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# ACTION-BASED ACTIVITIES IN TEACHING CORPORATE ENTREPRENEURSHIP AT UNIVERSITY LEVEL

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# ACTION-BASED ACTIVITIES IN TEACHING CORPORATE ENTREPRENEURSHIP AT UNIVERSITY LEVEL


ABSTRACT

INTRODUCTION: It is no longer a question of whether (corporate) entrepreneurship can be taught at university level, but rather one of developing and promoting its 'reachable' facets. This explorative research discusses the university-level course "Entrepreneurial behaviour and personal resources" (EB) run for Masters Students. The corporate entrepreneurship (CE) element was taught experientially and some action-based methods were used. The focus of this article is on these action-based activities, the aim being to gain a deeper understanding of the students´ perceptions and of the learning outcomes.

METHOD: The case study was based on rich written material produced by students, and a combination of qualitative methods and observation techniques was used in the analysis.

ANALYSIS: The action-based activities are described and analysed in the context of the crucial elements of action learning (AL).

RESULTS: All of the students claimed to have learned a lot about the CE phenomenon. They took at least a small step towards developing their own entrepreneurial behaviour. It remains to be seen to what extent such behaviour was instilled.

CONCLUSION: Although AL is far from easy to apply in the university setting it has its advantages in fostering entrepreneurial behaviour. More research is needed in order to understand its full potential and the effectiveness of action-based activities in teaching CE.

## INTRODUCTION

There is no longer any doubt that entrepreneurship can be taught at university level: it is rather a question of developing and promoting its 'reachable' facets, i.e. the elements that are teachable (Henry et al., 2005; Kuratko, 2005). It involves the 'arts' (creative and innovative thinking) and the 'sciences' (business and functional management competencies) (Jack and Anderson, 1999; Rae, 2004). This 'science' is considered to be teachable, even via more conventional pedagogy, but the 'art', the matter of creation and innovation, apparently is not, at least not in the same way: it is a highly subjective skill that cannot be directly imparted given its fundamentally experiential nature (Jack and Anderson, 1999). It seems that universities have succeeded relatively well in teaching the 'science' of entrepreneurship by providing a conceptual background and stimulating the necessary analytical thought processes. Some of the crucial notions may have been ruined in the process, as the analytical approach does not allow for student imagination to stimulate the 'art', even though it may otherwise provide a sound platform for entrepreneurial endeavours (Jack and Anderson, 1999; Kirby, 2004). Even researchers and educators seem to find it hard to glean the true meaning and intent of the word entrepreneurship (Kuratko, 2005). Similarly, Hjorth (2003) calls for entrepreneurship that is not management-focused, and for education that acknowledges the creative, playful and passionate student.

The explorative research described in this paper was conducted as part of the university-level course "Entrepreneurial behaviour and personal resources" (hereafter EB) run for Masters Students. The course was taught experientially and some action-based methods[1] were used in order to support student learning in the field of corporate entrepreneurship (CE). The students were also involved in an R&D project being undertaken by my research team and commissioned by a municipal social- and health-care organisation. The project was set up to foster the identification and promotion of CE and its antecedents.

The aim of this article is to explore the action-based activities implemented as part of the EB course, and to gain a deeper understanding of the students´

[1] By action-based methods or activities I refer here to methods that emphasise learning by doing (see Rasmussen and Sorheim, 2006).

perceptions and learning outcomes through their own 'words' (see Bourner and Frost, 1996 for a similar approach). The paper describes the action-based methods used as well as the results obtained, but includes no in-depth discussion of the effectiveness of the course, which would require a more longitudinal approach. Finally, some conclusions are drawn and directions for further experiments and research are suggested.

## THE CONCEPT OF CORPORATE ENTREPRENEURSHIP AND THE CHALLENGES INVOLVED IN TEACHING IT

Entrepreneurship and opportunity exploitation do not necessarily imply the creation of new firms as they may also take place in existing organisations (see Sharma and Chrisman, 1999; Shane and Venkataraman, 2000) – a phenomenon that is referred to as CE or intrapreneurship. Some attempts have been made to clarify the concepts and terminological hierarchy (Sharma and Chrisman, 1999), but no unified understanding has been reached. I have purposely chosen to define the terms broadly here in an attempt to capture the related processes. It is the broad notion of CE that is important, not its exact form or guise[2].

CE is defined here as entrepreneurship within an existing organisation – regardless of its size – involving emergent intentions and behaviours that deviate from the customary way of doing business. The outcome may be not only new businesses or ventures, but also other innovative activities such as product, service and process innovations, self-renewal, risk taking, proactiveness, and competitive aggressiveness. (Antoncic and Hisrich,[3] 2001; 2003; 2004) These dimensions differ, but they are closely related, thereby forming the basis of the phenomenon (Antoncic and Hisrich, 2003). CE is essentially an activity-based concept that operates at the organisational boundary, pushing current products and services, norms, technologies, orientations, structures and operations in new directions (Antoncic and Hisrich, 2003). It is not about business as usual, but rather implies unusual business or business approaches (Thornberry, 2001).

2 I acknowledge the fact that CE and intrapreneurship are not exact synonyms, but represent slightly different phenomena of organisational renewal (see e.g., Sharma and Chrisman, 1999; Åmo and Kolvereid, 2005). This slight definitional difference is not of crucial importance in this study as the focus is on the entrepreneurial processes of potential intrapreneurs, future promoters of CE in different organisations.

3 Antoncic and Hisrich refer to the concept of intrapreneurship, not CE *per se*.

As CE is rooted in theories of entrepreneurship (Sharma and Chrisman, 1999), the challenge in teaching it is to reach the 'art'. The challenge is even greater given that implementation is usually considered more of a managerial issue ('science') (see e.g., Kuratko et al., 2005) than a creative and innovative process ('art'). In order to support the true meaning of entrepreneurship (see Kuratko, 2005) it has been suggested that learning approaches and methods that incorporate elements of innovation and risk taking should be used (Gibb, 1993; 1996; 2002). The thrust of the teaching should be on the facilitation of learning to support corporate entrepreneurial behaviour.

A typical university setting is unlikely to include many entrepreneurial elements (Frank, 1996a; Heinonen and Poikkijoki, 2006). Traditional teaching methods, such as lectures and examinations, do not activate CE (Gibb, 2002; Sogunro, 2004) and do not provide students with an opportunity to be actively engaged with the learning process (Gorman et al., 1997; Fiet, 2000a; Kuratko, 2005). If education is to be effective and equip students adequately for their future work and careers there is a need to expand the pedagogies and to introduce innovative approaches. Fiet (2000b) similarly encourages student-led activities in the classroom in order to foster involvement in the learning process, but still stresses the importance of the underlying theories. University-level courses must support students in learning the theoretical concepts and putting them into practice, foster entrepreneurial behaviour and encourage reflection in order to improve individual performance (see Edwards and Muir, 2005). It is not only a question of substance and content, but also one of delivery and the learning process. In an attempt to integrate the substance and process of entrepreneurial behaviour into the corporate setting, some action-based methods were used in teaching CE in the EB course discussed here.

## METHODOLOGY

During the EB course I experimented with some action-based methods in my teaching of CE. The course objective was to increase understanding about CE and to promote entrepreneurial behaviour within the corporate setting. Empirically this case study is based on rich written material produced by the students, namely personal learning diaries and a case-study assignment (Appendix 1). I used a combination of qualitative methods and observation

techniques during and after the course in order to explore student perceptions and learning outcomes.

The students were asked at the beginning of the course to describe their learning objectives as concretely as they could, and to list potential outcomes that would indicate that the objectives had been met (see Löbler, 2006 on increasing student commitment). This information was included in their learning diaries, which they kept in order to reflect on their learning (see Frank, 1996b on a role of a learning diary in reflection). At the end they were asked to reflect on how far the initial objectives had been achieved. The outcome of their main project – an empirical case-study on CE in a municipal setting – was also a clear indication of their learning. Finally, the group discussions, activities and exercises conducted during the sessions enabled me as a teacher and a researcher to observe student reactions and self-reflection. All these observations and the written material related to the action-based activities were carefully analysed in the context of action learning (AL).

## ACTION-BASED ACTIVITIES IN THE CONTEXT OF ACTION LEARNING

The students on the EB course were actively engaged in the process of learning: as learners they acquired and generated knowledge through their own active search following a problem-solving process (see Zuber-Skerritt, 2002). The activities discussed in this article bear some resemblance to AL, in which "… real people resolve and take action on real problems in real time and learn through questioning and reflection while doing so" (Marquardt and Waddill, 2004, 186). Learning is understood here as a highly situational and holistic process, in which students flexibly tackle elusive problems and combine social processes with individual needs (Mumford, 1995a). Therefore I have decided to describe and analyse the action-based course activities in the context of the crucial elements of AL (see Marquart, 1999; 2004a; Marquardt and Waddill, 2004), even though I acknowledge that these activities do not include all of the AL components (see Marquardt, 1999; 2004a). The elements are discussed one by one, each including a description of the course in question (EB course) and an analysis of the perceptions and outcomes of the students (EB outcome).

### A problem, a project or a challenge

AL is built around a problem, a project or a challenge, the resolution of which is of great importance to the individual, the team or the organisation. The problem should be significant, or urgent, for the team or individual to solve, and should provide opportunities for learning (Revans, 1982). It gives the group meaningful and relevant work, and creates a hook for experimentation using stored knowledge (Marquardt and Waddill, 2004).

EB course: A municipal social- and health-care organisation wanted to analyse and develop its ways of working. My research team was commissioned to support the project, and CE was taken as a future objective and the basis of our analysis. The research team conducted a large-scale survey to identify the level and nature of CE within the organisation. The survey measured a total of nine areas indicating the phenomenon of CE, its antecedents and outcomes. The areas were analysed separately and then compared in order to identify related strengths and weaknesses. The following Figure 1 presents the results of the survey by areas and units (N=569): the wider the area inside the graph, the higher the level of CE within the organisation.

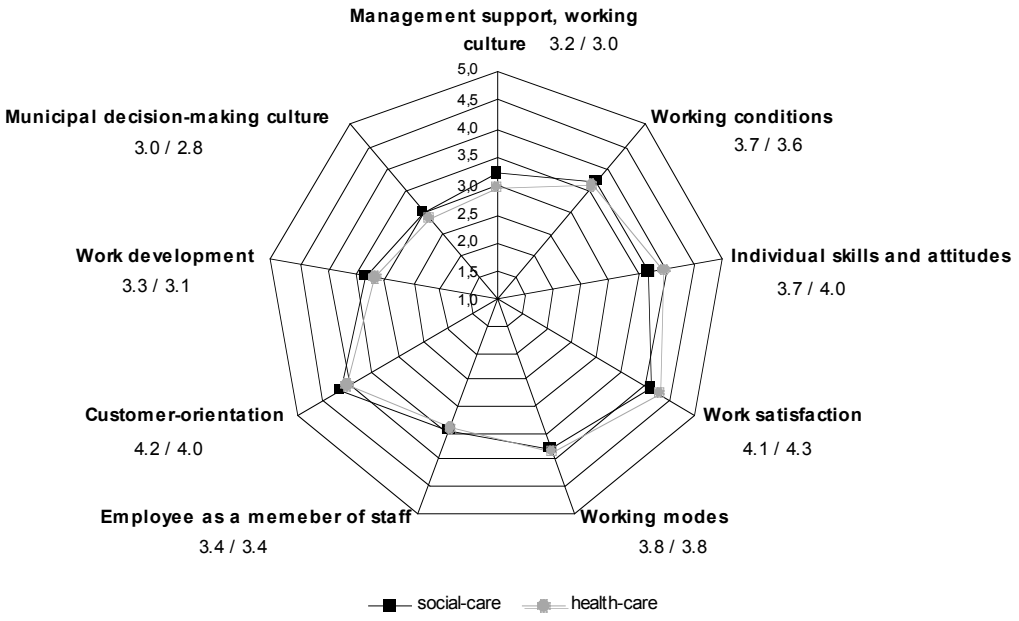


Figure 1 Indications of the phenomenon of CE, its antecedents and outcomes

The students on my EB course were linked to this analysis and development project as they were given the task of conducting, in pairs, an in-depth interview with one middle manager within the social- and health-care organisation. Their task was to gain a deeper understanding of the current situation and to identify the role of middle managers in it. They compiled a case-study report of their interview. The results of the case study and the CE survey were integrated and reported to the organisation for reflection. The students were informed beforehand of the objectives of the development project as well as of the use and importance of their contribution. It was made clear that the aim was to contribute not only to their individual and group learning, but also to the development of the organisation.

EB outcome: The case-study project was considered challenging and meaningful. All the pairs finalised it in time and were eager to present their findings to the group.

> 'For once there's a task about real life, not only about theories and charts, and human behaviour, existence, personality and the desire to develop are what count.' [individual learning diary]

The emphasis, indeed, was on combining theoretical knowledge and practical application in the context of CE. A theoretical introduction through more traditional methods, such as reading articles and literature followed by pair and group discussion, provided a good basis for the successful implementation of the project. It was easy to link the student contribution to the main project in the organisation, and thus to create value-added for the customer. In general, the results of the case study supported the survey results, but more importantly, they also gave a more heterogeneous and in-depth picture of the nature of CE in the organisation: middle-mangers had a key role in promoting it. Even in the same unit, however, they differed enormously in their attitudes.

> 'It was surprising that the interviewees and their attitudes towards work were so different. Some were not interested at all in work-related issues, whereas others were truly committed from the bottom of their hearts.' [individual learning diary]

In addition, the survey and case study portrayed a somewhat different picture of CE in the units studied.

> 'It was great to observe from the interviews that the health-care unit seemed to be much more innovative and open to changes than the

social-care unit. This could not be seen from the survey results.' [individual learning diary]

From the learning perspective it was important not only that the different pairs arrived at different outcomes and conclusions as different persons were interviewed, but also that the survey highlighted some other aspects of the phenomenon under study. It became clear to the students that no such thing as an absolute truth existed in organisational development, and that the reality was constructed and developed by the actors involved.

A diverse group

AL is optimal within a learning group composed of four to eight individuals with diverse backgrounds and experiences who are able to maximise various perspectives and absorb fresh viewpoints (Dilworth and Willis, 2003). According to Revans (1988), the success of the group lies not in the capabilities and skills of its individual members, but in the cross-fertilisation of its collective abilities.

EB course: The group consisted of 12 students. Ten of them were Master's-level students at Turku School of Economics, while the other two had enrolled via the Open University. These latter two brought some further working experience and diversity to the group, which otherwise consisted of second-year university-level students in the field of business administration with relatively scanty, although varying (summer) work experience. The group met over seven weeks and there were seven joint sessions (of two hours each). The project work was carried out in pairs (with one group of three), but the theoretical basis of CE and some preparatory work and exercises were covered during the joint sessions. The students also met autonomously to work on their projects.

EB outcome: Running a course for second-year Master's-level students within a single-faculty university (business school) with a view to promoting AL was not an easy task. The group was relatively inexperienced (in terms of working experience), and they all had a background in business administration or economics. Holding the course open to (usually older) students from the Open University was extremely useful and it enriched the discussions. As the students found the atmosphere in the classroom relaxed, pleasant, and inspiring the group was prepared to ask good questions and to learn from each other. The reflection in the group and pair discussions

supported the learning effectively. However, a wider variety of students would have benefited the learning process.

> 'It was interesting to listen to others´ achievements as I was really familiar with the substance from our own case-study report. The debriefing session was very fruitful due to the heterogeneous findings of the different groups.' [individual learning diary]

The importance of social and practical learning (see Rae, 1999 on sources of entrepreneurial learning) was highlighted in this respect. The students learned from their peers, and also from the municipal interviewees.

The process of reflective inquiry

AL focuses on the right questions rather than on the right answers, and on what one does not know as well as on what one does know (Mumford, 1995b). The questions and reflection are emphasised above factual statements and opinions as problems are tackled by first asking for clarification, reflecting and identifying possible solutions, and only then moving towards consideration of strategies and possible action (Marquardt, 2004b). Questions help to create a common goal, to strengthen listening skills, and to increase the learning (Marquardt and Waddill, 2004).

EB course: Before beginning the field work (i.e. conducting the interviews) the students were familiarised with the theoretical concept of CE, and carried out some action-based activities followed by group debriefing discussions in a classroom setting. First, a group assignment to construct a poster on CE[4] served as an opportunity to reflect on the knowledge gained individually and collectively. The assignment was also designed to promote a secure and familiar yet creative atmosphere within the group (i.e. warming-up and group formation), and to encourage the students to actively engage in their own learning. In order to complete the task they had to tackle the question: 'What are the crucial elements of CE?' The second task required them to identify entrepreneurial/non-entrepreneurial behaviour by analysing imaginary accounts of intrapreneurial organisations prepared by my students from the previous CE course [5]. The main question to be

[4] The students were given one empty poster paper, a pile of magazines and newspapers, glue, scissors and pens. Their task was to construct a poster portraying CE. Each group presented the outcome and justified its choices.

[5] The identification exercise comprised a handful of stories/descriptions of hypothetical organisations prepared during my previous course on CE, when each student wrote an imaginary story about an

addressed was: 'How can CE be identified, and what should we be looking at?' Thirdly, the students were thrown into the role-play situation, and had no option but to join in the game. Each one was given a specific role (incorporating an attitude to CE)[6]. This activity gave them the opportunity to take a new kind of role and to probe hidden aspects of themselves, as role-playing encourages people to view situations from new perspectives (Sogunro, 2004). It made them ponder upon how best to demonstrate the character they had been given, and on how they and the others in the group experienced the situation.

> 'I found it far from easy to act my own role… It was hard all of a sudden to imagine how an intrapreneurial employee would behave in a real-life situation…' [individual learning diary]

The group discussions during and after the exercises supported the reflection process and broadened the learning in the spirit of co-participation (Taylor and Thorpe, 2004; see also Löbler, 2006). Finally, the project – the case-study (Appendix 1) – gave the students an opportunity to apply their acquired theoretical knowledge. It integrated two different learning arenas, the university and the organisation (see Leitch and Harrison, 1999), and as Binks et al. (2006) suggest, it connected the processes of academic learning, reflective self-awareness and experiential learning in a practical context. The students were given guidance in preparing and conducting the interviews, but they took full responsibility for the implementation of the case-study (see Löbler, 2006 on supporting student autonomy and not solving problems for them). They drafted the themes, conducted the interviews and prepared the case-study reports, which were presented and discussed in the group. They could not refer to the CE concept during the interviews because the interviewees were not familiar with it, and they therefore had to find ways of identifying the phenomenon, its antecedents and outcomes by discussing the individual and organisational factors that portrayed it.

> 'The challenge was to encourage the interviewees to discuss CE and related themes when they were not familiar with the concept. You need to have quite innovative and down-to-earth questions.' [individual learning diary]

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intrapreneurial organisation. Now the students were asked to judge (and to justify their judgment) how well their predecessors had managed to capture the essence of CE in their stories.

[6] The group was given the task of planning and organising a one-day strategy/development event for an imaginary company in which they were all employed. Each student was given a specific role (position and task in the company and attitude in relation to CE). The students did not know the others´ roles. The role play continued until the task was completed, after which the debriefing was conducted in the group.

It was not only a question of planning and conducting the case-study, but also of interpreting the results. What did each of the findings mean? What did they reveal about the current situation? During the discussions the students attempted to move from their own solutions and interpretations to seeking what would be best for the municipal organisation.

EB outcome: The theory-based activities allowed the students to test and assess their own entrepreneurial skills and capabilities, as well as to imagine their future behaviour in managerial situations, for example. The course opened up new perspectives on management and shaped student attitudes towards work. The theory-based activities made it easier for them to understand and assess their current and past behaviour in their (summer) jobs. The case-study supported their learning most as they had to ask questions and to integrate theory and practice during the process.

> 'Clearly everyone had attempted to explore the same themes. It was evident that the theories had been internalised during the sessions and now we wanted to test them in practice.' [individual learning diary]

What was perhaps the most important was the student reflection during the course. This study gave contradictory evidence on reflection: on the one hand the students needed time to internalise the learning experience to be able to reflect effectively, but on the other hand it was important to start the process as soon as the learning intervention had taken place. Teaching interventions may appear separate and sporadic in the short term, but in the longer term they form more holistic and sequential learning circles in which new knowledge and activity continuously produce new experiences through individual reflection in a social context (Heinonen and Poikkijoki, 2006). My students very consistently admitted that even more could have been achieved had they only realised the importance of reflection from the very beginning.

> 'Sometimes it would have been better to be able to reflect on your thoughts just after the session, but usually I had time to do that only later in the evening, and some ideas might have been lost.' [individual learning diary]

The learning objectives, the process, the experiences and the results were discussed in a final group session with a view to integrating all the sources of learning through student reflection (Fiet, 2000b). The sharing and

drawing of conclusions, together with reflection, are vital aspects of action-based activities in teaching.

Power to take action

Members of an AL group need to have the power to take action themselves, or to be assured that their recommendations will be implemented (Marquardt and Waddill, 2004), otherwise the group is in danger of losing its energy, creativity, and commitment (Marquardt, 2004b). The most valuable learning occurs only when action is taken and reflected upon, for one is never sure an idea or a plan will be effective until it has been implemented (Pedler, 1997).

EB course: The students were fully responsible for conducting the case-study as well as for interpreting the results and recommendations based on their findings. Such freedom and responsibility are quite exceptional for second-year Master's students, whose courses mostly comprise traditional lecturing, literature reading and examinations. It was made clear to them that any empirical findings and their implications would be of great importance and would be incorporated into our final report and discussions with the customer. The role of the case-study and the survey was highlighted by inviting the students to participate in the briefing organised for the staff of the organisation under study. Given the different time frames of the EB course and the municipal R&D project, the students could not be given any customer feedback on their contribution, nor were they able to reflect upon the results and potential measures to be taken with the customer.

EB outcome: The students had the freedom and power to organise their projects and other learning activities within the EB course. It was made clear that it was of utmost importance to deliver the case-study on time because it was an elementary part of a wider, commissioned project. They were not seen in the customer interface, however, in other words the results were reported and discussed by my research team. In terms of learning it would have been better if the students had been involved in reporting their contribution not only to the group, but also to the customer. Similarly, it was a pity that the course ended before the final discussion with the customer was held. Even though it was made clear to the students at the outset that it would be the customer who would decide what action to take, it would have been meaningful and useful for them to recognise the consequences of their contribution. However, I dare to argue that their motivation to conduct the case-study and to learn from it did not suffer from the lack of power to take

action: this approach was challenging and motivating enough for second-year Master's students.

> 'I enjoyed the case-study and especially the fact that our study might be useful for the organisation.' [individual learning diary]
>
> 'It was a delightful thought that I was a small part of a large project in this city.' [individual learning diary]

Commitment to learning

As AL was developed as a method for management learning and development (Bourner et al., 2000), it is used in solving organisational problems providing immediate, short-term benefits to the organisation (Marquardt, 2004b). Equal emphasis is put on accomplishing the task and on the learning of individuals, teams and organisations. The greater and longer-term multiplier benefits are usually gained from the latter. The competencies developed individually will serve the people concerned throughout their professional lives (Marquardt and Waddill, 2004).

EB course: At the beginning of the EB course the students were advised that the course project was not only a learning opportunity, but also a problem-solving process in which acquired knowledge and experience would be put into practice. They were expected to learn about the CE phenomenon, as well as to practice their own corporate entrepreneurial skills and competences for use later in their professional lives in different organisations. It was emphasised that learning was far from an individual process, and rather included elements of social learning from others (see Rae, 1999).

EB outcome: The students were committed to increasing their understanding of the CE phenomenon and to promoting their entrepreneurial behaviour. A cynic might say that they were most interested in passing the EB course, the assessment of which was based on the case-study, active participation during the sessions, the take-home examination, and the learning diary (see Löbler, 2006 on the idea that entrepreneurship courses should not be tested in the 'normal' way). They nevertheless managed together to solve the problems they faced during the process, and were able to achieve their project objectives. Their learning process, on the other hand, was revealed in their learning diaries. They considered their holistic learning experience through action-based activities exciting as it managed to bridge the gap between academic knowledge and practice by way of active involvement and

problem-solving in a hands-on multilogue approach involving their peers (Hjorth and Johannisson, 2006).

> 'I found the debriefing session interesting… In the final session I realised how everything I had learned and done during the course finally became integrated into holistic learning about CE.' [individual learning diary]

The learning coach

The role of the AL coach is to ask questions, and to focus on those that are related to the learning of the group (e.g., what could we do better?), of the individual (e.g., what have we learned about ourselves?), and of the organisation (e.g., what have we learned that is applicable to our organisation?) (Marquardt and Waddill, 2004). All her/his efforts are directed towards helping the group to learn, while the other members focus on solving the problem. Marquardt (2004a) discovered that this makes the group effective more quickly in terms of problem-solving activities and group interactions.

EB course: As a teacher (or a coach) I attempted to help and facilitate the co-learning process of my students. I also saw myself as a guide creating entrepreneurial learning environments and processes (Heinonen, 2006). The most important aspect emphasising my role was the debriefing, not the completion of the exercises or the project. By facilitating the discussion and the co-learning process, I was attempting to help the students to recognise their own CE potential. In this I acknowledge that I was not a teacher in the traditional sense (one who teaches), I was a member of a learning group, and also a learner in a dialogue with the students (see Leitch and Harrison, 1999).

EB outcome: The action-based activities gave me an interesting opportunity to engage my students in the learning process: they had ownership of their learning and I acted as a guide and a facilitator (Fiet, 2000b; Hannon, 2005). I trusted their capabilities and skills and did not provide them with clear answers.

> '…The teacher told as about the objectives of the interview… She gave no ready-made suggestions for the interview questions although we all expected her to give a list of questions or that we would prepare the list together. She pushed us into asking questions so that we would

get an idea of what to do. Finally, things became clear, but anyhow the interview was challenging…' [individual learning diary]

My role as a guide and a facilitator was influenced by my role as an academic teacher and researcher. Even though I was truly facilitating the learning of the students, I was also heavily involved with the substance to be learnt, namely CE, the field of my particular research interest and expertise. It was therefore difficult for me to confine myself to the learning process, and I realised how easily I had started to guide the problem-solving process of my students. When they faced difficulties in drafting the themes and questions to be discussed during the interview, for example, I might have helped them too much, or rather too early in the process.

'During the session we constructed the preliminary questionnaire for the interview.' [individual learning diary]

Similarly, I may have influenced their reflection during the exercises that gave them a chance to experience entrepreneurial behaviour, and thus have prevented some entrepreneurial learning from taking place. It was too easy for me as an expert to focus on 'hard' aspects of the substance to be learnt, rather than concentrating on the creative and social aspects of learning so often emphasised by entrepreneurs themselves (see Collins et al., 2006). This could have been related to my ultimate responsibilities towards our customer, the municipal social- and health-care organisation. Perhaps I did not trust my students enough, and was perhaps sometimes guilty of making things too easy and manageable for them (see Lizzio and Wilson, 2004 on balancing between guidance and demands), although they sometimes hinted at the opposite. Despite my shortcomings as a coach my approach was quite strange to university students and not traditionally considered very academic. CE as a learning process is about innovative action and extending life beyond experiences, the teaching of which requires an innovative approach inviting reflective and intellectual activity (see Hjorth and Johannisson, 2006). The role of the teacher is to stretch the traditional boundaries likewise.

## DISCUSSION AND IMPLICATIONS

This study described and analysed the action-based activities I have used in teaching CE to Master's-level students on an EB course in the context of the crucial elements of AL (Marquart, 1999; 2004a; Marquardt and Waddill,

2004). The lack of theoretically robust studies on different teaching methods and experiments in entrepreneurship within a university setting was my motivation. This final discussion is aimed at strengthening the learning process and further developing the action-based activities in the teaching of (corporate) entrepreneurship in the university setting.

The course not only focused on the CE phenomenon in its many guises (Sharma and Chrisman, 1999), it was also aimed at encouraging students to reflect upon their own propensity to behave entrepreneurially, and to identify and promote CE in any organisational setting. It was taught experientially and some action-based methods were used in order to support student learning. The focus was on learning about (context and process) as well as for (practice) CE (Edwards and Muir, 2005) in order to broaden understanding of its manifold opportunities in different organisations. A further objective was to 'push' the students into CE through the structuring of learning as an entrepreneurial process (Hjorth and Johannisson, 2006) and project by using action-based activities.

