# DEVELOPING CRITICAL THINKING ABILITIES IN BUSINESS AND ACCOUNTING GRADUATES

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## ABSTRACT

*Critical thinking abilities are essential for modern business professionals, particularly in the high value-added knowledge economies of the information age. There have been clear and repeated calls for improving students' abilities in this regard. Developing graduate critical thinking capability may be achieved in a variety of ways. One approach is based on experiential learning theory. In developing a Bachelor of Business Studies (BBS) degree programme (NQAI Level 8) at the Castlebar Campus, Galway–Mayo Institute of Technology, an accredited module entitled* Critical Thinking *was designed and included as a core element in the curriculum. The concept of experiential learning is central to the module design. The purpose of the paper is to explain: the background and underlying rationale for the module; the nature and application of experiential learning; design issues and content; issues arising from the first delivery and initial feedback from students. This approach to fostering students' critical thinking ability is considered to be potentially successful although a formal evaluation of the module impact has yet to be carried out. It is intended that the experience at Castlebar will serve as a model and stimulus for similar developments elsewhere.*

The future is a foreign country. They do things differently there. (With apologies to L.P. Hartley.)

## INTRODUCTION

Thinking is at the heart of knowledge and scholarship. Through it, knowledge is imagined, created, discovered, acquired, understood, questioned, contested, validated, verified, expanded, connected, contextualised, applied, acted on, transmitted and enjoyed. The nature and processes of thinking are key concerns for, inter alia, philosophers, psychologists, educationalists, scientists and neuro-biologists. For Descartes, the founder of modern philosophy, thinking was the kernel of his theory of knowledge: Cogito, ergo sum – 'I think, therefore I am'(Methods, Part iv).

What of thinking? I find here that thought is an attribute that belongs to me; it alone cannot be separated from me. I am, I exist, that is certain. But how often? Just when I

think; for it might possibly be the case if I ceased entirely to think, that I should likewise cease altogether to exist... I am not more than a thing which thinks. (Meditations ii)

Russell (1961) explains that,

"Thinking" is used by Descartes in a very wide sense. A thing that thinks, he says, is one that doubts, understands, conceives, affirms, denies, wills, imagines and feels – for feeling, as it occurs in dreams, is a form of thinking. Since thought is the essence of mind, the mind must always think, even during deep sleep. (Russell, 1961, p. 548)

In this broad sense, thinking is typically defined as "mental activity" that underlies the processes by which we make meaning and act (for example, Flew and Priest, 2002). de Bono (1978, p. 33) suggests that such definitions are correct but not very helpful (see also Thomson, 1959). He defines thinking as:

... the deliberate exploration of experience for a purpose. That purpose may be understanding, decision making, planning, problem solving, judgement, action and so on. (de Bono, 1978, p. 33)

The 'educational trinity', he explains, is: knowledge, intelligence and thinking. 'Thinking is the operating skill through which intelligence acts upon experience' and knowledge 'is the basic material handled by thinking'. Thinking is a learnable skill that can be acquired and developed.

The stimulation and cultivation of a thinking "spirit" and thinking capacities, that will resonate and develop through life, are intrinsic and integral to the purposes of tertiary level education. Yet a common complaint in academic common-rooms is the failure of students "to think for themselves" or "to think outside the box" or, indeed, "to think at all". Undergraduate degree programmes, including those in business and accounting, should seek to stimulate students' passion for and powers of thinking. They should seek to foster students' thinking skills and habits that will, for example, enhance their capacities for life-long learning, reflection, reasoning, creativity, innovation, knowledge management and problem solving. In particular, the cultivation of critical thinking skills has been specified as a core competency for students (Pithers and Soden, 2000). The clear and repeated calls for the development of enhanced critical thinking skills in accounting graduates is a recognition of the importance of such skills in the long-term development of accounting professionals as effective, reflective practitioners (AAA, 1986; Arthur Andersen & Co. et al., 1989; AECC, 1990; Albrecht and Sack, 2000; AICPA, 2000, 2002).

There are many perspectives on the nature, scope and processes of critical thinking and it has no universally accepted definition. (A useful website for exploring different perspectives is www.criticalthinking.org). Baril, Cunningham, Fordham, Gardner and Wolcott (1998) review various perspectives and, based on a study of the critical thinking competency deemed essential by the accounting profession, identify a combined set of cognitive and non-cognitive attributes, attitudes and behaviours which they present as an operational definition. Similarly, Facione (1998) explains it as purposeful thinking involving a set of cognitive skills (analysis, interpretation, inference, explanation, evaluation and

self-regulation) and affective dispositions (inquisitive, systematic, analytical, judicious, truth seeking, open-minded, confident in reasoning). He suggests it is an element of 'good thinking' which might also include creative thinking, kinetic thinking, meditative thinking and instinctive thinking.

It is pertinent to consider whether undergraduate programmes stimulate and cultivate students' thinking capability. In practice, business and accounting undergraduate education tends toward an excessively narrow knowledge acquisition and content orientation (Porter and McKibbin, 1988; Baril et al., 1998; Byrne, Flood and Willis, 1999; Walker and Ainsworth, 2001). The primary focus is on the accumulation of technical knowledge rather than on cognitive and non-cognitive attribute development. This manifests itself, for example, in an insufficient emphasis on conceptual understanding and on the application of concepts to differing, unfamiliar and ambiguous circumstances. The emphasis tends towards a short term "heaping-up" exercise to obtain qualification awards, rather than on what Newman (1852, Discourse vi, 7) described as 'thought or reason exercised upon knowledge'. This is unlikely to provide graduates with an adequate preparation for their professional lives.

