



City Research Online

City St George's, University of London

Citation: Jones, S., Kernan, M.A. & Holtham, C. (2017). Taking the MICL: An Interdisciplinary Masters Programme in Innovation, Creativity and Leadership. Paper presented at the 2017 EFMD Higher Education Research Conference, 23-24 Oct 2017, Leuven, Belgium.

This is the accepted version of the paper.

This version of the publication may differ from the final published version. To cite this item please consult the publisher's version.

Permanent repository link: <https://city-ref-test.eprints-hosting.org/id/eprint/19179/>

Copyright and Reuse: Copyright and Moral Rights remain with the author(s) and/or copyright holders. Copies of full items can be used for personal research or study, educational, or not-for-profit purposes without prior permission or charge, unless otherwise indicated, provided that the authors, title and full bibliographic details are credited, a hyperlink and/or URL is given for the original metadata page and the content is not changed in any way. For full details of reuse please refer to [City Research Online policy](#).

Suggested Track: Track 3 – Innovations in management education and research

Taking the MICL: An Interdisciplinary Masters Programme in Innovation, Creativity and Leadership

Sara Jones, Cass Business School, City, University of London

Mary Ann Kernan, School of Arts and Social Sciences, City, University of London

Clive Holtham, Cass Business School, City, University of London

Abstract

The Masters in Innovation, Creativity and Leadership (the MICL) is an innovative, radically interdisciplinary and highly successful programme that is offered as part of the portfolio of Management Masters courses at Cass Business School in the UK. In this paper, we argue that while the world is increasingly Volatile, Uncertain, Complex and Ambiguous (VUCA), educational responses to this have been surprisingly limited. We note the parallel development of interest in interdisciplinary activity, particularly in relation to higher education, and then describe the MICL as an interdisciplinary management education programme developed against the background of an increasingly VUCA world. We describe the aims and structure of the MICL programme, as well as some of the methods employed to assist staff and students with adopting our interdisciplinary approach. Finally, we present some quantitative data on outcomes for students after completing the programme, as well as some qualitative data relating to the first cohort of students, that lead us to believe that the MICL programme provides a strong foundation on the basis of which students can survive and thrive in a world of increasingly dramatic change and complexity.

1 Background and Context

Most of the history of the modern university has been concerned with understanding the physical, social and human world as it is. Scientific discoveries, technological inventions and ever shifting human behaviour and aspirations have, however, cumulatively driven changes to the physical, social and human worlds. And the speed of those changes has in many ways accelerated. This has in turn created demands for university graduates who are geared not only to operating the world as it is, important though that remains, but also to changing that world, not just incrementally but also in more revolutionary or disruptive ways. This has fuelled a demand from employers for graduates who can exploit creativity, including their own personal creativity, and who can lead processes of innovation as well as processes of stability and control.

The world is witnessing change of many kinds, and often at a previously unseen rate. Not all change in and of the world is benign. Furthermore, many of today's grand societal challenges are inherently complex and problematic, as evidenced, for example, by the UN's 17 Sustainable Development Goals, including ending poverty in all its forms everywhere,

ensuring healthy lives and promoting well-being for all at all ages and ensuring access to affordable, reliable sustainable and modern energy for all (United Nations, 2017).

One particular focus in radical change has evolved out of events since the fall of the Berlin Wall in 1989. This initiative to characterize and explain the changing nature of the business, social and political environment arose, perhaps surprisingly, from the work of the US Army War College (Yarger, 2012) at a point where the relatively stable state of a post World War 2 (WW2) balance of power suddenly broke down. The College coined the term VUCA (Volatility, Uncertainty, Complexity and Ambiguity).

VUCA had been prefigured by the concept of moving beyond “The Stable State”, which was introduced in Donald Schön’s 1970 Reith lectures and subsequent book (Schön, 1973). Schön was part of the broader systems thinking movement, which originated before WW2 out of concerns about the long-term survival of the planet, then evolved into a movement for more effective governance and management. Systems thinking was always cross-disciplinary, including scientists, engineers, social scientists, as was its cousin of operational research. The Santa Fe Institute still embodies that cross-disciplinary thinking and practice. However, systems thinking essentially fell between the cracks of academic disciplines, not least in business and management, and most of its former homes now have only a minimal presence. In 1972 City University itself created what went on to become a leading department in Systems Science but this was eventually absorbed into the Business School and there are no longer doctoral candidates at City in systems thinking.

Educational responses to VUCA have been quite narrowly considered, and surprisingly little work exists on the pedagogy needed to prepare students and managers for a VUCA world. Writing for managers rather than educators, Johansen and Ryan (2012) contributed to the debate by identifying qualities they saw as being essential in the context of VUCA, including chapters addressing the need for leaders to develop:

- ‘Maker instinct’
- Being able to create and communicate ‘clarity’
- A capacity for ‘dilemma flipping’
- ‘Immersive learning ability’, defined as a capacity to learn ‘in a first-person way’ in both physical and virtual environments
- ‘Bio-empathy’ or ‘learning from nature’
- ‘Rapid prototyping’
- Organising ‘smart mobs’ using a variety of media, and
- Being able to ‘create commons’

Johansen and Ryan (2012, p.2) also defined a need for VUCA leaders to ‘get comfortable with being uncomfortable’, arguing that very few organizational contexts would be predictable.

Lawrence (2013, p7) argues that

“VUCA leaders must have foresight to see where they are going but must also remain flexible about how they get there..., they must work collaboratively and be excellent

communicators to thrive in a complex VUCA environment. Above all, VUCA learners must be able to learn fast because change is constant. These skills and abilities are a far cry from the more function-specific skills and abilities leaders needed in the past to succeed.”

From a pedagogical perspective, Uncertainty is the VUCA element which can be addressed most readily using existing business education disciplines, not least statistical approaches, while appropriate responses to Volatility, Complexity and Ambiguity are more elusive as well as less commonly discussed in the literature of management pedagogy.

Complexity has been one of the foundational components of general systems theory since it was first mooted in the 1930's, and in its various forms of evolution since then, including but by no means limited to cybernetics (Beer, 1995), complex adaptive systems (Morgan, 2006), and systems thinking (Checkland, 1981).

