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Title:

Institute for Innovation and Entrepreneurship at Vaal University of Technology:
Conceptions, Distinctions and Impact

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Framing the Institute for Innovation and Entrepreneurship

There are a number of factors that guided our resolve to establish the Institute for Innovation and Entrepreneurship as early as in 2006. First, poverty and inequality incidences remain relatively high and mostly defined in racial terms with Africans bearing the most brunt of these incidences post-apartheid notwithstanding policy initiatives that attempt to ameliorate their impact on the most vulnerable among us. According to Leibbrandt, Woolard, Finn and Argent (2010: 9), mostly Africans still live in poverty and intra-African inequality has dominated aggregate measures of inequality post-apartheid inasmuch as some redistribution between inter-racial groups is increasingly becoming a reality.

In our geographic location (Sedibeng District of the Gauteng Province), the main economic driver – manufacturing – which constituted almost 40% of our economic activity has been declining since 1993 as the result of global price competitiveness. The manufacturing sector in our district focused mainly on the transformation of the physical or chemical materials into new products with fuel, petroleum, chemical, rubber, metal, glass products and electrical machinery dominating this sector. This sector, of all other economic sectors in our district, had mastered the art of industrial assembly line production system with its ability to utilize and absorb unskilled and semi-skilled labourers which were dominantly African and residing in neighbouring townships. With the decline in this manufacturing sector, these labourers lost their jobs and contributed significantly in the high rate of unemployment which hovers around 61% in the townships (Slabbert, 2003). According to Slabbert (2003: 21), there is a high formal correlation between unemployment and poverty incidences in our district so that those who are unemployed are most likely to be poor and generally unskilled. This overreliance on formal sector income in our district which comprises almost 80% of household income has made our people extremely weak on innovative and entrepreneurial self-efficacy.

Entrepreneurial self-efficacy is the belief that one can competently develop a product or service and perform activities that could identify markets for the product/service and become competitive (Lebusa and Pitso, 2012). Forced into finding alternative means of generating household income, most retrenched people in our district opened small retail outlets with little experience in business strategies and operations with the consequence that most ceased operations few months into business and others continued on the path of subsistence entrepreneurship and have been barely surviving. A new phenomenon of mushrooming shopping complexes consisting of established brands made way into the townships and posed further threat to the survival of these township businesses which include spaza shops which were mostly opened out of desperation when people lost their formal household income (Lebusa, in press). Furthermore, a new breed of small retail outlets with better organized structures and institutions for leveraging opportunities that come with bulk buying and other collective benefits posed even more threats and that these threats (read competition) was posed by non-South Africans fuelled a new phenomenon of xenophobia and unreasonable expectations of seeking protection from the government (Lebusa, in press). Our township business people just lack the capacity to compete and succeed in this tough economic environment. The situation is made worse by the declining disposable income as the result of general loss of formal household income due to high levels of unemployment and the pressures that face those who still generate some income which gets thinly spread among nucleus and extended families as well as exacerbated by the high food and energy prices. These customers have become more discerning and demanding of better products with lower prices making the competition even stiffer.

Second, the post-apartheid era almost at the same time of its inception signalled the advent of the new global economy whose organizing form is information and useful knowledge which are sources of value creation (Castells, 2001: 2). The value creating forces that leverage and make use of information and relevant knowledge such as the brand/franchise, computer systems and intellectual property have reduced the traditional commoditised forces of land, labour, machine capital and assembly line industrial production to a secondary role (Stephan and Power, 2012: 119).

As Castells (2001: 2) suggests “*the new economy can be defined as the combination of three interrelated characteristics that cannot function without each other*”. According to Castells (2001: 2), in this economy the sources of productivity and competitiveness are information and useful knowledge as powered by information technology. This information technology enables this economy to operate as a unit in real time and on a planetary scale. The last of its characteristic is that its capacity is technological, organisational and institutional, that is, this economy is capable of structuring the entire planet by means of telecommunications and informational systems thus allowing firms and networks to organise themselves to be globally active as well as centring markets as the sole and only legitimate means of meeting human needs and creating its conveniences.