The tendency to emphasise knowledge acquisition reflects choices made in curriculum design, delivery and assessment. However, it also reflects the previous experience of the student body. Most will have graduated from a secondary education process that, to a significant extent, rewards and encourages rote learning. They will have had very limited work experience and little knowledge of the actual workings of organisations and business. Lecturers in all business disciplines find themselves educating students who have little direct experience of real-world disciplinary applications or organisational realities.

The challenge of cultivating undergraduate thinking capability can be addressed in a wide variety of ways (Kimmel, 1995; Cunningham, 1996; Wolcott and Lynch, 1997). Wolcott, Baril, Cunningham, Fordham and St. Pierre (2002, p. 86) summarise a range of educational interventions in response to the calls for the improvement of the critical thinking abilities of accounting students. The calls, they suggest, require a response from educators, but they explain that 'there is little empirical evidence that any specific instructional method can enhance the critical thinking skills of students'. The difficulties in doing so are outlined (see also Baril et al., 1998) and they question the value of any further efforts in this regard unless faculty have the ability to examine empirically whether their efforts are successful.

## AN EDUCATIONAL INTERVENTION TO DEVELOP CRITICAL THINKING

It was against the background outlined above that a fully accredited, five ECTS credit module, entitled Critical Thinking, was designed and incorporated into the final year (year four) of a new Bachelor of Business Studies (BBS) degree programme (NQAI Level 8) at Castlebar Campus, Galway–Mayo Institute of Technology (GMIT). Details of the programme structure are outlined in **Appendix 1**. The module was designed by a multi-disciplinary team of lecturers with backgrounds in business studies, accounting, experiential education and

psychology. The intervention was a response to the calls for the development of graduate critical thinking abilities and the educational values espoused by the lecturing staff. Underpinning it was a conviction that the cultivation of undergraduate critical thinking capability should not be left to chance, but rather, should be addressed consciously, formally and explicitly and incorporated into curriculum design, delivery and assessment. It was considered valid to include such a module in the final year of the programme, as the students' level of maturity, prior learning and life experience would serve as a valuable basis for the enhancement of their critical thinking capacities. However, it was recognised that interventions earlier in a programme could also be potentially beneficial in this regard: it is not a question of either/or but rather of both/and. The first delivery of the module was completed in January 2004.

Conscious of the difficulties surrounding the development of critical thinking skills and the paucity of empirical evidence to support the use of any particular intervention (Wolcott et al., 2002), an experiential learning approach was adopted as the conceptual basis for the module design. Experiential learning methodologies have been used for some time at Castlebar Campus, particularly in outdoor education programmes. The *Critical Thinking* module seeks to extend this approach, consciously, formally and explicitly, into the area of business studies. The approach is educationally valid as a basis for developing student critical thinking skills, was consistent with practice on existing programmes at the Campus and reflected staffing resources, competency and qualifications. Furthermore, it accorded with a recognition by faculty of the experimental nature of the proposed intervention, characterised by an expectation that there would be an inevitable element of "muddling through" involved, that there would be an element of experiential learning for faculty arising from the process. The inherent necessity to monitor and evaluate the impact of the module in terms of achieving its desired effects was recognised. However, contrary to the perspective of Wolcott et al. (2002) it was not deemed necessary, particularly in the context of an experiential learning approach, that the nature of an intervention be restricted to that which could be empirically validated as successful in the short term. In this regard, faculty were inspired by Samuel Beckett's dictum in *Worstward Ho*: 'Ever tried. Ever failed. No matter. Try again. Fail again. Fail better.'

The fundamental purpose of the module is to contribute to the cultivation of students' thinking skills and habits that will support their continuing development as business professionals. The term "critical thinking" is interpreted broadly as embracing a questioning, curious, actively inquisitive and reflective outlook – an approach to thinking that embraces both reason and imagination, that combines cognitive ability and affective dispositions. The module incorporates two inter-related dimensions. On the one hand, it requires students to "think about thinking" and so fosters a better understanding of thinking processes and related actions by individuals and groups. Blackburn (2001) likens this: to a study of 'conceptual engineering' involving reflection on the 'scaffolding of our thought'; to a questioning of the lenses through which the world is viewed; to a questioning of the ideas and concepts that shape perception and behaviour. On the other hand, it

requires students to engage in "thinking exercises" followed by reflection and "thinking about the experience". Whether thinking skills and habits are innate or learned, there is little disagreement that practice, application and reflection can deepen and expand them. To develop students' thinking ability, thinking must first be understood and practised. The module aims to foster students' awareness of thinking, enhance confidence in their own thinking abilities and enable them to engage the world thoughtfully in carrying out their professional responsibilities over the long term.

## EXPERIENTIAL LEARNING

The key element in experiential learning is an emphasis on the centrality of experience and reflection on experience to the learning process. This idea is traceable to ancient Greece. Plato in *The Republic*, for example, suggested that to develop particular virtues, students should be placed in scenarios that require the use of the virtue. Significant contributors to the development of modern experiential learning theory include Dewey (1916, 1938), Lewin (1951), Polanyi (1958, 1966), Rogers (1961), Freire (1970), Piaget (1977), Moore (1981, 2005), Kolb (1984), Schön (1983, 1987), Rogers and Freiberg (1994) and Sternberg and Horvarth (1999). A summary of experiential learning theory is provided by Kolb, Boyatzis and Mainemelis (2001).

Dewey (1938) believed that all genuine education came about through experience. This is not to suggest that all experiences are genuinely or equally educative. The value of the experience in learning depended on the quality of the experience.