All of the students claimed to have learned a lot about the phenomenon of CE: the concept, the individual characteristics and behavioural patterns, the organisational antecedents and the outcomes on both the individual and the organisational level. After the course they were able to identify CE and its absence in an organisation. They usually mentioned this in their learning diaries, and it was confirmed in the group discussions and in the case-study reports. Another objective was to promote entrepreneurial behaviour, namely CE, the assessment of which is far from straightforward. The EB course incorporated experience, practice and action during and after the acquisition of the necessary knowledge (theory). The students learned about CE through exercises and while solving the problems related to the case-study. Their learning took place through questioning, and through feedback from me and from each other. My observations and experiences in the classroom gave me reason to believe that they took at least a small step towards learning 'in' CE – their own entrepreneurial behaviour – which is where the invention of new practices takes place (Hjorth and Johannisson, 2006). They claimed to have gained a better understanding of their strengths and weaknesses with regard to CE, and of their self-image, which was advantageous in terms of their future self-development not only in their studying and working lives, but also in mastering their personal lives.

> ‘I think CE is about mastering your own life. A small intrapreneur lives in all of us, but mine needed to have some encouragement to find its way out… I feel that my entrepreneurial behaviour did not face its end, but rather the beginning.’ [individual learning diary]

How well the course managed to instil entrepreneurial behaviour in the students remains to be seen, however. The critical reflections in the learning diaries look promising, but further longitudinal research is needed.

Prior research reports a number of cases in which AL has been successfully applied. It is equally important to find disconfirming cases that promote the further development of the learning process. (Bourner et al., 1996) Analysing the EB course in the context of AL principles brings up some issues worth mentioning. Given the fact that AL has been developed and designed to support management learning and organisational development (Bourner et al., 2000), it is not directly applicable to Master’s-level students in the university setting: they tend to be too inexperienced and homogenous to fertilise genuinely new ideas. On the other hand, deep expertise and professionalism might hinder the development of truly fresh ideas, and create more pressure in terms of finding a sufficiently challenging task for the group. It was not too hard to find a manageable, although meaningful, project with plenty of learning opportunities for these second-year students, but from the AL perspective the most demanding objective to fulfil was to empower them to take action. They were not given the opportunity to intervene in the work of the case organisation during the EB course, and they were merely outside ‘researchers’ rather than genuine actors influencing the development project. In the circumstances it did not decrease their motivation, but it certainly weakened the learning outcomes. It would have been most valuable for them to reflect upon the customer feedback and the measures to be taken as a consequence of the project.

This study demonstrated that even though AL is far from easy to apply in the university setting, it has its advantages in teaching entrepreneurial behaviour. The action-based activities, with some AL elements, that were used represent a move from pre-packaged teaching towards a questioning approach to teaching and learning. Its deep focus on getting something new and innovative created and accomplished in the group facing time pressure, and producing a learning experience of a tough joint venture, fits extremely well with the core of entrepreneurship – the entrepreneurial process – in

which entrepreneurial individuals interact with their environment and discover, evaluate and exploit opportunities (Shane and Venkataraman, 2000; Shook et al., 2003). Action-based activities are less straightforward and more demanding, but they provide a wider range of learning outcomes (O´Hara et al., 1996). The approach has the potential to support learning in the field of (corporate) entrepreneurship in different settings and learning environments as it addresses and attempts to promote the entrepreneurial processes of students.

Finally, this EB course was also a true learning experience for me – not only as a teacher but also as a researcher. The role of coach is not an easy one to take in academia. Moreover, I sometimes found it hard to legitimise the use of action-based activities. Nevertheless, the learning outcomes and student feedback – demanding more activities, more exercises and more discussions – encourage me to run new experiments in teaching CE. It is of utmost importance to patiently and systematically reflect upon and assess the respective learning outcomes in the longer term rather than merely to focus on the hands-on reactions of the students. That is the only way to cumulate our knowledge of the effects of different approaches, and hence to reduce the conceptual and contextual shortcomings that make it hard to understand what the real effects of entrepreneurship studies and enterprise education are (see Matlay, 2005). Accordingly, I will continue to combine and experiment with action and learning in my future teaching endeavours!

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Appendix 1 Written material produced by the students during the course

Learning diary

The completion of a written learning diary was compulsory and a condition for earning the course credits. The learning diary was used as a method of self-assessment and process evaluation in order to help the students to reflect upon the things learnt. They used them for working on the learning material, linking personal experience with the course substance and notes, and making a self-assessment and analysis of the contents. The following elements were included:

- Personal expectations and learning objectives
- After each session: the highlights of the day and reflection upon what had been learned
- Inter-session work, group work in particular: material related to the topic on the Internet, media, discussions etc., and writing down the main points.

At the end of the course the students were asked to assess:

- How well the objectives had been reached
- Their own input
- The input of the other group members
- The course as a whole, and to give suggestions for improvements.

Each personal learning diary was given to me after the course, and was assessed as an indication of student performance.

Case-study and the report

Each pair of students (and the one group of three) interviewed one middle manager within the case social- and health-care organisation. Five middle managers in total were interviewed: three from the social-care unit and two from the health-care unit. The task was the same for all the pairs, but the interviewee was different. Each pair prepared a case-study report of their interview.

The objective of the interview was to gain deeper understanding of the CE phenomenon and its antecedents and outcomes in the organisations studied. No format for the report was given beforehand. The reports discussed and presented the working modes and practices of the interviewees in order to provide information on the CE phenomenon and its antecedents. Usually the nature of the change that was taking place in the unit was also described in order to highlight innovativeness and proactivity. The reports threw light on the performance and outcomes of CE as identified based on the interview. They all painted a heterogeneous picture of the CE phenomenon, and even interviewees from the same unit perceived the current situation in very different ways. Their attitudes towards development (superior-employee) discussions, for example, illustrated the situation:

> 'I don't know how useful they are as the employees don't talk.' [Interviewee A, social-care unit]
>
> 'In the development discussions I try to identify new innovations and best practices in order to improve our performance.' [Interviewee B, social-care unit]

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# SUSTAINING COMPETING PROFESSIONAL IDENTITIES: MEASURING ACTION LEARNING 'OUTCOMES' IN AN EDUCATIONAL CONTEXT

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# Sustaining competing professional identities: Measuring action learning 'outcomes' in an educational context

Abstract
This paper builds on an initial investigation of the process of action learning in a university Management School in New Zealand, where the focus is on sustainability and innovation. Students are encouraged to engage with entrepreneurial practice and develop critical thinking skills. In this study, we recognise the impact of the organisational context both on our own professional practice as teaching staff and on learning outcomes for staff and students.

The emergent nature of action learning outcomes makes the measurement of their effectiveness problematic. Research questions cannot be determined at the outset but are generated in consultation with the research participants. Despite aiming to be collaborative, our focus groups and interviews made explicit the tensions existing in the professional identities of staff. Their expert knowledge as researchers and teachers was challenged by an action learning approach. Consequently, this paper is an example of ongoing critical reflective practice.

We conclude that measuring the effectiveness of action learning outcomes is context-dependent and consider the implications for the teaching of critical management studies. The process of action learning must be considered a key outcome. Individual reflection on professional identity and practice may be as important as the organisational learning and explicit knowledge gained.

**Sustaining competing professional identities: Measuring action learning 'outcomes' in an educational context**

Introduction

Business schools have been heavily criticised for emphasising traditional pedagogical techniques and focusing on functional, prescriptive approaches to management, rather than preparing students with critical, analytical skills that can be applied in a rapidly changing environment. Emphasis is often placed on the latest popular management fashion (Collins, 200; Jackson, 2001; Holmes, Cockburn-Wootten, Motion, Zorn & Roper, 2005); yet, there has been extensive critique of the management fashions that have been promoted in popular texts and their influence on teaching approaches (Collins, 200; Jackson, 2001). Critical scholars have called for a radical change towards the teaching of management that fosters and integrates a critical, reflexive approach (Grey, 2004). They argue that this approach helps to prepare students for a complex and ambiguous business environment (Linstead, Fulop & Lilley, 2004; Mintzberg, 2004). Grey and French, for example, call for the re-evaluation of both what we teach and how we teach in management (1996).

This re-evaluation calls for a radical approach towards the context of teaching management as well as the process of learning. The structural, historical, and cultural context in which management practices occur is one that involves "relations among power, discursive practices and conflict suppression as they relate to the production of individual identity and corporate knowledge" (Deetz, 2003, p. 23). Organisations, including universities, are both enabled and contained by particular discursive practices and the positioning of powerful groups. In this University the focus on sustainability challenges existing practices and frames approaches to teaching and research. Indeed, management education has been shaped and influenced by dominant stakeholder groups (Thomas & Anthony, 1996). Gallos (1996), for example, calls on management educators to advocate the value of this new approach to management teaching practice in their institutions, that "good scholarship need not be divorced from good teaching" (p. 10). The context of management teaching is often unacknowledged; rather than focusing on the experience and process of learning, the emphasis is often on the output—the successful completion of courses.

In this context, critical scholars have called for management educators to critically reflect on their professional practice and on how they encourage critical reflexive thinking in their students (French & Grey, 1996; Grey, 2004; Mintzberg, 2004). In encouraging students to become critical reflexive learners, the design of courses needs to allow both the student and teacher to explore the processes of learning (Kolb, 1984). Embracing a critical framework towards teaching requires that both the teacher and student question assumptions, understand the contexts which shape management discourses, and look at alternative ways of practicing and "unmasking hidden tensions and meanings with a goal of emancipating thinking and action" (Holmes et al, 2005, p. 249; Politis, 2005).

In response to this critique, this paper builds on an initial investigation of the process of action learning in a university management school in New Zealand, where the teaching and research focus is on sustainability and innovation. Participation, dialogue and experiential learning are encouraged in classes by teachers, to develop students' thinking away from traditional conceptions of management. In this New Zealand management school, students are encouraged to engage with concepts of innovation and entrepreneurial practice, and to develop their critical thinking skills. This paper illustrates this process of encouraging critical, reflective practice through an application of action learning. As learning is an ongoing process, this paper also reflects on critical incidents that have occurred since the action learning study. We recognise the impact of the organisational context both on our own professional practice as teaching staff and on learning outcomes for staff and students. This paper is an example of ongoing critical reflective practice.

## Background

The context for this paper is the Department of Management Communication (MCOM) at the University of Waikato, within the Waikato Management School (WMS). The purpose statement of the WMS states that: "At the heart of our business is transformation – our purpose is to inspire the world with fresh understandings of sustainable success" (Waikato Management School, 2006). The Department has over twenty staff from diverse cultures and with diverse research approaches. It offers undergraduate and postgraduate degrees in management communication and

public relations. Cultural diversity is reflected in both the critical, creative approach applied in teaching and in the Department's research. In addition, the students comprise both bi-cultural and multi-cultural groups, and tensions can arise due both to this diversity in student groups and the desire by the department to 'practice what we preach'. The key tension for staff is to encourage students to move away from their initial functionalist expectations of management education towards the process of critically reflective learning (see Holmes et al, 2005).

Literature review

In this section we first explore the relevance of the learning process to the development of sustainable innovation. The literature on entrepreneurship has begun to address the issue of learning, with a specific interest in investigating the key characteristics of how entrepreneurs learn (Cope, 2005; Politis, 2005). Indeed, the main activity associated with being an entrepreneur has been the learning that they encounter while setting up and developing a new venture. This learning has been seen as one that is developed from previous experiences, experiential in nature, a dynamic process, and importantly it should develop from instrumental learning to a higher reflective learning process (Cope, 2005; Politis, 2005).

Entrepreneurs that have learnt from previous experiences and contexts have been identified as more successful in adapting to and foreseeing new ventures. Importantly, the learning that has been deemed successful has developed from both their 'hands on' experiences and ongoing critical reflection of those experiences (Cope, 2005; Kayne & Altman, 2005; Politis, 2005). As Cope asserts, "Entrepreneurs are constantly learning and developing as they manage their business" (2005, p. 384). The desirable characteristics of this learning are that it embraces both a dynamic and ongoing learning process; evaluates how structures and context shape the individual and business; reflects on particular key incidents; and investigates how they overcame problems and challenges that confronted them (Cope, 2005; Politis, 2005). In this sense their learning creates opportunities for sustainable innovation.

The challenge for academics has been to investigate ways that allow the learning acquired by an experienced entrepreneur to be passed on to others. A key point emphasised in the literature has been the social context and

networks for entrepreneurs in passing on and acquiring new learning (Cope, 2005; Gill & Ganesh, forthcoming; Politis, 2005). Action learning potentially offers one method of facilitating these learning processes. It provides the dynamic and social collaboration called for by the entrepreneurship literature, with the aim of individual and organisation change. The following sections in this literature review will define and discuss the key features of learning and describe the process of action learning.

The process of learning

The emphasis on student-centred learning and teaching has been heavily influenced by Kolb's learning cycle (1984). Learning, in Kolb's model is a continuous process, which involves a dialectic approach to learning and is firmly grounded in experience (Kolb, 1984). Learning is conceived of as a holistic process that involves reflection, adaptation to reality, and relationships. The model's key contribution to management education has been the emphasis on linking theory and practice (Vince, 1998). This has had a significant impact on the movement towards investigating organisational learning (Linstead, Fulop & Lilley 2004).

Definitions of experiential learning are many and varied but all share a belief in the value of learners having a lived, as opposed to a vicarious, experience to learn from (Brookfield, 1983). Managers appear to prefer those forms of learning that are vocationally oriented and 'hands on'; yet, there appears to be a move towards communities of practice that attempt to bridge the gap between theory and practice (Brown & Duguid, 1991). Similarly, Kolb's cycle encourages reflection into the question of how individual and organisational learning occurs, with the aim of solving organisational problems, knowledge acquisition (turning tacit knowledge into explicit knowledge), reducing conflict, and more importantly improving relationships. This has prompted an interest by both managers and academics into the process of individual and organisational learning (Thompson & McHugh, 2002).

As the process of learning requires a dialectic relationship, 'communities of practice' have become common place in organisations (Brown & Duguid, 1991; Thompson & McHugh, 2002; Linstead et al, 2005). They are defined as "collections of individuals with varying degrees of expertise in a

particular area, who share insight and a sense of identity" (Linstead et al, 2005, p. 44). These employees are encouraged to draw on tacitly gained workplace experiences in order to solve workplace problems (Smith, 2001). The aim is to accumulate individuals' experiential and tacit knowledge, gained in the workplace, and to translate this through shared discussion into solving organisational problems (Nonaka, 1991; Smith, 2001).

Criticism, however, has been made of such organisational initiatives regarding individual and organisational learning (Thompson & McHugh, 2002). These criticisms question whether any real collaborative or creative learning is achieved and if any organisational transformation occurs as a result of this learning (Thompson & McHugh, 2002). Instead, Thompson and McHugh argue that "it will be managed learning. The implication here is that organisational initiatives will be dependent on ad hoc instrumental opportunities and functional imperatives" (p. 248, emphasis in the original). Rather than creating change, it is argued that organisational learning will create "defensive routines" and a slide back into typical work practices (Thompson & McHugh, 2002; Linstead et al, 2005).

The ethos of action learning

In response to the increased attention directed towards organisational learning and student-centered learning, action learning has become an increasingly popular tool used in both organisations and in some areas of further education (Cusins, 1995; Pedler, 1991; Hoban, 2004). The key tenets of action learning are "reflection, community and action – which interrelate and enhance each other" (Hoban, 2004, p. 204). Employees come together in groups, for example, reflecting on particular problems and endeavoring to generate ideas that can be put into action. The premise in action learning is that through group reflective discussion, where the employees (or students) draw on their experiences, individuals learn to solve work problems and thus enhance the wider group or organisational learning (Pedler 1991; Donnenberg & De Loo, 2004; Vince 2005). The key focus of action learning is that it should be orientated towards changing the organisational learning through individual and group problem solving (Pedler, 2006).

Action learning has been attributed to Reg Revans (1998) and although he never specified a detailed method, "he did expect applications of the theory to be creative, to evolve, and not to be carbon copies of one another" (Willis,

2004, p. 11). Revans did, however, define action learning through what it is not, and, as a result, some key approaches towards implementing the method have developed (Marquardt & Waddill, 2004; Willis, 2004). Action learning tends to begin with a problem or challenge that a group of people want to work on. This group can be up to six or eight members of the organisation; the group needs to question and reflect on the problem and any ideas posed to solve it; a facilitator is required to help this group work; and finally some action or change is generated from the process (O'Hara, Bourner & Webber, 2004; Marquardt & Waddill, 2004).

The challenges for, and criticism of, action learning are that it neglects issues relating to organisational power and identity dynamics. It can be inhibited by pre-defined organisational goals and structures, lacks any strategies for action/change, and it has been difficult to integrate within typical teaching structures (Ashton, 2006; Corley & Thorne, 2006; Vince, 2004; Willis, 2004). The rise of critical action learning has been in response to the political reality and organisational dynamics of trying to implement the method (Pedler, Burgoyne & Brook, 2005).

As mentioned earlier, action learning has been seen as a tool for achieving change within an organisation. The context in which this occurs, however, has rarely been considered. Power within the organisation and an individual investment in professional identity changes the dynamics in the action learning sets used within organisations (Vince, 2004). Importantly, particular dominant groups in the organisation will also have the power to determine what is measurable and is seen as a successful outcome of the action learning process (Corley & Thorne, 2006). A common complaint from many of the senior managers involved in action learning projects, however, is that it did not meet "the organisation's 'real needs for change'" (Corley & Thorne, 2006, p. 39). Yet, these managers had not been involved in the projects, offered little support, and did not provide feedback on any of the employees' recommendations. This poses the question as to who determines the successful outcome of an action learning project. It also brings to light issues of whether the process of learning is as central to the method as the outcomes of the project.

A key feature of the organisational political context which can shape the process and outcomes of action learning is that pre-defined organisational

(and individual) goals and agendas will inhibit the outcomes of the set. Corley and Thorne (2006), for example, found that organisational structures, customs and practice, work routines, individual job focus, and context affected the individual's desire to continue. Corley and Thorne suggested that:

[S]ome groups and individuals felt unsupported and unable to drive through change…Feedback from some senior managers hindered change… [participants] 'lost motivation' and perceived lack of 'power' was also evidenced when participants received no feedback. (2006, p. 38)

An organisation with a focus on sustainability, however, is more likely to recognise the emotional well-being of groups and individuals within the organisation (see, for example, Clarke & Roome, 1999). It might acknowledge all participants in an action learning set, rather than allowing the learning process to be compromised by power structures dictated by the organisational structure, customs or practices.

Sustainability in organisations can additionally be defined in terms of either entrepreneurship—sustainable, ongoing innovation, or stability—maintaining current best practice, and the status quo. If an organisational culture demonstrates dynamic adaptability (see Gioia, Schultz & Corley, 2004), and embraces innovation and entrepreneurship, then it is the processes of reflection and innovation which are foregrounded (and stable), not the defensive systems maintaining the dominant organisational hierarchy and organisational practices (Thompson & McHugh, 2002). Such a dynamic learning environment which is both innovative and sustainable may also foster action learning.

When integrating action learning into an educational context, then, the question must be asked whether the method can promote critical reflective learning and change, while avoiding the typical organisational political games. In this paper, we reflect on a case study to illustrate these concerns.

We seek to demonstrate the relevance of this literature to the sustainable and innovative research and teaching of critical management studies in our aim to ensure that students can incubate ideas and offer creative solutions to organisational problems.

The Research Project

In the following sections, we describe the original action learning case study (Cockburn-Wootten, Henderson & Rix, 2005) and our initial reflections, before moving on to reflect on the learning and changes that have occurred since the study was completed. We recognise the limitations of focusing on a single case study. At the same time, this is an opportunity for in-depth analysis of individual and organisational learning on how we teach critical management studies. This reflection on the process of a single case study is also an example of critical action learning.

MCOM staff had identified that the MCOM Department web site did not communicate effectively with key users or stakeholders, nor did it serve the internal users of the department, and students complained that they could not find key documents to help with their assignments. As the Department was seen as a leading department in teaching organisational communication and public relations, having an effective web site that communicated to both external and internal members was particularly important.

Staff agreed that an action learning approach would create an interactive, ongoing forum that could convert staff members' tacit knowledge into a shared resource site on the web page. The Department's web page could be updated and adapted to the needs of both staff and other significant stakeholders. Staff also agreed that an individual student research project, supervised by a staff member, could address this need. The individual research project paper, (called a '599'), unlike a traditional semester paper, had the flexibility in both structure and content to include an action learning approach.

The initial aim of Caroline, the student researcher, was to only focus on the external communication features of the website, as this was deemed more important by the Department. Her project was envisaged as an ongoing one, which would be continued by staff once she had completed her study. Cheryl was Caroline's first supervisor, and Alison, (a doctoral assistant at the time), was her second supervisor, and action learning methods were new for both supervisors. Indeed, at the time of study there had only been one action learning research project in the Department; this was a doctoral study, co-supervised by a member of MCOM and another department. Although the MCOM department was relatively unfamiliar with the action learning

methodology, they were keen to apply the approach as it embraced a collaborative perspective to learning and organisational problem solving.

Caroline's first task was to talk to key members of the Department to elicit current views and attitudes regarding the web site and to encourage discussion with staff regarding suggestions for site improvement. These interviews were exploratory and intended to promote some data for discussion at the larger set discussions. In the second stage of the project, Caroline organised a collaborative discussion format to gain additional staff involvement and ideas regarding the web site. The participants for the discussion group were selected on the basis of their knowledge of the Department, length of employment, and their current connection with the web site.

Thirteen of the twenty four staff in the Department were involved in the project. They comprised both senior and junior staff who were either new employees or who had been working at the university for five or more years. In addition to the interviews and discussion group, ongoing informal conversations helped to supplement the data collection. All of the data was analysed using thematic analysis based on Patton's (2002) work.

Discussion

The emergent nature of action learning outcomes makes the measurement of their effectiveness problematic. Research questions cannot be determined at the outset but are generated in consultation with the research participants. Despite aiming to be collaborative, our focus groups and interviews made explicit the tensions existing in the professional identities of staff. Their expert knowledge as researchers and teachers was challenged by an action learning approach.

The staff were initially committed to, and involved in, the action learning project. They discussed the issues several times during staff meetings, all agreeing to select a suitable student to progress the study and reach the desired outcome of change to the web site. All staff were willing to participate in any group/set discussions organised by the student and the feeling was one of excitement that finally something was happening. It was also anticipated that as academics who all embrace critical perspectives there would be a lack of 'group think', a substantial dose of the 'wisdom of peers'

(Pedler, 2005) and that individual staff would avoid the problem of "feel[ing] isolated from his or her community" (Corley & Thorne, 2006, p. 41). As the study progressed, however, it soon became evident that the university context and academic professional identities came to influence the study and eventual outcomes.

The key problems were that the objectives of the project changed, and staff felt vulnerable due to their perceived lack of knowledge/expertise, issues of power and credibility, role conflict, and lack of organisational support. After several meetings held by Caroline, the student researcher, the focus of the research question and problem was questioned by staff. Despite initial agreement before the project began, staff started to diverge on the nature of the website problems and what the focus of the project should be. Some staff, for example, wanted to focus exclusively on the aesthetic aspects of the website rather than ensuring that the content was firmly established first, while others felt that one of the key priorities of the webpage should be an alumni site. Agreement was required on key aspects of the content and design of the site and staff needed to decide how to effectively manage the website on an ongoing basis.

The professional identities of the staff also impacted on the eventual outcomes of the study. Academic staff were involved in a research project driven by a student, supervised by a peer, with the second supervisor being a doctoral student in the Department. Issues of power and credibility arose from the fact that the research process was guided by a student researcher. Staff additionally felt vulnerable because they had limited skills regarding technology and felt uneasy about the amount of work involved in the study that was taking time away from the 'real job' of research and teaching.

As she was relatively unfamiliar with research, and as she was both a student and tutor in the Department, Caroline found that coordinating the project within the constraints of completing her assessed student paper raised conflicting issues regarding her roles. Was she a student learner or actually part of the research community? Caroline conducted the interviews on her own and noted the initial reluctance from staff to become involved in the interviews. Staff, unintentionally, increased her conflict when they directly questioned the focus of the project and expressed strong concerns that it should be focusing on other website issues. In an attempt to help ease

Caroline's anxiety, Cheryl took on an advocacy and mediating role, explaining the reasoning behind certain choices to both Caroline and the staff as required.

On reflection, this advocacy role, although it did ease some of the conflict, should not have been necessary if time for more reflective discussion had been included in the study (see Clarke, 2005). Instead, the constraints of the paper timeframes and assessment dictated the research design and actually inhibited establishing a longer process that could have allowed for ongoing discussion and reflection. The action learning process was also incompatible with Caroline's individual aim of successfully completing the project within paper timelines, in order to gain a good grade.

Reflecting further on this project, Cheryl and Alison also experienced role conflict, as supervisors of this project and members of staff within the Department. Although Cheryl took on an advocacy role for Caroline, a fine balance was required to ensure that other staff felt that their 'voices' were also heard. Cheryl acted as co-facilitator of the action learning project, in her role of supervisor, yet she herself was unfamiliar with action learning perspectives. This investigation provided some valuable lessons to pass on to other management students, given Cheryl's responsibility for coordinating student research projects and teaching in a Master's level research methodology course.

Alison took on the role of second supervisor to learn more about supervision, but again was unfamiliar with action learning approaches. However, as a doctoral assistant, rather than a tenured staff member, Alison, like Caroline, at times felt that her status in the department inhibited her interaction in the focus group discussions and was uncertain of her role in the ongoing management and development of the project.

Since the majority of the staff in the MCOM Department had not experienced action learning approaches as part of their own research programmes, despite their initial enthusiasm, they had uncertain expectations about the project at the outset. On reflection, we suspect that, as experienced academics, part of the staff reticence in becoming involved and supporting the development of the project was due to their discomfort with the novelty of the experience, particularly the role conflict they experienced

in being part of a student-directed, but staff-focused, action learning project. Staff may have seen the project as relinquishing control and power of the MCOM website, rather than finding the action learning process an empowering one.

The full website development was not completed by the end of the research project, since no staff member(s) took responsibility to continue Caroline's role once she had completed her paper. Although several staff individually took on specific responsibilities for particular aspects of the website development, with multiple demands on their time, such development has often been shelved. Additionally, development of the website relied on a support unit outside the department for technical aspects of the implementation, and much of the initial momentum created by the research investigation has therefore been lost.

Overall, the study raised questions regarding the difficulty in implementing an action learning approach without collective ownership and participation. This difficulty in implementation influenced the outcomes for both individual and organisational learning. We became particularly interested in how the context of the research had constrained the project's outcomes, and, in addition, how issues of professional identity and image shaped the research process and the participants' willingness to discuss problems and vulnerabilities in group sessions.

On reflection on the case study, the two key explicit tensions raised by the action learning approach were the influence of the organisational context and professional identities. These tensions shaped participation, progress, and the role of the facilitators. The department was relatively unfamiliar with action learning projects, yet, this unfamiliarity is not unusual within university departments. As McNiff and Whitehead (2000) have commented, the university context only validates "real research in conventional terms" and tends to neglect the "swamps" of real-life experience (p. 95). Academic conventions call for the presentation of linear outcomes produced at conferences and for journals. The 'messy', emergent and 'unhygenic' nature of research is rarely discussed in the dominant quarters of university life (Stanley & Wise, 1993; Bloch, 2002).

Conclusion and implications for the teaching of critical management studies

The learning outcomes of this action learning project illustrate the difficulty of implementing a collaborative and holistic approach to solving organisational problems. The focus on measuring the successful action learning project based solely on functional or instrumental outcomes should be avoided (Raelin & Raelin, 2006). Reflecting on the process of learning, and encouraging the questioning of assumptions in a collaborative environment is just as important as the changes initiated from the project. Raelin and Raelin (2006) warn that we must be wary of action learning projects which "have a tendency to foster action at the expense of learning" (p. 46). Action learning for both the individuals involved and for the organisation evolves within a particular context. It is this context, which Vince (2004) calls "organising insight" in which the learning occurs, and individuals draw on this insight to understand, defend practices, or change actions. As Vince (2004) argues:

Questioning the impact of the organisation on action learning implies a willingness to try to understand how assumptions constrain and define action. The focus here is not only on how individuals' behaviour or 'ordeals by practice' are themselves defined by assumptions. It is also about the organising that takes place to foster particular assumptions. (p. 74)

For the MCOM department, the individual learning was greater than any organisational learning. It was evident that the organisational structures and professional identity of the staff groups shaped the level of motivation, support and participation towards the project. Using a student, doctoral student, and peer to drive the project was a challenge to these ingrained organisational hierarchies. In addition we learned that action learning is as much about the development of the process as the outcomes and the effect of trying to contain the project within university timelines was to discourage discussion and collaboration. Another key learning was the problem in achieving change in organisations from the 'bottom up' (Vince, 2004). In this study the research project was situated in just one academic department and although supported by senior staff in the Department other wider School support was not considered.