This new economy poses serious challenges on research and scholarship as well as on how universities conduct their business. Knowledge production, particularly one that contributes to economic growth and development, is now premised on innovative systems (Castells, 2001). The innovative systems approach to economic growth and development suggests that the determinants of technological change can no longer be the sole preserve of individual firms or research institutes such as universities but form part of the broader societal structure in which firms and knowledge institutes are embedded (Lundvall, 1992). Studies on innovative systems point to the influence of the social structures on technological change and, in the longer term and more indirectly, to the economic growth and development (Carlsson and Stankiewicz 1991, Freeman 1995, Lundvall, 1988, Lundvall 1992). This broad societal orientation of knowledge production and technological change makes universities ripe for disruption so that there is a need for universities to rebrand and use information technologies to leverage franchising and intellectual property as key sources of value creation which places learning at the heart of universities strategies and operations. In this sense, research should be understood as learning at the collective level, that is, any new knowledge that is produced within the innovative systems framework has to benefit the broader spectrum of society which is one of the few ways that technological changes and advancements that impact economic growth and development can occur in this century.

This also means that learning at the local level has become necessary in order to close the transactional space between the three layers of technological change – the society, firms and research institutes. According to Bowden and Marton (1998: 4) who advance the learning paradigm in line with the innovative systems approach, universities should view teaching as learning at an individual level where individuals learn about knowledge that is already known in the discipline. Furthermore, Bowden and Marton (1998: 8) view research as collective learning because those that conduct research make their findings public so that the societal collective can benefit from it and see community engagement as learning at the local level where formal knowledge meet and find expression in non-formal and informal settings which tend to sober the ideals of formal knowledge. Once universities have adopted this learning paradigm, efforts of research and scholarship will focus on shaping and guiding technological changes which means that universities would be able to leverage the innovative opportunities that come with dealing with the complexities and uncertainty of real life situations in society. There is, therefore, a need for universities to develop new efficiencies that would enable them to produce useful knowledge and become innovative as well as entrepreneurial through expanding their brands on a global scale.

Institutes for Innovation and Entrepreneurship in universities should operate as semi-autonomous and independent units to leverage the opportunities that the new global economic environment provides in order to eschew the asphyxiating bureaucratic dogma that bedevils universities and constrain innovation and entrepreneurship (Christensen and Eyring, 2012).

The third factor relates to another post-apartheid phenomenon that relates to the fact that the absorption rate of new recruits by our economy has dwindled to less than 4% by 2001 estimates and continues to shed jobs rather than create new ones (Davies, 2001). As the result of this downward trend of job losses and lack of new job opportunities, graduate unemployment and under-employment has also risen significantly post-apartheid. There are, however, officially more than 600 000 unemployed graduates in the country with more than 820 000 vacancies (Adcorp, 2011) which means that universities may not be preparing their graduates for employability which involves development of so-called soft skills such as creativity.

Another worrying concern is the fact that the country is unable to account for more than three million young people between the ages of 18 and 24 years because they are neither at formal institutions or employed (Pauw *et al*, 2006). In our own district, the conservative estimates of these unaccounted young people is 250 000. Our education system has also, over time, dropped more than half a million children if we consider that more than one million Grade 1 children registered in 2000 and of that number just under 400 000 of these children wrote their matriculation in 2012 (DoE, 2012). Of those who wrote matriculation, almost 50 000 less learners wrote their matriculation in 2012 in Accounting, Mathematics and Science as compared to 2011 matriculation statistics (DoE, 2012). Our district schools have also been consistently under-performing in matriculation results since the advent of democracy so that a huge pool of young people in our district is without the matriculation certificate which is vital for placement in higher education and in searching for other opportunities. These issues played a significant role in designing our Institute for Innovation and Entrepreneurship.