> It is not enough to insist upon the necessity of experience, nor even of activity in experience. Everything depends upon the quality of the experience which is had. The quality of any experience has two aspects. There is an immediate aspect of agreeableness or disagreeableness, and there is its influence upon later experiences… the central problem of an education based upon experience is to select the kind of present experiences that live fruitfully and creatively in subsequent experiences. (Dewey, 1938, p. 25–28)

Dewey's theory of experience is framed by inseparable principles of continuity and interaction. The two principles

> … intercept and unite. They are, so to speak, the longitudinal and lateral aspects of experience… As an individual passes from one situation to another, his world, his environment, expands or contracts. He does not find himself living in another world but in a different part or aspect of one and the same world. What he learned in the way of knowledge and of skill in one situation becomes an instrument of understanding and dealing effectively with the situations which follow. The process goes on as long as life and learning continue. (Dewey, 1938, p. 44)

For advocates of experiential learning, the process of how students learn is equal in importance to the subject matter of education. Experiential learning theory defines learning

as the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience. (Kolb, 1984, p. 41)

Knowledge is inseparably linked with doing and it is through activity that it acquires meaning. Extracting meaning and learning from experience requires reflection through thinking. Kolb developed a four stage learning cycle model which provides insight into the process of experiential learning (Kolb et al., 2001). According to the model (see **Figure 1** below), concrete experiences are the basis for observation and reflections. These reflections are incorporated into an individual's thinking and refined into abstract concepts. These abstract concepts then become the basis on which further experience is planned and the abstract concepts are tested.

**Figure 1: Kolb's four stage learning cycle**
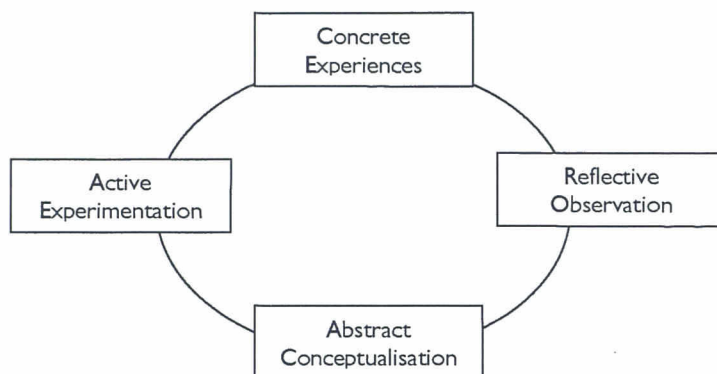


The capacity to generate ideas and concepts and to test their effectiveness has specific and direct relevance to the education of business and accounting graduates who will work in environments where change is exponential and in which the application of knowledge to new and unstructured problems in unfamiliar settings will be the norm. Schön (1987) noted that problems in the real world of work do not present themselves to practitioners as well-formed structures 'but as messy, indeterminate situations' (Schön, 1987, p. 4). Experiential learning which nurtures and stimulates growth in judgement, understanding and connectedness should enable graduates not only to cope with the problems of the present but also with evolving and as yet unspecified situations they will encounter in the future.

In the context of preparing graduates for the demands of a rapidly changing world, Moore (1981), Schön (1983, 1987) and Sternberg and Horvath (1999) considered how professionals can learn from experience and become more explicitly aware of their 'tacit knowledge' (Polanyi, 1958, 1966), that is, things 'known' without awareness or without an ability to describe them or explain them theoretically. Tacit knowledge is demonstrated in actions and is manifest in 'the skilful judgements, decisions and actions we undertake spontaneously, without

being able to state the rules or procedures we follow' (Schön, 1987, p. 24). Schön identified reflection as having a key role in making this knowledge explicit to the learner. Reflection on and during action, he suggests, could play a key role in bridging the worlds of university and of practice (Schön, 1987, p. 309). More recently, Moore (2005) has explored the struggle for students to make a connection between the contexts of the school and the workplace. The key to the process, he suggests, is protracted and guided reflection.

Experiential learning theory recognises that genuine learning and knowledge creation is a holistic process requiring an integration of cognitive and affective processes (Dewey, 1938; Rogers, 1961; Rogers and Freiberg, 1994; Kolb, 1984). The crucial role of the lecturer is in choosing quality experiences and in fostering the learner's awareness of and capacity for learning from experience through reflection. This requires that the lecturer has a clear understanding of the processes involved and a belief in the learner's propensity to learn and capacity for self-direction given the proper environment. The role of the lecturer is to act as a facilitator of the learning process rather than as a dispenser of content.

Chapman (1995) summarises the disparate strands that form experiential learning theory as follows:

> … an approach which has students actively engaged in exploring questions they find relevant and meaningful, and has them trusting that feeling, as well as thinking, can lead to knowledge. Teachers are cast as coaches and are largely removed from their roles as interpreters of reality, purveyors of truth, mediators between students and the world. They are asked to believe that students can draw valid and meaningful conclusions from their own experiences. (Chapman, 1995, p. 239)

## EXPERIENTIAL LEARNING IN THE CURRICULUM

Experiential learning has long been formally incorporated into undergraduate business and accounting education programmes at tertiary level, in four main ways:

1. The use of case based teaching and learning
2. The use of business games and computer based simulations
3. Project work
4. Accredited work placements.

Case studies are widely used in business and accounting courses to expose students to real-world situations and simulate experiences outside their normal life. A case sets forth events and circumstances surrounding a particular situation which may involve a whole industry, an organisation or part of an organisation. Students, often working in teams, are required to diagnose the situation and recommend appropriate actions. Cases range from focused analyses of particular decisions in specific disciplinary contexts to broad descriptions of situations necessitating a multi-disciplinary perspective (Kidder, 1981). Case studies are designed to foster students' insight into business situations and managerial

decisions that they would otherwise not experience and thereby enhance their understanding and judgement.