On a more positive note, the project did encourage reflection by individuals in the Department regarding how they 'practice what they preach'. Staff met informally to discuss how they integrate critical pedagogy within their papers and the outcome was a continuing commitment to the teaching of

critical approaches to management. Another outcome was that tacit knowledge was converted to explicit knowledge, for example in the creation of a student learning resources and a tutor manual. A group of staff additionally, co-authored a journal article as a result of their reflection on critical pedagogy (see Holmes et al, 2005), and Jean McNiff was invited by the Department and the University's Teaching Learning and Development Unit to deliver a variety of seminars on action research and action learning.

The action learning process did, therefore, result in individual learning outcomes. For example, partly as a result of the reflections triggered by this project, Alison, who is now a lecturer in the MCOM Department, has introduced a number of experiential learning scenarios in lectures and tutorials with her Media and Public Relations class. She also encourages her postgraduate students in Corporate Public Relations to move from a functional perspective to critical, problem-solving, and innovative solutions when discussing how public relations theory can inform professional practice.

Cheryl adapted the learning she gained from being involved in the project to her teaching and in particular her compulsory undergraduate second year class, Introduction to Management Communication (MCOM200). She realised that this course provided an ideal opportunity to achieve the learning goals of management communication and encourage an innovative, problem solving approach to the students' assignments. After several tutorial discussions from the course in semester B 2005, Cheryl decided to focus on one of the recurrent problems identified by the B semester 2005 students, team/group work in an intercultural environment.

This semester, a key assignment that has been introduced into the course has been teamwork with a focus on investigating the intercultural issues of team/group work in an educational environment. The aim of this team assignment is that the students are investigating a problem that they have identified in their own university experiences. The assignment encourages them to focus on both individual learning and to consider practical changes and recommendations for the organisation.

The challenge in facilitating and teaching this assignment has been in balancing the process of learning in the team assignment with the outputs. If

too high a percentage is placed on the final grade, for example, the students tend to disregard time for reflection and discussion of team members' ideas. If the lecture and tutorial time does not value and encourage discussion regarding their teamwork, they again tend to neglect the process of teamwork focusing only on the final grade. In addition to the various tools we use to encourage the teams in the tutorial to reflect and discuss teamwork, the final assignment, called an 'individual critical evaluation of team communications' asks them to reflect on their experiences. They have to review the tools and methods used within the team to progress with the problem solving as well as the contribution of their own actions and learning achievements.

After two semesters, similar findings and recommendations to the problem were being suggested by the student projects. They called for a more explicit discussion of the rules, rewards and assumptions regarding team/group work in each course outline that contains team/group work assignments. Their main concern was that the lecturers tend to assume that the students know how to manage and 'be' in a team/group. They also found that none of the course outlines directly addressed the issue of conflict especially regarding laziness or social loafing. They also recommended a third year course that provides both theoretical and practical content regarding team and group work.

A further independent student research project was sponsored by Cheryl to investigate these recommendations on a wider School level. This 499 student-led research project, supervised by another member of the Department raised a variety of similar concerns and calls for a course for students and for the university to provide staff training on teaching team and group work. The results of the student projects and the 499 were taken to a meeting with the Deans and Cheryl has been asked along with another staff member to develop and implement a course on team/group work for the School.

The above example in particular illustrates that although the initial action learning project did not gain immediate changes in the Departmental web site it did provide ongoing reflection and learning for both Alison and Cheryl. The final example from the MCOM200 course illustrates how these

student ‘mini’ action learning projects did instigate changes at the individual, course, and organisational levels.

It seems that action learning is not served well by having deadlines and structures imposed. As our reflection on this project demonstrates, organisational learning, and student learning in a Management Education setting, is limited by an emphasis on outputs. Learning occurs outside these boundaries, and depends on the commitment and motivation of both the individuals and the organisation involved. It is the experience and process of the learning which may ensure that it is both sustainable and innovative, triggering ongoing reflection, allowing the transferability of tacit knowledge, and fostering entrepreneurship.

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# The Macquarie Innovation Learning & Knowledge (MILK) Framework.

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**The Macquarie Innovation Learning & Knowledge (MILK) Framework.**

Abstract

The term Entrepreneurship is generally seen to encompass a relatively broad range of activities and roles, including:

- Self-employment;
- Small business management;
- The establishment of technology-based start-ups;
- Commercialisation of Intellectual Property; and
- Pioneering new ideas and leading transformational change.

Even within these distinct spheres, there is a range of entrepreneurial roles – from providing leadership and strategic vision, through to conduct of day-to-day activities involved in achieving sales revenues and ensuring the venture's solvency. Each of these roles requires a distinct (albeit often overlapping) set of knowledge and skills.

As part of an effort to develop a cohesive set of academic and professional education programs addressing Entrepreneurship and Innovation, our team identified a need for an explicit map of the successful Entrepreneur's knowledge base possessed, and a framework that relates the various ideas, concepts, and skills that comprise such a knowledge base to each other, and to the various roles and functions that fall under the broad rubric of Entrepreneurship.

The Macquarie Innovation Learning & Knowledge (MILK) Framework was intended as a tool that could be used to define and categories the basic units of knowledge and skill that should be part of an Entrepreneurship education program. It seeks to segment relevant knowledge into a defined set of categories (dimensions), with each dimension representing a particular field of specialization. Each category is further segmented into levels of increased complexity and significance – with concepts at each level relying (and building) upon lower level ones for effective comprehension.

This structure is keeping the view of memory as a hierarchical network of conceptual schemas, and Sweller's Cognitive Load Theory, which argues that working memory capacity acts as a constraint on the size of individual concepts (schemas). Learning complex ideas thus relies on having them be expressed as a combination of simpler concepts that have been previously learned.

The current version of the framework defines nine functional dimensions, coupled with an integrative one (strategic perspective) that reflects connections between the other nine. Each dimension was delineated into four levels of complexity – from a basic awareness of the field, through to mastery that enables one to play a leadership role in that area. The resulting model sets out 40 distinct modules of "knowledge", each encompassing a specific set of ideas, skills and capabilities.

The MILK framework enables the explicit definition of a minimum skill set to be expected of staff in specific organizational roles (such as R&D Manager, Business Development Lead, Sales Executive, or CEO). These definitions can then be applied in recruitment, promotion and performance evaluation, as well as being used for determination of professional development and training needs.

The framework is being applied at the Macquarie Institute for Innovation to develop a set of teaching modules that can be assembled into specific education and training programs. This enables the deployment of a teaching model that is comprehensive, robust, and cost effective. The framework also supports a research agenda, with a focus on developing clearer definitions of the content of each module.

"The aim of education should be to teach us rather how to think, than what to think."

– Bill Beattie, "Remarks on the Utility of Classical Learning", 1776

Introduction – Entrepreneurship Education

The term "entrepreneurship" is generally seen to encompass a relatively broad range of activities and roles, including

- Self-employment and small-business management;
- The establishment of technology-based start-ups;
- Commercialisation of Intellectual Property;
- Launching new products and developing new markets; and (more broadly)
- Pioneering new ideas and leading transformational change.

Within these distinct spheres, there is a range of distinct entrepreneurial roles – from providing leadership and strategic vision, through to conduct of day-to-day activities involved in achieving sales revenues and ensuring the venture's solvency. Each of these roles requires a unique (albeit often overlapping) set of capabilities and skills. Development of such capabilities and skills is the aim of entrepreneurship education.

The Oxford English Dictionary (Little, 1991) defines "educate" as (inter alia) "…to train so as to develop some special aptitude, taste or disposition". The aim of education is thus not simply to impart "knowledge", but rather to inculcate in students certain ways of thinking about their environment and the various problems and challenges they encounter in their lives. This perspective is particularly relevant for entrepreneurship education, where the explicit goal is to prepare students to play an active role in successful entrepreneurial endeavours.

Entrepreneurship education has attracted significant attention over the past decades. However, much of the effort (as well as the bulk of research) in the field has focused on strategies to encourage entrepreneurial behaviour. A representative example is Holmgren & From (2005), who define "Entrepreneurship Education" (citing Sjøvoll and Skåland, 2002) as:

> "…the process of providing individuals with the concepts, creativity and skills to recognise opportunities that others have overlooked, and to have the insight, self esteem and knowledge to act were others have hesitated …entrepreneurship also means … a vision of a future with a lot of possibilities" (p.385).

In the mid 1980s, a focus of much of the research in the area was personality traits, in an effort to identify and inculcate the traits that predispose people towards becoming

entrepreneurs (Greenberger and Sexton, 1988). Over the recent years though, this direction has been discredited, in particular because trait theory does not account for learning and development as entrepreneurs establish and manage ventures (Gartner 1988, Shaver 1995).

Focus then shifted to a behavioural perspective, whereby students were seen to learn to be entrepreneurial by engaging in the various activities involved in the creation of new business ventures (Gartner 1985). The resulting programs involved students in various aspects of new venture creation – from opportunity recognition through to the preparation of business plans – including market research, competitive analysis, and IP strategy (Kuratko 2005). The expectation was that students would learn to become more entrepreneurial.

One example of this approach is Swinburne University's MEI program, which sought to explicitly track whether its graduates became involved in new venture creation. McMullan and Gillin (1998) reported that some 87% had done so. More generally, many programs began to emphasise "experiential learning" activities like internships, consulting projects, computer simulations, student business start-ups, and interactions with successful entrepreneurs (Kuratko 2005, Solomon et. al. 2002). In some cases, successful completion of such activities became a graduation requirement. Looking beyond the "start-up" stage, Cope (2005) presented a "dynamic learning" perspective, which built upon the "behavioural" one to examine how entrepreneurs learn and develop once the new venture is established.

Factors which encourage entrepreneurship are clearly important, since a willingness to engage in entrepreneurial activity is a basic pre-requisite for doing so. Yet once graduates of such a program have committed to an entrepreneurial career and identified a (hopefully) attractive opportunity as a focus for their efforts, the challenge of transforming this opportunity into a successful venture remains. Thus, there is a need to identify and organise the particular insights, knowledge, and skills that will enable aspiring entrepreneurs to succeed in their endeavours.

Most entrepreneurship education programs emerged from conventional business and management programs, and reflect an attempt to repackage the functional elements of such programs to focus on smaller enterprises. While many of these elements are relevant and significant, it is widely recognised the behaviours, knowledge and skills associated with management of established enterprises need to undergo significant adjustment to be relevant in a context of emerging initiatives.

This paper presents a framework for thinking about the skills and knowledge involved in entrepreneurial activities, and for developing entrepreneurship education programs that focus on the acquisition of such knowledge and development of relevant skills.

## Developing a Modular Entrepreneurship Education Program

The Macquarie Innovation Learning & Knowledge (MILK) framework was formulated at Macquarie University's Macquarie Institute for Innovation (MII) in the context of an

effort to develop a suite of education and training programs in Entrepreneurship and Innovation (with a particular focus on technology-based entrepreneurship).

MII's educational mandate encompassed the delivery of undergraduate and post-graduate academic course units (including a dedicated "Masters" degree), research commercialisation training for the University's research students and staff, commercially available short courses that address issues related to management of technology start-ups, and custom training programs in the area technology commercialisation and innovation management.
To leverage scarce time and staff resources across this broad range of educational offerings, the MII team sought to develop the educational content of its programs as a set of re-usable modules, each addressing a distinct area of knowledge or capability. These modules could be assembled as required to provide a broad variety of programs to meet specific demand.

Context: Defining the Framework's Scope

In developing the MILK Framework, the MII team sought to address a diverse set of objectives, including:

- Detailing the diverse base of knowledge that could be expected to significantly improve the success prospects of entrepreneurial ventures;
- Providing an organized map of content that should comprise educational programs in the "Entrepreneurship" sphere (including programs focused on research commercialisation and management of innovation), highlighting dependencies between the various concepts;
- Reflect a hierarchy of understanding and capability, in line with differences in the level of knowledge, skill development and experience;
- Organized into distinct modules of information, each of which of a size that could be delivered in one to two days (10-12 contact hours) of teaching;
- Usable as a guide for program development;
- Usable as an assessment tool to evaluate existing skill/capability sets;
- Be easy communicable to a general audience.

The framework would be used both to organize and structure program content, to define the specific skill and training requirements that would be addressed in "custom education" programs, and as a tool to identify and clearly communicate skill and training gaps to client training managers and prospective students.

One communication approach seen as an attractive example was the well known Bell-Mason diagnostic (Bell and McNamara, 1991). Developed as a framework for evaluating the prospects (and investment potential) of early-stage technology ventures, it defines a set of performance dimensions, a methodology to evaluate the level of development along each dimension achieved by the particular venture, and a set of "targets" that a venture should meet as it develops from the "concept" stage to a "steady state".

In developing the MILK framework (as well as the actual programs that apply the framework) particular emphasis was given to current learning and skill development theories, in particular the implications of recent developments in understanding Human Cognitive Architecture on the processes involved in learning and teaching complex concepts and skills.

Human Cognitive Architecture and the Cognitive Load Theory

One effort to understand how people acquire and apply knowledge and skills (in other words "learn") is the Cognitive Load Theory (CLT) proposed by Sweller (1999). CLT seeks to apply the principles of psychology and cognitive theory to better understand the processes involved in learning and teaching. The key theme of CLT is that to be effective, instruction must take account of human cognitive architecture, and the way people acquire and organise knowledge.

Human Cognitive Architecture

Human ability to learn, to acquire, retain, and retrieve information, and eventually to apply it in a proper context, relies on the operation of our memory. CLT proponents (building upon the substantial body of research on "memory") argue that human memory comprises three distinct functional units:

- Sensory Memory – where the external data impinging upon our senses is translated into individual elements of meaning, such as shapes or sounds;
- Working Memory – where such individual elements and/or the relationships between them are identified and/or classified for immediate decision making.
- Long Term Memory – where information about information elements and relationships between them is retained over an extended period – in other words, "learned".

These three functional units, and the channels that enable the transfer of information between them (Figure 1), comprise Human Cognitive Architecture (HCA).

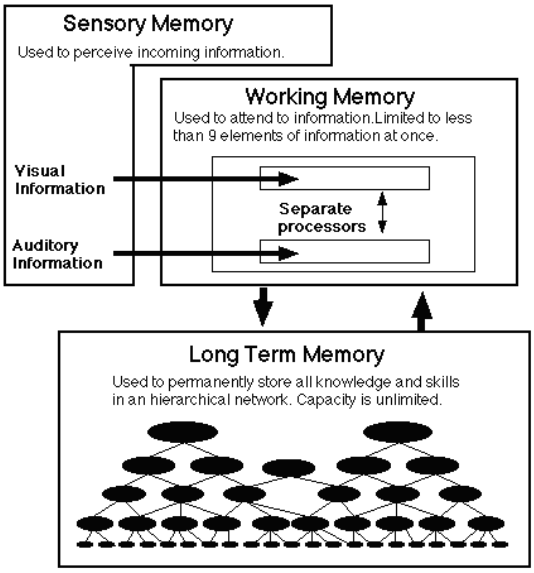


Figure 2: Human Cognitive Architecture (Cooper, 1998)

The structure and operation of HCA influences the process of knowledge acquisition (or "learning") as well as the subsequent application of that knowledge ("capability" or "skill"). Of particular significance are the different structures and function of Working Memory and Long Term Memory, as well as the relationship between them.

Knowledge acquired over our lifetime is organised into complex relational structures termed schemas (Rumelhart, 1980) which are stored in Long Term Memory (LTM). Each schema, consisting of a set of "information elements" and a description of how they relate to each other, defines a "concept". Schemas can be thought of in terms of a network of associations between mental "representations" for disparate concepts. This reflects the "Connectionist" or "neural network" view of cognition, which sees the learning process as involving the creation of connections between the brain's neuron structures and changes in the strength of such connections. Hebb (1949) described this as "neurons that fire together wire together". Thus, we "learn" the association between one abstract concept (like "heat" or "profit") and another (like "fire" or "high priced sale"), and that if the later is created, the former is likely to ensue.

However, though LTM is an effective storage mechanism, having virtually unlimited capacity and retention, the actual use and manipulation of information relies on the Working Memory (WM). WM contains "processors" which enable us to deal with the various units of data that impinge upon our senses: identifying specific information elements and how they interact with each other and previously learned concepts or schemas, assembling diverse elements of information into a cohesive unit (the new schema), and integrating the resulting unit of "knowledge" into our overall base of knowledge (thereby creating "meaning" and "capability").

Cognitive Load Theory

Research suggests, that processing capacity of WM is limited, with most people able to manipulate just 7 to 9 information elements (or relationships) in their WM at a time (Miller, 1956). The limited capacity of WM in turn limits the complexity of the concepts (or schemas) we can readily manipulate.

If we define the term "Cognitive Load" to describe a concept's "size" (in terms of the number of distinct elements and/or relationships that comprise that concept's schema), it follows from the above that the difficulty of learning a particular concept is directly related to its "Cognitive Load". Specifically, for a concept to be learnable, its "cognitive load" must be smaller than WM capacity. To the extent that the full schema for a concept may exceed WM capacity, we rely on a related cognitive mechanism.

With very few exceptions, complex schemas comprise of elements that are themselves schemas – thus the schema for "snow" is made up of schemas for ideas such as "white" and "cold". Once we have fully learned a schema, it can serve as a substitute for all the elements that comprise it. Thus, the cognitive load of a complex schema can be reduced by decomposing it into a set of simpler sub-schemas, each of which is smaller than WM Capacity. For example, understanding that Net Present Value represents the "economic profit" available in a non-competitive environment, makes it easier to understand "competitive strategy" models. Likewise, when we attempt to apply a complex concept, understanding it well enables us to isolate a small subset of the complete schema for manipulation in WM, and then to integrate the results of such "manipulation" with other sub-schemas to obtain the overall result.

Thus, the schemas stored in LTM are organised as a hierarchical network, building up from simple definitions of shapes and sounds to abstract concepts such as fairness, strategy, "value", or "the theory of relativity". This is also the way we learn (in other words acquire new schemas), by assembling more complex (higher order) concepts and skills from less complex (lower order) building blocks.

Applying Skills – Schema Automation

Developing proficiency in a field thus requires the development of a dense network of schemas that reflect the various concepts, principles, ideas, rules, and cause-effect relationships in that field. The difference between a "novice" and an "expert" in the particular field though, reflects more than just the number (and relevance) of the schemas in their LTM. We are all familiar with people who are able to memorise (or "rote learn") sophisticated concepts, but lack the ability to correctly apply them in the "real-world" environment.

Cognitive Load Theory addresses this issue by recognising that there is a further, distinct aspect of the learning process – Schema Automation.

When presented with a new problem or task, prior to applying the appropriate schema(s) we need to classify the problem – relate it to one or more of the numerous schemas that comprise our LTM. The amount of effort needed for this "classification" task is a key differentiator between the "novice" and the "expert". The novice needs to search through

the various available schemas to identify the ones that are relevant to the task at hand, and then to figure out exactly how to apply the chosen schema. The key characteristic of an "expert" is that this process takes place automatically, without conscious effort or additional "cognitive load" (enabling the "expert" to apply more complex schemas more effectively).
Schema automation does not involve creation of new mental frameworks (or "neural connections"), but rather the adjustment of the strength of the existing links between LTM schemas in order to make the newly learned schemas more accessible.

CLT and Entrepreneurship Education

The key implication of the CLT model is that learning involves two distinct processes: Schema Creation and Schema Automation. This implication can serve to guide our efforts, dividing high-level goal of "helping students develop the capabilities needed to build successful entrepreneurial ventures…" into two distinct tasks:

- help students formulate a conceptual framework (set of schemas) that defines a set of complex concepts (such "build a successful venture", "attract talented people" and "credible value proposition") and the relationships between these.
- provide students with the opportunity to practice applying key schemas, so as to strengthen the particular associations considered important (e.g. between "superior value proposition", "defendable market", and "sustainable profits").

The first of these tasks requires the teacher to formulate a hierarchy of concepts. This hierarchy would offer guidance as to the order in which the more "complex" concepts should be learned (and thus taught), thereby enabling these complex ideas (or "skills" or more fundamentally "associations") to be presented in readily comprehensible (and thus learnable "chunks").
An effective hierarchy must encompass the dependencies both within a particular subject area (such the need to conceptualise "profit" in order to understand "return on investment") but also across subject areas (such the need to understand statistical concepts as "normal distribution" and "co-variance" order to understand financial "risk premium" models).
The second of these tasks requires the teacher to relate the abstract concepts to real life examples, and to provide students with the opportunity to practice their skills in a controlled environment, using "active learning" methods such as case studies and applied projects.

The MILK Framework

In attempting to formulate and classify a "body of knowledge", there is a clear need for boundaries to limit the task's scope to manageable proportions. In the context of "entrepreneurship" this is particularly challenging, as the term is seen to have a range of disparate meanings and applications, encompassing not just business creation, but also

the creation of innovative non-profit ventures, leading transformative change in established organizations, and "initiative" generally.

It is seen that since most such "entrepreneurial" initiatives will eventually need to secure resources, access to which is (in Western countries) typically controlled by the market, a key element of an "Entrepreneurship Education" program must comprise business related skills. Reflecting this, the dimensions that comprise the framework have a strong association with business education.
In segmenting relevant knowledge into a defined set of "knowledge categories" (dimensions) with each dimension representing a particular field of specialization, ten dimensions were chosen. The first nine reflect particular areas of specialisation, with the tenth serving to integrate the concepts of the other nine into a cohesive whole.

The Specialty Dimensions:

The nine specialty dimensions were selected as:

(1) Money – This dimension addresses the function of "money" in the commercial environment, both as a unit of measure and as a fundamental requirement for securing necessary resources.

    At the introductory level it encompasses basic accounting and finance concepts (such "what is profit" and "discounted value"), though to more complex ("higher order?") concepts related to skills such as being able to raise funds in the public markets (through an IPO or by securitising anticipated cash-flows).

(2) People & Organisations – encompasses various ideas, skills and concepts related to understanding, managing, motivating, and leading people.

    In includes basic principles of "organisational behaviour" such as personality models, teamwork, or motivation and incentive systems through to concepts involved in organisational design, tacit knowledge, organisational learning, job structuring, recruitment, HR policy, and related issues.

(3) Value Creation and Marketing – to the extent that our "market" system is built upon the "free exchange of value", and "value creation and capture" are seen as the primary goals of entrepreneurs, this module addresses the very concept of "value" and how "value" is created in the market place.

    Building upon the "Marketing" discipline, this dimension looks at how "value" is defined and measured, various aspects of customer demand and satisfaction, issues related to product and service design, collection of market data, quality management, and pricing strategies. At higher levels, strategic concepts such as role of industry standards and market externalities such as network effects are considered.

(4) Competition – while the above dimension focuses on the issues related to the "creation" of value, this one addresses those related to the capture/retention of such

"value" in a competitive environment. The focus is on how value (or in the first instance revenues) is distributed amongst various stakeholders associated with the enterprise.

Concepts and models addressed include basic theories of competitive strategy (such Porter's 5-Forces model) through to strategies that involve control of key resources or preferential access embodied in industry standards or legislation, and on to issues related to corporate governance and social responsibility.

(5) Ideas and Paradigms – most definitions of "entrepreneurship" consider it to be inextricably linked with "innovation", the emergence and adoption of productive new ideas.

This dimension focuses on this "innovation" process, including models of idea creation, dissemination, and diffusion, product and industry life cycles, role of "dominant designs" and paradigms, and ideas such as "path contingency".

(6) Analytics – encompasses analytic tools and frameworks, from basic statistical concepts such as measures of central tendency and variance, the implications of different distributions, hypothesis testing, and forecasting.

In the advanced stages, this dimension examines issues related to rationality, cognitive biases, as well as analytic techniques such as simulation.

(7) Selling & Communications – focuses on skills and capabilities related to sales and persuasive communication, including presentation skills and negotiations.

At advanced levels, this dimension examines related to organisational decision processes, sales-force management, rhetoric, and determinants of behavioural change.

(8) Execution – addresses the various issues related to effective execution in a business setting, including financial controls, project management, the role of IT, production, operations management, time management, etc

In the advanced levels addresses issues related to design of optimal business processes, management of information flows, outsourcing, effective planning, and effective use of IT based management systems such as ERP and CRM.

(9) Law and Governance – focuses on the legal infrastructure in which business (and other) ventures operate, including various tax and reporting obligations, laws, related to protection of Intellectual Property, those designed to regulate competition, and those that govern the relationship between entrepreneurs, managers, investors, and employees.

The Integrative Dimension: Strategic Perspective

Although the above dimensions reflect an effort to segment knowledge into distinct fields, in the real world segmentation of this sort is neither effective nor fully desirable. Effective entrepreneurs must be able to effectively integrate the knowledge from each of

the specialty areas ("dimensions") into a cohesive understanding of the actions that need to be taken to enhance the venture's prospects of success.

The final "integrative" dimension, "Strategic Perspective" serves such a role, offering links between the concepts in the various modules. Notably, many of the concepts that comprise this dimension leverage the concepts and schemas developed in the other dimensions – if studied independently their "cognitive load" would be excessive.

Thus (for example), understanding the proprietary control of an industry standard is a competitive advantage that can underpin superior profit margins and valuation (Morris and Ferguson 1993), requires understanding aspects of "Value" (Axis 3), "IP law" (Axis 9), "Competition" (Axis 4), and "Profitability and Margins" (Axis 1).

The Strategic Perspective dimension focuses on concepts that integrate ideas, skill, and knowledge from multiple other dimensions. In this respect it can be seen as the most important dimension – as it enables the effective application of the more complex concepts in a "real world" environment, a critical aspect of "expertise".

Levels of Expertise

Knowledge/capability in each specialty area ("dimension") is seen as organized into levels of increased complexity and significance: with higher level concepts building on the lower level ones for comprehension.

To reflect this, complexity was delineated into four levels. The designation (naming) of each level was chosen to provide some guidance as to what may be expected at each level of understanding – from basic familiarity through to the ability to play a leadership role in that area. In particular, the four levels were designated as:

1. Awareness – knowledge sufficient to understand the field's basic terminology and to be able to follow clear instructions in respect of activities in the field;
2. Involvement – sufficient knowledge to be able to work effectively in the field as a member of a team or independently on clearly defined tasks;
3. Execution – understanding and ability to lead small teams in execution of well defined projects in the field, having clear guidelines in respect of objectives resources, and processes;
4. Leadership – knowledge and capability sufficient for independent leadership of key functions or (with sufficient breadth of skill and experience) the entire enterprise.

Segmenting the skills and capabilities associated with successful Entrepreneurship and Innovation activities into 10 areas (dimensions) of specialisation, each with four levels of expertise (or complexity) results in 40 distinct "knowledge" modules.

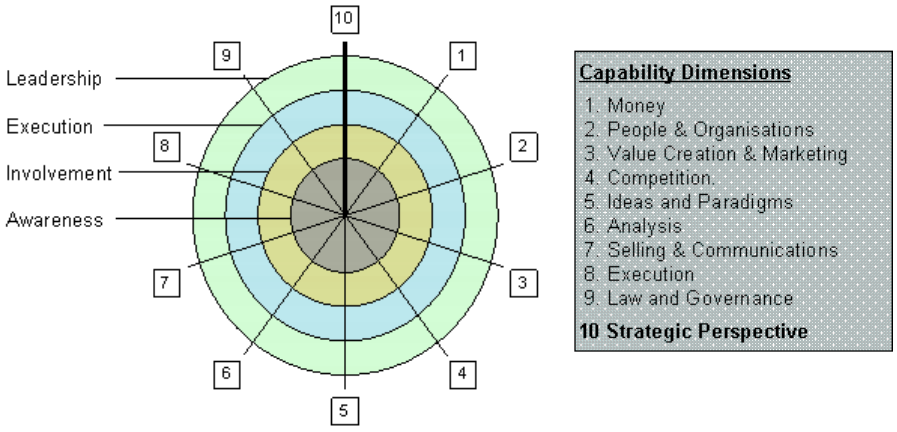


Figure 3: The MILK Framework

These can be represented on a "Radar Diagram" (Figure 2), where each intersection of the specialty axis and the complexity circle represents a specific module.

Applying the MILK Framework

In essence, the MILK Framework provides a tool for categorising and organising the various cognitive schemas that can be seen to comprise the "knowledge base" of an "Entrepreneur". It can thus be applied either normatively, to describe the knowledge base of a particular person, or positively, to prescribe job requirements or the content of educational programs. It can also serve to identify (and readily communicate) gaps between a person's knowledge base and the role's requirement, highlighting training needs.