Developing the Institute for Innovation and Entrepreneurship

Its Unique Design Features

We aim to contribute in transforming the ownership of the means of production in the country through targeting upper middle class inequality. This type of inequality is of a special kind because it is difficult to discern as it is more sophisticated thus requiring some deeper analysis. It finds expression in the Black Economic Empowerment (BEE) and reparation discourses of the early 1990s.

BEE was invented by the white economic elites who controlled mining, chemical and engineering industries as well as finance in order to co-opt former liberation leaders who would, in turn, serve as buffers to big business which would then be protected against foreign competition and would also leverage government tenders (Mbeki 2009: 67). This invention created instant multi-millionaires out of politicians and those closely connected to the political elite on the pretext that this is about redressing past economic inequalities.

However, BEE actually created a huge dependence where the new black upper middle class remained a victim and weak in order to leverage these reparation benefits which led to what Moeletsi Mbeki in his 2009 book, *Architects of Poverty: Why African Capitalism needs Changing*, refers to as consumptive entrepreneurship where the search for economic opportunities mostly by blacks is based on the flawed reparation discourse which accentuates the victimhood status and keep the ownership of these businesses mostly in the few white economic elites. This situation, where mostly black upper middle class elites do not own the means of production which remains in white upper middle class elites, has resulted in the special kind of inequality. Our take is that this inequality needs to be tackled from bottom-up and forms the basis of our efforts in the institute.

We have adopted backward mapping (backcasting) as the basis of tackling this inequality and, in the process, contribute in alleviating poverty levels. First, we have made clear what our overall aim is which relates, at the risk of repetition, to striving for equitable ownership of the means of production at the upper middle class level. Second, our overall efforts are directed towards achieving an enterprising individual with strong powers of analysis, creativity and application. We believe such an enterprising individual will need some higher literacy and numeracy skills in order to greatly benefit from our infusions of training, ideas generation, mentoring and leveraging of technological information for business success and competitive advantage. Third, we focus our attention to start-ups and existing small businesses as our starting point with the clear intention that these individual business people will form networks that would enable them to graduate to tackling bigger business opportunities with clear focus on owning the means of production.

Fourth, we put our energies on creating enabling and expanded learning opportunities which are sufficiently safe and inviting (Pitso 2011, Pitso in press) to allow prospective entrepreneurs to become proactive (take initiative), innovative, risk-taking, effectual (take decisions under conditions of uncertainty), autonomous and collaborative as well as being aggressively competitive.

Our Institute for Innovation and Entrepreneurship consists of four units which are designed to tackle various challenges that might compromise our developing enterprising individuals. The first unit focuses on Adult Basic Education and Training (ABET) which is aimed at improving literacy and numeracy levels of individuals as well as create alternative routes to accessing higher learning. We believe that this is a precondition for participation in our institute. Without proper grounding on these skills plus the basic skills on entrepreneurship and computer that we also provide in this unit, we believe that prospective entrepreneurs may struggle to cope in our extensive training that is no less than six months and includes another 12 months for monitoring, mentoring and evaluation.

Another unit pays attention to start-ups and existing businesses. Start-ups are intended for venture creation and target mainly the youth from which we can tap and develop networks that can tackle bigger business opportunities. Existing businesses are targeted for turning them into entrepreneurial entities that can compete in the hostile business environment.

The third and fourth units focus on making a contribution towards developing enterprising students and lecturers that could turn our institution into an innovative and entrepreneurial university that can leverage local and global opportunities through strategic franchising of its products and services by means of blended individual, collective and local learning. The key drivers of these units are inquiry, deepened knowledge, developed (designed and tested) artefacts and Prototypes for commercialisation.

The Role of the Institute for Innovation and Entrepreneurship on Developing Enterprising Individuals

In 2008 and sponsored by the African Bank and Anglo American, our institute provided 340 local learners that failed matric with second chance opportunities to access higher learning and also provided extended opportunities to these learners to become entrepreneurial and computer literate.