The use of business games and of computer based simulation seeks to develop students' limited business experience and nurture their understanding and judgement through participation in simulated real-world, dynamic, competitive exercises. For example, the use of a Just-in-Time game enables students, usually working in groups, to experience and learn from simulating the design and implementation of such systems. The game would simulate a mock business including purchasing, production control, assembly, and quality control functions. A variety of variable changes, such as sudden shortages of particular materials, would be introduced into the game to simulate conditions for business decision making. Other common examples include games based on stock market trading and on strategic scenario planning. In general, the aim is that the student participants can transfer the knowledge and skills gained during the simulation into the reality of the world of business. (For examples of experiential exercises relevant to business see Michalko (1991) and Clegg and Birch (1999). Other useful exercises can be found on websites such as www.marketplace-simulation.com and www.towson.edu/~absel/).

Student project work, carried out individually or in groups, embraces a broad range and variety of assignments usually involving some element of active research into real-world situations. Examples include: undertaking industry and/or company and/or process analysis; survey work; interviewing; data analysis; literature reviews. Accredited work placements have long been used in business and accounting programmes to provide students with organisational experience in particular disciplinary areas and to enhance their classroom learning.

The above approaches, other than work placement, are incorporated as embedded elements into the various modules on the BBS programme at Castlebar, consistent with common practice elsewhere. The inclusion of a new stand-alone accredited *Critical Thinking* module, however, introduces a supplementary dimension to the use of these traditional elements of experiential learning. The intention was not to replace the traditional approaches but to complement them. Variations of these approaches are used in the module itself, but the nature and context of their application is different.

The choice of experiential learning methodologies as a basis for the new module creates opportunities for devising classroom experiences as a conduit for developing critical thinking skills which embrace both reasoning and imagining and which require a holistic response from students. Writing about the need to produce graduates with a greater zest for business, Whitehead (1932) noted:

> The tragedy of the world is that those who are imaginative have but slight experience, those who are experienced have feeble imaginations. Fools act on imagination without knowledge; pedants act on knowledge without imagination. The task of a university is to weld together imagination and experience. (Whitehead, 1932, p. 140)

Students are required to participate and engage with the experiential exercises and to reflect on the process as a stimulus for enhancing the full range of their

critical, imaginative and creative capacities and in making explicit their tacit knowledge.

## THE *CRITICAL THINKING* MODULE – DESIGN

The *Critical Thinking* module is an integral, mandatory and accredited element of the BBS programme at Castlebar Campus, GMIT. It represents a conscious, formal, explicit attempt at developing students' thinking abilities through the curriculum. The concept of experiential learning is central to the design. The aim is to develop students' understanding of and capacity for learning, for creative, analytical and critical thinking and for problem solving. Students who complete the module should have, inter alia:

1. An understanding of the processes of learning, creativity and innovation in individuals and organisations
2. An ability to apply contemporary perspectives on learning to business issues
3. Developed thinking skills and the ability to apply these in decision making
4. An ability to critically evaluate methods of generating and evaluating solutions to business problems
5. The ability to apply principles and processes of negotiation and conflict resolution in organisational contexts.

The content of the module is classified in the syllabus into four interrelated sections:

1. The learning process (30 per cent)
2. Creativity and innovation (20 per cent)
3. Problem solving and decision making (30 per cent)
4. Negotiation and conflict resolution (20 per cent).

Content weightings are specified in the brackets. These are intended as an indicative guide to the relative importance of each section. However, the sections are interrelated and the expectation is that they will be delivered and assessed in an integrated fashion.

The decision to include the various elements identified, together with the respective weightings attached to each, was arrived at through a process of internal discussion among the staff developing the programme and reflects the collective wisdom, knowledge, experience, prejudice and intuition of that group. The experience of lecturers from the outdoor education programme informed the discussions. Throughout the process, the group was aware of its own lack of explicit direct experience in this area and the limitations of its knowledge and understanding. However, in keeping with the concept of experiential learning, the content was agreed as a reasonable starting point which would be within our resources to deliver and which could be amended in the light of reflection on practice. The group was also aware that the module represented an innovative intervention within the sector and that validation could present a problem. There may therefore have been an element of conservatism in the specification of content.

The focus of the learning process section of the syllabus is on the language, methodologies, validation and processes of thinking and knowledge. The specified topics are:

Basic process of thinking and the factors that affect it; nature and value of knowledge; practical epistemology; ways of learning; models of cognitive processing; learning styles and preferences; experiential learning; scientific methodology; short and long term memory; sources of information; interpretation and evaluation of information; knowledge management in organisations; reflective practitioner concept.

Creativity has always been considered as the cornerstone of literary and artistic endeavours, but of less significance in a business or accounting context. (Indeed, in the case of the latter, creativity may be viewed with suspicion if not outright contempt.) Business success, however, depends on creative thought and its realisation through innovation. There is a tendency to view creative and innovative efforts as the purview of an R&D department or as resulting from the inspired efforts of a few gifted individuals. An alternative perspective, and one that is growing in acceptance, is to view creativity and innovation as aspects intrinsic to the role of all managers and business professionals. The corollary is that creativity and innovation should be developed more broadly among business staff. The specified topics in this section are:

Nature and component skills of creative thinking; creativity in literary, artistic and scientific endeavours; process of innovation in business; reconciling stability with innovation in organisations; applications in product and service development, new manufacturing and delivery techniques, management processes and use of information systems; methods of promoting creativity more broadly among managers and organisational staff.