One of the areas that systems thinkers were drawn to, was knowledge management. David Snowden while at IBM developed a systems framework which he calls “Cynefin”. Snowden’s work is of great significance to the addressing of VUCA. We have found that one of the most accessible key writings in this area is Snowden and Boone’s paper, entitled ‘A Leader’s Framework for Decision Making’ (2007), which states that ‘wise executives tailor their approach to fit the complexity of the circumstances they face.’. This paper presents a diagram which more than self-consciously critiques the conventional 2 x 2 matrix (Figure 1), being presented as an anti-clockwise spiral path moving from Simple to Disorder, though latterly Snowden has re-named “simple” to “obvious”.

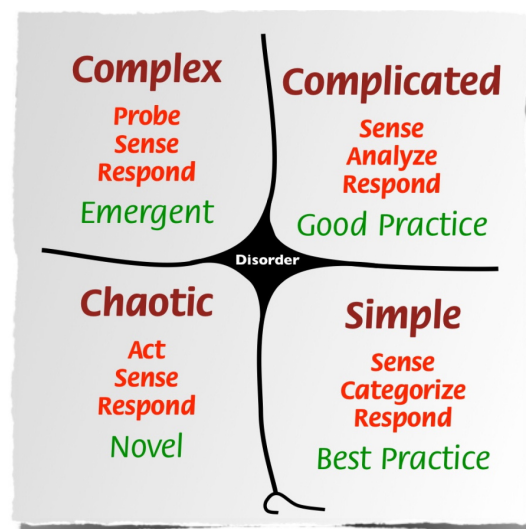


Figure 1 – Cynefin Framework (Snowden and Boone, 2007, p.72)

Whereas conventional management degrees had heavily focused on the Simple and Complicated categories, the Masters in Innovation, Creativity and Leadership programme (the MICL), which is the focus of this paper, was explicitly set up post 2008 in a context of disorder, and chaotic and complex events, and for this it was always envisaged that an interdisciplinary approach would be essential, and that it was not essential to include classic, often economics-originated, analytical subjects in the curriculum.

2 Interdisciplinarity in research, practice and higher education

Against this background of increasing complexity and change, there is growing recognition of the need for more multi- and interdisciplinary research and teaching, and ‘Mode 2’ production of knowledge, involving multidisciplinary teams working together on real world problems. (Gibbons et al, 2010). Some examples of cross-disciplinary connections of particular recent interest include:

- Intersections between arts and technology or STEM/STEAM: teaching arts subjects in schools is argued to help students make best use of their STEM knowledge (Culture Capital Exchange, 2016)
- Intersections between arts and business: it is argued that this combination can both support the growth of business capacity in the arts, and help organisations face management challenges and find possible solutions to emergent business problems (Schiuma, 2011)

The recent review of the UK’s Research Excellence Framework (REF) carried out by Lord Nicolas Stern, stated that ‘it is vital that interdisciplinary work is submitted, assessed and rewarded through the REF’ (UK Government, 2016). Lyall et al (2011) identified five critical success factors for interdisciplinary research, including the ‘locus of interdisciplinarity’ (whether at the level of the individual researcher, project, theme, or programme); catalysis (the use of deliberate steps to achieve interdisciplinarity); visionary leadership; active management of the development and maintenance of interdisciplinary integration; and learning and continuity, or capacity building.

Blackwell et al (2009, 2010) discuss interdisciplinary innovation, involving professional or academic teams from several different disciplines, as an approach to developing new solutions to complex problems, of the kind discussed earlier, but suggest that there was, at time of writing, not a great deal of clarity on how to develop the capacity for interdisciplinary innovation. Blackwell et al (2010) identified a number of factors that appear to offer effective support for interdisciplinary innovation. For example, they stressed the importance of developing the right structures and attitudes to cross ‘knowledge boundaries’, as well as the ability of both leaders and practitioners to communicate competently and persuasively. They also explain how “Different sectors do not simply have different languages to express ideas; they have different kinds of knowledge not always mutually recognised. This presents a major team-building challenge requiring leaders with unusual personal qualities and skills.”

Though development of the UK’s Teaching Excellence Framework (TEF) is at an earlier stage than the REF, a submission in July 2016 by the Royal Society to the Department for Business, Innovation and Skills on this subject likewise emphasised the need for “A broader range of metrics ... to recognise the diversity of excellent practice both within and between disciplines, including interdisciplinary teaching” (Royal Society, 2016).

In parallel with this, there is growing interest amongst leading business schools in interdisciplinary research, as illustrated by the recent Chartered Association of Business Schools Interdisciplinary Research Summit, held in October 2016 at the British Academy

(Chartered Association of Business Schools, 2016), and in interdisciplinary teaching, as evidenced by the theme of this conference.

Bardecki (2015, p.201) summarised six criteria for successful academic collaboration in teaching and learning, relevant in the 15 year long interdisciplinary collaboration at Ryerson University:

- “Inception as faculty initiative, rather than a top-down administrative approach
- A fluid organization and flexible involvement
- A supportive administration
- Consistent yet flexible funding
- A short reporting structure and ease of access to administration, and
- A core of ‘gluons’; individuals acting as the core of the interdisciplinary initiative.”

A large amount of literature exists on approaches to interdisciplinary study. The theme of complexity identified by Blackwell et al (2009) is echoed by McEwan et al (2009), who characterise interdisciplinary courses as:

- engaging with complex issues
- investigating real-world issues
- being area- or problem-based (e.g. European Studies or urban development)
- involving integrative experiential learning.

Klein (2006) and Spelt et al (2009) provide very helpful overviews of a broad range of literature on interdisciplinary study. According to Spelt et al, we can consider interdisciplinary thinking as a complex cognitive skill consisting of a number of subskills. These include ability to change disciplinary perspectives, create meaningful connections across disciplines, and cope with complexity, in addition to having knowledge of individual disciplines and the ability to communicate. Spelt et al note a number of personal characteristics relevant for students of interdisciplinary programmes, including curiosity, respect, openness, patience, diligence and self-regulation. From the point of view of the learning environment, Spelt et al identify a number of factors including the importance of teachers being part of a team, and an intellectual community focused on interdisciplinarity, as well as the use of pedagogy aimed at achieving active learning and collaboration. Finally, they also note how “Interdisciplinary thinking does not occur spontaneously, it can take a considerable amount of time for students to achieve an adequate level of expertise in its practice. In addition, students need help in order to be able to synthesize two or more disciplines”, suggesting that learning activities should seek to incorporate opportunities for reflection.