Organising Concepts and Schemas

Perhaps the best way to present this function is by example, describing the content of an example set of modules and the hierarchical relationship between the concepts (or schemas) that comprise each module. In this regard, we can examine Levels 1 and 2 of the "Money" dimension, and how the contingency effect of Level 1 "Analytics".

Module: Money [1]

This module comprises the most fundamental concepts of accounting and finance, as they impact the emergence and development of a new venture. The emphasis in on understanding:

- Money as a resource to fund the asset base needed to support the venture's growth. Particular emphasis is given to the "fundamental accounting equation" ( A = L + OE ), which highlights that funding for the venture's assets needs to be provided either by the entrepreneur him/her self or by external investors;

- The role of accounting statements a key source of information about the flow of resources in the business, in particular for cost calculations, and the role of leverage (both "financial" and "operational");
- Importance of cash, and the difference between cash and accrual accounting;
- Key financial ratios (particularly "investor return" metrics like ROI and ROE), and the subordinate metrics that drive these (DuPont ratio decomposition);
- Introduction to "time value of money," including discounted cash flow analysis and key DCF formulae like "annuity", "perpetuity" and "growing perpetuity".

Upon completion of this module, students should understand the function of money in a start-up venture, and recognise its impact upon key decisions.

Module: Money [2]

This module build upon "Money [1]" to introduce concepts related to risk, valuation, and efficient use of scarce resources. In includes concepts such as:

- Different definitions of risk, including degree of variance from expected return, default risk, and risks in timing of cash-flows;
- The impact of diversification on risk, and in particular the differences between unique and market (systematic) risk;
- Managing risk with arbitrage, capital structure adjustments, and derivatives;
- Introduction to asset pricing models such as CAPM and APT, and the key assumptions embedded in such models;
- Implications of the "diversification," "fungibility", and "liquidity" assumptions on valuation of entrepreneurial ventures;
- Valuation in the absence of information – the venture capital approach.

Upon completion of this module, students should understand the factors that can influence the value (and fundability) of their venture, and be aware of some ways to manage risk.

However, since many of the "risk" and "risk management" models presented in this module rely on "statistical" metrics of "risk", to effectively understand (and thus learn) these models, the student must understand some of the fundamental statistical ideas (including the characteristics of the "normal" distribution, "Expectation", and "variance and co-variance" which are presented in Level 1 of "Analytics". As such, familiarity with Analytics-1 should be a pre-requisite for study of Money-2.

Module: Strategic Perspective [1]

While understanding the role of money and the various financial models is important in a business environment, complete understanding requires that it be linked with the other dimensions of knowledge. The strategic perspective dimension helps students to understand that superior profits stem from an ability to create superior value ("Value

Creation") in an environment of constrained competition ("Competition") which will allow the entrepreneur to retain the bulk of the created value.

Reflecting the view that no knowledge is ever fully acquired until the student is able to apply it in such a "real world" environment, the MILK framework as proposed requires that when evaluating people for leadership roles, only skill levels less than or equal to one's capability along the "Strategic Perspective" dimension be considered.

Using the MILK Framework for Evaluation and Communication

As well as defining the contingency structure of the various schemas that make up the cognitive "knowledge base" of an entrepreneur, the MILK Framework can have substantial value for testing and evaluation, and as tool to set out and communicate the capability requirements of specific organisational roles.

Once all of the modules are fully specified in respect of the schemas (concepts, ideas and skills) that comprise them, instruments could be developed to evaluate the knowledge base of current (or prospective) staff in order to identify training needs.
Similarly, various roles in the enterprise could be expressed (and defined) in terms of the specific modules of knowledge that should form part of an incumbent's "body of knowledge". Thus (for example) a "Sales Manager" role may require the incumbent to have Selling-3 and People-3 (with Strategic-2 as a pre-requisite) and Execution-2, with Level 1 in all remaining categories. Since the framework enables both of the above sets of information to be presented in a convenient graphic form, superimposing the two "capability maps" would readily allow a candidate's suitability for the role (and training gaps) to be readily perceived (Figure 3).

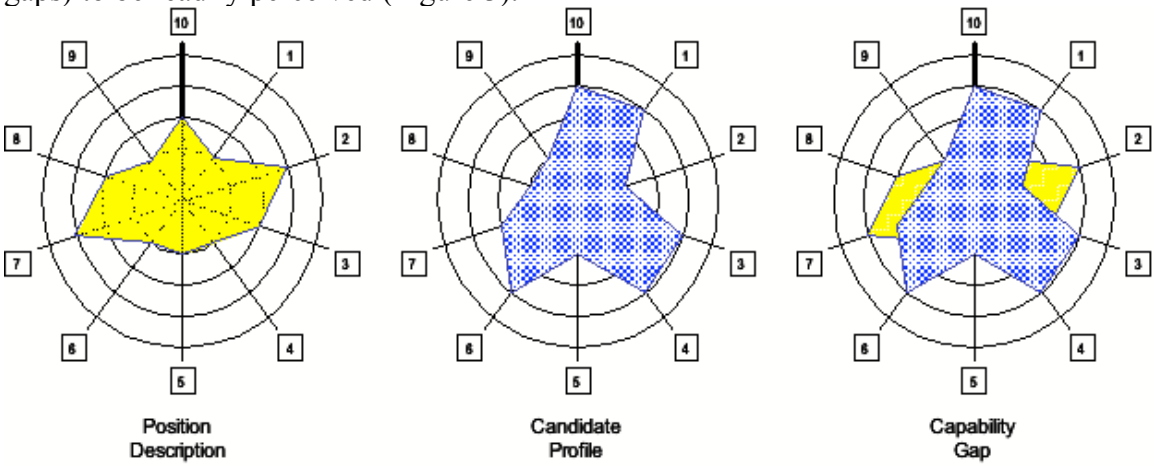


Figure 4: Using the MILK Framework for Recruitment.
Excess skills in a particular area could provide guidance on areas of interest and thus career paths, whereas any gaps (relative to either current or aspirational roles) would indicate training needs. This, in the above example, the candidate appears to be well suited for a "strategic marketing" role.

Finally, career paths could be defined in terms of skills that need to be acquired for a particular promotion –highlighting for example, that the move from salesman to sales manager requires "Execution (3)" level skills in "[7] Sales & Communication" while to become a marketing manager requires attaining that skill level in "[3] Value Creation & Marketing" (with both requiring "Execution [3]" in "[2] People & Organisations").

## Conclusion and Further Directions

The MILK framework remains in early stages of development, with current application limited to its use in designing a custom "research commercialisation training" program for a semi-government research institution.

The focus of current work is the development of detailed outlines of the content of the individual modules, and a comprehensive map of the relationships and dependencies between the concepts ("schemas") that comprise each module. In particular, there is a need to explicitly decompose complex concepts into simpler schemas that can be accommodated (and manipulated) within Working Memory capacity.

Another research direction focuses on ways to apply the framework as diagnostic tool in evaluating capabilities and performance, and for HR applications such as position descriptions for recruitment and training needs assessment.

The development of the MILK framework progressed in parallel with the development and delivery of the actual innovation and entrepreneurship education programs at the Macquarie University. Throughout this process, the framework informed the structure of the curriculum and delivery of classes. Reciprocally, the framework benefited from comments arising through interaction with corporate clients, and from feedback from practitioners and other educators in the field. We encourage the readers to consider the MILK framework, and welcome any comments regarding its conceptual structure and practical implementation. In particular, we welcome suggestions in regard to the specific concepts that should comprise the content of the individual modules from educators across a broad range of specialties.

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# Project seminar business plan development – An analysis of integrative project-based entrepreneurship education

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## INTRODUCTION

The question whether entrepreneurship can be taught has been a major debate in entrepreneurship research and even lead to the question whether entrepreneurship can actually be learnt (Edwards & Muir, 2004; Rae, 2000). Basic outcome of these debates has been the identification of different aspects in entrepreneurship education, of which some are teachable with the help of classical education tools and formats, while other do not seem to be teachable in the same manner. These aspects can only be developed by students themselves through active engagement in the learning process. Against the background of these findings a general call for shifting the emphasis from classical teaching to facilitate active learning arose, promoting the integration of more action-oriented concepts in current entrepreneurship education (Shepherd & Douglas, 1996).

As a result, active-learning concepts were increasingly integrated into entrepreneur-ship education. Regarding the dedicated research to that topic, however reveals, that empirical evidence regarding the effects and appropriateness of more action-oriented teaching approaches, is still hard to find. Though the role and impact of active learning in an entrepreneurship context is increasingly analysed by many scholars, most of the research conducted in that area is of qualitative nature and based on rather short observation periods.

Focusing on a specific type of active learning approaches, the concept of project-based learning, this survey has the objective to help closing this gap of empirical research, by analysing the annually held project seminar 'Business Plan Development' at the European Business School (ebs) in Germany. The main task for participating student teams in the project seminar is to co-operate with scientists from prominent German technological research institutions as the Fraunhofer institute, and to write a business plan that enables these scientists to market their inventions.

The survey focuses on the experiences of the participating students and alumni of the project seminars' eight-year history and their own founding activities. It thus aims at indicating whether project-based learning or teaching approaches might be an answer to the challenge of conveying the non-teachable aspects in entrepreneurship education to business students. To

test for how close the assigned tasks of the project seminar are to reality, the survey also provides some basic evidence regarding the realisation of the technology-projects the students wrote their plans for.

## Theoretical Background

### Science and art elements of entrepreneurship

The question whether entrepreneurship can be taught has been a major debate in entrepreneurship research and even lead to the question whether it can actually be learnt (Edwards & Muir, 2004; Rae, 2000). While some scholars as Gorman et al. (1997) indicated that entrepreneurship can be taught or at least be developed by education, other researchers as Saee (1996) argued that entrepreneurial skills are not teachable and that entrepreneurship education is only able to create entrepre-neurial awareness. Entrepreneurial awareness hereby refers to stimulating entrepreneurial spirit in an individual, that one day might lead a person to start-up its own business (Duchéneaut, 1997).

As discussed by Jack and Anderson in 1998, the ongoing debate regarding the teachability of entrepreneurship, lead to a distinction in entrepreneurship education between teachable science elements, that refer to classical business administration and management aspects and non-teachable art elements, that refer to the more experimental and creative aspects.

The rationale of the teachability of the science elements is based on the positivistic nature of traditional management education. Positive knowledge yields a hierarchical conception of science, focusing on the identification of causal laws that are derived from observation. The science of business or management is hence analytical, rational and logic. Instrumental knowledge that is important for SME or start-up management is thus communicable in traditional lecture settings, by elaborating on the identified causalities.
Entrepreneurship as a holistic, dynamic, unique and sensitive process is however characterised by unpredictability (Hofer & Bygrave, 1992) and of an anti-positivistic nature. Any entrepreneurial event is unique, probably

idiosyncratic and could be perceived as a phenomenon. In this context, entrepreneurship is thus more an art than a science. The art elements of entrepreneurship are creative, generative, and provocative, and thus constitute a major limitation for classical educational concepts. (Anderson, 1999; Shepherd & Douglas, 1996).

As instrumental knowledge and SME management skills, which are taught as the functional role of entrepreneurship, do not assist the students in dealing with the unknowability of entrepreneurship, uncertain situations and environments, it is necessary to also convey students the art elements of entrepreneurship. These are however not teachable in a traditional educational concept, due to their experiential nature. Being unpredictable, innovative and new, the art elements of entrepreneurship education can not be directly provided but only be developed by active participation of the students in the learning process, and experiences from trial and error (Anderson, 1999).

A key aspect for the conveyance of these creative, artistic elements is the creation of entrepreneurial awareness among the students. Given the great variety of different kinds of ventures, entrepreneurs, inconsistent environments and ways to become entrepreneurial, students are best suited for a satisfying career if they understand these dimensions and contingencies and learn how to deal with them by being actively integrated in the teaching concept (Anderson, 1999).
Important for the creation of entrepreneurial awareness is in particular the development of a learning environment that reflects the real-life environment of entrepreneurs. This provides the students with a chance to encounter the risks and ambiguity of the unstructured situation, which dominates the job of most entrepreneurs, by themselves. (Shepherd & Douglas, 1996; Robinson & Haynes, 1991)

The call for more action-orientation in entrepreneurship education
In order to overcome the limitations of traditional theory-based learning approaches by creating entrepreneurial awareness among the students, and in order to design a learning environment that is close to reality, a call for shifting entrepreneurship education towards more action-oriented teaching,

arose in the literature (Shepherd & Douglas, 1996; Formica, 2002; Gorman et al., 1997)

As a concept the active learning approach aims at providing opportunities for students to meaningfully write, read, reflect on and discuss an academic subject, its content, ideas and principles (Meyer & Jones, 1993). According to education literature, active learning approaches create a stimulating atmosphere by encouraging interaction among students and thus promoting so-called soft skills as problem-solving, the ability to work in teams, decision taking, conflict management or communication skills.
The active learning concept is often seen as forming a learning continuum, starting from simple tasks or short discussion sessions in class, to more complex tasks, such as long-term group projects or case study (Bonwell & Sutherland, 1996). The underlying thinking of the more complex tasks is that the students shall play the primary role. The teachers are rather seen as 'coaches' or 'facilitators' of learning than as classical instructors (Hytti & Gorman, 2004).

Besides the great prominence of the more action-oriented learning approaches, some scholars demanded that theory-based activities must not be neglected in entrepreneurship education. They argued that theoretical frameworks and theory-based knowledge are essential to ground the practical learning activities (Fiet, 1997). Already in 1993 Bygrave stated that both extremes are obstacles for effective entrepreneurship education. Designing a course to consist only of theory will bore the students while focusing on practical applications only, does not allow for assisting students in their decision-making and derived actions. A good educational approach thus has to integrate an efficient mix of theoretical elements and practical application.

Project-based learning approaches

A teaching concept that integrates the major requirements for effective entrepreneurship education is the pedagogical concept of project-based learning. In project-based learning approaches, students have to take responsibility and conclude a realistic task by independently gathering information and by building up, transforming, and constructing knowledge (McKeachie, 2002; Cuthbert, 2001).

Löwegren argued in 2005 that the project-based learning model is an appropriate pedagogical model for conveying the 'action-part' of entrepreneurship education, but that it needs to be further complemented with some theoretical knowledge and reflection. This call for a more integrative approach is based on experiences from a course given at Lund University. Löwegren reports from despair and distrust on side of the students as a result of too little guidance in the beginning of the project-based learning course and of motivation problems that were based on difficulties by designing the project tasks close enough to real life (Löwegren, 2005).

Eight years ago, the European Business School (ebs) also designed a series of courses, lectures and seminars that was bundled in the 'project seminar business plan development'. The ebs bundled hereby theory-based with active learning modules, external partners and various coaching, discussion and presentation elements and a rather continuous grading structure. The result was a specific integrative project-based learning approach that shall subsequently be analyzed and discussed as a possible answer to the shortcomings in pure action-oriented learning approaches in entrepreneurship education.

## THE PROJECT SEMINAR 'BUSINESS PLAN DEVELOPMENT'

The project seminar is a compulsory element for last-year business administration students majoring in entrepreneurship, but also open to all other final year business administration students at the ebs. It starts with a series of preparatory lectures focusing on business plan theory, the micro-social environment of start-ups in Germany and typical differences between young start-ups and big incumbent companies (Klandt, 2006).

After completion of the lecture series the students are provided with a list of several different business ideas from scientists of the Fraunhofer institute and other technological research institutions. In groups of three or four, that the students form themselves, they chose a business idea and perform a feasibility study of the project.

In this stage of the project seminar the students work rather independently, though they are encouraged to contact the scientist who developed the business idea. After the completion of the feasibility study, every team presents his results in front of all participants of the seminar, the chair, and the idea providing scientists and defends his results in an open discussion. If the idea is judged feasible, the students are assigned with the task to further develop their feasibility analysis into a complete business plan.

While great parts of the business plan are developed in intensive independent group work, each team is assigned a tutor from the chair who supports the team through coaching, feedback and the provision of contacts. Furthermore, every team is obliged to present their progress in regularly held meetings with the chair on the basis of written project status reports. In these meetings the students are provided with feedback, contacts, hints, ideas and general support. Discussions with the idea providing scientists and other experts in the respective technological field are strongly encouraged in this stage of the business plan development.

After completion of the business plans the students have to present their final outcomes to a board of experts from the respective industry, venture capital firms, banks, public support programs, experienced scientists in the respective field of technology and academics from the area of entrepreneurship. Subsequent to each presentation the team has to defend their results in an open discussion. After each team has presented, the panel of judges evaluates the results and elects the winner-team, which is rewarded with the ebs-Business-Plan-Award and some prices from sponsor companies in an evening ceremony.

The grading structure of the project seminar aims at a continuous assessment of the students commitment. Key parts that are graded are the final written feasibility study as well as the final written business plan, the two presentations and discussions with the panel of experts, the written project status reports, and the discussions within the status meetings.

## METHODOLOGY

The data gathering of this study includes questionnaires send to the students and alumni of the European Business School that participated in the project seminar and a variety of primary research activities focusing on measuring the performance of the founded start-ups.

To evaluate the effect of the project seminar business plan development for the participating students, an internet based survey was conducted among the alumni of this course. In the recent eight years, that this seminar takes place at the European Business School as one part of the Entrepreneurship major, more than 150 students have participated in this project-based-learning event. 129 of this former students from the years 1998 until 2005 were contacted via e-mail and asked to fill in an online-survey. In total 45 responses were collected, which represents a response rate of almost 35%. The responses were collected from former students of all years, i.e. 1998 to 2005.

To evaluate the results for the developed business plans, traditional market intelligence techniques were used to gather information on the current status of the ventures including interviews with cooperation partners of the project seminar.

## Results and Implicatons

Concerning the 45 former students only 20% are female and 80% are male with the youngest respondent being 24 years old and the oldest respondent with an age of 35 years. Considering the background of these students, more than 75% stem from a family that is running a family business, or did run a family business in the past. Moreover, one third of the students already started to invest time, money or personal effort to plan a new venture during their studies. This could be an effect of the entrepreneurship related family background and the fact that entrepreneurship education creates greater entrepreneurial awareness (Saee 1996).

Nevertheless, at this point of time, only 10% of the respondents name self-employment as their main source of income. Comparing to the German population this is however little above the average, according to the German Statistical Office. Almost two thirds are working as employed managers or

executives and 15% are working as a research assistant. As above all more than 26% of the alumni have already started a new venture or taken over a business in the past, some former students started a venture and give it up to work as an employed manager afterwards and other students may have founded a venture in the past, but still have a job as their main source of income. In most cases the company was set up together with a team of founders, as only 25% of the students who already started up a business assumed the role of a solo-entrepreneur. In the last year of business, with an average number of over 30 employees, the businesses made an turnover within the range from several thousand Euros until more than ten million Euros, with five companies generating more than half a million Euros of sales. Most of the companies were started in the services sector, and the entrepreneur had on average gained an experience of more than two and a half years in the respective industry.

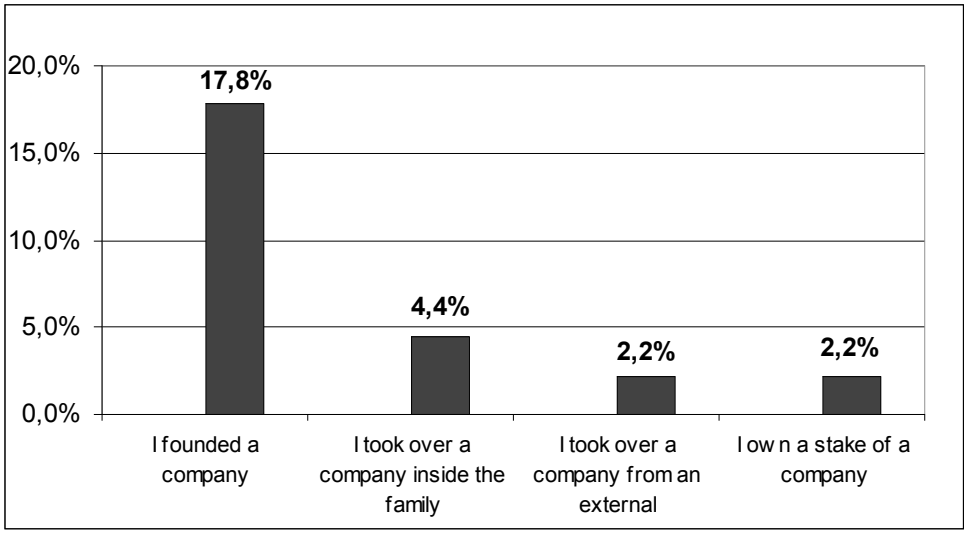


Figure 1: Percentage of students that founded or took over a company

Taken into account the employed people, another 25% of the respondents are planning to become self-employed in the future and additional 45% have already thought about this topic. Only 15% have never thought about becoming self-employed or are determined not to become self-employed at all.

Concerning the actions that were undertaken to start a venture, more than 40% of the former students have already spent some time on thinking about an adequate business idea and half of them have a written concept of it. But

only a few have already developed a full business plan for their venture (5%), talked to potential investors (7%) or determined a concrete date to start the business (7%).

These numbers prove that the entrepreneurial activities of the former students that participated in the project seminar are above average when being compared with the average activities of German students (Golla et al., 2005). This indicates a potential relationship of the entrepreneurial awareness created via the project seminar and the entrepreneurial action undertaken by the former students.
Considering the impact of the project seminar for the general orientation towards self-employment this relationship can be underlined, as around 60% of the students reported that their self-confidence concerning self-employment had risen and 37% said it remained equal. None reported, that their self-confidence was lower after having participated in the project seminar. When being asked whether their wish to become self-employed had changed, 40% said their wish to become self-employed had risen and almost 60% reported it had not changed. Still none of the respondents reported that the project seminar had a negative impact on their wish to become self-employed. When analysing the main hurdles for not starting up a company on their own, more than half of the respondents name their good current job and salary as the main criteria for not becoming self-employed. Considerations about the risk (25%) or the capital requirements (20%) seem less important in this context. Again it is shown that the participants of the project seminar have an above average determination concerning entrepreneurship and that the main obstacles for not becoming self-employed are different than those of ebs-students in general (Golla et. al 2002).

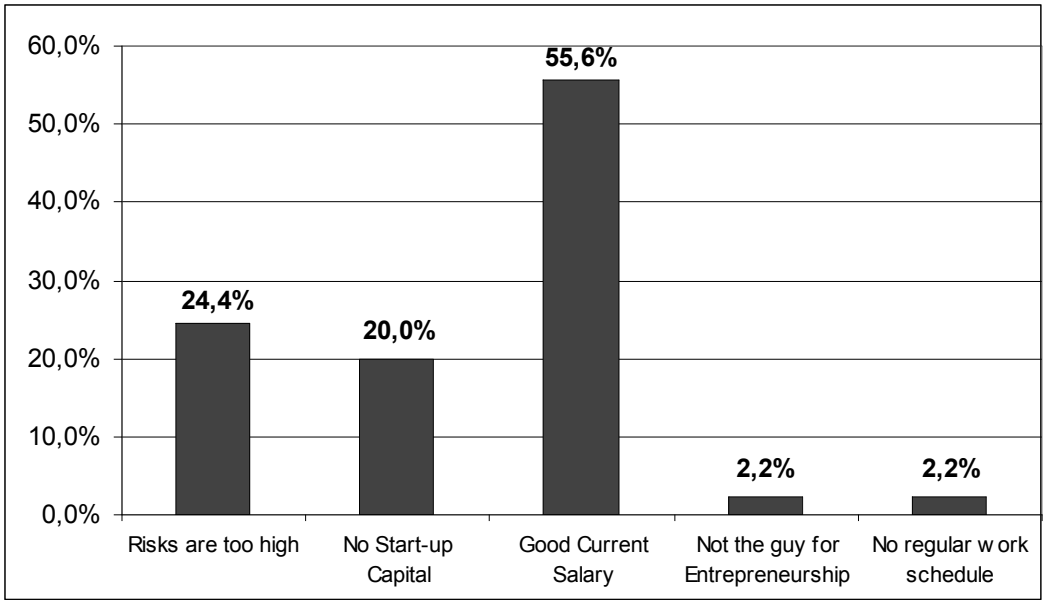


Figure 2: Main hurdles for not becoming self-employed

When asking the students to name the most important aspects of the project seminar for their own learning objectives, most of the respondents named the active parts as writing the plan, working and discussing with founders and other students as most relevant. Aspects from traditional lectures as reading the course material and listening to the lectures seem less important.

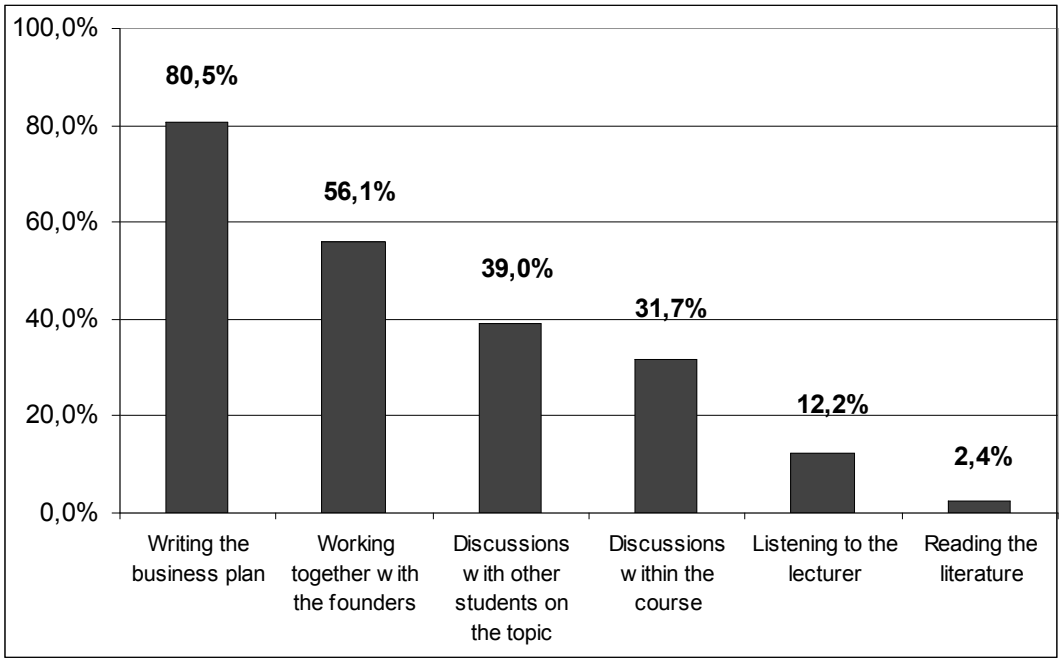

Figure 3: Important aspects of the project seminar for the learning objectives of the participating students

These results support the call for more action-orientation in entrepreneurship education, as it is shown that students value most the active and action-oriented elements of the project seminar. Especially the educational tools used in traditional lectures are far less important, proving again the need for innovative project-based learning approaches as stated earlier in this paper to teach science and art elements of entrepreneurship.

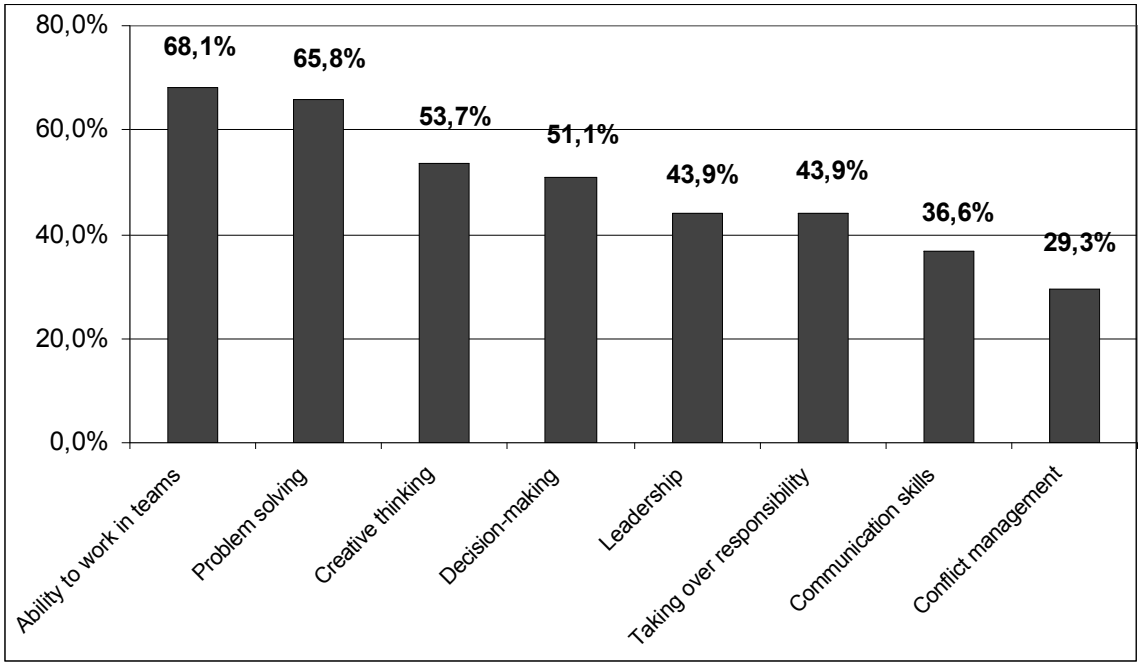


Figure 4: Percentage of students that rated the project seminar as helpful for their learning in the respective areas.