The essential application for critical thinking is in the definition and resolution of problems and decision making, whether made by individuals or groups. The specified topics included under problem solving and decision making are:

Systematic approaches to problem solving and decision making; inductive and deductive logic; vertical and lateral thinking; working within teams; effect of psychological, intellectual, and social processes; organisational decision making in practice; problem identification and clarification; symptoms versus root causes; role of measurement; analytical techniques for rating and evaluating alternatives including diagrams and quantitative techniques.

Thinking, problem solving and decision making in organisations is increasingly a non-competitive, collaborative endeavour. Consider the following from Garten:

Partnerships of many constituencies are the only way to harness the extraordinary amount of information and the experience available for dealing with the complexities of today's markets. Go it alone approaches are out, team work is in. As Jack Welch once put it, 'the challenge to solving any problem is to get every mind in the game'. (Garten, 2002, p. 28)

Negotiation and conflict resolution are critical for effective group thinking, problem solving and decision making. Specified topics included in the syllabus in this regard are:

> Nature of negotiation; values, judgement, mutual trust; biases and underlying interests; objective versus negotiating position; identification of alternative solutions and consequences; steps in negotiation process; consensus building; theories associated with conflict resolution; arbitration and conflict resolution.

## THE *CRITICAL THINKING* MODULE – DELIVERY

The course is delivered using a mixture of lectures and experiential learning over a 13 week period (three contact hours per week). Each section is divided into three phases for delivery purposes. The initial phase outlines the theories that underlie particular skills, and relates those theories to organisational contexts. Tasks are then undertaken which require students to display and develop the targeted skills. The final phase reviews the processes, thinking and learning involved, and transfers the main concepts to the business and organisational world. Each section has the following format:

### *Introduction/explanation/"front loading"*

Lectures, handouts, case studies, web sites and discussions cover the theories, research and business approaches to the particular topics. The experiential task or activity is introduced. Information about the task itself is discussed and the students are encouraged to identify the goals, the possible problems and alternative outcomes. The purpose of this introductory section is to prepare the students, and to enhance their learning from the exercise through comparing the experience they anticipate with their actual experience.

### *Conduct of the exercise or task*

This may range from discussions with guest presenters to a team problem solving challenge involving active engagement. The role of the lecturers is to facilitate and manage the learning activity. The students are encouraged to take responsibility for the activity and their consequent learning.

### *Review, application and integration*

Using team discussion and learning journals, the students are encouraged to use the principles of reflective thinking (see Schön, 1983) in order to:

1. Evaluate the activity itself
2. Critique the process and the results, thereby identifying how they have learned
3. Identify the key lessons learned
4. Describe applications of those lessons to business problems and scenarios
5. Integrate the knowledge they have "created" with experience in other parts of the course.

Students are encouraged to enjoy the tasks (intrinsic motivation) while achieving course goals (extrinsic motivation). The reflective portion of each task encourages application and retention of the knowledge and experience. As described by other educators:

> Knowledge retained by students is that knowledge which they find relevant to their daily lives or which can be integrated with larger systems of knowledge... For educators, this means portraying knowledge as valuable in itself and as a means to important human ends. (www.sasked.gov.sk.ca)

## EXAMPLES OF EXPERIENTIAL TASKS AND ACTIVITIES

Both individual and team experiential tasks and activities are used to develop thinking abilities. Examples of tasks and activities used are outlined below. (The tasks could be adapted for use in any of the sections, with minor changes.)

*Section 1: review and explanation of a learning process topic*

Each student was assigned a specific topic from the following list:

> Knowledge; certainty; epistemology; inductive reasoning; practical epistemology; learning; thinking; experiential learning; scientific methodology; intuition; short term memory; chance; long term memory; lateral thinking; reflective practitioner; evidence; creativity; critical thinking; problem solving; decision making; deductive reasoning; negotiation; judgement; reasoning; evaluation; consensus building; arbitration; heuristics; understanding; deciding; search processes; descriptive thinking; proscriptive thinking; normative thinking; empirical research; rationality; selective perception; beliefs; artificial intelligence; risk analysis; illusions; cognitive dissonance; attention; biases.

Each was required to research the topic and prepare a report including a concise definition of the topic, brief history of its development, key theories or research, and possible areas of application in business. The reports were then loaded into the internal computer system for access by all the class. The aim is to encourage students to explore and apply theoretical principles.

*Section 1: perception – how we see things*

The nine-dots problem is described fully in Adams (1979). A block of nine dots is presented (3 x 3), and the students are asked to connect all the dots using no more than four straight lines, without lifting the pen between lines. The problem and possible solutions are illustrated in **Appendix 2**. This exercise is traditionally used to illustrate "thinking outside the box" – if one stays within the borders of the dots area, the task cannot be done. Extending the lines outside the area makes it simple. Most people confronted with the task assume that the lines must go through the centre of the dots, that the paper must stay flat, or that the dots or lines must be a certain size or thickness. The aim is to explore how one's experience and assumptions restrict one's thinking.

*Section 1: seeing the world through another's eyes*

Students were asked to imagine themselves in three different situations – as a foreign student in the college, as a blind student in the college, and as a hawk. In each case, the students were asked to list the problems that they would face and describe a product or service which could solve one or more of the problems. The goal was to encourage the students to look at familiar items or day-to-day living and see the world from very different perspectives. Things that they take for granted, such as their vision, or being able to understand the lecturer, may be serious problems for another person. For example, if they put themselves in the place of a hawk, they find that sleeping, eating, moving, etc. are all completely different from their own life. An ability to appreciate different viewpoints is critical across all business functions and disciplinary areas.