In the following section we describe and characterise the MICL programme in terms of the characteristics of interdisciplinary work and study identified above, and in so doing aim to develop our argument that the course provides a strong basis for students and alumni to operate effectively in a complex and changing world.

3 Case Study: An Interdisciplinary Masters Programme in Innovation, Creativity and Leadership (MICL)

The Masters in Innovation, Creativity and Leadership (the MICL) is an innovative, interdisciplinary programme that is offered as part of the portfolio of Management Masters courses at Cass Business School in the UK. Here we describe the background against which the course was developed, its aims and structures, the methods used to help both staff and students adopt an appropriate interdisciplinary approach, and some of the outcomes achieved to date.

3.1 MICL Background

City University was anxious in 2007 to greatly enhance cross-School working and set up a competitive process to enable academics to bid for seed funding to establish a number of interdisciplinary centres. A successful application led to the creation in 2008/9 of the Centre for Creativity in Professional Practice. At the time, this was a unique collaboration between leading academics from all of City, University of London's five Schools. It particularly built on a University-wide research event in 2005 which brought together around 50 academics with interests in teaching and researching creativity from different perspectives, shown below in Table 1.

Business	Creative Problem Solving; Art of Management
Psychology	Psychology of Creativity & Innovation
Journalism	Creative Writing
Music	Composition; Performance; Kinaesthetics (with Dance)
Law	Intellectual Property
Engineering	Product Design
Health	Innovation
Informatics	Design; Interfaces
Cultural Policy	Creative sector

Table 1: Disciplinary perspectives underpinning the development of the Centre for Creativity in Professional Practice at City, University of London

The funding was granted by City, University of London, for the Centre for Creativity to establish itself as a focus for research, education and knowledge transfer activities around the core themes of innovation, creativity and leadership. Such early funding, resourcing and championing, or sponsorship, has been identified as important to the success of interdisciplinary activity (Blackwell et al 2010, pp. 4, 16). The lead academic was in the School of Informatics, and when the Masters in Innovation, Creativity and Leadership (MICL) was created, this also naturally was part of the portfolio of that school's postgraduate courses. Following changes in the School of Informatics, a transfer of staff and the degree took place in 2015, and the Centre for Creativity and MICL degree are now administered within the Cass Business School. However, with its diverse academic team from all over the

university, the Centre remains one of the few genuinely interdisciplinary and long-standing groups in the field globally.

Over the past six years, the Centre for Creativity has become a world class centre of applied creativity research, attracting funding of £14m from the EU, EPSRC, AHRC, InnovateUK, Google and other commercial organisations for cross-disciplinary research projects involving academics from Business, Health, Journalism, Engineering and Computer Science. It has also delivered on a wide range of knowledge transfer activities, and has supervised four cross-disciplinary PhD students to completion. An active community has been developed based on both large and small firms in London, including a successful annual conference and regular events.

In 2010, the Centre for Creativity launched the radically interdisciplinary and highly successful Masters in Innovation, Creativity and Leadership (MICL), drawing on the expertise of colleagues in five different Schools across the University to deliver modules in business, design, technology, psychology, creative writing, creative industries, leadership and law. It is this programme that is the focus for the rest of this paper.

The creation of the MICL degree took place in the wake of the 2007-8 global financial crisis. While business leadership as a whole had not directly caused the crisis, the lack of sufficient critical thinking among thought leaders in particular was undoubtedly one factor. Again, while there were specific criticisms even of named business school academics for their roles, even more worrying was the general failure of business education to pay sufficient attention to governance, ethics and high risk situations. Some commentators such as Henry Mintzberg (2004) had been warning about both the business leadership failure and the business education weaknesses since well before even the 2001 crisis.

Separately from Mintzberg, the Critical Management movement, which was initiated in the early 1990s (Alvesson and Wilmott, 1992), had consistently warned of the risks in the ever-narrowing of managerial assumptions and values. One of the perspectives of the critical management movement was that managers needed to be exposed to much broader styles of thinking, including the arts and humanities. There had been ad hoc initiatives in this area before the 1990s, but by 2002 it was possible to create the Art of Management and Organisation conference and related international networks, which has sustained a biennial conference, new journals and a wider acceptance of papers on the art of management in conventional journals (AOMO, 2017) .

One of the most clear-cut initiatives on educating managers for a post-crisis world has been the study funded by the Carnegie Institute (Colby et al, 2011). Though aimed specifically at undergraduates, this work went both deep and broad, and in short indicated that the status quo could not be resolved through purely incremental changes, such as the creation of new modules in ethics. This study identified four approaches which were the requirements for effective modern leadership: Analytical Thinking; Multiple Framing; The Reflective Exploration of Meaning, and Practical Reasoning. Multiple framing is defined as:

“... the ability to work intellectually with fundamentally different, sometimes mutually incompatible, analytical perspectives. It involves conscious awareness that

any particular scheme of analytical thinking or intellectual discipline frames experience in particular ways.” (Colby et al, 2011, p.8)

The MICL, as an interdisciplinary degree, was conceived largely in terms of multiple framing. It exhibits three of McEwan’s et al’s (2011) four characteristics, outlined above, in that it engages students with complex issues, encourages them to investigate real-world issues, and involves them in integrative experiential learning, as will be described further below. Interestingly, however, it is not area- or problem-based, but rather addresses the themes of innovation, creativity and leadership, that can be applied in many different areas, and to address many different problems.

We believe that an interdisciplinary approach is particularly appropriate for a course focussing on creativity and innovation. Nigel Bassett-Jones has described how diversity of the kind to be found in an interdisciplinary programme “is a recognizable source of creativity and innovation” (Bassett-Jones, 2005), and Hewlett et al report how employees of diverse companies are 45% more likely to report growing market share, and 70% more likely to report capturing new market (Hewlett et al, 2013).