To analyse the effectiveness of the project seminar concerning the teaching of soft skills, students were asked to rate whether the project seminar was helpful or not in the above eights areas using a five point likert-scale. It is shown that most of the students rate the project seminar as most helpful concerning Teamwork, creativity, problem solving and decision-making skills. Communication skills and conflict management seem somewhat less important in this context. Nevertheless, it is shown that the project seminar "Business Plan Development as a project-based learning approach is able to help students to learn important soft skills. Thus, it can be regarded as a

solution to promote the art elements of entrepreneurship and to overcome the shortcomings of classical educational concepts (Anderson 1999).

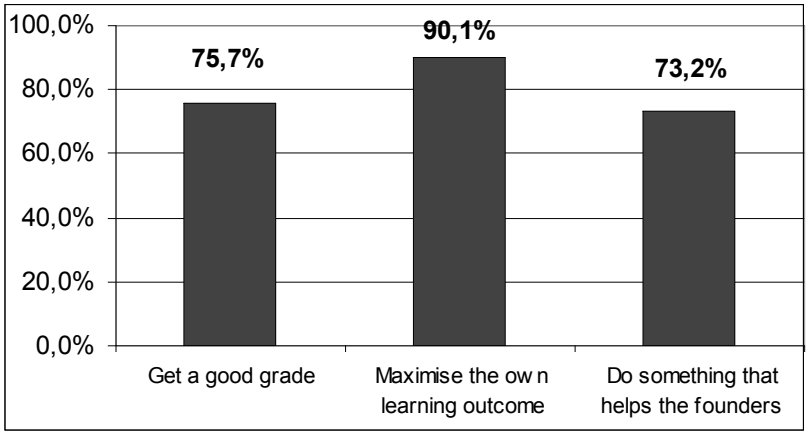


Figure 5: Percentage of students that rated the following aspects as important for their motivation to do work for the project seminar.

Related to that, when asked about the motivation to do work for the project seminar, to maximise the own learning was regarded as most important by the students. This proves that the active objectives of the project seminar are highly important for motivating the students, as traditional learning is mostly dominated by the passive motivation of "getting a good grade".

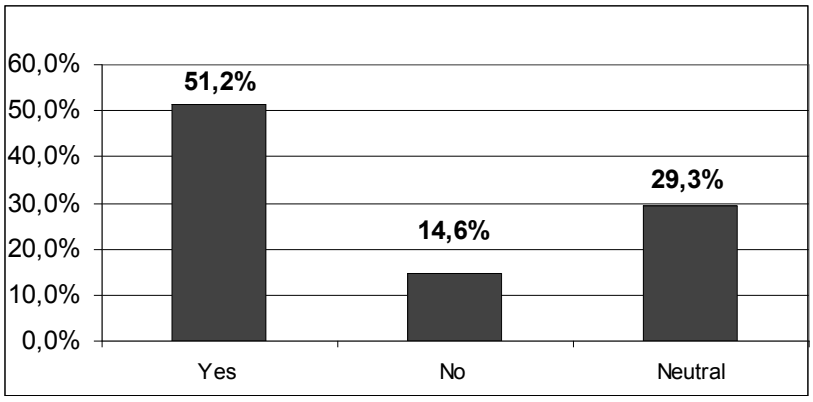


Figure 6: Does the project seminar provide a realistic learning atmosphere?

As outlined above another requirement for efficient active learning approaches is a good reflection of the real-life environment. On the basis of the given answers it can be stated that the design of the project seminar meets this requirement. In general the students had the opinion that the

project seminar provides a realistic learning atmosphere. Almost 70% regarded the techniques used in the project seminar as helpful for starting a business on their own. And 60% judged the processes of the project seminar as helpful for starting a business in real life.
In addition to these subjective measures there are however also objective indicators for the realistic context that the project seminar, especially the matching of business students with scientists from technological backgrounds provides. Looking at the development of the business ideas and concepts that were analysed and worked on in the project seminar, reveals that nearly 30% of these concepts actually lead to the foundation of a company, for approximately 22% the realisation was planned, and for about 26% the ideas or technologies were marketed via licenses or partner companies. While the founded companies currently employ 4 to 5 employees on average, it is expected that at the end of 2006, 48 jobs will have been created by the realised business concepts.

A limitation to that proposition is however, that only business ideas from research-partner institutions such as the Fraunhofer institute, that entered the project seminar in the years 2001 to 2005, were taken into account. In the years before, the students were also allowed to develop business plans for ideas of their own. The current status of these projects could not be found out, but it is most likely that just a significantly smaller percentage of these ideas will have been realised after the completion of the project seminar.

| Status | Number | Percentage |
|---|---|---|
| Projects/ Business Plans Total | 27 | 100% |
| Companies already founded | 8 | 29,6% |
| Companies planned | 6 | 22,2% |
| Marketed via licences/partners | 7 | 25,9% |

Figure 7: Status of analysed business concepts

Another important aspect of the integrative project-learning approach is the completion of active learning elements with the necessary theoretical foundation, and the opportunity to continuously apply the newly learned theoretical knowledge to practice.
In case of the project seminar the theoretical concepts that are part of the seminar are rated by more than 90 % of the students as being able to be implemented into the practical parts of the seminar. Thus the integrative approach provided the students with a sound basis for decision-making.

## Conclusion

Based on an empirical analysis of the annually held project seminar 'Business Plan Development' at the European Business School (ebs) in Germany the aim of this paper was to generate a better understanding of the effectiveness of integrative project-based learning approaches in entrepreneurship education. The major outcome of the study is that project-based learning approaches that are complemented by applicable theoretical modules are a promising approach to combine the two aspects of entrepreneurship education, science and art elements. The results of this study also show that, by using action-oriented methods relevant, but non-teachable soft skills as teamwork, problem solving, creativity and decision-making can be conveyed to the students. As already assumed by Read and Sarmiento in 2005 the integrative approach of project seminars, that motivate the students for independent initiative, but provide them also the necessary support and theoretical background, proved quite successful. In addition to that, it is shown that students value these more innovative educational approaches and are motivated by the highly realistic learning environment. Furthermore, it can be assumed from the empirical findings of the study that the participation in the project seminar raised the entrepreneurial awareness of the students that lead to above average entrepreneurial activities.
Furthermore the partnering of students with scientists that provide a technological invention or business idea enables the setting-up of a realistic working environment, actively motivating the students to show a high commitment. This commitment can indirectly be measured by the quality of the business plans and analyses that were created. According to the good performance of the actually founded companies, the written business plans

were of sound quality. Therefore not only the participating students benefit from interdisciplinary integrative project-based learning approaches, but also their scientific counterparts.

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# MAKING USE OF ACTION LEARNING IN BUSINESS SCHOOLS: THE UK & NEW ZEALAND EXPERIENCE

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# MAKING USE OF ACTION LEARNING IN BUSINESS SCHOOLS: THE UK & NEW ZEALAND EXPERIENCE

**Abstract**

INTRODUCTION Most business schools originated in the latter half of the twentieth century. Often they were staffed by individuals from the business environment who were not skilled in teaching or research methods. The new academics were required to facilitate the learning of students in an academic environment. Often they adopted a narrowly focused approach to knowledge creation, scientific positivism, because the approach was well accepted in society generally and they believed such an approach was expected of them.

METHOD We provide details from our personal histories, and from the literature, to demonstrate that scientific positivism has often provided an unsuitable base for the development of teaching, learning, and critical thinking skills in business graduates. We are critical of our broad working environment during the last decades of the twentieth century, because it has been dominated by the scientific positivism approach to understanding.

ANALYSIS We argue that any search for universal solutions to problems of learning, as encouraged by scientific positivism, is futile because such universals do not exist. However, much energy is being expended business academics seeking to improve the learning environments in their classrooms. A more accommodating approach to educational research is required.

CONCLUSION Business academics may benefit, from the employment of an action learning methodology.

## Introduction

As management education expanded during the 1970s and 1980s the teaching of management skills in the universities was often undertaken by ex-business practitioners who were engaged as experts in their chosen fields. Students 'learned' through access to the knowledge of these experts. As access to Higher Education grew beyond the elite few, the nature of university education changed. For example in the UK the polytechnics (since the early 1990s, the 'new' universities) focused on vocational courses through a model more closely related to schools. Teachers agreed to high class-contact hours, which they were often not well prepared for:

My first encounter with a class [circa 1970]….. Following a half-hour chat with the course leader and a week to prepare some notes, but no guidance whatever regarding exactly how I might go about teaching, I found myself pointed towards a classroom door beyond which I discovered 25 young adults eagerly expecting me to tell them all they needed to know about absorption costing… (Hand, 2001).

There has been some progress since the events described above[7]. In many Universities teaching is now recognized as a profession in its own right. The UK now has a Higher Education Academy that brings together teachers and other Higher Education practitioners. In our experience there is now more encouragement for academics, once in post, to develop their teaching skills and to reflect upon their practice; but what models are available to those who wish to do this? Reflective practice is a term that is often used, but rarely described. There is little discussion about (a) precisely what we mean by reflective practice, (b) how we achieve it, and (c) how we know that, or if, it has made any difference. In this paper we discuss the problem faced by teachers who are seeking to determine how best to facilitate learning in our business schools, which will have most relevance and value to their students' developments. We argue for a critical approach to education and the use of the action learning methodology to help to achieve this.

## The dominance of scientific positivism

Like many academics currently teaching in Universities we were brought up in the age of scientific positivism. We have witnessed the opening up of

[7] In both the UK & NZ a teaching qualification is still not required in Higher Education.

outer space, the advent of computers, the development of the world-wide-web, genetically modified foods and cloning. However, we argue that the promise of scientific positivism in some areas has not materialized. For example, we can recall being taught the 'certainties' which were being discovered to explain human behaviour, such as the rules that control human behaviour in the workplace. In examinations we reiterated how 'proven' administrative controls should be used to ensure the 'correct' behaviour from workers. Skinner, an eminent professor at Harvard, stated:

The hypothesis that man is not free is essential to the application of scientific method to the study of human behaviour. The free inner man who is held responsible for his behaviour is only a prescientific substitute for the kind of causes which are discovered in the course of scientific analysis (Skinner 1953, p. 477).

Today many would probably disagree with Skinner. Nevertheless education itself is threatened in a current societal environment left over from yester-year. Critical thinkers have had difficulty in being heard in an academic environment dominated by confident positivists. The late twentieth century saw any intellectuals remaining outside positivism excluded from academic debates:

By a set of interlocking self-limitations, positive reason supported the social status quo and promoted the treatment of human beings as things. By its doctrine of evidence it limited evidence to sensory experience. Expressed in the social sciences as behaviourism ... [it] led to a science of public opinion that accepted the givens of the historical moment in lieu of any vision of the potentialities (Young, 1989, p. 19).

Positivism produced undeniable progress in the natural sciences. From this base it was allowed to engulf the social sciences. "Scientists" everywhere created hypotheses, which helped explain the "objective" world. These hypotheses provided publicity to world-views residing in the heads of their perpetrators. Mitroff and Mason (1981) report on an (arguably real) scientist, involved in the Apollo space mission:

X is so committed to the idea that the moon is Q that you could literally take the moon apart piece by piece, ship it back to Earth, reassemble it in X's

backyard ...and X would still continue to believe that the moon is Q. X's belief in Q is unshakeable. He refuses to listen to reason or to evidence (p. 140).

Positivism does not protect the 'truth' from the subjective values of those producing it. In the social sciences narrowly focused positivist enquiries allow holistic value systems to be marginalized. Positivism has prevented the social sciences from developing as they might have done:

Rather than remaining focused on social reform... the social sciences have developed a kind of dialogical routine that permits academic and applied researchers to utilize each other as foils while doing as they please. Each stereotypes the other. Neither reads much of the other's work. Each feels superior to the other. In this division of labour, each needs the other as the "straw man" (Greenwood et al., 1993, p. 189).

Greenwood et al bemoan the academic research community's general infatuation with abstract static models, expert control of research, and lack of commitment to testing ideas through genuine application. They complain that the applied research communities often simplify problems to match them to the modest solutions that are to hand. Such research is generally closed to the participation of the subjects of the research; it does not address relevant issues, or promote ongoing learning. Along similar lines Mitroff (1983) describes the differences between fabricated "exercises" used in classrooms, and natural "problems" confronted in actual social situations:

An exercise is something that typically has a single correct solution and, furthermore, when it is arrived at it is recognised as such by all parties... Problems, in contrast, may have many different solutions because they may be looked at from different, equally valid angles... In an exercise, we can be relatively confident that each party starts from the same set of given, that is the same definition of the exercise to be solved. In a problem... [it] is not the same for all parties because each interprets it from very different grounds, defining the basic problem somewhat differently. Mess is indeed a more appropriate word to use in describing... [many cases,] than the more benign word problem (p. 17).

In actual research situations (including in the classroom) one is far more likely to encounter problems than exercises. It is probable that what constitutes a complex problem will be perceived totally differently by different parties. If research processes are made participatory, the participation of all who will be affected by the outcomes can improve the relevance of research in complex areas. Further, democracy in knowledge production gives the participants a stake in the quality of the results, increasing the reliability of information and the likelihood that results will be put into practice. Unfortunately, positivistic science has dominated social science research methodology and has helped to create a crisis in educational research.

"Instrumental reasoning" has become the preferred reasoning in Western society. It involves itself too much with consideration of the means that are employed to achieve, perhaps ill contemplated, ends [8], and works within fairly arbitrary divisions of whole environments wherein manageable 'problems' can be identified and 'remedied'. It studies efficiency, often at the expense of effectiveness, or even without consideration of exactly what the effects of an efficient system are. An efficient classroom situation might involve one lecturer teaching a large class worth many "equivalent full time student" points. What is taught, and how well the students are being educated and helped to develop, become secondary considerations

The purposes of a University education

Each individual will have his/her own opinions on this. However, some food for thought is provided by: Gibson, 1986; Kelly, Davey & Haigh, 1999; Postman & Weingartner, 1971; Young, 1989. Academics must attempt to identify any gap which has opened up between the understanding of "education" in the life-world at their University and a historical and perhaps more laudable meaning of "education". In Ancient Greece the most fortunate of young people were given educations to prepare them for political life, "For the classical Greeks, politics implied the cultivation of character and the pursuit of the good and just life" (Gibson, 1986, p. 35). At that time there was no divide between theory and practice, they belonged together, as did facts and values, truth and virtue. There was no separation of means from ends, of ideals from the methods of attaining those ideals.

[8] See Willmott et al (1993) for a comparison of the "ethics of conviction" with the "ethics of responsibility".

Rationality, goodness, justice, implied one another and each was indissolubly linked with practice. This perspective has not re-emerged with the development of science and technology.

Many university courses in Business have captured the tensions between the technical and the conceptual aspects of the core curriculum. However, even where academics have wished to emphasise more fully the ambiguous and conceptual nature of the Management area, they have sometimes been constrained by professional bodies that expect a technical minimum content within the curriculum. A related tension is that some students appear to perceive education as involving little more than the rote learning and regurgitation of 'true' facts. We argue that academics should require their courses to go much further than the technical, by preparing students for a post-graduation world of rapid change in which they must be prepared to take a critical, pro-active role in enriching and managing their environments.

A university education should not be concerned simply with the inculcation of specialized skills. Academics are charged with valuing a society in which people are able: to think and act independently, to exercise freedom of choice after rational reflection, and to conduct their own lives without having their minds made up by others. Independent learning must therefore be promoted at the University as part of a much broader duty of care to individuals and to the community. If Universities do not foster independent thinking and learning, then who will? Set against this exhortation there can be little doubt that Western education has problems.

The best schools in the West have turned themselves from ivory towers into service organizations subject to the same disciplines of supply and demand they teach to their students (Syrett, 1993, p. 46).

There is perhaps a crisis in education at a fundamental level:

Crisis is an appropriate term, because the present struggle... is a struggle about the moral foundations of education, about its relation to the freedom of the individual and the purpose of the state... It has provoked a situation, especially in universities, where many responsible commentators are beginning to fear for the life of these institutions (Young, 1989, p. 3).

Something that young Greek people are reputed to have met in their educations may be missing from contemporary educations. While some people within Universities and business schools throughout the Western world may not acknowledge the crisis in business education, we argue that change is necessary, and has been slow to come.

The Concise Oxford Dictionary defines educate (in its first of four usages) as, "give intellectual, moral and social instruction". This suggests that in some quarters the old Greek meaning retains validity. Political decision-making was an holistic concept to the Greeks. It concerned itself with the life-world and how best to develop that world. There may not be an equivalent holistic concept today to describe an active interest in social issues and resource allocations within communities. Much 'education' no longer concerns itself with the pursuit of, "the good and just life". We believe a Critical Theory approach to educational developments could improve matters.

Critical theory and the action-learning methodology[9]

Critical Theory involves committed reason. Reason is applied in circumstances where truth and goodness are necessarily linked. The common instrumental rationality that treats men, women and nature as mere objects is challenged through the process of self reflection, which critical thinking demands. Critical Theory is a mode of thought which never loses sight of the question "what is it for?". It acknowledges values, moral problems and consequences, in human conduct and the study of that conduct.

Education becomes a process that proposes a way of understanding the social world, and is committed to the improvement of that world. That is not to say that it is impossible to contemplate a society where citizens are content despite a poor understanding of their world. Some contemporary citizens are happy in a world that they choose not to think about [10]. In

[9] Lewin is credited with the naming of Action Research (Lewin, 1952), but it was not much used until towards the end of the 20th century. A major use has area has been in education, where the term "Action Learning" has evolved in relation to action research in education.

[10] Examples are perhaps not necessary because everyone must know such people. Consider the man who has switched to the music programme every morning because the news depresses him, and the woman who has cancelled all papers for similar reasons. Both individuals, known to the authors, appear to maintain happy lives.

Huxley's Brave New World citizens are content, but only because they have been prevented from developing certain desires. These desires cannot be satisfied within the framework of their present societal position. Academics today should perhaps consider if they are players in a Huxley-like plot.

Within Higher Education the path to enlightened research has broadened since Carr and Kemmis (1986) suggested that most contemporary textbooks assume questions about the aims and methods of educational research can be answered by reference to the aims and methods of the established sciences. With the decline in the dominance of "scientific positivism" in academia, other approaches to knowledge creation are being accepted. Academics are gaining the confidence to adopt a variety of research approaches better suited to the eclectic nature of their fields.

Some business educators have begun to move away from the traditional empirical study of pedagogical issues towards a classroom-based research methodology better to understand the learning that is taking place in their own teaching settings. We recommend the adoption of an action learning methodology in pursuit of this aim. McNiff (1988) provides a concise definition:

An approach to improving education, by encouraging teachers to be aware of their own practice, to be critical of that practice, and to be prepared to change it. It is participatory, in that it involves the teacher in his (sic) own enquiry... It is research WITH, rather than research ON (p. 4).

Zuber-Skerritt (1992b) describes action learning as:

A process by which groups of people... work on real issues or problems, carrying real responsibility in real conditions. The solutions they come up with may require changes to be made in the organisation, and they often pose challenges to senior management, but the benefits are great because people actually own their own problems and their own solutions (p. 48).

Gibson (1986) criticises the gap between theory and practice that opened up in the twentieth century:

In the traditional view [of education], 'theory' has been applied to 'practice'... The insights and concepts of, for example, psychology or sociology have

been drawn upon to explain, inform or direct practice. Both action research and critical theory challenge this approach as they urge the fundamental indivisibility of theory and practice. Theory is in all practice, is grounded in it (p. 162).

The action learning perspective can reveal different images concerning curricula, different suggestions concerning who is best placed to develop curricula, and different ideas concerning the role of course controllers. Action learning avoids the opening of the theory/practice gap, because theory and practice are developed together and in unison. Action learning advocates maintain that, "there is nothing so practical as a good theory" (Greenwood et al., 1993, p. 187). Carr and Kemmis (1986) suggests that action learning provides an excellent educational research methodology because, "The purpose of educational research is to develop theories that are grounded in the problems and perspectives of educational practice (rather than the problems and perspectives of some social scientific practice)" (p. 122).

Action learning involves seeking-out and implementing changes that have the greatest support from the individuals concerned, and are acceptable to all, "Two of the ideas which were crucial in Lewin's work were the ideas of group decisions and commitment to improvement" (Kemmis and McTaggart, 1988, p. 6). Carr and Kemmis (1986) offer five reasons for adopting action learning in education:

1. Educational theory must reject positivist notions of rationality, objectivity and truth.

2. Educational theory must be rooted in the self-understandings of educational practitioners.

3. Education theory must distinguish ideologically distorted interpretations of practises and overcome them.

4. Education theory must expose those aspects of the existing social order that frustrate the pursuit of rational goals.

5. Educational theory must recognise that it has to relate to practice.

(Extracted from chapter 5)

Ledford and Mohran (1993) point out that one of the central issues in action learning is the recognition that socially active participants create and define their own realities. Creating realities demands action. The substance of action learning is action, and every action learning project must recognise this. Action learning is not simply an interpretivist methodology, because participants are challenged to go beyond an understanding of what "is" to an investigation of what "might become", and to create this. The broader the participants can cast their minds in determining what might become, potentially the better can be the results. Action learning fits well with a critical perspective. Although the principles used in action learning vary in their emphasis between the many people who have used and write about the methodology, most advocates would probably agree with the claims that high quality action learning in business schools:

- has a pedagogic aim, which embodies an educational ideal. The practitioner uses research into her/his own practice to realise these ideals. The individual practitioner is thus central to the research. McNiff (1988, p 37) cites Jack Whitehead who stresses the 'I' in action-learning in keeping the teacher/practitioner at the centre of the research. The teacher's concern is with the greater educational good of the students. The ideals are about students but the teacher has a key influence on the achievement of the ideals, so the teacher is at the centre of the research.

- is about change. This is not research merely for understanding, but for improvement through changing practice. The fundamental aim of action learning is to improve practice.

- brings together teaching and research into one activity. As Zuber-Skerritt (1992a, p. 11) explains "Action and practical experience may be the foundations of educational research, and research may inform practice and lead to action".

- gathers evidence about teaching and learning from different points of view, and by different methods - 'triangulation'. It recognises the significance of the viewpoints of all participants in the educational process, and of the need for rigour in gathering evidence from a number of sources.

- is often claimed to be (1) collaborative, by involving all participants in the educational process, and (2) democratic in allowing the focus of research to emerge from the agenda of the key players rather than being imposed by external parties.

Several models have been suggested to provide the stages of an action learning project. Most of these incorporate: acting, reflecting, and evidence gathering in some form (see for example Elliott, 1991, pp. 69-71, or Zuber-Skerritt, 1992b, p.120).
It may appear that such models are little different from the one that all professional educators adopt as a matter of course when designing and delivering courses. Surely we are all engaged in this kind of process quite routinely? What is it that turns this process into action learning? We suggest that at least two differences stand out.

Firstly, that the reflection and evidence gathering are structured and rigorously conducted in an action inquiry. The practitioner seeks evidence from a variety of sources in order to clarify what is problematic about current practice. If, for example, our handling of seminars is the subject of an action-learning study, we will probably require evidence from sources such as: written notes or diary entries (by ourselves and the students) made during or shortly after the seminars, student interviews, work records from the seminar, or tape recordings. Following from the structured evidence gathering, comes a period of critical reflection when that evidence is considered and changes may be considered (or fresh evidence sought). There is also a role for critical friends who may be able to offer other perspectives and support (see, for example, Ovens, 1989 or Dadds, 1993).

A second aspect of the model that distinguishes action learning from normal good practice is the dissemination of the research output. There is, in this action learning model, an expectation that theorisation of improvements and of the ideals are part of the sharing with fellow-professionals. In one sense it may appear that action learning is a highly personal research model and unique to the individual practitioner. However, without dissemination to peer groups, and to other participants in the educational process, the research cycle is incomplete.

Unlike other forms of research, an action inquiry is unlikely to have generalisable conclusions, and will always be context-specific and localised. Plainly put this means that what has been discovered about our own students, our own learning-teaching situation, our own assessment practices and so on, can only be claimed to be about that situation. However, the research does become part of the wider academic dialogue if others use reported research outputs as a starting point for reflection on their own projects. It follows that action learning reports must clear in reporting the context, the nature of the evidence, the constraints, the participants and the circumstances of the research. Other practitioners must take care when using published findings within their own context.

Using the action learning methodology, the teacher-as-researcher is at the centre of the inquiry, and there is a fusion between theory and practice as one informs the other. Those employing action learning go through a process of: problem identification, gathering evidence, making changes, gathering further evidence about the changes, reflection, and proposing further improvements. Although the findings are disseminated, there is no attempt to generalise from specific cases. Rather, as the educational setting is variable, it is for other practitioners to consider ways in which published results may inform their own practices. By researching their own practices, business educators can discover ways of making improvements, and of progressing towards their own pedagogic ideals. In the best of action learning environments, the projects become collaborative exercises.

The transition from teacher to teacher-researcher

Stenhouse encapsulates the emergence of practitioner-research in education when discussing action learning as an alternative to traditional educational research paradigms. At his inaugural lecture at the University of East Anglia in the UK Stenhouse remarked:

An alternative [to the traditional research paradigm] is to treat education itself as the subject of the research and this way we can begin to integrate educational practice and research more fully and we can see that educational practitioners have much to offer from their own actions, experiences, and reflections. This is, of course, where action-research begins to emerge, as teachers ……. build up an understanding of their own practice by doing research into it (Stenhouse, 1979).

Since the introduction in 1992 of the Research Assessment Exercise (RAE) in UK universities there has been debate on the validity of research by teachers into their own practice. Many calls have been made for the RAE to include research into academic teaching, and the RAE panels now appear to be taking the matter seriously. As Stephen Rowland stated in an open letter to John Rogers (Higher Education Funding Council RAE manager):

In the light of the emphasis on teaching and learning expressed by the Dearing Report of 1997, and the interest this has stimulated in improving quality of teaching in HE, we feel that it is important that these developments are underpinned by appropriate research into the curriculum and educational practices which inform teaching (University of Sheffield, 1999).

If what we do is educate then, by conducting research into the matters that are central to our practice, we can enhance the professionalism of our work and provide firm evidence for proposed changes. Such research into teaching and learning will provide a firmer base for resisting changes, which may be suggested by external agencies and ill-informed government policies.

Criticisms of Action Learning

Anyone considering the use of action learning within their own practice should be prepared for the criticisms levelled at it. As with other forms of qualitative research, action learners have been accused of being unscientific. Rather than being value neutral, action learning involves the identification and selection of problems to solve, and such problems are part of current practice. Action learning is concerned with humanist values. McKernan (1991) notes that action learning is expressly political because it seeks continuous change in the environment being studied, it:

is seen as a politically empowering process for participants; the struggle is for more rational, just and democratic forms of education….. As a theoretical activity it invites….. practitioners to consider... the totality of relationships within the social system and structure of the society in which they live and work (p. 27).

Mainstream research into societal phenomena generally involves one set of people (the researchers) studying another set of people (the subjects). There are a number of reasons why the chance of such research having practical outcomes, of optimal use to the researched, is small (Bartholomew, 1972). The principal complication is caused when the problem being researched is different to that recognised by the subjects. Action learning makes educational research an integral part of educational practice, thereby improving the chances of the outcomes being relevant to the practice of education. The action learning methodology is more 'realistic' than many other research methodologies because it is based at the local level where the people involved are able to talk about, "real"[11] problems. It necessitates talking with the people who are living their normal lives in the environment being researched, here the classroom. It involves bringing these people and their ideas into the research project.