*Section 2: creativity – generating new ideas or putting things together in new ways*

Five different creativity exercises were used in the class. In some cases, the students worked in groups, in others, individually. The exercises were: redesigning a familiar product; identifying the characteristics of creative and non-creative people that the students knew; developing creativity awards for typically non-creative jobs; identifying applications of creativity in departments of a company; developing new uses for throw-away items such as packaging materials. For example, in one task, individuals are given materials which would normally be considered worthless and asked to identify as many artistic or practical products as possible, based on the function, shape or nature of the original items. The immediate goals during the exercise were to encourage the generation of ideas and the ability of groups to work together in generating ideas. Techniques such as brainstorming were used, with the emphasis on encouraging rather than criticising ideas. The students were later asked to reflect on the exercises in three areas: what key lessons and new ideas were learned; how could these be applied in business; and how could they be applied to other parts of the course.

*Section 3: problem solving – generating, selecting, evaluating information, weighing alternatives*

The "NASA exercise" was presented by a guest speaker. Students were organised into groups of five. They are told that "you are part of an astronaut team that is meant to join a space exploration based on the Moon. Unfortunately you crash land 200 miles away from the exploration station. You are able to retrieve 15 items from the wreck. You need to rank them in order of importance – how much will they help you survive/reach the station?" The group must agree on the ranking. Their results are compared to those of NASA scientists (who presumably worry about these issues on a regular basis).

The goals of the exercise are to understand the importance of assumptions (are we on the light or dark side of the moon?), the process of evaluating information, and the negotiation process to reach consensus. For example, matches are one of the items. Many people immediately assume that they should be taken, until someone else points out that the Moon has no atmosphere and the matches won't work. In the case of flares, the group gets into the discussion of whether they will

work in a vacuum or not – a question that the group may not be able to answer. The exercise is relevant to any group problem solving or project activity in business, since resources are often limited and there are usually differing views as to what should be done with the resources.

*Section 4: decision making/negotiating – selling our company*

Groups were given a description of a small company which they had built up over the last 15 years. They were asked to consider an offer to sell the company. Five questions were answered by the groups: What are the personal goals of the managers and the goals of the company? What information would you want to get from what sources? How would you define three alternatives or solutions? What are the key factors you would use in evaluating these alternatives? What tools or techniques would be useful in evaluating the alternatives?

*Section 4: various other exercises*

Other exercises used to build negotiation and conflict resolution abilities include versions of the prisoner's dilemma based on common cost sharing, mock juries, debates, and mock companies facing challenges from new technologies, competition, or the business environment.

## THE *CRITICAL THINKING* MODULE – ASSESSMENT

Assessment was weighted 30 per cent for continuous assessment and 70 per cent for a final examination. The continuous assessment is based on the assigned tasks and includes consideration of a group write-up and the use of individual learning journals. The actual examination sat by the students at the end of the first running of the module (in January 2004) is given in **Appendix 3**. The approach to assessment is an area that needs revisiting. There is perhaps a certain irony about a course based on experiential learning having a traditional approach to assessment. It may reflect an inherent timidity on the part of the designers and a lacuna in critical thinking faculties in approaching a validation process. Based on the experience of delivery, however, it has already been proposed to increase the continuous assessment element to 100 per cent.

## STUDENT FEEDBACK

On completion of the first running of the course, the 44 students who took the module were asked to evaluate the methodology and its effectiveness. Their feedback was included in the comment section of a standard end-of-module questionnaire. All students responded and three main themes emerged from this limited qualitative evaluation:

1. The need for an adjustment period for students to accustom themselves to the experiential methodology
2. An enthusiasm on the part of students for group work and a belief in its merits
3. An increased confidence on the part of students in their own ideas.

Students have been socialised into a certain way of thinking and learning by their previous experience and a change in the process requires a period of adjustment. This following comment was representative of students who were unsure about the methodology at the outset:

> At the start of these class exercises, I often failed to see the point of such exercises. After completing the class exercises I do believe that the work was fundamentally an important aspect of the subject, as it enabled people to explore the creative sides of various ideas, playing around with different angles and thoughts. It also enabled students to participate in the groups and their activities without the feeling that we were even completing assignments.

The fact that many exercises involved working in groups was consistently mentioned in the students' evaluations. For example one student noted that

> ... when you combine all these differing opinions you have a multitude of different and creative innovations for what might have been a difficult obstacle. People tend to learn off each other and get fired up creatively by what others are saying.

Another noted that

> ... by working in groups you achieve more and with greater ease. People learn off each other and are more enthusiastic about what they are doing and they realise that you can learn as much from each other as you can from the lecturer.

The last comment introduces the third theme that was commonly referred to in the evaluations: students' perception that the module had increased their confidence in their own ideas and capabilities. One student commented, for example,

> During this module I came to value my own ideas more and not rely entirely on those I had taken from books or the internet.

And another student noted

> ... it encouraged us to get all our silly ideas out and once said or written down they didn't seem so silly after all.

The tasks, though, were not all considered to be equally effective. In their evaluations, some students referred to the fact that certain tasks had not engaged them as much as others and that they had not been able to make the connection between the task and the business world. This may explain the differing levels of engagement referred to by one student:

> ... as a group member I found it difficult as some people approached the task in a meaningful and determined way while others approached it in a "jokey" manner i.e. they didn't take it seriously.