In the rest of this section, we describe the aims and structure of the course, as well as some of the methods used, and then go on to analyse programme outcomes in relation to some of the themes identified above.

3.2 MICL Aims and Structure

The MICL offers students a deliberately diverse range of disciplinary perspectives on the three key themes of innovation, creativity and leadership, which we argue are important in enabling students to survive and thrive in an increasingly volatile, uncertain, complex and ambiguous world (Lawrence, 2013).

Students join the MICL programme from many different backgrounds including marketing, PR, nursing, health management, accountancy, librarianship and graphic design. The programme aims to provide senior and middle managers from any background with knowledge and skills that will enable individuals, groups and organizations to lead and behave more creatively and deliver more innovative solutions. It aims to give these managers an in-depth understanding of what creativity and innovation is in different domains. It offers them a wide range of processes, techniques and tools that can be applied to deliver more creative and innovative processes and products. It seeks to make them aware of individual and organizational constraints on creativity and innovation, and how these constraints can be overcome in different professions, and finally to provide students with critical capabilities for leading groups, divisions and organizations to be more creative and innovative.

The MICL programme consists of 8 taught 15-credit modules as set out in Table 2:

Module	School in which module was developed
Creative Writing	Arts
Creative Problem Solving and Leadership	Business
The Psychology of Creativity and Innovation	Social Science
Leading Creative Design	Informatics
Technologies, Creativity and Innovation	Informatics
The Law, Creativity and Innovation	Law
Delivering Innovation – Turning Ideas into Action	Business
Creativity and the Creative Industries	Arts

Table 2: MICL modules

There is additionally a 60-credit individual dissertation plus a variety of integrating events, as described further below.

Much of the work on the MICL takes a collaborative, practical, problem-solving approach, as illustrated in Figure 2. This is in line with the characterisation, by Spelt et al (2009) and McEwan et al (2009) of much interdisciplinary study as collaborative, and involving active, experiential learning, as well as the need for collaboration in operating in a VUCA context, as identified by Lawrence (2013). Many of the assessments on the programme involve students working on real world problems, as suggested by McEwan et al (2009). These are, of necessity, quite complex, and in line with both the characterisation of interdisciplinary study by Spelt et al (2009) and McEwan et al (2009), and that of the world as VUCA. For example, one of the assessments for the Leading Creative Design module in 2016 involved students working together in groups to design new services to address SME mis-perceptions of the City of London, and increase the number of SMEs seeking to locate in that area, a challenge that involved students in considering physical, economic, social and political perspectives.



Figure 2: MICL's collaborative, practical, creative problem-solving approach, involving learning with and from peers from different backgrounds

The need for this approach was highlighted during the design of the programme by key employers identifying rather different qualities post 2007-8 than they had previously done, with a smaller emphasis on analytical skills, and much greater emphasis on so-called soft skills.

Finally, an important part of the process of creating the academic team, during the design of the programme, was working on the shared values expected from both staff and students. These are heavily emphasised to students from the first day of induction onwards, and to new members of the academic team. They differ from the type of values found on more conventional modules.

All colleagues involved in the MICL learning community are expected to embrace the following values associated with creative and innovative practices:

- Open-mindedness: Taking personal responsibility for being open to challenging, sometimes absurd-sounding new ideas;
- Encouraging diversity: Appreciation of differences between individuals and approaches from different backgrounds and disciplines;
- Co-operation: Ability to co-operate actively and supportively with colleagues;
- Risk-taking: Willingness to assess and take risk;
- Leading and following: Understanding when each role is appropriate and actively adopting that role;
- Grit: Ability to keep moving forward when the going gets tough;
- Stretching: Getting comfortable with paradox, metaphor and apparent chaos;
- Active involvement: Showing up, taking part and engaging in constructive dialogue with colleagues.

We work with these values during the induction period for new students, and throughout the programme, for example in lived experience workshops, as described below. Those particularly relevant for interdisciplinarity are: Open-mindedness, echoing the personal characteristics identified by Spelt et al (2009) of curiosity and openness; Encouraging diversity, echoing Spelt et al's notion of respect; Co-operation, echoing the theme of collaboration discussed above; and Grit, building on Spelt et al's characteristics of patience and diligence. Stretching is also important in the context of a VUCA environment, especially in relation to Ambiguity.

3.3 MICL Methods

The development and operation of the MICL programme has involved several approaches which reinforce the interdisciplinary approach.

3.3.1 Visible collective presence of faculty team

The seed funding from the University for the Centre for Creativity in Professional Practice enabled a full time core team to be set up, through external fixed term appointments, of a Centre director and researcher. This was used to stimulate and orchestrate interdisciplinary

working, to secure further funding and external relationships, and to disseminate outcomes, and was in addition to the academic team from across the University who had assembled and brought into the bid document.

When it came to the creation of the MICL degree, this interdisciplinary team did not immediately start with work on the programme documentation. It was felt to be important to build the unusual cross-school group into a coherent team, and to this end several workshops were organised for the team to develop a distinct identity en route to then creating the degree programme in detail. The importance of time to develop social capital as being necessary to the success of an interdisciplinary initiative such as the development of the MICL is identified by Blackwell et al 2010 (p.19) and Blackwell et al 2009 (p.46), and the importance of teachers being part of a team, and an intellectually interdisciplinary community also figures in Spelt et al's analysis of interdisciplinary study (2009). As it has turned out, the team has had unusually few personnel changes over nearly a decade of collaboration, and at least part of this must be attributed to that early successful phase of team building.

Conventional degree programmes should of course have formal meetings of the lecturing team, but for the MICL degree, it was also regarded as important to have events across the year that involved members of the staff team from different disciplinary backgrounds. In the student induction period, as many as possible of the academic team attend for at least part of the induction to signal that they are not teaching in isolation, but are integral to the whole. There are then termly non-module lived experience workshops, which all staff are invited to join, and provide an opportunity for connections and linkages by both staff and students. Finally there is an active calendar of social events and research seminars for all staff and students, and also alumni, who are particularly important to the programme and community.