This unit project was launched by the then Honourable Minister of Education, Ms. Naledi Pandor. The project focused on Accounting, Mathematics, Science, English as well as basic entrepreneurship and computer skills. Through this project, we have successfully placed 15 learners into higher education institutions in areas of Engineering, Internal Auditing and Education. We can also report that more than hundred learners were sufficiently motivated to continue with their studies in FET colleges and other ABET centres. These students have been invited to apply for placement in our upcoming Start-Ups project which begins in August 2012. We have since established that the ABET centres in our district are now fairly functional so that we have decided to provide support to these centres through developing the tutorial system for them in areas of Accounting, Mathematics, Science, Entrepreneurship and Basic Computer, The tutorial system is modelled around the Supplemental Instruction and critical thinking for which one of us had spent time at the University of Missouri Kansas City and the Foundation for Critical Thinking housed at the University of California benchmarking and conceptualizing this tutorial system.

We have also linked up with the person who deals with the Recognition of Prior Learning (RPL) at our institution with the view to developing alternative access route to higher education for those who qualify and meet the criteria. Through our involvement in other community projects, as members of the Non-Governmental Organization that provide support to an orphanage, we have been assisting orphans to become self-reliant through education and taking advantage of the enterprise development projects that would enable them to run businesses. Three hundred orphans have already received support which includes Christmas celebrations that are funded by SAMANCOR as a way of compensating for loss of family life. Through this NGO we also contribute in skilling people to develop agricultural skills and promote home-based gardening and we also contribute in organising sports activities in the area. Furthermore, there are ninety caregivers that provide support and assistance to HIV and AIDS patients and other terminally ill people. Our overall aim, in this unit, is to create second chance opportunities for self-reliance and self-determination for the most marginalised in our communities while cushioning those who have lost the support of families.

Our second unit deals with small enterprise development which focuses on developing Start-Ups and existing businesses. It is this unit that serves as the basis of building networks to tackle bigger business opportunities within and beyond our borders. All other units are seen as tributaries that supply this specific unit with all the necessary tools for successful launch of bigger businesses. We have secured funding from Anglo American to train, monitor, mentor and evaluate fifty selected prospective entrepreneurs and fifty small business owners over a period of eighteen months starting from 11 August 2012. The Start-Ups project focuses on unemployed youths who show potential to be innovative and entrepreneurial which we measure through some standardised tests which also serve to put these prospective entrepreneurs in the right frame of mind prior to the actual training. These tests are one of many ways we look for potential in the applicants. Other ways include the business intent, initial commitment and performance in training.

We have also been responsible for establishing and sustaining the Students in Free Enterprise (SIFE) activities over the last five years and have consistently participated in the year-end national competitions for which we have been runners-up. We have been using SIFE to assist us in skilling small businesses with financial, marketing and other skills so that they could become competitive and enterprising. More importantly, we have been inculcating a sense of responsibility to our students drawn from all faculties and, in the process, students have been given opportunities to test and measure their knowledge base in real-life situations. We have also set up entrepreneurship forums to encourage small businesses to leverage collective buying power and form useful networks that could develop into corporative entities that could tackle bigger business opportunities as well as have a collective voice for dealing with other issues related to their businesses.

Our third unit focuses on embedding and signifying entrepreneurship in the curriculum so that our institution could produce enterprising graduates that could develop products and services that can be commercialised. We particularly intend creating graduates that are proactive, innovative, risk-taking and effectual. In 2009, we took twenty-four final-year Process Instrumentation undergraduates through a process intended to make them enterprising.

This project took six months to complete and at its end, these undergraduates had discovered a gap in the market that related to the development and commercialisation of the water leak detectors for households and thus debunked the myth that our students could not become innovative and entrepreneurial. Given time and resources, this students' project showed that learning environments can be organised in such a way as to develop enterprising graduates (Pitso 2009, Pitso 2011, Pitso in press, Lebusa and Pitso 2012).

