

Merging Entrepreneurial Knowledge with Science and Technology – UMK initiatives: a drive to prepare employable graduates

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Abstract

Universities are seen as the training ground for producing and shaping the minds of our science graduates. These institutions of higher education also provide an important intellectual environment and create the social setting for students to interact, exchange and propound ideas not only for specific courses they have chosen to pursue but should also have a good mix with courses that contain commercial and entrepreneurial elements. Universities are expected and must play an additional role, over and above the mundane traditional research and teaching, by embedding into the curriculum entrepreneurial elements in their educational programmes. Entrepreneurial exposure and training should start right at the beginning as the students step into the university and the onus is on the higher education authorities to address the need for producing competent and techno-savvy graduates who are equally competent in entrepreneurial skills. A combination of knowledge on science and technology gained with those on entrepreneurial practices acquired over the period spent in these universities would necessarily equip a graduate for the ever demanding opportunities in the labour market as jobs become more specialized and acute in the private sector. The need to merge entrepreneurship with S&T has to be the way forward to ensure that our graduates become employable either with the public or private sector, but more importantly they could be made to stand on their own two feet as self employed graduates engaging on their own business or enterprise in the ver expanding global market.

This paper dwells on the vision, plan of action and strategy of the new kid on the block, Universiti Malaysia Kelantan (UMK), which aspires to be unique, different and relevant. The approaches it has taken since its inception in 2007 are highlighted in order to meet and live up to with the university's tagline as an Entrepreneurial Institute of Higher Education. Strategies are outlined and several approaches discussed on some of the initiatives already taken particularly by the Science and Technology based Faculty of Agro Industry and Natural Resources (FASA).

Keywords: Entrepreneurial knowledge, S&T, wealth creation, academic and social entrepreneurship

Introduction

The development of science and technology (S&T) in Malaysia has been policy-driven and strategically triggered by the government. This is not an anomaly in any developing country; however based on a findings conducted by MASTIC, Malaysia seems slow in the S&T development process compared to its East Asian counterparts such as Japan, Korea, Taiwan, Singapore, China and India (Edge Daily, 2008). The paper explained that one of the differentiating factors between Malaysia and other East Asian countries perhaps is the level of academic entrepreneurship in the national innovation system. The question often asked has this policy-driven approach been effective in enhancing academic entrepreneurship in higher education institutions and the national innovation system. In the past, various programmes and initiatives were undertaken to facilitate the nation's transition from a

production-based to an innovation-based economy, beginning with the transformation towards becoming a developed society and the re-focusing of efforts on the development of a knowledge-based economy.

Several key initiatives were put in place and among the significant decisions that could be related to academic entrepreneurship in higher education were the designation of four public universities as research universities and a substantial sum of money were allocated for science, technology and innovation initiatives to strengthen the national innovation system. Focus was directed at biotechnology, advanced materials, manufacturing, nanotechnology and ICT to generate 300 science and technology-based companies through public-funded R&D, and 50 companies with global partnerships. In order to develop a world-class institution of higher learning, utmost attention and consideration must be given to the development of academic entrepreneurship, which includes a better understanding of what it is and putting in place the right internal systems and mechanisms within the academic institutions to facilitate its development.

Having set these priorities and work towards transforming the well-entrenched existing value systems, a university creates economic value by becoming entrepreneurial. In the value creation process, strong and effective leadership at all levels of the academic organization is important in facilitating, nurturing and supporting academic entrepreneurial activities. In an entrepreneurial university, academic entrepreneurship processes and activities are embedded in the university system, acculturized in its academic faculties, embodied in its community of practice and get the mindset of each individual academic changed.

UMK – charting a revolutionary way forward towards academic and social entrepreneurship

Universiti Malaysia Kelantan, under the leadership of the Vice-Chancellor, is charting a course that differentiates it from other universities. While UMK was set up to for the generic reason of fulfilling the national need for more access to higher education, the present leadership's specific and special vision is to shape it as an entrepreneurial university with the main thrust, theme and tagline on entrepreneurship. The type of degree programmes, the content of the syllabi, as well as the classroom pedagogy all reflect the full force of this focus. Even more specifically is that every module and course within the university – whether it is in the field of business, the discipline of veterinary sciences, bioindustrial technology or the degree in Heritage Studies – all include the attributes of entrepreneurship as the backbone of its curriculum. UMK is also different in that it is the only university in the country which insists that a minimum of 10% of its course content across the board for all programmes covers the so-called 'established knowledge' which incorporates real-life experience, sound entrepreneurial practices displayed which are put into practice as well as case studies of success stories shared by successful entrepreneurs themselves. The Vice-Chancellor reasons that academic entrepreneurship must not be seen as an end in itself. The university must also play a role and be responsible in the context of its community involvement through 'social' entrepreneurship. UMK will have to grow and develop in its role of forging a strong and vibrant university-community partnership.