3.3.2 Explicit forms of collaboration across wide disciplinary boundaries

To assist staff teaching on the MICL with understanding and appreciating each other's disciplinary perspectives, a number of more specific practical mechanisms have been put in place including:

- Shadowing, in which all staff are invited to sit in on at least one lecture from another colleague's module each term, on a rotating basis;
- Second setting of assessments by module leaders from different disciplines, and double marking of dissertations by colleagues from different disciplinary backgrounds where possible;
- Regular programme planning meetings for all module leaders.

3.3.3 Shared emphasis on reflection across the programme

It is perhaps not surprising that the Donald Schön who encouraged the systems approach and thinking beyond the stable state in the early 1970s, was the same Donald Schön who, a decade later, strongly promoted the concept of the reflective practitioner (Schön, 1983). The modern leader, thinking systemically, was no longer dealing impersonally with a static

body of knowledge, but needed to make time for reflection on how that body of knowledge was changing and needed to be changed through the conscious actions of the individual professional. Blackwell et al (2009, p.70) have reinforced this:

“In the interdisciplinary context, explicit energy devoted to reflection is even more critical for both the organization and the individual, because of the likelihood that the work has developed new knowledge outside of previously codified professional practice or organizational processes.”

As Blackwell et al (2009, p.70) also point out: “Reflection is a critical element of good interdisciplinary practice”. Reflection is introduced to students during the induction period, and is built in to many of the MICL modules. Students are exposed to different reflective practices and approaches to reflection, while being encouraged to develop their own personal styles. Finally, the capstone module Creativity and the Creative Industries involves producing an artefact supported by a reflective account that draws on a student’s whole journey through the degree programme.

Approaches to helping students on the MICL to understand and appreciate the range of disciplinary reflective perspectives and their potential applications include:

- Lived experience workshops, in which all students in a cohort come together to reflect on their experience across the programme, particularly in relation to MICL programme values, as described above;
- Individual reflection in journals, sketchbooks and portfolios that students complete as part of their assessments;
- Reflective exercises in which students are encouraged to explicitly identify connections between modules. Figure 3 is one example of the outcome of such an exercise.

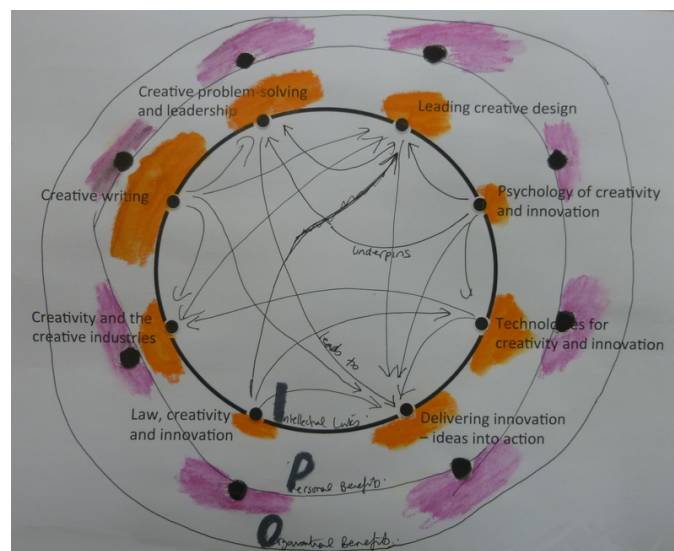


Figure 3: Results from a module circle exercise – module names are arranged around the edge of the circle, with connections spotted by staff and students indicated by arrows across the circle

3.4 MICL Outcomes

In this section, we report on the MICL programme's outcomes, first in terms of largely quantitative data requested from all students who have completed the course, and then using more detailed qualitative data collected from the first cohort of students to complete the programme, who graduated in 2013.

3.4.1 Graduate destinations

Here we report results relevant to the MICL from an annual survey sent by the University to all students in the year following their graduation. Completion of the survey is voluntary. A total of 37 MICL graduates have responded since first students graduated in 2012–13.

Year of graduation	No. responses	% employed	% self-employed/ starting own business	% with a different employer	Job titles
2012–2013	10	90	22	67	Business Manager, Consultant, Freelance Consultant, Fundraising Support Manager, Information Resources Supervisor, Innovation Consultant, Marketing Director, Principal Consultant, Research Fellow
2013–2014	6	100	33	80	Associate Director for Enterprise, BD Manager, Brand Engagement Consultant, Freelance Training Consultant, Programme Manager, Technical Director
2014–2015	12	100	33	58	Brand Building Manager, Company Director, Director Project Marketing, Head of Business Engagement, Programme Director, Project Management Officer, Project Manager, Reader in Medical Education, Research Analyst, Self-employed Consultant, Self-employed Management Trainer, Recruitment Administrator
2015–2016	9	89	38	57	Business Planner, Cofounder, Experience Strategist, Project Manager, Senior Analyst, Senior Educational Technologist, Staff Anaesthetist

Table 3: MICL graduate destination data

All those graduating from the MICL who are employed within the year following graduation identify as being in professional or managerial jobs. Some indication of the nature of jobs taken by MICL graduates is shown by the job titles in the table above.

We note that a substantial proportion of students change their employers following completion of the course, though the proportion changing to a different employer has decreased somewhat over the last two years, perhaps due to significant changes in course

fees. We also note that of those changing employers, an increasing proportion are transitioning to self-employment, freelancing or setting up their own businesses.

This theme of change is prominent in the reflections of students reported below, and is in line with our belief that the course equips students well to deal with increasing Volatility in their environments.

3.4.2 Student experiences

In this section we present extracts from qualitative data collected from current and previous students that illustrate some of our key points. This is based mainly on the analysis of coursework assignments submitted by the first cohort of the Masters in Innovation, Creativity and Leadership, who studied part-time from 2010 over two academic years, completing in 2012 and graduating in 2013. In this section, we outline the findings of a qualitative analysis of assignments that were completed at the end of the programme, including:

- The assignments for the Creativity and the Creative Industries module, including the students' supporting text for creative artefacts and final analytical reports, completed at the end of the taught modules (between March and May 2012)
- The introductions and reflective components of their final dissertations, delivered in September 2012 (or January 2013, where there were extenuating circumstances).