The action learning methodology does not attempt to build grand theories. Its aim is to build transient local theories to help individuals better to understand, control and profit from their environment. The measures of 'understanding', 'control' and 'profit' are made by the individuals in the classroom, not by researchers in distant offices.

Many orthodox social science researchers are not pleased with the advent of action learning; and attempt to discredit it because, "It challenges the 'expert' authority of academic educational researchers... (and) challenges bureaucratic authority in its notion of participatory control" (Carr and Kemmis, 1986, p. 210). "Orthodox researchers respond to the challenge of action-research to their hegemony by stating that they do ‘science’ while action-researchers merely ‘tell stories’ (Greenwood et al., 1993). However, the narrative dimensions of supposedly "objective" social scientific accounts have been successfully demonstrated elsewhere: Bourdieu, 1984; Clifford and Marcus, 1986; Habermas, 1984; Mitroff and Mason, 1981.

Action learning is sometimes criticised for 'obvious' bias because it involves the researcher in analysing his/her own practices. Such criticism implies that there is a 'neutral, value-free' point from which 'proper' research can be

[11] “Real” in the sense that the problems have meaning in the decision making models of the people involved, concerning how they organise their lives.

conducted, whereas any such point is illusory, "There is no objective knowledge of reality... reality can only be known through our constructions which are subject to constant revision; we do not have direct access to an interpretation-free reality" (Zuber-Skerritt, 1992b, p. 56). Narratives emanating from action learning environments provide vicarious learning experiences for their readers. However, it must be recognised that researchers bring their own biases to models that they create in attempting to understand and describe their environments. These biases will influence the researchers' 'skeletal' [12] generalisations concerning their reality within their environments. Nevertheless, the skeletal generalisations can provide useful insights to others with similar interests.

Action learning treats the actors as both the 'bearers' and the 'victims' of ideologies. It recognises the actors' ability to change the world. The collaborative nature of action learning can offer an approach to overcoming those aspects of the existing social order which frustrate rational change. Action learning is, "The expression of individual self-reflection which contributes to community self-reflection both by extending and by challenging the formation of common practices, theories and institutional structures" (Carr and Kemmis, (1986, p. 205).

It is because of action learning's power in challenging current assumptions that it is potentially so useful in reshaping current practices in tertiary education, thereby providing the opportunity for greater productivity in learning. Action learning requires the active participation of those who have to carry out the work that they identify and anticipate. The people in the research environment must agree as to how progress will be monitored. There are some obvious problems with the introduction of such an approach into a structured educational environment, but none that is insurmountable. Academics must maintain flexibility in responding to societal pressures. Adoption of the action learning methodology does not assist people to implement pre-designed fixed systems, rather it involves people remaining open to surprises, being responsive to opportunities, and examining new practices to compare them with previous practices. Whatever current

[12] 'skeletal' signals the incompleteness of any general theory. The skeletal framework can be fleshed out within chosen empirical research locations but 'whole beings' thus created must be considered to have no more that local meaning (Laughlin, 1995).

practice is adopted it must be subjected to ongoing critical assessment, and to change when appropriate.

## Conclusion

In today's Universities there is increasing recognition of the place of research into teaching and learning, and an increasing focus on the study of and reflection about teaching practices. Action learning, we argue, provides practitioners with a model for aiding development at both a personal and a professional level. The model may also help academics to respond to many of the pressures exerted by external agencies.

We do not argue that action learning should replace scientific positivism as a 'better' methodology for knowledge generation. Rather we argue that, in social sciences research, action learning may sometimes produce better results than would scientific positivism. Action learning should be allowed to co-exist with other research methodologies. Knowledge outputs from action learning studies should be accorded equal respect to other knowledge outputs, by readers who must be aware that all methodologies may be abused on occasions.

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# CAN ENTREPRENEURSHIP BE TAUGHT IN AN ACTION-LEARNING FORMAT?

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## Overview

Entrepreneurship is largely measured by practical outcomes rather than theoretical contributions, in its effect of exploiting new opportunities at the risk of failure. It is therefore a discipline that intuitively lends itself to the application of action learning principles where the focus shifts from the

teacher to the learner, and the challenge of the practical real-life environment creates the opportunity for reflective learning.

The business community has taken notice of this education technique and has begun to recognize action learning as a feature of business education. Telecom New Zealand, one of the largest companies in the country, has co-developed an action learning education program together with Waikato University's Management school where emerging leaders apply taught principles during their work day and then report on outcomes that include learning results and practical accomplishments. In the Philippines, Bristol Myer Squibb spends thousands of dollars a year to fund business school students' activities while they learn how to apply entrepreneurship theories outside the class room. In China, HSBC supports hundreds of university students in developing practical business skills while teaching their communities about financial literacy, creating a new recruiting pool of young managers with practical abilities.

This greater collaboration between the academic and business communities has been advocated for many years (White, 1993), and firms such as Samsung, Dow, GE, Deutsche Bank, Boeing, Sodexho, Novartis and Nokia apply action learning techniques effectively (Marquardt, 2004). This acceptance by business leaders of an alternative method of education, could conceivably breathe life into the traditional MBA and undergraduate teaching programs, where the curriculum may have changed over the years but the teaching has largely remained inside the class rooms.

Especially for entrepreneurship, this appears to be a less-than-appropriate approach when attempting to develop effective practical management skills, and we have reviewed the outcomes of one global entrepreneurship education program, where university students and CEOs of the world's leading companies (from firms such as HSBC, Metro, KPMG, Korn/Ferry, Cargill, Wal-Mart, Henkel, AIG, etc.) come together to jointly develop entrepreneurial talent.

Nearly all the academic literature outlining the genesis of business and entrepreneurial studies is preoccupied with the gap between the world of practical performance and the teaching environment in business schools and universities. After the Carnegie Commission Studies "signalled a crisis

situation" (Rowley, et al, 1998) specific shortcomings were highlighted as a lack of relevance to business including research, overly quantitative course content, and a lack of preparation for entrepreneurial careers. While this may have led at some schools to a revision in course content, the delivery methods remained largely the same; In-school teaching with the presenter/teacher being largely responsible for the learning outcomes, while the participants/students supposedly absorb through listening and the occasional interactive participation.

In a competitive market, more universities use accreditation by global organizations as a branding advantage, and the common accreditation methods are largely focused on the structure of teaching and something school-wide internal procedure. The issue then arises whether this focus on structure rather than outcome appropriately reflects the needs of the student participant and their future employers.

Action learning is not without its critics, and we speculate that the divide between business expectations of practically relevant education outcomes will clash more intensely in the future with a renewed emphasis of universities on traditional academic accomplishments. In New Zealand, following from the UK, the government-driven funding mechanism now places greater pressure on business schools to engage in traditional academic publishing efforts, with a portion of the government's funding to universities paid for research accomplishments. Aside from the nasty result of driving the more accomplished academics even further away from the class room than before, we are concerned that a focus on academic research which is solely judged by academic peers through the referee process at journals and conferences, returns the universities back to a position of being divorced from business reality. It might require the strong commitment by business to action learning, to continue the development of effective teaching programs, especially in entrepreneurship, where many characteristics, such as self-confidence, persistence and high energy levels, cannot easily be acquired in the classroom (Miller, 1987).

## Methodology

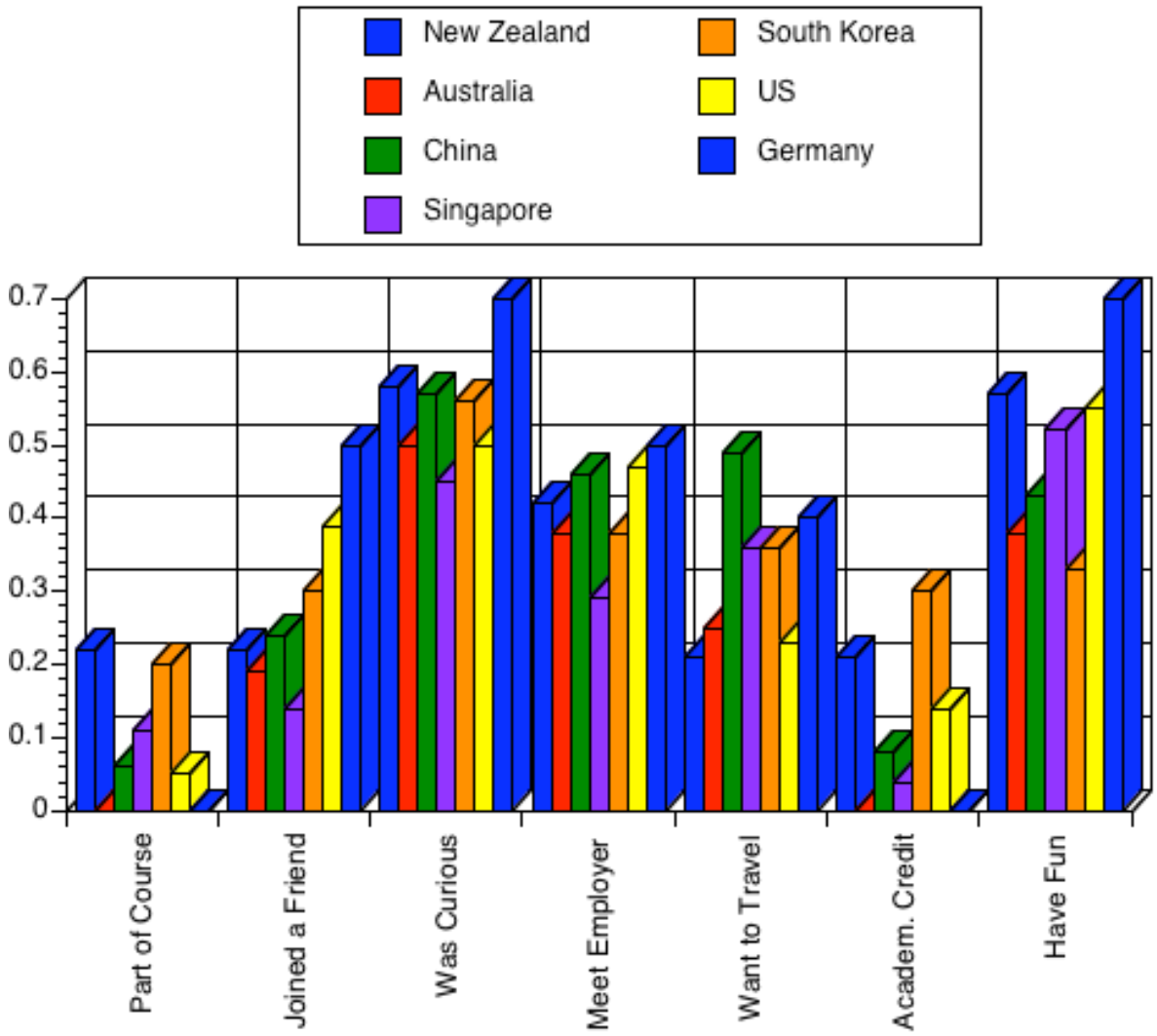
We have selected a global university-based action learning program, sponsored by companies and their leaders in 40+ countries, to investigate how participants respond and what learnings occurred. The data collection

was conducted by a web-based survey in English, and hardcopy surveys were used in China, where not all schools allow web access to external web addresses. The response rate was significant in Korea, Singapore and China (with more than 60% of all participating students completing the survey), and participation rate dropped for Australia (18%) and New Zealand (30%) and was low in the US, where we sampled the responses mainly from one large university, and in Germany, where the effort had just started. The total survey population numbers 436.

We then applied the PETE (Practical Entrepreneurship Teaching Engagement) model (Mueller et. al., 2005) to discuss whether this approach followed the PETE model, which describes ingredients of an effective interactive managerial learning program and seeks to explain that the presence of several factors can improve the effectiveness of practically relevant entrepreneurship education.

## Discussion of Results

Participants join this program for different reasons. While students in China, Singapore, Germany and South Korea were interested in the travel opportunities offered through this activity, 'curiosity', 'having fun', 'making friends' and 'meeting employers' were ranked highly (Graph 1). Of greater significance is that the traditional academic connections of a university-based activity, 'getting academic credit' and 'being part of a course' were very poor drivers of motivation for students. We speculate that students attach value to the fact that this program is not part of the school offering, and that they actively look for an engagement which reaches beyond the boundaries of conventional academic teaching. This should raise awareness among university leaders that the traditional methods of teaching might not provide for an effective engagement of students. A learning approach that connects students to business and its outcome-oriented approaches appears to be of great interest to students.




Graph 1: Why did you join the program?

In reviewing the expectations of students, we find that the majority of all students, are looking to learn 'new skills' and to 'meet executives'. To a lesser degree they indicate an interest in 'making new friends' and 'getting a job', although that intent is likely also reported in the response of wishing to 'meet executives'. Respondees in the US, where this specific program has been operational for more than 25 years, focus on job opportunities and. thousands of students pour into the national US competition event where more than 100 firms have recruitment booths, and large numbers of students are hired on the spot by brand-name companies, such as Wal-Mart, Walgreens, HSBC, AIG, etc. "When you come to a SIFE event, there is a

belief that this is the future generation that really does have the potential to change the world, and to be a part of that is very extraordinary." says Denise Morrison, President of Campbell USA (Morrison, 2005), and we have interviewed several dozen executives who attribute significant skills to these students.

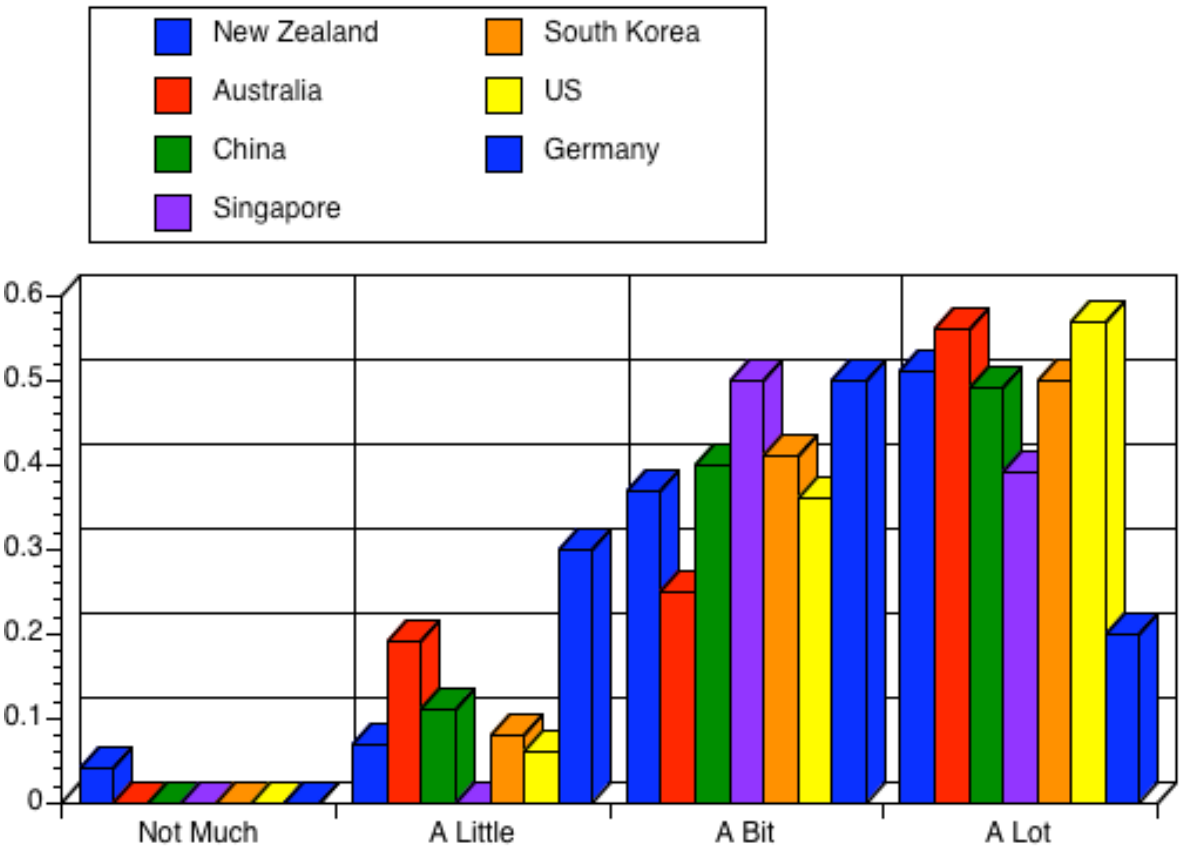
We have not yet reviewed enough long-term data to form an opinion on whether program participation results in tangible job search advantages, and we suggest those areas as valuable additional investigations in the future.

Some of these enterprise projects in the communities are quite sophisticated and require significant time involvement, project planning, networking and sales skills: In China, the students travelled to remote provinces to teach farmers better crop rotations, spending days in trains to travel a total of nearly 30,000 kilometers. In Australia, students created an educational program for about-to-be-released prisoners, investing weeks to teach basic business skills and then following some of the participants through the first phases of establishing their own business after prison release. In New Zealand, students worked with a group of indigenous Maori in a remote location, teaching business skills by example of establishing and operating a small chicken farm.

With the exception of Chinese and German students, for whom this program was largely new, 80% of all other participants ranked this activity as 'quite important' or 'very important' to them. This likely rivals the ranking they would give traditional university assignments and supports the notion that such an effort can mobilize students not only to perform the quantity of work required but to also commit to quality output.

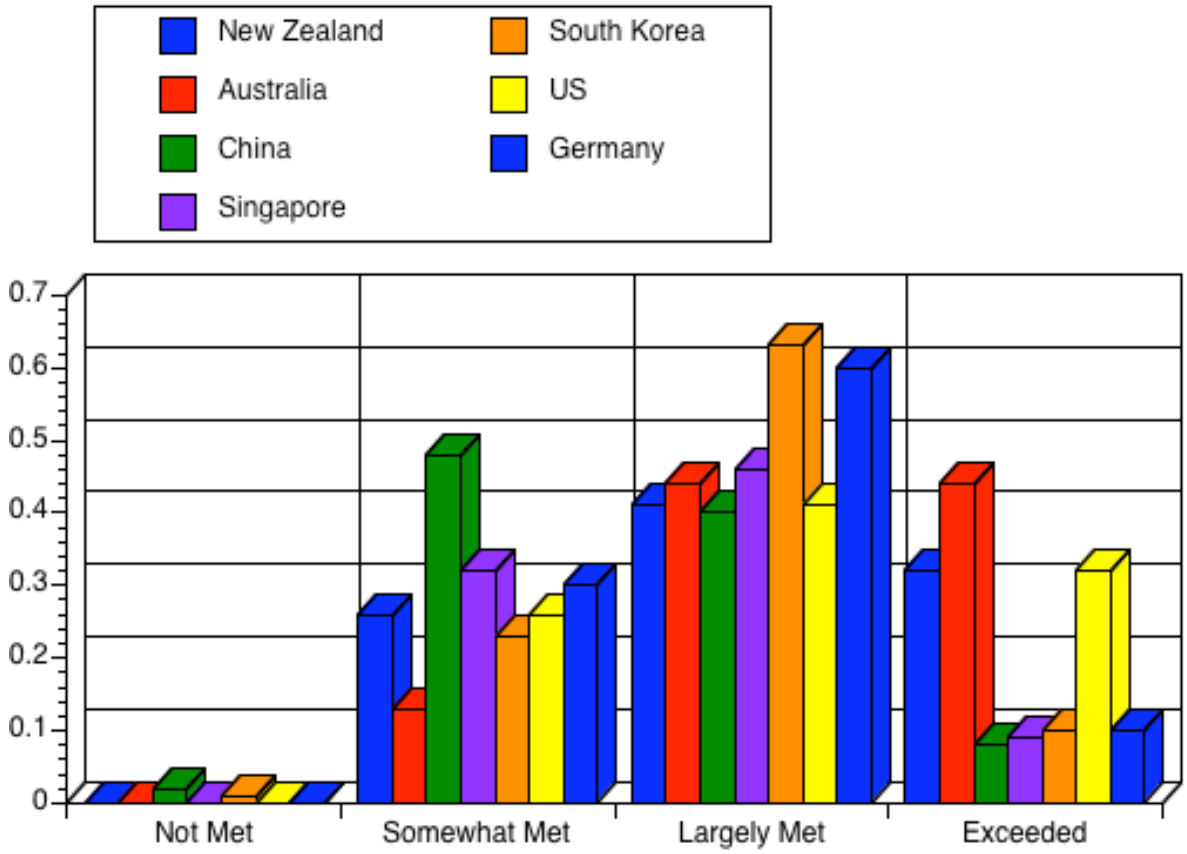
The participants report even more uniformly the levels of learning that were achieved (see Graph 2). Aside from a slightly less enthusiastic affirmation of learning in Australia and Germany, 45%-55% of the students report 'a lot' of learning, and another 35%-50% report 'a bit' of learning. This appears to be quite an achievement, given that this is an unstructured, mainly self-driven series of events which is purposefully unclear of the specific steps required to achieve a successful outcome. In fact, the students do not know until the day of their national competition how their projects are rated by the

company leaders who serve as judges and thus are largely left to their own devices in the development of their deliveries.




Graph 2:How much did you learn from this activity?

With a peculiar exception in China, students across the three continents report of 'largely met' or 'exceeded' expectations, which appears to be a good result given the many hours the students have invested in their work (Graph 3). The lone outlier is China, where more than 40% of the students indicated their expectations were only 'somewhat met'. Follow-up interviews with those students clarified their response. The achievement-focused students were frustrated that their team did not win the China national competition and thus they missed out on the (all expenses paid) travel to the world cup competition event in Toronto. We know from contact with the students in all of these countries that nearly all of this year's participants have re-enrolled to participate next year again, and we take this as a confirmation of the reported high level of satisfaction.



Graph 3:To what extent did this activity meet your expectations?

Action learning must involve real work - that is, it will have real outcomes, and is not a simulation exercise. It must involve questioning and critical thinking, in order to be able to question the validity of existing assumptions, and to use the answers to move the process forward. People must take responsibility for their own learning; they must not wait for their responses or struggles to be recognized and assisted from outside. Additonally, action learning must be successful in building group dynamics, as members of a 'set' come together to work with and learn from each other (Bowerman and Peters, 1999).

To that extent, this action learning program meets common definitions, and we see it consistent with the Practical Entrepreneurship Teaching

Engagement (PETE) model, developed to guide school faculty to the creation of effective action learning environments.

This entrepreneurship teaching model attempts to isolate factors which can contribute to high student engagement and outcome levels by creating a sense of:

Belonging by creating a committed and motivated sub-group of students with a special group membership in an organization;

Challenging the students to practical work outside the classrooms and requiring significant personal commitment to achieve acceptable outcomes;

Including a real-life competition in front of senior corporate executives of world-class corporations;

Connecting students to the corporate environment before they leave university;

Creating a signal effect among other universities, academic mentors and students (and, as they indicated in the responses, also among their friends)

Producing a sustainable community benefit which educates the performing students as well.


Graph 4: PETE Model

## CONCLUSION

We have investigated an action-learning based entrepreneurship program which attempts to give students the opportunity to apply their academic learning in a practical environment. These students represent different cultural backgrounds which govern their rules of interaction and are from different economic systems some favouring some not favouring free market enterprise. It is therefore remarkable for these participants to uniformly and consistently report outcomes which appear to exceed those of some traditional teaching programs.

These students work in teams for which they establish self-governance, must create and 'sell' their own design of projects, and then perform those projects. At the end of each program year, student teams from each country

compete before senior executives and the winning team travels to a world event.

These contact and travel incentives seem to create an attraction for students, who report high levels of engagement in this extracurricular work, as well as high rates of outcome satisfaction after completion of their work. Executives appear attracted to this program and support this work through their personal attendance at competition events, as mentors to students and with corporate financial contributions.

We have not investigated whether there is a tangible effect on the course grades of students after they completed the program, and we are curious whether the participation in this program does create job opportunities these students would otherwise not have. There has not yet been a longitudinal investigation into the lasting career benefits of action learning education at university.

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# The dynamics of entrepreneurs' success factors in influencing venture growth

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## Abstract

This study aims to investigate the formal and informal attributes of founding entrepreneurs contributing to venture growth. The study found significant relationship between venture growth and entrepreneurs with high personal initiative, focused on specific competency areas within operations, finance, marketing and human resources. In operations, founding entrepreneurs are found to be concerned with equipment selection, quality of products and services, competitive strategies planning and the improvement of product and services. Raising capital from bank and institution was the only area of concern in finance, whilst in marketing, it was promoting company and its product and services, understanding market needs and customer feedback are prioritized. Lastly, every aspects in human resources is considered important, which includes recruiting and retaining employees, human resource policies and compensation plan, training and development, delegating and relinquishing control, develop performance appraisal and finally, employees motivation. The study showed no significant relationships between venture growth and human capital, social network support, and government support programs.

Keywords: Entrepreneur, personal initiative, human capital, competency, government support programs, venture capital, Malaysia

The opportunity to create wealth and being their own boss has attracted many to be entrepreneurs. Evidently, this has amplified the studies on small and medium enterprises' (SME) growth and more importantly, the formal and informal attributes associated with the entrepreneurs who have led their companies successfully to growth-stage. The common research areas cited in the literature are such as entrepreneurs' leadership, entrepreneurial orientation, management skills, competencies, human capital, personality traits and circle of network. McClelland (1961) asserted that qualities associated with a high need for achievement contribute to the success of new venture. Begley and Boyd (1987) found that entrepreneurs (founders) scored significantly higher than small business managers (non-founders) in need for achievement, risk-taking propensity, and tolerance of ambiguity. Brockhaus (1982) reviewed a number of psychological characteristics and

conclude that need for achievement, internal locus of control and a risk-taking propensity as attributes contributing to the success of new business start-ups. On the other hand, Brockhaus and Horwitz's (1986) empirical findings showed that entrepreneurs with internal locus of control strive for high achievement.

Mill (1984) suggested that risk taking is a key factor in distinguishing entrepreneurs from managers. It is believed that entrepreneurs take greater degree of risk especially in areas where they have control or competencies in realizing the profit. Many studies have included risk taking as a major entrepreneurial characteristic. Mitton (1989) confirmed that entrepreneurs eagerly undertake the unknown and uncertain circumstances, thus the entrepreneurial inclined individuals are expected to display more tolerance of ambiguity than others. As far as innovativeness is concerned, Mitton suggested that it is the focal point of entrepreneurship and an essential entrepreneur characteristic. Indeed entrepreneurial literatures show that entrepreneurs are significantly more innovative than non-entrepreneurs (Ho & Koh, 1992; Robinson & Sexton, 1994).

Entrepreneurs' personality traits have also been identified to have impact on organizational performance (Robinson & Sexton, 1994). Studies also found that personality traits such as locus of control and ambiguity tolerance influenced the business success directly and the business process indirectly (Entrialgo, Fernandez, & Vazquez, 2000). Kiggundu (2002) later added demographic variables to his study and found that personality traits have direct influence on the success of African entrepreneurs. Although studies on personality traits have played an important role in contributing to the success of entrepreneurs worldwide, nevertheless, personality traits have been criticized both on theoretical and empirical ground in the studies of entrepreneurship. Gartner (1988) in his research article entitled "Who is the entrepreneur?" mentioned that asking "Who" is the wrong question, but rather the personality of entrepreneur is only related to the success of business start-up through more specific mediating processes. This is due to the fact that these factors are not relevant if there is no action and initiative taken by the entrepreneurs.

Frese and Fay's (2001) study conducted on a group of employees revealed that those with higher personal initiative performed significantly better in the workplace. Research on personal initiative concentrate on the self-starting

nature of entrepreneurs: how they pursue success with their proactive attitude, how to seek and grasp opportunity with their proactive approach, and how to find any solutions or necessities to overcome barriers to achieve their goals (Frese, Kring, Soose, & Zempel, 1996; Frese, Fay, Hilburger, Leng, & Tag, 1997). Entrepreneurs with high initiative are able to stay ahead of their competitors, and are role model for their employees. Initiative is goal-directed and action-oriented (Frese et al., 1997) and, therefore, closely linked to an active strategy. It is also a psychological variable behind the reason whether a person has what it takes to become an entrepreneur. An entrepreneur with high personal initiative is someone who initiate to take action and to be proactive. Whether it is to determine the success of start-ups or to successfully lead a company to growth-stage, personal initiative, which represents the ability to self-start, proactive, and over-coming barriers plays a major role. Even so, majority of the research carried on personal initiative is in relation to employees' performance and perhaps limited studies have been reported on personal initiative in relation to entrepreneurial success.

