by the Federal Polytechnic EE program in Nigeria encourages students to begin backyard enterprise projects in Year 1. In many cases, this program is similar to the supervised agricultural project programs that have been hugely popular in the US since the passage of the Smith-Hughes Act in 1917 and the 4-H agricultural

and family and consumer sciences project programs facilitated by land-grant extension agencies.

Universally, the higher education culture is slow to change, and top-down added expectations from governmental sponsors is usually reservedly accepted and often dissipates after initial funding stimulants have ended. This said, middle-level tertiary institutions are rising to the call. These institutions are generally more adaptive than their university counterparts. Often their faculty are employed based upon the skill sets that they bring out of business and industry. By necessity, their compensation levels are such that part-time enterprise operation is necessary to supplement their family incomes. Thus, many of these faculty have their fingers on the pulse of the regional business sector.

Although much of the instruction about entrepreneurship is through Business Management Departments or Agricultural Economics/Agribusiness Departments, many colleges have added EE to their academic core, integrating a progressive EE curriculum across academic disciplines which include formal coursework and experiential learning in skill areas of promise.

In their South Africa study, Co and Mitchell (2006) reported that academic staff in differing tertiary education settings (including technical universities or *technikons*) perceived EE in tertiary institutions to be in a developmental stage with high levels of institutional commitment to teaching, research, and outreach in entrepreneurship.

There is a need for a holistic review of existing EE programs offered in tertiary institutions in Sub-Saharan Africa (Co & Mitchell, 2006) in the context of their institutions, region and country. To do so, stakeholders would have to look carefully at common articulated program measurable outcomes, as well as the fidelity of program delivery. These data could be disaggregated by program type such as TVET or Higher Education System, public or private, enrollment, location (urban, suburban, or rural), or other indicators of interest.

Institutionally, Mets (1997) and Palomba and Banta (1999) recommend both a process- and outcome-based evaluation. The process includes the establishment of a program review council, self-studies by internal stakeholders, reviews by experts external to the tertiary institution, and administrative follow-up for corrective action. These reviews can then lead to

restructured programs, replacement by re-structured or new programs, or academic program deletions. In terms of regional and/or country program assessments, Co and Mitchell (2006) remind us that EE programs in Sub-Saharan Africa can only be successful if offered as part of a more comprehensive country-level approach that includes entrepreneur-friendly policies by governmental and political institutions.

More empirical evidence is needed on program delivery models and impact. Many experts have concluded that impact-directed research of EE programming lacks empirical evidence on the nature and size of its effects (Cox et al., 2002; Souitaris et al., 2007; Weber, 2011). In Watson's (2001) critical framework for EE research, he called for open and public research procedures, precise definitions, replication, objective data collection and sampling, adequate data for analysis, and complete frankness in reporting flaws in designs and research effects.

The number of qualified faculty has to be increased (Jimoh & Ezeana, 2014). Innovative EE Sub-Saharan African graduate degree programs are needed. These could be developed through the establishment of joint university degree program offerings in Sub-Saharan Africa focusing on excellence in EE in much the same manner that joint programs in the US are offered (Shinn & Baker, 2010). These programs could be delivered through distance learning technologies and through short-term immersion experiences. A key for the success of these programs would be the development of a long-term business strategy that ensures that the degree price-point is competitive for African academicians and/or entrepreneurs who would like to share their knowledge and zeal of entrepreneurship by teaching in tertiary institutions. This program income would need to be balanced with program delivery costs (e.g. an entrepreneurship-orientation) to ensure quality delivery and profitability.

Short-term immersion experiences in the West and distance learning technologies can be used in the development of continuing education certificates for faculty training and retraining. Certificates are mentioned as opposed to degree programs from the West because Western price-points are not cost-effective based upon potential lifetime earnings of academic staff in Sub-Saharan Africa. Sustainable professional development programs must be designed

on a cost-recovery or profit basis. However, special government or donor support is likely needed for program start-up.