In this co-curriculum activity, all students will find themselves participating in a programme for economic and community development. This programme is one in which UMK identifies and adopts several kampungs around Kelantan that has been categorized as hardcore poor. The university then works together with these communities to help develop them economically and socially towards a two-fold objective: firstly, to find ways to help the

villagers improve their way of life in general, and secondly, to enhance and put into practice the learning experience of the students by applying their knowledge and skills in a practical way. Of course, the impact on well-being of the impoverished villages will be accomplished over the course of several years and in this respect UMK hopes to see students proposing programmes which will realistically and incrementally develop the villages through diversification of income and wealth, adoption of better techniques for agricultural technology and even improved knowledge and understanding of livestock, aquaculture and farming.

The university's mission is to produce fresh graduates who are entrepreneurial, innovative and creative rather than those stereotyped as being not having the ability to assimilate and adapt well to the work environment, inadequacy in applying theory to real-life situations and their lack of confidence in communicating their views and ideas.

Moulding students as agro-entrepreneurs

The Faculty of Agro Industry and Natural Resources (FASA) is one of the faculties established together with the establishment of UMK and this was planned in line with the 9th Malaysian Plan and with the aspirations as outlined in the 2nd and 3rd National Agricultural Policy which focuses on the development of agro-based industries. The aim of these blueprints is to exploit the agriculture sector for the generation of the country's economy. Consequently, industrial development based on agriculture has become one of the priorities in making the entrepreneurship programme a success. The Faculty emphasizes on the importance of natural resources as a vital component in generating the economy and serious attention are given on their exploitation and management. FASA focuses on combining knowledge in science and technology (S&T) and entrepreneurship with the emphasis on product development processes for the enhancement of commodities with commercial potentials. It stresses on the concept of diversifying the agricultural sector and sustainable utilization of natural resources. FASA is not an agricultural faculty; it does not train students to become farmers but teaches students to be agro-entrepreneurs, strengthening the philosophy that *Agriculture is Business* through sustainable development and utilization of rich natural resources.

As a faculty with a vision to lead in the integration of S&T with entrepreneurship for the development of first class human capital its primary mission is to provide high quality knowledge and training to both undergraduate and post graduate students. In this direction, the objectives in teaching and research are to incorporate the theoretical aspects of applied science knowledge with the appropriate technology complemented with entrepreneurial training and practices so that graduates that passed through the Faculty are those that excel in agro technology entrepreneurship. FASA will need to be unique, different and relevant to the national aspiration for economic development in agriculture, to ensure that the alumni will finally be job creators rather than job seekers.

Initiatives and strategies adopted

One of the important ingredients in the curriculum structure for the degree of Bachelor of Applied Science with Honours for the seven programmes already offered within the Faculty are elective courses on entrepreneurship. Relevant courses have been designed viz., Basic Entrepreneurship, Principles of Business Management, Marketing Principles, Management of Small & Medium Scale Industries, Financial Management, Entrepreneurship Strategy, and Agribusiness & Entrepreneurship each with 3 credit hours for which the students are to choose a minimum of 12 credit hours during their 4-year stint at the

university. This represents 14.5 % of the total credit hours the students have to fulfill. Over and above that, elements of entrepreneurial attributes are embedded in the core programmes of the faculty such as courses on Agricultural Marketing, Ethics in Bio industry Entrepreneurship; Natural Resources Management for Tourism Industry; Livestock Marketing and Economics; Planning for Commercial Livestock Production; and Economics, Commerce and the Environment.

The other strategy to complement the teaching of these courses is the generic *Students in Enterprise Programme* (SIEP) which really is an extension of a basic internship-cum-practical training aspect of any degree programme and which carries two credit hours. The emphasis here is not on learning and experiencing a piece of the working world, but on how to help small and medium industries and enterprises improve and be more efficient in their businesses. The students will have to spend a total of 10 – 14 days in between semester breaks and will choose the industry, business or enterprise which they would like to be attached to, and they would then proceed to observe 'entrepreneurship-in-practice' in the actual business environments that are related to agro industry and natural resources. The observations they make among the vegetable farmers, fruit growers, landscape and garden nursery operators, fish mongers of the wet market, fruit and vegetable sellers at the night market, the sundry shop owner around the block, estate and plantation managers, livestock farmers, or eco-tourism operators, etc. must lead to the production and presentation of a proposal for how these businesses can expand, grow, and be more profitable. The SIEP will take the students through the 'Foundation' phase, leading to a 'Specialization' stage culminating with a 'Realization' final year project. Every student from the faculty will go through seven attachment exercises as prescribed in the format developed as given in Appendix 1. This programme, which every student will go through is none other than an extension of 'problem-based' learning to our very own 'project-oriented-based' learning.

Besides lectures, tutorials, practical classes, field work and industrial training, the curriculum also include sharing experiences with industry expertise and company CEOs on entrepreneurship and businesses. These experiences are expected to develop interest and inculcate entrepreneurial spirit among students and thereby understand at close quarters the long and winding road in the arena of entrepreneurship. The Chairman Lecture Series (CLS) mooted by the Chairman of the University's Board of Directors, who himself is a President and CEO of a Government-Linked Company, held regularly is a case in point undertaken by the University. The importance of these lecture series, already nine thus far, cannot be over emphasized as we have observed some measurable impact on the mindset of these students as amplified by intelligent and pertinent questions asked, often interspersed with lively discussions, following these lectures.