The Cass Business School of City, University of London had reviewed qualities needed in business after the 2001 crisis and as part of opening a new graduate business school building in 2003. One approach taken was to create an experimental module in "The Art of Management" and this was launched as an MBA elective in 2005 (Holtham et al, 2008). This strongly influenced the rethinking of the MSc in Management post 2007, and the revamping of the first year undergraduate curriculum shortly after that. The experience of running the MBA elective over several years also particularly shaped the design of the MICL capstone module Creativity and the Creative Industries (CCI).

The briefings for both the assignments for the Creativity and the Creative Industries module and the final dissertations built on the programme's consistent use of reflective practice to support each of the eight taught modules, as described above. The CCI assessments introduced artistic practices which were in almost every case new to the students. The final dissertation called for a personal reflection as part of the concluding section of the dissertation, which some of the students used as an opportunity for personal as well as research reflection.

This first cohort of students on the Masters in Innovation, Creativity and Leadership, as volunteers for a new programme with this title, represented a self-selecting population of individuals who were willing to be challenged by an innovative Masters programme not directly aligned to a specified professional ambition (in contrast, for example, to a Masters in Law or Journalism, or an MBA). They were also a comparatively small group of 15 completers, constrained both by the programme's recruitment policy to accept only individuals with management experience and, for this first cohort, their availability to study

part-time. All were UK or EU citizens. This cohort consisted of 7 females and 8 males, with an age range of 25-60 years, mean age of 42.8, and median age of 44.

Most of the starting cohort of 18 in 2010 held first degrees, with one holding an HND (a UK vocational qualification at degree level), three Masters degrees and one PhD. Their span of first-degree subjects was itself interdisciplinary, ranging from Theatre and Literary Studies to Physics, Horticultural Science and Geography. Most of their degrees were awarded in the UK, with two from mainland Europe and one from Ireland. Their stated professional affiliations upon application were similarly broad, with individuals joining the course from SMEs, local government, charities, communications, Higher Education professional services and large commercial organisations, in addition to self-employed consultants and designers.

The data analysed for this study focused on the 12 individuals who completed all of the taught components between 2010 and 2012, and who were among the first group of graduates. With consent, and ensuring the former students' identities would not be revealed, the data analysed took the form of (i) written assignments of up to 1500 words for the Creativity and the Creative Industries module and (ii) the personal reflection sections from students' final dissertations. Their dissertation introductions were also reviewed to identify any summative MICL reflections or target applications of the programme's content.

Extracts from this data are presented below first in relation to students' thoughts on the interdisciplinary nature of the programme as a whole, and then in relation to the VUCA constructs of Volatility, Complexity and Ambiguity.

Interdisciplinarity in the MICL

It seems that one of the reasons students choose to take the MICL, and perhaps other similarly interdisciplinary courses, is because they are looking for challenge, and something that will allow them to explore, and take them outside of their normal range of activities. For example, one student explained:

"I've really had to go out of my comfort zone, having to look at technology and writing business essays is a world away from my previous experience, but then part of the reason I choose a multi-disciplinary masters was for this challenge, so I have tried to embrace it." (Student 1)

By the end of the course, students find themselves, as Spelt et al (2009) suggested, able to make new connections between the different disciplinary perspectives they have experienced across different modules. For example, as one student put it:

"I have learned things that I would never have anticipated and challenged myself in completely unexpected ways. The subjects are intensely interesting, and you discover layers and layers of connections across disciplines, which can be used to create your own web of information and lens in which to view creativity, innovation and leadership." (Student 2)

We argue that the breaching of mental silos (Hartley 2005), which is inherent in an interdisciplinary approach, is particularly helpful in equipping students to be able to transfer skills from one domain to another. For example, when speaking about her work on an artistic installation as part of the module on Creativity and the Creative Industries, another student, who was also developing a tech start-up business, said:

“Working on this artefact taught me about being an entrepreneur, as it required the same skill set: how you plan a project with an unknown outcome; how you are forced to change and to adjust and to take the risk to try out new things; how you learn about yourself and your limitations that you need to overcome in order to be successful; how to solve problems in a creative way and bring the project to a desirable end; how to communicate an abstract concept in a way that the audience buys into the story you want to share; and how you learn from your environment while reflecting on the project as a whole.” (Student 3)

We believe that this demonstrates the development of T-shaped skills, useful in a VUCA world (Lawrence 2013) in which students may need to change career many times, transferring their skills to new contexts in each case. Just as MICL students come from many different backgrounds, they also go on to many different careers, and often these are different from the ones they joined with, as illustrated in this statement from a previous student:

“The multidisciplinary nature of the MICL helped me grow personally and professionally. It broadened my knowledge, stretched my thinking and challenged me to work in new areas. It enabled me to take my career in a fresh direction.” (Student 4)

We return to this theme of change below.

Volatility and Change

MICL students often speak of the course as a journey:

“I do believe that I will be able to live differently having travelled the MICL journey.” (Student 4)

“Taking this course has been a personal learning journey. I now approach my work with more confidence and look at the world with fresh eyes. The interdisciplinary nature of the course provides a lively and creative climate for study, useful frameworks and novel connections. I would recommend it to anyone who is looking to bring about change - in whatever form that takes.” (Student 4)

As indicated above, MICL students often change the direction of their own careers during or shortly after completing the course. An indication of one type of change, involving a student

who ran a successful Kickstarter campaign to help him launch a manufacturing business while on the course, can be seen below:

“The MICL nurtures skills that allow you to look at challenges from different perspectives, making you step back, looking at the bigger picture, or get closer, looking at the details. You train your natural flexibility and increase your ability to adapt to ever-changing situations.