Unlike personal initiative, human capital, which is considered passive approach (where individuals simply reacting to the environment according to what they possessed), was quite extensively studied. Human capital is the theory concerned with knowledge and capacity; this includes the education level, industry experience and management experience. The review of literature showed that human capital contributes to business start-ups and venture growth. However it is also found to have positive and negative result in relation to the success of entrepreneurs in their businesses. Human capital elements of the entrepreneurs such as family-environment, education, age, work history, role models and support networks have been identified to contribute to the business venture success (Hisrich, 1990; Krueger, 1993). The assumption is that higher human capital of the entrepreneurs increases the chances of their company's survival and success (Dyke, Fischer, & Reuber, 1992; Bruederl & Preisendoerfer, 1998). Recently, Lussiers and Pfeifer (2001) empirically found that in addition to competencies and personality traits, human capital of individual entrepreneurs play a role in contributing to the success of entrepreneurs. His study found that entrepreneur with higher education level, industrial and managerial experience, and business exposure has greater chance of succeeding than

people without tertiary education, minimal industrial and managerial experience, and with little or no business exposure.

Similarly, competency is one of most crucial factors to ensure the success of new business ventures. The entrepreneurs faced even greater challenge when they have successfully bring their organizations to growth and as the company moves into this stage, it experienced what observers refer to as strategic reflection point (Grove, 1996). A strategic reflection point represents a time in the life of the business when the fundamental operations have profoundly changed. According to theorists, Adizes (1979), and Greiner (1972), organizations progress through consistent, predictable phases of development known as life-cycle stages. In the start-up stage, the company is concerned with inventing the product or services, establishing a market niche, attracting new customers, and manufacturing and marketing of the product (Flamholtz, 1986). Once the company begins to grow rapidly, it will need to have more formal structures and coordination due to the increase in functional activities. In the growth stage, the entrepreneur is forced to focus on the long-term stability while maintaining the innovative and entrepreneurial spirit that made it successful in the first place. As the founding members of the company, the entrepreneur plays an important role in the long-term business success of a new venture. The entrepreneurial leader champions the vision of the company and inspires others such as investors, venture capitalists, bankers, customers and employees to support the vision. However, at some point in time, the company will continue to grow and the founder must focus and emphasize on different areas of competencies and talents in order to lead the company to long-term business success.

According to conventional wisdom, due to the poor functional competencies of the founders, they are typically replaced by professional managers who have the experience and the necessary competencies required to manage the company when it begins to transit from a start-up stage to a growth stage company. Willard, Krueger, and Freeser (1992), found no evidence that professional managers performed better in high-growth companies than the original founders. They observed that many founders could learn to manage growth effectively. Therefore, the assumption that a professional manager must be employed may no longer be valid. This study challenged the conventional wisdom by revealing the process by which successful

entrepreneurs transform themselves into professional managers. While studies found that founders could have the competencies to perform equally well as professional managers, there are very few studies on the similarity and the areas of competencies these successful entrepreneurs and managers focused on for growth stage companies. Many studies found that majority of the business failure were due to the lack of management skills or competencies (O'Neill & Duker, 1986; Terpstra & Olson, 1993). Bruno, Leidecker, and Harder (1987) studied ten failed high-technology firms and concluded that there were three major reasons for the failure: 1) financial difficulties, 2) product/market problems and 3) managerial problems. Hence, entrepreneurs who have the necessary competencies especially in the area of operations, finance, marketing and human resources, and management skills required for the business are more likely to be successful at start-up (Prahalad & Hamel, 1990; Swiercz & Spencer, 1992). The areas of competency has been greatly researched in most developed countries, and most literatures revealed that they are positively related to companies at venture growth, and likewise, there is no literature found pertaining to such topic in Malaysia. Thus one of the aims of this study is to examine the areas of functional competencies that founding entrepreneurs focused on and contributes to the success of managing companies at growth stage.

Apart from the competencies mentioned earlier, Bruerderl and Preisendoerfer (1998) found in their research that social network support is related to both, survival and growth of newly founded companies. A network approach assumes that entrepreneur's ability to organize and coordinate networks between individuals and organizations are critical for starting up a company and business success. It was found that formal support sources were hardly used, the institutions mostly mentioned were banks (Birley, Cromie & Myers, 1991). Support from informal network such as friends, relatives, previous employers and acquaintances have found to benefit the business. Thus another aim of this study was to examine to what extent social network support significantly contribute to the success of managing companies at growth stage.

Lastly, questions have also been raised pertaining to the government's role in supporting the entrepreneurs both during start-up and venture growth. Many are unaware of funds and programs provided by the government, while some believes it is impossible to obtain such assistance, others are just

simply ignorant of it. In comparison with neighboring countries pertaining to these support programs, an article mentioned that the literature published by the Malaysian Industrial Development Authority appears to be preoccupied with internal bureaucratic concerns rather than the entrepreneur's needs (Dana, 1987). Malaysian government recognizes that about 25 percent of the country's economic performance is contributed by the SMEs. Therefore the government has put in place many regulatory, legal and financial frameworks conducive to SME start-ups and development under various strategic plans such as Second Industrial Master Plan (1995-2005), Financial Sector Masterplan (2001-2010), Small and Medium Industry Development Plan (2001-2005) and Eight Malaysia Plan (2001-2005). Currently, there are five major areas of government support programs for SMEs in Malaysia, among which are: financial and credit assistance; technical and training assistance; extension and advisory services; marketing and market research; and infrastructure supports (Abdullah, 1999).

Yusuf (1995) found in his study that government support is one of the critical success factors for small business in South Pacific. Governments in developing countries play a role in promoting and supporting companies by providing incentives and infrastructure. However, although there are numerous agencies and institutions established by the Malaysian government to assist SMEs, it is still unclear whether these programs are accessible to SMEs and how far do SMEs utilize the programs. Therefore, it is also the interest of this research to investigate whether entrepreneurs of growing enterprises are utilizing government support programs to grow their businesses and if not, what are the reasons for not doing so.

The growth of successful small medium enterprises in Malaysia plays a very crucial role in the development of the country's economy and unemployment issue. Nevertheless, 79,310 businesses discontinued during the year 2002 (CCM, 2002), and the numbers are rising. Evidently, it is crucial and important to examine the factors contributing to successful founding entrepreneurs in Malaysia. Studies have been done to examine factors and elements possessed by founding entrepreneurs contributing to the business start-up success, such as the entrepreneurs' leadership, human capital, management skills, functional competencies, personality traits and so on. Nevertheless, there are very few studies found to examining these elements in relation to venture growth and particularly yet to found any in

the Malaysian context. Thus this study was initiated to examine the relationships between personal initiative, human capital and competencies of the successful founding entrepreneurs of Malaysia in respect to venture growth. In addition, the study was aimed to identify whether entrepreneurs at venture growth are aware and fully utilizing government-support programs, and to what extent these programs are beneficial to their business.

## Method

The target population for this study is Malaysia Enterprise 50 (E-50) winners for the year 1997 to 2003. E-50 is an annual award program organized by the Small and Medium Industries Development Corporation (SMIDEC), Malaysia. This award recognizes the achievements of Malaysia's enterprising homegrown companies which are well positioned for the future. 50 winners are selected from among the nominations received, and the evaluation is based on the companies' management and financial performance. From the 350 winners in the Enterprise 50 list, there are only 252 unique companies as they are repeated winners. A letter was sent to all 252 founding CEOs requesting for their participation. However, only 100 of them managed to participate in this study. Self completion questionnaire was utilized to collect data for this study.

Questionnaires were delivered to all participants personally by the researchers. Literature review and feedback from the panel of experts provides inputs for the development of the research questionnaire. The pilot study further refines the questionnaire prior finalizing it. The Cronbach's Alpha values for all the items were well above the commonly acceptable value of .70 (Fowler, 2002). The questionnaire was divided into five sections. The first section collected data pertaining to human capital, whereby the participants were asked to indicate their level of education, whether family owned the business, number of years working experience prior to owning business, and number of year's management experience prior to starting the business. The second section measures competencies which are divided into two types: functional competencies and interpersonal competency. There are four functional competencies - finance, operations, marketing and human resource. Interpersonal competency is specifically

relating to social network support. Participants were asked to respond on a five-point scale; (1) being no emphasis and (5) being major and constant emphasis for each of the five competencies which they focused while managing growth. The questions are similar to Lussier and Pfeifer (2001) and Yusuf (1995); however, for the purpose of this study additional questions relevant to the various competencies were added. The third section is in regards to government support programs, questions asked were whether the entrepreneurs are aware of the availability of such programs and if so, are they utilizing these programs and whether there are any difficulties faced in obtaining assistance of these programs. Dichotomous 'yes' or 'no', multiple choices and open ended questions were used in this section.

The dependent variable is the venture growth level. Venture growth is measured by annual sales growth. To measure sales growth, the participants were asked about the company sales for the past three years (2002 – 2004). Compound Annual Growth Rate or CAGR was used to calculate the growth rate. Finally in the last section, respondents' background information was collected.

Binary logistic regression is a technique for predicting the mean value of a binary response variable as a function of one or more covariates. It was employed in this research to examine the relationship between a single dependent variable, venture growth (VG), which is dichotomous and several independent variables. Ordinary regression can not safely be applied to this kind of response variable because the venture growth is classified as either high growth or low growth, and the variance of binary variable is not constant. In addition, an ordinary regression approach would yield predicted values which lie outside the range of feasible values for the dependent variable. Instead, logistic regression models the probability of a positive response (e.g. 'high growth') given the values of other variables.

## Findings and Discussion

The relationship between the dependent variable, VG, and fourteen other independent variables were examined, and the result is showed in Table 1. If the significance level of the Wald statistic is small (less than 0.05) then the

parameters are useful to the model and are significantly related to venture growth.

Table 1: Logistic Regression (Trimmed Model)

| Variable/Construct Description | Factor | B | S.E. | Wald | df | Sig. | Exp(B) |
|---|---|---|---|---|---|---|---|
| Educational level | HC1 | -1.089 | 0.527 | 4.26 | 1 | 0.039 | 0.337 |
| Working experience prior owning business | HC2 | 1.15 | 0.981 | 1.373 | 1 | 0.007 | 0.038 |
| Parents own business | HC4 | -1.936 | 0.969 | 3.987 | 1 | 0.046 | 0.144 |
| Competitive strategies and planning<br>Improvement of product and services | OPER Group 3 | 2.611 | 0.959 | 7.41 | 1 | 0.006 | 13.61 |
| Raise capital from institution | FIN Group1 | 1.088 | 0.371 | 8.598 | 1 | 0.003 | 2.969 |
| Promoting company and its product<br>Understanding market needs<br>Customer feedback<br>Market analysis | MKTG Group | -2.429 | 1.222 | 3.948 | 1 | 0.047 | 0.088 |
| Recruitment and retraining employees<br>HR policies and compensation plan<br>Training and development of staffs<br>Delegating and | HR Group | 2.756 | 1.143 | 5.814 | 1 | 0.016 | 15.737 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| relinquishing control<br>Develop performance appraisal<br>Motivate employees | | | | | | | |
| Personal Initiative | RELTPI | 2.322 | 0.79 | 8.636 | 1 | 0.003 | 10.198 |
| -2 Log-likelihood | 56.44 | | | | | | |
| Value | 54.072 | | | | | | |
| Model Chi-Square | 3.887 | | | | | | |
| Goodness of Fit | 0.418 | | | | | | |
| Cox & Snell R Square | 0.625 | | | | | | |
| Nagelkerke R Square | | | | | | | |

Note: regression coefficients (B), standard error (S.E), Wald statistic, degrees of freedom (df), significance level (Sig), odds multiplier (Exp(B)).

Human Capital

Among the four variables in human capital tested using binary logistic regression , HC1, HC2 and HC4, which are 'education level', 'working experience prior owning business' and 'parents own business' respectively, the results were significant at p=.039, p=.007 and p=.046. Higher education level helps the entrepreneurs to have better knowledge and skills which contribute to the success of their venture. Working experience also assists the entrepreneurs with information and understanding about the industry and thus, assisted them in venturing into the current business they are in. Entrepreneurs with parents who owned business may have the opportunity to learn and acquire skills from the parents from a young age and also understood the requirements of being an entrepreneur to get them ready for what to anticipate in owning business ventures. Whereas HC3 which is the 'management experience prior owning business' was found not significant at p=.241, apparently individuals who were found successful in their small business venture were less reliant upon their previous business skills, they seemed more open to growth and changed, planned for that change through delegation and strategic planning, and sought to learn or use general business skills (Kemelgor, 1985), this could also suggest that the many years of managerial experience might have affected their ability to judge, analyze,

make quick decision and calculate risk well, hence their experience may not benefit their business venture.

**Competencies**

The results also showed that only certain areas among the four areas of the competency, namely operation, finance, marketing and human resource, were deemed as important by the CEOs and they are significantly related to VG.

OPER_Group3 which are 'competitive strategies and planning' and 'improvement of product and services' scored significantly high at p=.006. The entrepreneurs would want to find out more about the competitors, by emphasizing more on competitive and strategies planning, it allowed the entrepreneurs to ensure that the products or services are constantly improving to have the competitive advantage. OPER_Group1 and OPER_Group2 were found not significant to VG, with p=.062 and p=.201 respectively, the variables in OPER_Group1 and OPER_Group2 are 'equipments selection', 'day to day operations', 'production scheduling and planning' and 'quality of products or services', these are considered day-to-day operational tasks and are likely to be relinquished by the team of founding CEOs and delegated to their subordinates. As for 'quality of products or services', it could be because the companies had installed proper quality standard and checks such as ISO standard and 5S, therefore, the entrepreneurs are only concerned on the overall quality of the companies products or services and not the day to day process. Another possible explanation is the entrepreneurs know that the quality systems are in placed; therefore, they are only concerned with unforeseen quality issues.

The variables for finance, FIN_Group1 and FIN_Group2 have different results, FIN_Group1 has a value of p=.003 which scored significantly high with VG, FIN_Group1 which is to raise capital from institution showed significant result because only by being able to source for external funds and to manage the finance well, it would ensure the long run success of the venture (Dunn et al., 1993). FIN_Group2 on the other hand has a value of p=.862, similarly to operation, founding CEOs would not allocate for daily tedious tasks such as 'record keeping', 'financial control', 'budget planning' and 'cashflow management'. Although, literature review supported that

cashflow management is important during business start-up, this non-significant relationship is explained by Teutenberg (1997) when he found that cashflow generally post as a concern and problem for smaller businesses rather than larger organizations, this is due to the fact that larger companies have greater access to people to train executives to manage it and plan for it

The result showed that marketing is significantly related to VG. MKTG_Group which represents all the marketing functions such as 'promoting company and its product and services', 'understanding market needs', 'customer feedback' and 'market analysis', has a value of p=.047. Trulsson (2002) found that it is crucial for entrepreneurs to appreciate the importance of putting customer first and what that implies for their operations is crucial. In all businesses, founding CEOs will always placed emphasis on ensuring the company's product or service being sold, as the livelihood of the company depend it. Knowing the demands of customers will definitely ensure the long term success of business ventures. As for human resource, HR_Group which consists of all the human resource functions such as 'recruiting and retaining employees', 'HR policies and compensation plan', 'training and development of staffs', 'delegating and relinquishing control', 'develop performance appraisal' and 'motivate employees', was found significant in relation to VG with a value of p=.016. The finding seemed universal, and it is expected that entrepreneurs delegate many of the important tasks to trustworthy and skilled professional employees, thus they would be involved in recruiting and retaining employees, especially high levels staffs. However, recruiting new staffs would naturally mean developing them would be the next important step, and this required human resources development activities (Ardichvili et al., 1998). The result showed that successful entrepreneurs at VG have greater involvement with training and developing staffs so that the employees are able to help sustain and grow the company in the long term. In addition, by providing a clear career path and career development helps to retain the employees. Having proper performance appraisals and compensating employees appropriately allows the employees to be more satisfied with their jobs and thus, they will stay with the organization. Motivating employees through providing them with the vision and mission of the companies and how these employees are fitted into the bigger picture again ensures that these employees will continue to grow and stay with company.

Variable SC_Group which stands for social group support has a value of p=.476, SC_Group was not significant to VG, this indicate that the concept of "who do you know" is important may only apply for entrepreneurs during startups (Eisenhardt and Schoonhoven 1996), while other studies found no significant relationship between social network and business performance (Butler et al., 1990; Merenda et al., 1994; Aldrich, Reese and Dubini, 1993).

**Government Support Programs**

Variable GS1 which stands for government support programs was found not significant to VG. It was found that entrepreneurs expressed their frustration in applying such loans, as most of the procedures and requirements pertaining to the loan were the preoccupied with internal bureaucratic concerns rather than the entrepreneur's needs (Dana, 1987).

**Personal Initiative**

Personal Initiative which represented by RELTPI was found significantly related to VG with a value p=.003. It was the intention of this research to examine whether entrepreneur with high PI is significantly related to venture growth as employee with high PI performed better in a job situation (Frese and Fay, 2001). The result indicated that entrepreneurs with high PI which also mean the ability to self-start, proactive attitude and capability to overcoming barriers, contributed to the success and the growth of their companies.

**Conclusion**

Many start-up entrepreneurs do have the necessary skills and opportunity to create a giant "in the making" company, nevertheless, concerns such as the lack of education, experience, moral and financial support have always been the few major stumbling blocks or rather mental blocks holding them back from their journey to success. From this research, it has been made clear that a large number of entrepreneurs affirmed personal initiative as one of the major key to success. It has also illustrated that entrepreneurs with high personal initiative will further enhance their management, improve business operation skills, and embark in a continuous learning and development attitude. High personal initiative entrepreneurs are typical "go-getters" and

persist in all their work until results are achieved. This attitude will serves them well in areas such seeking funds and supports, and to keep themselves motivated, these so-called "lacks" in them will be overcome with their pro-active and self-starter personality.

Entrepreneurs know that their focus in the areas of competency changes in order to grow their company. However, entrepreneurs at times found to be reserved when they are unclear or anticipating involvement of higher level or different aspects of competency. To assist them to grow the company, the research has also provided a clear indication as to which area of competency the entrepreneurs should focus on. Sound knowledge and expertise of the following competency must be acquired and employed. Human resource is a clear distinction to be focused on, as all areas of HR are found to have significant relationship with venture growth. This includes areas such as recruiting and retaining employees, HR policies and compensation plan, training and development of staffs, delegating and relinquishing control, develop performance appraisal and motivate employees.

As the company grows, the founding entrepreneurs must be attuned to promoting company and its product and services, understanding market needs and customer feedback. Knowing the trends and what comes next as accurately as possible will allow long term continuation for the business. In addition to knowing what the customers' needs and expectations are, entrepreneurs naturally pay close attention to quality of products or services, competitive strategies and planning and the improvement of product and services. Founding entrepreneurs must also be involved in strategic planning pertaining to competition, because this ensures the future and the survival of the company. While moving away from the day-to-day accounting tasks, the entrepreneurs need to look at the bigger picture as far as the company's finance, it is advised to delegate the daily accounting activities to the professionally hired and concentrate in higher level of financial management such as raising capital from institution.

**Limitations of the study**

The cross-sectional research design does not allow the firm establishment of a cause and effect relationship, and thus post as a limitation to the study. Therefore, a preferable longitudinal research which would generate more

accurate findings, however, this would not be possible due to the time and cost constraints. The sample consists of founding entrepreneurs from the E-50. Thus, the generalization of the results is limited to entrepreneurs in venture growth only.

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# Changing Entrepreneurial Perceptions and Developing Entrepreneurial Competencies through Experiential Learning: Evidence from Entrepreneurship Education in Singapore's Tertiary Education Institutions

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# Changing Entrepreneurial Perceptions and Developing Entrepreneurial Competencies through Experiential Learning: Evidence from Entrepreneurship Education in Singapore's Tertiary Education Institutions


## Abstract

This paper examines whether the introduction of entrepreneurship education based on concepts of experiential learning into the university curriculum has had any positive effect on changing the entrepreneurial perceptions, intentions and competencies of tertiary education students. The paper uses Kolb's model of experiential learning as a conceptual framework to interpret the actions taken by the Singapore universities in introducing various forms of entrepreneurship education schemes. Although it finds that there is evidence to support claims that entrepreneurship education based on experiential learning in undergraduate courses has had a positive effect on changing entrepreneurial perceptions and intentions among Singapore university students, the findings for entrepreneurial competencies are inconclusive as important aspects of tolerance of failure and opportunity recognition do not seem to have been positively affected.



**Key words:** Entrepreneurship education; Experiential Learning; Entrepreneurial intentions; Entrepreneurial competencies; Singapore

## Introduction

Following the success of the turnaround in the US economy in the 'Entrepreneurial Revolution' of the early 1990s, Singapore has sought to channel resources to develop home-grown entrepreneurs that can help the economy move up the value chain without reliance on increasingly scarce foreign investment (Rosenberg, 2002). As the focus was to grow entrepreneurs in the technology sectors, a substantial amount of resources were targeted at tertiary educational institutions, beginning with the local universities and cascading down to the polytechnics. This led to the start of entrepreneurship education programmes for undergraduates from 2000 onwards.

In Singapore, as in most other Commonwealth countries, the polytechnics have traditionally been more open to adopting experiential learning concepts while the universities have continued to opt for more traditional directed learning methods (Tan & Ng, 2006). However, elements of experiential learning were incorporated into the new university entrepreneurship courses that were started from 2002/2003 onwards. Given that the government specifically targeted universities first, it took a few years before the polytechnics started introducing their own programmes and hence it gave us an opportunity to investigate whether the introduction of entrepreneurship education based on experiential-learning techniques had any impact on improving entrepreneurial perspectives among undergraduates as compared to students in non-degree courses at the polytechnics.

In their examination of entrepreneurship education over the years, Greene, Katz, & Johannisson (2004) note that what distinguishes it from other forms of management education is that experiential learning often plays a key role in the courses. This study hence examines whether the introduction of entrepreneurship education based on concepts of experiential learning into the university curriculum has had any positive effect on changing the entrepreneurial perceptions and intentions of tertiary education students. Given the embryonic context of entrepreneurship research in Singapore, the research follows Donckels & Miettinen (1997) in investigating the relationship of entrepreneurship education on promoting entrepreneurial intention and perceptions. Specifically, by comparing entrepreneurial

intentions and culture among university undergraduates and polytechnic diploma students using a modified questionnaire based on entrepreneurial perceptions, intentions and competencies, this study examined the differences between both groups of students following the introduction of entrepreneurship education into the university undergraduate curriculum.

The study mainly uses Kolb's model of experiential learning as a conceptual framework (D. A. Kolb, 1984) to interpret the actions taken by the Singapore universities in introducing various forms of entrepreneurship education schemes. In so doing, it also draws on the earlier theories by Kurt Lewin, John Dewey and Jean Piaget (A. Y. Kolb & Kolb, 2005). Experiential learning has been found to be an effective sub-approach of action learning in management education (Larsen, 2004; McCarthy & McCarthy, 2006) and has been particularly useful in entrepreneurship education (Gendron, 2004). This is because experiential learning helps build self-efficacy (A. Bandura, 1977), an essential competency in entrepreneurship.

Using a modified questionnaire based on entrepreneurial attitudes, intentions and knowledge (Douglas & Shepherd, 2002; Reynolds, Bygrave, Autio, Cox, & Hay, 2003) that was administered to undergraduates and polytechnic diploma students, this study compared the differences between both groups of students following the introduction of entrepreneurship education into the university undergraduate curriculum. Overall, the study finds that there is evidence to support claims that entrepreneurship education based on experiential learning in undergraduate courses has had a positive effect on changing entrepreneurial perceptions and intentions among Singapore university students and that the entrepreneurial gap between graduates and polytechnic diploma holders may be narrowing. Building on research on self-assessed or self-perceived entrepreneurial competencies by (Chandler & Jansen, 1992), the paper also looked into the effects of entrepreneurship education on building entrepreneurial competencies. However, in terms of developing entrepreneurial competencies, the findings are inconclusive as important aspects of tolerance of failure and opportunity recognition do not seem to have been positively affected even after the entrepreneurship education courses.

By exploring the link between entrepreneurship education and entrepreneurial perceptions and competencies, this paper contributes to the research on educating future entrepreneurs in that it draws attentions to the skills and attributes that are needed to be developed in order for the entrepreneurship courses to be effective in tertiary institutions. It also points towards further research needed to track whether some of the more encouraging results actually lead to more new ventures and better start-up performance.

**Literature Review**

The literature review examines the literature behind experiential learning and entrepreneurship education and explores whether experiential-learning based entrepreneurship education programmes have any impact on entrepreneurial perceptions and competencies.

Experiential learning concepts have existed in various forms in the last century but it received its first significant statement in 1971 when David Kolb, working with Roger Fry, built on Kurt Lewin's work, to put forward the concept of Experiential Learning Theory (ELT) (D. A. Kolb, 1971). This was formalised with the publication of Kolb's book on Experiential Learning in 1984 in which he developed a holistic learning process based on experience through a synthesis of research by people like Kurt Lewin, John Dewey, Jean Piaget, William James, Carl Jung, Paulo Fierer and Carl Rogers (A. Y. Kolb & Kolb, 2005; D. A. Kolb, 1984). ELT Learning Theory defined learning as "the process whereby knowledge is created though the transformation of experience. Knowledge results from the combination of grasping and transforming experience" (D. A. Kolb, 1984) (p.41). A person learns in a cyclical manner constantly reconciling the two opposing modes of Reflective Observation versus Active Experimentation and Concrete Experiences versus Abstract Conceptualisation. This is depicted in the Kolb learning cycle diagram below.

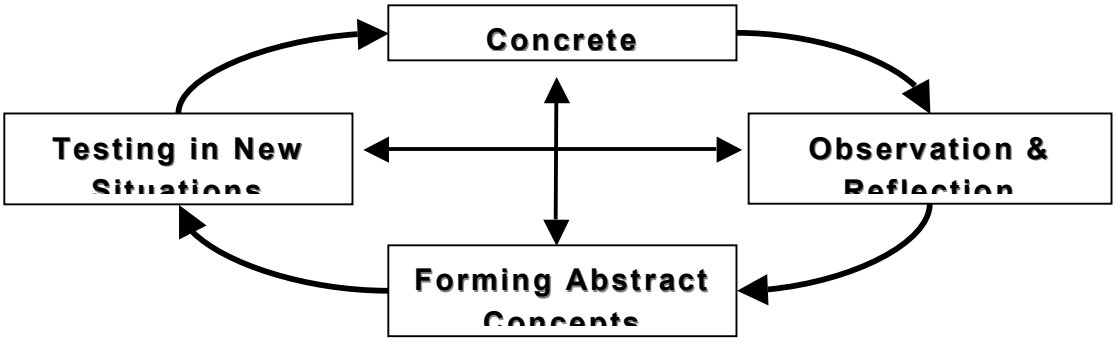


Figure 1 – Kolb's Experiential Learning Cycle (Adapted from Kolb (1984))

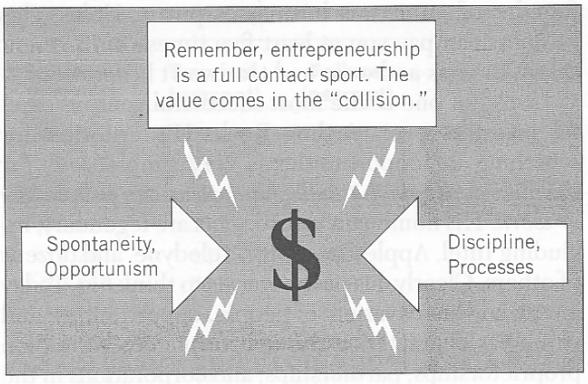
In quantitative and qualitative reviews of the validity of the effectiveness of ELT in various contexts, the model has proven to be significantly robust as a framework for the development of new learning-centred curriculum and methods (Hickcox, 1991; Iliff, 1994). The construct has been used largely in inter-disciplinary and multi-disciplinary settings and Kolb, Boyatzis, & Mainemelis (2001), in a study of a bibliography of ELT publications, find significant use in the interface of management and education.

At about the same time that ELT was being developed, entrepreneurship education was also emerging from its embryonic state. Entrepreneurship was increasingly seen as something that could be taught and should not be seen as some traits that one was born with (Kuratko, 2005). There was increasing support among prominent thinkers like Peter Drucker claiming that "the entrepreneurial mystique? It's not magic, it's not mysterious, and it has nothing to do with the genes. It's a discipline. And, like any discipline, it can be learned." (Drucker, 1985).