Academic deans and directors should explore Responsibility Centered Management (RCM) (Curry, Laws, & Strauss, 2013). Established programs should be given the freedom to function as 'cost centers' allowing unit-level management teams to control profits for reinvesting in program-related capital and operational improvements or provide salary incentives to exemplary academic staff. This model includes a 'tax' on all programs to support critical infrastructure and administrative overhead.

Tertiary institutions should consider offering continuing education programs on a cost-recovery basis to prepare EE graduates to deliver community-based extension programs. Program graduates with strong technical and business skills would be ideal candidates for NGOs or FBOs to employ as part-time community-based extension providers. Thus, the graduate's expertise in small business development and deep technical knowledge of production practices could be combined with community-based extension program development and evaluation skills for delivery of community-based extension programs. Community-based extension work could serve as income supplement (Baker, et al., 2014).

Addendum: Recommendation for Fast-Tracking EE Development

Based upon the literature and the author's professional experiences, a Center for Research, Evaluation, and Accountability in Agribusiness Entrepreneurship Education should be established in Sub-Saharan Africa to fast-track entrepreneurship in the region. The Center could be an addition to the biophysical centers in the CGIAR Research Consortium. The Center should focus on agribusiness capacity building in extension agencies, TVET institutions, and higher education institutions.

The Center would identify exemplary programs and bring stakeholders together to develop consensus on exemplary program frameworks. Institutions would utilize this framework to develop program level outcomes that localize opportunities for entrepreneurial success. A continuous culture of assessment would be established linking performance metrics with program outcomes.

Catchment surveillance systems of actors in representative urban, suburban, and rural areas would be monitored for the purpose of determining the extent that beginning entrepreneurs received mentoring by experienced entrepreneurs, and to identify the extent to which beginning entrepreneurs had access to loans and other resources. Social Network Analysis (SNA) would be utilized as a monitoring tool in these networks and would provide both graphical and statistical evidence on the interactions of beginning cohorts of entrepreneurs.

The Center would support graduate education, particularly African-centric Ph.D. programs, by advancing knowledge and scholarship in EE. Ph.D. program coursework and experience is based upon research-based knowledge domains and knowledge objects. This knowledge, in-turn, informs the core content in professional-level master's programs, baccalaureate, and diploma programs. Shinn and Baker (2010) speaking of Ph.D. programs in Agricultural Education, state that "The mix of domains and knowledge objects remains an important art and science. However, clever degree planners will maintain a balance between fundamental, powerful principles [informed by empirical research] and future practice (p. 173). To inform the discipline, the Center will utilize state-of-the-art laboratories for scientists to study thought-processes and behaviors of successful entrepreneurs and the actors within their systems including consumers of their products or services. Neuro-imaging and

psychophysiology research is leading to new and exciting advances linking human physiology and human behavior. A functional magnetic resonance imaging (fMRI) laboratory will lead to new insights in brain activation. Other laboratories will focus on psychophysiology (skin conductance, heart rate, and facial electromyography of frown or smile muscles) which allows scientists to measure physiological markers of subjects. Physiology data provide unconscious reactions and isolate specific points in a treatment. When combined with fMRI data, psychophysiology data can provide a unified methodology for assessing behavioral stimuli, which can be followed in larger field trials through lower-cost mobile eye-tracking technology. As Golde and Walker (2008) suggested, doctoral programs exist to “educate and prepare those to whom we can entrust the vigor, quality, and integrity of the field” (p.5).

Participating agencies and institutions would be required to pay an annual fee to access Center services and emerging research. Service benefits would include access to a critical IT research and reporting infrastructure now lacking in many agencies and institutions. The Center would also be the conduit for EE program accreditation. Center staff would include institutional planning and assessment expertise who would coordinate an external program review process to ensure that accredited programs have the highest standards for program quality, including strong linkages with the agribusiness community.

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