“Being part of the MICL whilst developing [my own business innovation] helped me in many ways. I was surrounded by inspiring people on a daily basis and this was crucial in helping me maintain focus and motivation throughout the development stages. In addition, the wide spectrum of topics covered by the course has given me the expertise to tackle unexpected challenges like writing the screenplay for the Kickstarter video.” (Student 5)

In a similar way, another student explained how:

“As my future goal I have identified to have an entrepreneurial career and the main aim of the Masters was to find a source of inspiration for the direction that my professional life would take” (Student 6)

and a third that:

“My reasons for doing the Masters were to help me gain confidence and find a new direction. I have gained the confidence I needed. The dissertation is to help me find the new direction.” (Student 7)

As well as proactively initiating change in their own lives and careers, some students report that the course leads them to feel more comfortable with change in the world around them, and the corresponding uncertainty this brings:

“... as time went by, I realised that I had become more relaxed with uncertainty.” (Student 4)

We argue that by developing in students an understanding of how to put innovation into practice in an organisational context, as well as enabling personal change, both through the interdisciplinary nature of the course as a whole, and the use of reflection in many modules, the course puts students in a good position to both withstand change and Volatility in the world around them, and also to begin to bring about change in a broader sense, for example in addressing some of today’s grand societal challenges. This leads us to our final themes of Complexity and Ambiguity.

Complexity and Ambiguity

Following her experiences on the MICL, one student described how she felt better able to manage the sometimes complex challenge of understanding the relationships between different identities:

“I see that my creative self and my business self can sit quite happily alongside each other. Being on the threshold between the two, I can blend elements of each.” (Student 4)

The same student explained how she was aware of, and comfortable with, the ambiguity inherent in the multiple possible interpretations of her artefact:

“When the author was setting up the door artefact the night before the exhibition, she was unsure whether or not she should make prescriptive the meaning of the open door. She reflected that there are multiple interpretations and no one view is more right than another.” (Student 4)

Another student explained the process of creating her artefact for the CCI module as follows:

“It requires comfort with ambiguity; ... Holding two conflicting ideas in your mind simultaneously – Janusian thinking. Comfort with uncertainty allowing you to explore many avenues and arrive at surprising conclusions. Saying ‘Yes to the Mess’.” (Student 7)

A third student reflected on the different attitudes to Ambiguity amongst members of the group she was a part of:

“... there is a tricky balance between having an ability to get the ‘gist’ of something with the ability to tolerate ambiguity and uncertainty in contrast with the desire of some to get a more clear and defined idea of deliverables within a project or brief.” (Student 8)

Hence, while evidence from the data analysed to date regarding Complexity is limited, it does seem that a significant proportion of students on the MICL become more comfortable with Ambiguity, and may even see this as presenting opportunities for developing new and surprising ideas.

4 Discussion and Conclusions

While we believe that the subjects of Innovation, Creativity and Leadership are themselves important topics of study in equipping management students for the increasingly VUCA environment in which they are likely to find themselves on graduation, we also believe, on the basis of the analysis presented above that the interdisciplinary nature of the MICL is important in providing a strong foundation, on the basis of which students can survive and

thrive in a world of increasingly dramatic change and complexity. The course appears to prepare students to survive Volatility and bring about change, and also to tolerate and even work in a positive way with Ambiguity and Uncertainty. The connections that a number of students report identifying between different disciplinary perspectives may also be helpful in enabling a productive approach to Complexity.

We end with a short analysis of our experiences of developing the MICL programme, in terms of frameworks presented earlier. First, we consider the work of Bardecki (2015, p.201) who summarised six criteria for successful academic collaboration in interdisciplinary teaching and learning:

- “Inception as faculty initiative, rather than a top-down administrative approach
- A fluid organization and flexible involvement
- A supportive administration
- Consistent yet flexible funding
- A short reporting structure and ease of access to administration, and
- A core of ‘gluons’; individuals acting as the core of the interdisciplinary initiative.”

In our own case, the middle four of these factors were not strong influences. Indeed, as discussed above, the team has been largely static and the organisation fixed. However, the first and the last were critical factors for the development of the MICL. The bottom-up nature of the initial process of bidding for funds to establish the Centre for Creativity provided an incentive for the team to succeed, and this unusually stable and close set of “gluons” remain significant even today.

Finally, we consider the five critical success factors for interdisciplinary working identified by Lyall et al (2011) and apply these to the context of developing and operating an education programme, rather than research.

Locus of interdisciplinarity

In the MICL this was of central significance. An early decision was taken not explicitly to integrate the contributions from the first seven core modules and the five academic disciplines involved. However, the eighth core module was developed as, and quickly became, a very explicit integrating device. Hence the locus of interdisciplinarity was initially at the level of the one individual module, and the programme as a whole. As time has gone on, individuals in the teaching team have, however, developed more experience with interdisciplinary working, so that the locus of interdisciplinarity has moved more towards the individuals in the team.

Catalysis

There is no doubt that the seed funding from the university was a pre-requisite to catalysing the creation of the Centre for Creativity in Professional Practice, and the related MICL degree. However in the longer term, the academic team were fully aware that it was vital to create an economically viable teaching activity to underpin an interdisciplinary research activity that was not otherwise explicitly encouraged by the very nature of strong school based mindsets and priorities.

Visionary leadership

The academic team was headed by an academic who undoubtedly demonstrated the type of leadership needed, both in relation to the university hierarchy and with the rest of the team. However the team members were themselves highly experienced and leaders in their own fields, so this was, and has remained, much more a collective and collaborative shared leadership activity.

Active management

In line with the leadership discussion, management was also actively shared, but of particular significance through most of the life of the Centre and the degree has been the role of the Centre's administrator and MICL course officer, who has also acted as a researcher on some of the Centre's projects. This hybrid post has been highly unusual in the university, but has played the single most crucial role in practical integration across disciplines in both policy and everyday practical terms.

Learning and continuity

Lyall et al (2011) identified the importance of capacity-building to "ensure that learning from past experiences of interdisciplinary investments becomes embedded within collective organisational memory". In this case, the MICL itself beneficially built on extensive previous learning design experiences albeit within mono-disciplinary contexts. The main lesson brought from interdisciplinary research projects by almost all the collaborators was the significance of team building around shared values.

In conclusion, we would argue that HE institutions should urgently seek to develop many more mechanisms for governance and management that will better support interdisciplinary approaches to management education in the future. We end with a thought from Blackwell et al (2010, p.6):

"Developing the spaces in which interdisciplinary innovation can occur, and nurturing the processes and personal skills that enable it, is an essential contribution of public policy and public funding."