Closer to home initiated by FASA are the talks and seminars specifically on Bio Entrepreneurship held over the weekends, at monthly intervals, where speakers specifically identified are invited to deliberate on selected topics in the realm of agro-technology development, bio-industrial innovation, natural resource conservation, plant and animal biotechnology, biomass utilization and environmental bioremediation all with a slant towards entrepreneurship. These talks are meant to provide students as an eye opener to the broad array of potential business opportunities out there that could be created. The success, albeit on a limited scale, of these talks on the students can be viewed from the feedback obtained from some enterprising students who would want to venture on a small scale business project while they are here in the university.

On the heel of this positive outcome, where students have begun to show interest and enthusiasm in wanting to do business, the Faculty has initiated a business programme where students working in small groups will have to come up with a viable business proposal related to agro industry and seed fund of up to RM 2,000 is made available to kick start their project. In the next semester the Faculty would see in practice over 7 of these projects on the ground that will be under strict supervision of their lecturers.

FASA will have its first batch of 44 Year 3 students undertaking Industrial Training during Semester 2 of the current Academic Year 2009/2010. Good rapport with potential agro related industries has been established for these students to undertake practical training and such industrial linkages will allow opportunities to be created for employment to potential graduates from the faculty.

A club for students of FASA was established early in the life of the faculty soon after the first intake with the objective of getting the pioneer students, not only to promote social interactions and improve the learning environment, but also to mobilize them into preparing and getting involved directly with some retail business activities. Through FASA Club, the students have shown that they could organize and manage some small business enterprises the first of which was the buying and selling of agriculture produce to fellow students and staff members of the university. Big plans are afoot following some of these successful ventures. The club members are thinking aloud now of setting up a co-operative wing and want the exposure and experience gained in managing the club's co-operative to be used as a stepping stone to eventually form a Student Cooperative Society managed and run by the Student Representatives Council.

Last but not least, the three short training courses for creation of business opportunities, viz. on mushroom cultivation, breeding of leeches for medicinal uses and the cosmetic industry, and vermiculture for compost making already held (although conducted for the local folks) are student-centred. The students are encouraged to help out in organizing them and to participate during the course as it is believed that not only will they acquire managerial and organizational skills but learnt and be aware of business opportunities.

Conclusion

Since its establishment in 2007, Faculty of Agro Industry and Natural Resources (FASA), has shown great progress in all aspects including academic, training and research, and community services. In all the seven programmes on offer, the element of entrepreneurship is strongly embedded in the delivery systems, either via lectures, practical classes, industrial training, field work and industrial inputs in teaching and learning. The curricula are also enriched with the *Student in Entrepreneurship Programme* and the programme on Society and Economic Development. Both these programmes are unique teaching strategies for students to participate toward building their experiences and understanding on the concept of business management for economic development.

The programmes at FASA were so designed to prepare graduates not only exhibiting the entrepreneurial attributes but also are able to serve in either the public, private sectors or be self-employed through the setting up of their own businesses. The features of the programmes at FASA differ from other programmes offered by other institutions of higher education in the country and some of which are the first of its kind in Malaysia. FASA is committed in ensuring our graduates to be highly marketable and fulfill the needs for first class human capital of the country.

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References

Edge Daily July, 2008. *Role of Academic Entrepreneurship*. [online]. Source: <http://www.theledgedaily.com>.

Appendix I

The training content towards aculturation and skill enhancement for different semesters in SIEP

<p>Semester I Observations of a business operation and description of what it involves <u>Objectives</u> Awareness; Acculturation <u>Skills</u> Communication</p>	<p>Semester II Information gathering on a business or enterprise through interviews and questionnaire/survey <u>Objectives</u> Acculturation; Familiarization <u>Skills</u> Communication; Analytical</p>
<p>Semester III Evaluation phase – critical assessment of a business (market potential/strategy, organization, issues and problems, etc.). Provide own ideas. <u>Objectives</u> Shaping business ideas <u>Skills</u> Re-sourcing; Critical analysis; Communication</p>	<p>Semester IV Market survey. Actively seeking more information on market potential, supply and demand. <u>Objectives</u> Ideas creation and innovation <u>Skills</u> Business planning; Referencing; Technical; Communication</p>
<p>Semester V Business proposal stage. Evaluation of some proposals (focusing mainly on market survey, financing, budgeting, accounting, etc.) and making comparison to choose most viable project <u>Objectives</u> Functional knowledge; Critical business ideas <u>Skills</u> Business planning; Managerial/Technical; Computing/Communication</p>	<p>Semester VI 1. Compulsory Industrial Training</p> <hr/> <p>2. (Last 10 days of Semester VI - after Industrial Training). Supervisory and Leadership Role <u>Objectives</u> Confidence building; develop business plan and draft of working paper <u>Skills</u> Risk management; Public relations; communication</p>
<p>Semester VII <i>Final Business Plan</i> with established guidelines of financial institutions provided <u>Objectives</u> Actual exposure to business environment <u>Skills</u> Financial management/Technical; Marketing; Managerial/Leadership; Communication</p>	