This unit is underpinned by the Triple Helix model which advances the view that entrepreneurship education is better developed when there is closer collaboration between three main societal organs which are higher education, government and industry. This view is similar to our overall position that technological advancements are better leveraged in the broader societal structures where the key drivers of entrepreneurship are learning, knowledge and innovation which aggregate into sustainable competitive advantage. The ability to sustain competitive advantage is what we seek to develop in our students through entrepreneurship education and wish to advance across all curricula in our institution. We have already referred to learning as the key source of value creation and the most important strategic mission of the 21st Century universities that seek to have a global influence and direct contribution to the emerging open innovative system as source of knowledge production and utilisation. This model thus highlights the changing role of the university in the knowledge-driven societies as understood from the inside-out and outside-in pressures. The inside-out pressures (proximal forces) refer to the intrinsic contradictions of knowledge generation and distribution where the entrenched propensities of wanting to produce knowledge that is premised on epistemological foundationalism remains strong (Pitso, 2009), that is, knowledge that is universal, context-free and clean in the face of the insatiable demand for useful and relevant knowledge. Furthermore, the inclination to rely on the epistemology of mimesis in knowledge distribution remains strong in the face of inquiry-driven learning environments where teaching becomes one of many ways students learn (Bowden and Marton, 1998). The epistemology of mimesis refers to curricular and pedagogic conditions that encourage the replication of existing learning content and has re-entered 21st Century educational discourse through a 2008 book authored by Mary Kalantzis and Bill Cope called '*New Learning: Elements of a Science of Education*'.

The need to embrace applied, problem-based, trans-disciplinary, heterogeneous, hybrid, demand-driven, innovative, network-embedded knowledge has become increasingly strong in this century and poses serious problems to the university settings that is organised, essentially, in the form of pure, disciplinary, mainly homogenous, expert-driven, supply-based, hierarchical, academia-based knowledge. This shift towards mode 2 knowledge has put tremendous pressures on universities but represents an important move towards making universities relevant and responsive to the mammoth tasks facing our societies. The outside-in pressures (distal forces) relate to the demands being made to universities to tackle pertinent societal issues and make a positive contribution towards economic growth and development as well as in building a critical citizenry. This model accentuates the need for universities to produce knowledge that is underpinned by innovative systems and considers universities as integral part of the broader societal structures with a crucial role of contributing immensely in taking the societies forward. Universities that embrace this approach are more likely to have global influence and could be viewed as having changed their DNA from the inside-out as Christensen and Eyring (2012) suggest.

Based on this model, which advances an integrated approach to curriculum enactment that is underpinned by entrepreneurship education, we have been approached by the maritime industry in the country through its government agency called South African Maritime Safety Authority (SAMSA) to tailor-make our Programme Qualifications Mix (PQM) in such a way as to allow us to provide learning programmes that could cater for this industry. We have already signed the Memorandum of Understanding and are at the stage of coming up with projects that will realise our common goal of tapping the huge economic potential that this industry brings to our society. We have also linked up with the local firms, industries and municipalities in order to maximise our collective expertise and experience with the view to impacting positively on our surrounding communities.

Our fourth unit serves as the foundation upon which all other units draw intellectual sustenance. The unit focuses on producing relevant, useful and measurable research as well as promote a strong inquiry culture within our institute and institution.

We have already managed to take more than five lecturers to local and international conferences as a way of encouraging them to take a scholarly view to their work. With our institution historically weak on research and scholarship, this unit has a vital role to play in this regard. We already play an important role in contributing towards global knowledge by our participation in various international bodies and use our role in these bodies to benchmark and embrace good international practices for problematisation and application in our contexts.

Concluding Remarks

We remain convinced that our institutes provide a safe space in which to tease out, test and iteratively refine novel, unique and new ideas in areas of curriculum, pedagogy, research and community engagement using the Triple Helix model which is in line with global societal trends. It is our resolve that this institute represents a way forward in terms of leveraging franchising global opportunities and in making our institution more responsive to the challenges facing our immediate communities. Given that we are already working on developing open innovationsystems with industries through investigating the efficacy of innomediation as the basis of our engagement with industry and communities, the realisation of a new way of doing things in our institution is no longer a pipe dream.

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