Entrepreneurship educators found that unlike most aspects of management education, entrepreneurship education had to engage in a context of numerous contradictions or paradoxes. As Timmons & Spinelli (2004) remark: "One of the most confounding aspects of the entrepreneurial process is its contradictions. Because of its highly dynamic, fluid, ambiguous, and chaotic character, its constant changes frequently pose paradoxes." (p. 50)

They argue further that because entrepreneurship is untidy, non-linear, inconsistent and unpredictable, and particularly because it is chaotic and contradictory, it is from the "collisions" inherent in these paradoxes that value is created and is illustrated in figure 2 below. They postulate that

effective entrepreneurship education needs to result in the development of competencies and skills that create predictability out of the ambiguity, chaos, and uncertainty that the paradoxes create.




Source: Timmons et al. (2004)
Figure 2 – Entrepreneurship as Collisions of Dilemmas

Hampden-Turner (1999; 2002) has found that a combination of Kolb's model and Argyris & Schon's (1978) double-loop learning model is especially appropriate in understanding the development of creative individuals. ELT, with its foundations on reconciling the seemingly contradictory nature of learning provided an ideal means to drive the development of entrepreneurship education development in an innovative way that did not follow the conventional dictates of the other management disciplines. For example, Solomon & Fernald Jr (1991) and Gorman & Hanlon (1997) focus on the need for concrete experience, one of the major components of ELT, in entrepreneurship education programmes, that this could be achieved through active involvement of students in the learning process. This focus is needed especially in tertiary educational institutions given that the other 3 components of Kolb's learning cycle of Observation, Forming abstract concepts, and Testing in new situations are established components in university curriculum and that traditionally, they have been weaker in the aspect of concrete experience. Heinonen & Poikkijoki (2006) note that a major focus of entrepreneurship education has been to shift the teaching to learning in a context that was as close to reality as possible. This follows earlier recognition by Bygrave (1997) and Feldman (2001) that entrepreneurship education needs to reflect the real-world environment.

According to McCarthy & McCarthy (2006), experiential learning is especially effective in developing self-efficacy, an essential capability for

entrepreneurship. As noted by Bandura (1991), personal experience is the most important factor that affects the development of self-efficacy. However, what counts as experience in the experiential learning context is not so straightforward. The literature on the actual practice of experiential learning techniques is diverse. Hamer (2000) notes that there is significant variety in its application ranging at one-extreme of field-based methods (e.g. internships) to less demanding classroom-based methods (e.g. role-playing and simulations). Or as one entrepreneur interviewed by Gendron (2004) notes, "you being the nonclassroom activity into the box … (or) get the students out into the real world." (p. 311) For example, within management learning, experiential learning techniques may range from modifications of the traditional lecture format whereby students work on loosely structured experiential projects in small groups (Gaidis, Andrews, & summer, 1991) to conducting actual market research (Churchill, 1986) to full-time apprenticeships with practicing entrepreneurs (Aronsson, 2004).

While the debate on whether entrepreneurship can really be taught, or is worth teaching is still ongoing (Fiet, 2001; Hynes, 1996; Kuratko, 2005), there is evidence that at least some of the results have been positive. For this paper, we accept the position by McMullan & Gillin (1998) and Vesper (1994) that entrepreneurship can be taught. In terms of empirical support, Gorman & Hanlon (1997) conducted a 10-year review of literature in entrepreneurship education and found that "most of the empirical studies surveyed indicated that entrepreneurship can be taught, or at least encouraged, by entrepreneurship education" (p. 63). This was in contrast to general management courses which did not have any significant influence on entrepreneurship perceptions (Hostager & Decker, 1999). More recently Raichaudhuri (2005) has noted that more than 50 percent of students who take up entrepreneurship classes at Harvard University have subsequently started their own ventures. Donckels & Miettinen (1997) comment that the main role of entrepreneurship education is to raise consciousness and acceptance for new venture creation as a realistic and profitable career option.

In the Singapore context, Wang & Wong (2004) found that in 1998, before the introduction of entrepreneurship education for undergraduates, Singapore undergraduates had a generally low perception of and knowledge of entrepreneurship. After entrepreneurship education was introduced, Lee

& Wong (2003) found in their study on students in tertiary institutions that there is a direct relationship between attitudes towards entrepreneurship education influencing new venture creation. However, Lee & Wong's research assumed that the more positive entrepreneurial perceptions came from entrepreneurship education and thereby ignored the possibility that these may have been affected by external factors like the large efforts in entrepreneurship promotion by the government in the local media. Moreover, there were also many incentives that the government placed in front of tertiary education graduates to start new ventures especially in high-technology areas.

Polytechnic diploma students were also subject to similar media influence and could also look to starting their own ventures and thereby claiming some of the incentives. However, from 2000 to 2002, the government had yet to fund entrepreneurship education among polytechnic students. As such, it is felt that a comparative study among university undergraduates and polytechnic diploma students in the period from 2000 to 2002 would examine in more rigour whether the entrepreneurship education among undergraduates was having a significant positive impact on their entrepreneurial perceptions and intentions.

But why focus on entrepreneurial intentions and perceptions? Entrepreneurial intention can be seen as an interest in creating a new organisation (Katz & Gartner, 1988) or as the target behaviour of starting a new business venture (Krueger, 2000). Intention can be seen as the cause of an action and the higher the stated intentions to execute the action, the higher the probability of engaging in the act (Chandrashekaran, McNeilly, Russ, & Marinova, 2000). Prior research has indicated a strong link between intention and actual behaviour both within entrepreneurship and in a wide variety of situations (Douglas & Shepherd, 2002; Sheppard, Hartwick, & Warshaw, 1988).

However, merely looking at intentions is too narrow and the literature also suggests that if entrepreneurial competencies are also taken into account, a more accurate picture can be developed as competencies are behavioural aspects that can be acquired and learned and thus, could be improved through education and training (Burgoyne, 1993; Parry, 1998). Although internalised aspects of competencies are difficult to change, externalised

elements could be easily acquired through proper training and education programs and could be effective through continuous practice (Muzychenko & Saee, 2004). Specifically, research has shown that entrepreneurial competencies that are strongly related to entrepreneurial intention and actual behaviour include risk (Douglas & Shepherd, 2002) and independence (Douglas & Shepherd, 2000; Kolvereid, 1996). Wallace (1998) in a study of the impact of small business courses on competencies confirmed that training programs for entrepreneurship could achieve their aim of developing entrepreneurial competencies.

While intentions and perceptions are often self-reported or self-assessed, competencies can be measured both individually and by external parties. While it is acknowledged that external evaluation will improve the validity of the study's results, we have followed (Chandler & Jansen, 1992) who found that self-assessed competencies were useful in the entrepreneurial context as entrepreneurs, whether actual or nascent are mainly individuals working in isolation or possess some combination of unique skills and abilities that make them innovative and entrepreneurial. Moreover, although the students had completed their entrepreneurship education courses, the bulk did not have any experience starting businesses or participating in new venture creation teams.

Finally, while there is no general link between gender and entrepreneurial perceptions and competencies in the literature (Birley, 1989; P. Greene, Hart, Gatewood, Brush, & Carter, 2003), in the Singapore context, Ghazali et al. (1994) had suggested that one reason why the polytechnic students were more entrepreneurial was because there were more male students enrolled in polytechnics as compared with female students (almost double the proportion of university students). As such, this study also seeks to explore whether this is still valid in the current situation.

## The Context - Entrepreneurship Education in Singapore's Tertiary Institutions

Gorman & Hanlon (1997) and Young (1997) have noted that it is important to distinguish between the contexts in which entrepreneurship is practiced. The following discussion highlights the context of entrepreneurship education in Singapore in its tertiary education sector.

The three local universities that were established by the government in Singapore all used different approaches to entrepreneurship education. This was partly due to the different traditions, strategies and resources of the universities but also partly due to experimental approach of entrepreneurship education among educators with different universities adapting different models from mainly US-based institutions to see whether they would work in Singapore.

The National University of Singapore (NUS) was the first to offer entrepreneurship courses for its undergraduates with a Minor in Technopreneurship Programme for Engineering Undergraduates launched in July 1999 and expanded to the science and computing faculties in 2000 before being made available university-wide in 2002. Undergraduates met basic pre-requisites could take on the courses that could be spread over 6 semesters. The bulk of the students engaged in classroom-based experiential learning techniques, however about 50-100 students per year were selected for a field-based experiential learning scheme called the NUS Overseas Colleges (NOC) programme. This targeted NUS undergraduates with better academic results and entrepreneurial drive and provided for a fully sponsored one-year joint study and internship stint in various overseas colleges established by NUS at technology enterprise hubs around the world whereby they served as interns in high-technology start-ups when they were not doing courses. The first one started in Silicon Valley in 2001 and the NOC students only needed to pay regular NUS tuition fees although they were taught by faculty from other institutions (e.g. adjunct Stanford University faculty in Silicon Valley) and were given a monthly stipend by their internship companies.

The Nanyang Technological University (NTU) used more localised concepts for entrepreneurship education. For the general undergraduate population, an Entrepreneurship Speaker Series was started in 2001 to provide a platform for NTU staff and undergraduates to network with successful entrepreneurs and venture capitalists and to establish ideas and contacts for feasible business ventures and an entrepreneurship elective was started at the business school with students encouraged to participate in the campus-wide business plan competition. In 2002/2003, the elective was expanded to a 5-module entrepreneurship 'minor' programme with additional experiential-learning techniques like case studies involving real entrepreneurs and the use

of computer-based simulations. As for those who wished to move on into formal entrepreneurship education, in their summer break before their honours year, they were eligible to apply for the Graduate Diploma Technopreneurship & Innovation Programme (TIP), which was a full-time sponsored course jointly conducted by NTU and the University of Washington which combined coursework as well as experiential learning with Singapore and Seattle-based entrepreneurs and scientists. Students received a two-thirds scholarship from the university and the Singapore Economic Development Board and paid for only one-third of the course. The students spent the first ten weeks of their course in Singapore with the subsequent six weeks in Seattle.

The Singapore Management University (SMU) was the last university to introduce entrepreneurship education as the university was only officially incorporated on 12 January 2000, and took in its first students in that year. Its administrative and educational practices are modelled after American institutions, in particular the University of Pennsylvania's Wharton School, which has played a major role in SMU's development. As such, instead of formal entrepreneurship education courses, at SMU, learning has been via loosely structured experiential projects in small groups instead of the usual lectures and tutorials, which enhance interaction and critical thinking. Through this different approach, SMU hopes to produce creative thinkers, challengers to the prevailing mindsets, who bring different perspectives to business.

The polytechnics have always had some form of entrepreneurship promotion activities in their history by funding innovative student start-ups from the mid-1990s onwards but they only incorporated this into their curriculum from 2002/2003 onwards. For example, learning from the universities' experience, Nanyang Polytechnic decided to use simulation and internship methods. Temasek Polytechnic, in contrast, has adopted an action-learning perspective by setting up, within its premises, an on-campus retail store managed by business students.

Given that there was a difference in the time between the start of undergraduate entrepreneurship education programmes as opposed to polytechnic diploma programmes, there was an opportunity to investigate whether the introduction of entrepreneurship education has had any impact

on improving entrepreneurial perspectives among undergraduates as compared to students in non-degree courses at the polytechnics.

**Research Objectives and Hypotheses**

Our primary research objective was to examine whether entrepreneurship education was having an impact on undergraduates' perception of entrepreneurship as compared to their cohort undergoing polytechnic education. Earlier research had indicated that the commonly-held perception of polytechnic students being more entrepreneurial was a valid one (Ghazali et al., 1994; Phan, Wong, & Wang, 2002). If entrepreneurship education was having an impact, then the gap between undergraduates who had completed or were undergoing entrepreneurship education would be smaller or less significant that before. To that end, the primary hypothesis to be tested was:

H1: Undergraduates have the same level of entrepreneurial intention as polytechnic students.

As mentioned above, Ghazali et al. (1994) suggested that gender differences could explain why polytechnic students were more entrepreneurial than university students. As such, in order to test whether it was entrepreneurship education and not gender that was causing the difference, the following hypothesis was also tested:

H2: Male students are more likely to set up their own business than female students.

In order to see if entrepreneurship education was having an impact on entrepreneurial competencies, we included a tongue-in-cheek question that asked what the university students thought about their polytechnic counterparts and vice-versa in terms of 19 factors broadly grouped into 7 types of entrepreneurial competencies. Based on past evidence, most of the competencies would be identified with the polytechnic students. However, if entrepreneurship education was having an impact, then there would be some competencies that the university students would fare better in. As such the third hypothesis is:

H3: Undergraduates have the same entrepreneurial competencies as polytechnic diploma students.

Data Collection

As not all the students in the university were allowed to take entrepreneurship courses, respondents for our questionnaire were selected on

a purposive basis. We collected our data at premises of the four polytechnics and the three universities in the 2002/2003 academic year. Responses were solicited from students and undergraduates randomly at various locations like canteens and study benches in different faculties. Different races and both sexes were approached in order to achieve a representative sample. Screening questions like "Are you a Singaporean?" and "Have you undergone or are you undergoing an entrepreneurship course?" helped to ensure that only target respondents were included in the sample.

There were several benefits from the purposive sampling method. Firstly, the data set was controlled. As the respondents were approached personally, it was probable that the questionnaires were more likely to be completed by the intended persons. Hence we are confident of the integrity of the data. Secondly, questionnaires were examined upon submission, and most incomplete ones were returned for completion. Incomplete questionnaires as well as those that do not meet the requirements were voided. Thirdly, the rate of response was greater than typical mail survey. Approximately only one out of thirty individuals who were approached refused to participate in the study.

Therefore, while still existent, non-response bias is not as problematic as mail survey. Furthermore, since responses were checked for completeness, item non-response error was dramatically minimized. Only around 15 out of 760 completed surveys had missing data. Thirdly, this method enables a large sample size to be generated. Central limit theorem suggests that the level of confidence of a large sample approaches that of a random sample. The size of the sample hence improves statistical power.

We recognise that purposive sampling may only result in high internal validity and may limit generalisability but as this research was conducted in a unique window of opportunity with limited resources and the sample was selected based on subjects that were appropriate to the study.

The actual sample size and distribution is summarized in table 1 as follows:
Table 1 - Sample size and distribution

| Institution | Business/ Accountancy | Information Technology | Engineering | TOTAL |
|---|---|---|---|---|
| National University | 34 | 20 | 118 | 172 |

| | | | | |
|---|---|---|---|---|
| of Singapore (NUS) | | | | |
| Nanyang Technological University (NTU) | 37 | - | 137 | 179 |
| Singapore Management University (SMU) | 21 | - | - | 21 |
| Nanyang Polytechnic (NYP) | 25 | 25 | 50 | 100 |
| Ngee Ann Polytechnic (NP) | 28 | 24 | 38 | 91 |
| Temasek Polytechnic (TP) | 22 | 25 | 49 | 100 |
| Singapore Polytechnic (SP) | 25 | 23 | 45 | 97 |

The sample has a high proportion of engineering students and hence may not be seen as representative of the entire student body. However, as the distribution of the students across the 3 main discipline groups is similar between the universities and polytechnics, the data is appropriate for comparison.

Entrepreneurial Intentions of University and Polytechnic Students Compared
Our first objective was to find out and compare the level of entrepreneurial intentions among local undergraduates and polytechnic students. As noted earlier, research and perception had shown that polytechnic students were more entrepreneurial, as compared to undergraduates. We attempted to find out if this perception still held after entrepreneurship education among undergraduates by comparing the entrepreneurial intentions between the two groups of students. Tables 2 and 3 below show the results.

Table 2 - Proportion of our Survey Population Who Have the Intention to Start Their Own Business

| Intention to set up own business? | Frequency | Percent (%) |
|---|---|---|
| Yes | 455 | 59.9 |
| No | 305 | 40.1 |
| Total | 760 | 100 |

Table 3 - Proportion of our Survey Population Who Have the Intention to Start Their Own Business (Breakdown by Institutions).

| ion to up ess? echnic nts) | NYP | NP | TP | SP | Total |
|---|---|---|---|---|---|
| | 65 (65%) | 53 (58.2%) | 55 (55%) | 50 (51.5%) | 223 (57.5%) |
| | 35 (35%) | 38 (41.8%) | 45 (45%) | 47 (48.5%) | 165 (42.5%) |
| | 100 (100%) | 91 (100%) | 100 (100%) | 97 (100%) | 388 (100%) |

| Intention to set up business? (university students) | NUS | NTU | SMU | To |
|---|---|---|---|---|
| Yes | 104 (60.5%) | 115 (64.2%) | 13 (61.9%) | 23 (6 |
| No | 68 (39.5%) | 64 (35.8%) | 8 (38.1%) | 14 (3 |
| Total | 172 (100%) | 179 (100%) | 21 (100%) | 37 (1 |

Testing the hypothesis (H1) that Singaporean undergraduates would have the same level of entrepreneurial intentions as polytechnic students yielded the results as shown in Table 4:

Table 4 - Test Statistics for Hypothesis 1.

| Proportion of university students who have intention to set up business (x1) | Proportion of polytechnic students who have intention to set up business (x2) | Test Statistic (z) |
|---|---|---|
| 0.624 | 0.575 | 1.375 |

Since the test statistic falls in the non-rejection region, we did not reject the null hypothesis and conclude that the difference between the two groups is not significant. We believe that the perception may have been true in the past but that entrepreneurship education among university students was having a positive effect in changing perceptions. This may have been reinforced by the recent recession of 2001/2002 caused in part by the

aftershocks of 9/11 and SARS. In the past, undergraduates had no problem getting a stable salaried job. However, with the onset of the recession and the surge in the unemployment rate, many fresh undergraduates have difficulties in securing a job. Also, a university degree was no longer a guarantee to a secured job and this may have unleashed the entrepreneurial streak within them.

We also sought to examine in more detail if there were differences in the perceived opportunities and obstacles to starting their own ventures between university and polytechnic students. Table 5 below and the subsequent discussion reinforce the general finding that entrepreneurship education among the undergraduates was reversing the stereotypical view of polytechnic students were more likely to become entrepreneurs than university students.

Table 5 - Reasons that Prompt Respondents to Start their Own Business - University versus Polytechnic Students.

| Reasons holding Singaporeans back from venturing into their own business | Percentage | |
|---|---|---|
| | Polytechnics | Universities |
| a) Profit-driven; able to earn more money | 76.2 | 78.0 |
| b) Desire to meet challenges | 53.8 | 50.9 |
| c) Dislike working for others | 32.7 | 36.6 |
| d) Opportunity to use one's knowledge in a certain field | 56.1 | 35.8 |
| e) Influence of friends and family members | 20.6 | 11.2 |
| f) Sense of satisfaction/achievement | 83.0 | 87.1 |
| g) Has been my ambition since young | 32.3 | 22.0 |
| h) Others, please specify | 4.0 | 5.2 |

A comparison between the two groups of students reveals that there are no major differences in the reasons that prompt them to start their own business. The existence of profit and a sense of satisfaction/achievement are the two most frequently cited reasons by both groups. This finding reinforces earlier research that shows that entrepreneurship education can have a positive impact on encouraging students to consider new venture creation as a viable career alternative.

Earlier research had indicated that there was a gender bias in entrepreneurial intention among tertiary level students. However, when we tested this as hypothesis H2, this bias is no longer significant (see table 6 below).

Table 6 - Male versus Female Undergraduate Students

| Proportion of male undergraduates who have intention to set up business (p1) | Proportion of female undergraduates who have intention to set up business (p2) | Test Statistic (z) | P-value (1-tailed) |
|---|---|---|---|
| 0.624 | 0.558 | 1.825 | 0.034 |

Since the test statistic falls in the rejection region, we concluded that the male respondents are not more likely to set up their own business, contrary to the traditional viewpoint.

One possible explanation is that female undergraduates today have more role models who have done well as entrepreneurs and as such are less risk-averse to starting their own ventures. Examples of successful female entrepreneurs in Singapore include Jannie Tay who founded The Hour Glass, and Mrs Nanz Chong-Komo, founder of The 1.99 Shop.

**Entrepreneurial Competencies of University and Polytechnic Students Compared**

To examine differences in entrepreneurial competencies, we included a tongue-in-cheek question that asked what the university students thought about their polytechnic counterparts and vice-versa in terms of 19 factors broadly grouped into competencies of risk-taking, innovation, independence, perseverance, opportunity, inter-personal skills and leadership. Three statements (some positive and some negative to ensure consistent responses) are used for each competency, with the only exception being leadership skills, which has only a positive statement. Table 7 below illustrates the results based on responses from 372 university students and 388 polytechnic students.

Table 7 - Entrepreneurial Competencies - University versus Polytechnic Students.

| Statistics/Competency | | Risk-taking | Innovation | Independence | Perseverance | Opportunity | Inter-personal Skills | Leadership |
|---|---|---|---|---|---|---|---|---|
| Universities (Mean) | | 3.2769 | 3.5099 | 3.2554 | 3.5959 | 3.0367 | 3.4892 | 3.1237 |
| Polytechnics (Mean) | | 3.2990 | 3.4691 | 3.1022 | 3.7053 | 3.1478 | 3.3092 | 3.0464 |
| Equal variances assumed | T-value | -0.468 | 0.877 | 3.250 | -2.060 | -2.638 | 3.885 | 0.951 |
| | Significance | 0.64 | 0.381 | 0.001 | 0.040 | 0.008 | 0.000 | 0.342 |
| Equal variances not assumed | T-value | -0.467 | 0.877 | 3.253 | -2.067 | -2.641 | 3.886 | 0.954 |
| | Significance | 0.64 | 0.381 | 0.001 | 0.039 | 0.008 | 0.000 | 0.340 |
| Implication: Whether the competency significantly distinguish between polytechnic and university students | | Not significant | Not significant | Significant | Significant | Significant | Significant | Not significant |

The results showed that the two groups still regarded each other as quite different in terms of entrepreneurial competencies as there are four categories that they are significantly different. While there are similarities towards risk-taking, innovation and leadership, the university students were more independent and possessed better interpersonal skills than polytechnic students. This may be due to the age difference, as you get more independent when you grow older. More mature thinking and better handling of human relationships make university students possess better interpersonal skills while polytechnic students are more persevering and opportunistic. The educational system may provide an explanation for this finding. The

university system of teaching and learning has always more geared towards developing independent learners as opposed to 'receivers'. Although some of the independent learning features can also be found in polytechnics, they are less extensive. However, polytechnic education may reinforce tolerance for failure and opportunity recognition as it has a more practical and hands-on focus. As independence and interpersonal skills are more highly sought after characteristics among employers as opposed to tolerance of failure and opportunity recognition, entrepreneurship education may not actually have a desirable effect on encouraging university students to start their own ventures. Instead it may exacerbate the trend of them being absorbed into larger organisations that are willing to pay for graduates with these characteristics.

Opportunity recognition has been identified by researchers as the most important competency among entrepreneurs (Shane & Venkataraman, 2000) and it is worrying that this is not being developed sufficiently among undergraduates, despite the more experiential nature of the courses. It may be because these methods are new and need time for both students and lecturers to get used to and be proficient in. As Smith (2001) notes, "it is well known that experience itself is a very slippery teacher." (p. 36). However, as the entrepreneurship programmes are run mainly by academics that have come out of business schools, it could be a larger problem of being unable to break out of the dominant pedagogic paradigms in management education. As Kourilsky (1995) comments, "current entrepreneurship education tends to migrate towards its natural focus of 'least resistance' – the traditional business management process areas" but entrepreneurship education needs to break out of this and develop "without business management's seminal antecedents – opportunity recognition, marshalling of resources, and creation of the business venture." (p. 14)

Similarly, the ability to tolerate failure is a significant factor and may be even harder to achieve for entrepreneurship education courses run within universities. This is similar to the developing competencies in coping with ambiguity and constant change. As Gendron (2004) observes,
"Almost anybody who has either been involved in start-ups or created one of their own often talks about some periods in those early days characterized by messiness, chaos, and constant ambiguity. Is there anything you can imagine doing in a university environment that would better prepare people

for the world of the start-up, which in many ways is completely contrary to the world of academia where you're constantly searching for clarity, for closure, for lack of ambiguity?" (p. 308).

**Limitations**

There are three limitations in the research for this paper. Firstly, respondent error is of a concern. The tendency to endorse favourable statements and not endorse negative statements is reduced in this research by introducing positive and negative statements to ensure consistency in response. Unless respondents conscientiously 'fake' responses, the results are considerably reliable. The perception of social desirability of the respondent vis-à-vis the question may also be problematic. However, this may be resolved by ensuring confidentiality (since no sensitive data information was asked in our survey) so that respondents are more likely to provide truthful responses. Secondly, a limitation concerning the instrumentation is response sets, which involves a host of biases such as acquiescence, evasiveness, tendency to guess and working for speed instead of accuracy. In addition, the survey design suffers from the potential bias that the researcher introduces. Systematic forms of bias may be incorporated by the definition of the questions, response sets and conditions for participation. Moreover, there may also be problems associated with respondents. No other control over respondent conditions could be achieved. The use of students as surrogates for entrepreneurs is also an issue.

Thirdly, the sample includes students who were doing entrepreneurship courses as a compulsory subject and those who were doing it as an elective. Given that the motivation of the students could be quite different depending on their ability to choose to go on these programmes, this could have an impact on the results. However, as the policies of the different tertiary education institutions were in constant flux during this period, we could not effectively control for this and hence the results may lead to methodological problems of aggregation (During, Oakey, & Kipling, 2000; Gartner & Birley, 2002).

**Conclusion**

The Singapore government has invested significantly in entrepreneurship education in the hope that some of the more talented Singaporeans would take on the challenge to start their own high-technology or knowledge-

intensive ventures. The Singapore universities adopted various experiential learning techniques in their entrepreneurial education programmes. Although the common perception and past research in Singapore has been that polytechnic diploma holders are more entrepreneurial than graduates, in this paper, we find that the initial introduction of entrepreneurship education into the undergraduate syllabus in Singaporean universities has had a positive effect on changing entrepreneurial perceptions and intentions among Singapore undergraduates. It also appears that the long-standing entrepreneurial gap between graduates and polytechnic diploma holders may be narrowing.

However, this trend may be short-lived as entrepreneurship education does not seem to be improving the persistence and opportunity recognition competencies of the graduates. Moreover, in the spirit of competition and meeting national education strategic targets, the success of the entrepreneurship education efforts in the universities has also led to the polytechnics introducing formal entrepreneurship education programmes into their syllabi. For example, Singapore's newest polytechnic, Republic Polytechnic, has adopted the more specific Problem-Based Learning method for its curriculum whereby learning is achieved via students tackling a set of problems that reflect the real-work situation as closely as possible (Tan & Ng, 2006; Wee, 2004). This may result in current diploma students who are undergoing entrepreneurship education having higher entrepreneurial intention and perceptions thereby re-establishing any gap that was initially created between university graduates and diploma holders. But from the educators and policy-makers perspective, this can only be a good outcome as entrepreneurship education is changing mindsets among both undergraduates and polytechnic students.

However, the trend in entrepreneurial competencies is worrying. The study finds that entrepreneurship courses have not had as much of a significant impact with the key entrepreneurial competencies of opportunity recognition and tolerance of failure still more prevalent among undergraduates than polytechnic students. Whether the causes are institutional or transient is debateable but it may point to what Hampden-Turner & Tan (2002) identified, using Kolb's model, as a larger problem in Singapore's highly meritocratic educational system, namely the cultural impediments to facilitate reconciliation of abstract thought with concrete actions:

"There is also a marked reluctance by abstract thinkers to come down to earth and consider the impact of their ideas and strategies on real people in the world of objects. To descend to the concrete world is risky. You may discover that your thoughts are insignificant in their repercussions or plain wrong … One constant feature of the entrepreneur is that he/she must command all levels of thought form the most abstract thoughts to the most concrete instances and details. The Big Idea either works "on the ground" in shops and offices, in orders and deliveries or it fails. Nor can you leave out any of the details. One glitch on day one with customer one and it may all be over … So how readily do Singaporeans take to the kind of person who is effective at all levels and not afraid to get his hands dirty? Our preliminary investigation suggests that the higher reaches of the abstraction ladder is indeed a privileged place and a relatively safe perch above the fray." (pp. 84-85) (emphasis in original).

While this may be a pessimistic view, it is important that the continued progress of these trends be monitored and investigated and points towards further research needed to track whether some of the more encouraging findings actually lead to higher new venture creation and better entrepreneurial performance.

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