In general, after an initial period of adjustment the students, for the most part, became involved in and were engaged by the tasks, perceived that working in groups was very effective and felt more confident in their own thinking abilities. The engagement was not universal and in individual cases the level of engagement was variable.

## DISCUSSION OF INITIAL DELIVERY EXPERIENCE

Employing an experiential learning approach in the *Critical Thinking* module is perceived by staff and students to have produced a range of benefits, some of which were unanticipated. Introducing a wider range of primary experiences than are available in a traditional lecturing situation appears to have broadened student experience and resulted in a greater level of student engagement with an apparent improvement in the quality of classroom discussion. In some instances, at least, the discussion following the learning event or experience in the critical thinking class served to highlight the thinking process for the students:

> ... it was only after I heard how the other group approached the task that I realised where we had wasted so much time.

This illustrates the value of enhancing the students' ability to reflect on what they have done if they are to draw more meaning from their experiences. Encouraging students to learn by active engagement appears to have built both their capabilities and their confidence. Lecturers were surprised at how often in casual conversation students referred to a sense of increased confidence as a result of their active engagement with the experiential tasks.

The process of experiential learning promoted common sense and the incorporation of experience from outside the classroom. In reviewing the tasks undertaken and comparing approaches, this knowledge became deeper and more refined. Encouraging students to link past experiences with experiences in the classrooms has been noted as important in learning:

> Learning always relates, in one way or another, to what has gone before. There is never a clean slate on which to begin; unless new ideas and new experience link to previous experience, they exist as abstractions, isolated and without meaning. (Boud, Cohen and Walker, 1993, p. 8)

An unexpected consequence of encouraging group problem solving was the extent to which students seemed to value the interpersonal skills they felt had been learned from working together. The learning climate in the classroom was described as more productive and was characterised by more effective cooperation and communication between lecturers and students and among students themselves.

The module benefited from its incorporation of intrinsic motivation into the learning experience. However, the experiential tasks, by their nature, have some inherent limitations. The degree to which the learning can be truly experiential is limited in the college context. This raises questions relating to the quality of the experience (see Dewey, 1938). The learning events or games were simulated; they represented an artificial situation without the risks and complexity of real-life business situations. In these exercises information can be provided or created to support certain scenarios, unlike the real-life situation in which the desired information cannot always be obtained accurately because of pressures of time or resources.

There are a number of variables in the college context which have to be right for the experiential learning climate to be effective. Lecturers need to adopt non-

traditional techniques, perhaps learn new skills and prepare new material and be comfortable with its use. The techniques and skills include facilitation skills, informal class control, time-management skills and more specialised assessment and evaluation. It was found that time management was particularly difficult. It is easier to cover more breadth of content with traditional methods, so to some extent breadth is being sacrificed for depth and knowledge of "how and why we learn" as well as "what we learn". Furthermore, lecturers may face resistance from traditionalists, who remain unconvinced of the merits and the potential benefits of experiential techniques and/or do not fully appreciate the inherent difficulties in its application. Kolb acknowledges that are many sceptics who would describe experiential education as

> ... gimmicky and faddish, and more concerned with technique and process than content and substance. (Kolb, 1984, p. 3)

While there is an ever increasing use of experiential methodologies at Castlebar Campus, it is by no means the dominant philosophy. Students remain socialised into expecting learning in a particular way. Some students considered the experiential tasks to be games, and so reduced their commitment and learning potential. In effect, not all students engaged positively with the process. Experiential education requires that students shoulder more responsibility for their own learning and motivation. The degree of learning is dependent on the degree of engagement. The individual learning styles of different students affect the quality of their participation and the consequent learning they achieve. It is, perhaps, unreasonable to expect students to change learning modes from subject to subject. Further research is planned to explore the relationship between learning style and the perceived effectiveness of the methodologies.

## CONCLUSION

The critical thinking abilities of business and accounting graduates can potentially be enhanced through the use of experiential learning. While experiential learning in the classroom cannot match the depth and extent of later learning in the workplace, it can provide a solid basis for the subsequent development of critical, reflective practitioners. In this context, the inclusion of a separate accredited module in a business and accounting degree programme, specifically focused on cultivating critical thinking skills and habits, is academically legitimate and professionally relevant.

Having introduced a module to develop student critical thinking skills, it is incumbent on the programme team to formally and systematically analyse and review the success of the intervention in this regard. Wolcott et al. (2002) provide a useful guide for designing empirical tests as the basis for such an analysis and evaluation. It is planned to undertake such an exercise after the third delivery of the module in 2006.

The programme team was pleased at the acceptance and validation of an accredited module in critical thinking based on experiential learning. This,

however, is recognised as being only a first step. It is now necessary to build on the development by drawing on the experience of the module delivery (and on the experience of similar interventions elsewhere) and developing, and possibly amending and/or extending, the approach. It is hoped that the experience at Castlebar will serve as a model and a stimulus for similar developments elsewhere.

## APPENDIX 1

| Bachelor of Business Studies (NQAI Level 8) – Year 4 | |
|---|---|
| *Subjects* | *Credits* |
| Strategic Management | 10 |
| Political Economy | 10 |
| Management Control Systems | 10 |
| Critical Thinking | 5 |
| E-Business | 5 |
| Organisation Theory | 5 |
| Corporate Ethics & Governance | 5 |
| *Plus Electives (10 credits)* | |
| Services Marketing | 5 |
| Strategic Marketing | 5 |
| Entrepreneurship & Small Business | 5 |
| Tourism Strategy | 5 |
| Human Resources Management | 5 |
| *Corporate* Finance | 5 |
| ICT Project Management | 5 |
| Language | 10 |

| Bachelor of Business Studies (NQAI Level 7) Year 3 | Credits | BA in A&FM (NQAI Level 7) | Credits |
|---|---|---|---|
| Marketing Management | 10 | Financial Accounting | 10 |
| Financial Management | 10 | Financial Management | 10 |
| MIS | 10 | MIS | 10 |
| Operations Management | 5 | Operations Management | 5 |
| Quantitative Methods | 5 | Quantitative Methods | 5 |
| Personnel Management | 5 | Management Accounting | 10 |
| Management & Business Env | 5 | *Plus Electives (10 Credits):* | |
| *Plus Electives (10 Credits):* | | Company Law | 10 |
| Employment Law | 5 | Taxation | 10 |
| Industrial Relations | 5 | Auditing | 10 |
| Internet Marketing | 5 | Business Language | 10 |
| Export Marketing | 5 | | |
| Database Management | 10 | | |
| Business Language | 10 | | |

| Higher Certificate in Business Studies (NQAI Level 6) | | | |
|---|---|---|---|
| **Year 1** | *Credits* | **Year 2** | *Credits* |
| Business Maths & Statistics | 10 | Marketing | 10 |
| Accounting | 10 | Management Accounting | 10 |
| Economics | 10 | Business Law | 10 |
| BIS | 10 | Behavioural Science | 10 |
| Management | 5 | *Plus Electives (20 Credits):* | |
| Communications | 5 | Financial Accounting | 10 |
| *Plus one Elective:* | | Selling & Sales Management | 10 |
| Business Language | 10 | Personal Finance | 5 |
| EU Studies | 10 | Financial Investment | 5 |
| | | Quality Management | 5 |
| | | Internet Applications | 5 |
| | | Business Language | 10 |

## APPENDIX 2

*The nine-dots problem*

Described fully in *Conceptual Blockbusting*, James L. Adams, 1979, W.W. Norton & Company, New York. ISBN-0-393-95054-9.
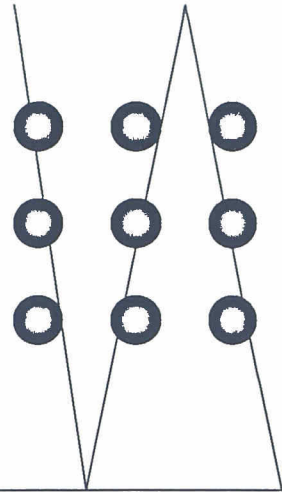
A block of nine dots is presented (3 x 3), and the students are asked to connect all the dots with no more than four straight lines, without lifting the pen between lines.
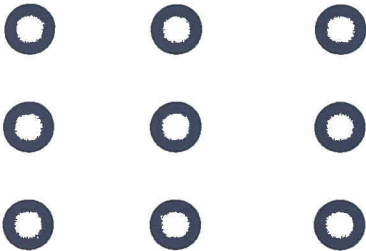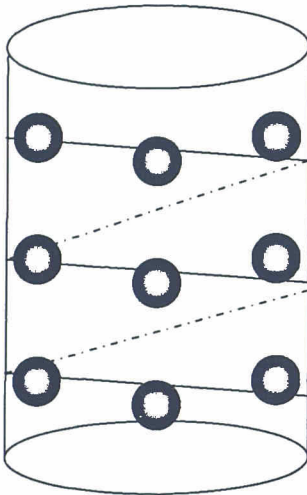


As long as the person treats the outside edges of the dots as the boundaries, they will not succeed.
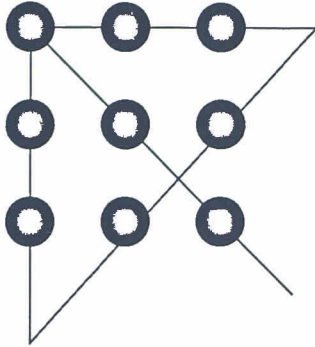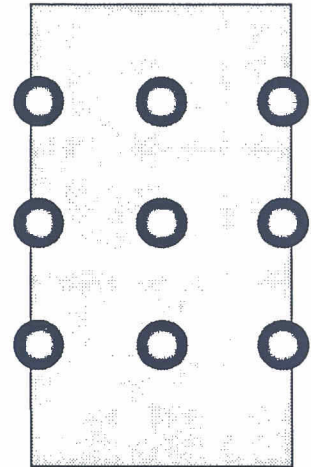
Extending the lines outside the "box" makes it possible.



Who said the lines had to go through the middle of the dots?



Who said the paper had to stay flat? Rolling it into a tube means that the dots can be connected with a spiral. Other options include crumpling the paper to line up the dots and "spearing" a line through all the dots.



Who said the line couldn't be really wide?

## APPENDIX 3

*January 2004 Examination for Critical Thinking*

*Instructions*

Answer any three (3) questions. Each question is worth 25 marks; 10 marks are given for basic information, 10 marks are for integration and analysis, and 5 marks are for style, including creativity.

*Question 1: Thinking/Learning*

Compare the effectiveness of experiential learning to the scientific method using the arguments of Rogers, Dewey and Schön.

*Question 2: Creativity*

Carl Rogers and Stephen King argued that creativity is inherent in all people, it just requires the proper conditions to be expressed and developed. Develop the argument for the opposing view – that only certain people are creative and they are born, not made.

*Question 3: Critical Thinking and Decision Making*

Using the principles of critical thinking, discuss how a marketing manager would select the winning candidate in a competition for a new advertising campaign.

*Question 4: Tools and Techniques*

Define lateral thinking and describe the use of the six hats method to deal with business decisions. Give three examples of where and how the method could be used in business.

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