We believe this to be as true for institutions of Higher Education as it is for other forms of organisation.

References

- Alvesson, M. and Willmott, H. (eds) (1992) *Critical Management Studies*. London, Thousand Oaks, CA and Delhi: SAGE.
- AOMO (Art of Management and Organisation) (2017) *AOMO: About Us* [Online]. Available: <https://artofmanagement.org/about/> [8 May 2017].
- Bardecki, M. (2015). Developing and Managing Integrated [Interdisciplinary/Transdisciplinary] Graduate Programs in Environmental Science and Management in a Collaborative Context, in Filho, W.L., Brandli, L., Kuznetsova, O. and Finisterra do Paco, A.M. (eds) *Integrative Approaches to*

Sustainable Development at University Level: Making the Links. Dordrecht, NY and London: Springer International Publishing, pp. 197–209.

Bassett-Jones, N. (2005) The Paradox of Diversity Management, Creativity and Innovation, *Creativity and Innovation Management*, 14(2), pp.169–75.

Beer, Stafford (1995) *The Brain of the Firm* (2nd edition). Chichester: Wiley.

Bennett, N. and Lemoine, G.J. (2014) What VUCA really means for you, *Harvard Business Review*, 92(1,2), p.27.

Blackwell, A., Wilson, L., Boulton, C. and Knell, J. (2010) *Creating Value across Boundaries: Maximising the return from interdisciplinary innovation* (May) [Online]. Available: https://www.nesta.org.uk/sites/default/files/creating_value_across_boundaries.pdf [20 August 2017].

Blackwell, A., Wilson, L., Street, A., Boulton, C. and Knell, J. (2009) Radical Innovation: Crossing knowledge boundaries with interdisciplinary teams, *Technical Report, University of Cambridge Computer Laboratory*, 760 (November) [Online]. Available: <https://www.cl.cam.ac.uk/techreports/UCAM-CL-TR-760.pdf> [20 August 2017].

Chartered Association of Business Schools (2016) *Interdisciplinary Research Summit* (July) [Online]. Available: <https://charteredabs.org/events/interdisciplinarity-research-summit/> [20 May 2017].

Checkland, P. (1981) *Systems Thinking, Systems Practice*. New York: Wiley.

Colby, A., Ehrlich, T., Sullivan, W. and Dolle, J. (2011) *Rethinking Undergraduate Business Education: Liberal learning for the profession*. San Francisco, Jossey-Bass.

Culture Capital Exchange (2016) *Challenging the STEM Agenda in Research* (June). Available: <http://www.theculturecapitalexchange.co.uk/wp-content/uploads/2016/06/Challenging-the-STEM-agenda-in-research.pdf> [20 May 2017].

Gibbons, M., Limoges, C., Nowotny, H., Schwartzman, S., Scott, P. and Trow, M. (2010) *The New Production Of Knowledge: The dynamics of science and research in contemporary societies*. London, Thousand Oaks, CA and Delhi: SAGE.

Hartley, John (2005) *Creative Industries*. Oxford: Blackwell.

Hewlett, S. A., Marshall, M. and Sherbin, L. (2013) How Diversity Can Drive Innovation, *Harvard Business Review*, 91(12) (December), p.30.

Holtham, C., Sims, D., Lampel, J. and Owens, A. (2008) Can artful inquiry ever play more than a minor role in formal management education? *Art of Management IV Conference*, Banff, Alberta (9–12 September).

Johansen, B. and Ryan, J.R. (2012) *Leaders Make the Future: Ten New Leadership Skills for an Uncertain World*. San Francisco, CA: Berrett-Koehler.

Klein, J.T. (2006) Resource Review: Resources for Interdisciplinary Studies, *Change*, 38(2) (March–April), pp. 50–6.

Lawrence, K. (2013) *Developing Leaders in a VUCA Environment* [Online]. Chapel Hill, NC: UNC Executive Development. Available: www.growbold.com/2013/developing-leaders-in-a-vuca-environment_UNC.2013.pdf [18 May 2017].

Lyall, C., Bruce, A., Marsden, W. and Meagher, L. (2011) *Identifying Key Success Factors in the Quest for Interdisciplinary Knowledge: Report to NERC* [Online]. Swindon: National Environment Research Council. Available: <https://www.innogen.ac.uk/downloads/QUEST-Interdisciplinarity-FINAL-report-310111.pdf> [20 August 2017].

McEwen, L., Jennings, R., Duck, R. and Roberts, H. (2009) *Students' experiences of interdisciplinary Masters' courses* [Online]. Southampton: Interdisciplinary Teaching and Learning Group, University of Southampton for the Higher Education Academy. Available:

http://www.heacademy.ac.uk/assets/York/documents/ourwork/sustainability/interdisciplinary_masters.pdf [13 March 2011].

Mintzberg, H. (2004) *Managers n=Not MBAs: A hard look at the soft practice of managing and management development*. San Francisco, CA: Berrett-Koehler.

Morgan, G. (2006) *Images of Organization* (4th edition). London, Thousand Oaks, CA and Delhi: SAGE.

Royal Society (2016) The Higher Education and Research White Paper and Teaching Excellence Framework [Letter from the President, Online]. Available:

<https://royalsociety.org/~media/policy/Publications/2016/07-12-16-royal-society-response-to-TEF-technical-consultation.pdf> [20 May 2017].

Santa Fe Institute (2016) *About* [Online]. Available: <https://www.santafe.edu/about> [20 August 2017].

Schiama, G. (2011) *The Value of Arts for Business*. Cambridge: Cambridge University Press.

Schön, D. A. (1973) *Beyond the Stable State*. Harmondsworth, UK: Penguin and New York, NY: Norton.

Schön, D.A. (1983) *The Reflective Practitioner: How professionals think in action*, Temple Smith, New York.

Snowden, D. and Boone, M. (2007) A Leader's Framework for Decision Making, *Harvard Business Review*, 85(11), pp.68–76.

Spelt, E.J.H., Biemans, H.J.A., Tobi, H., Luning, P.A. and Mulder, M. (2009) Teaching and Learning in Interdisciplinary Higher Education: A Systematic Review, *Educational Psychology Review*, 21(4), pp. 365–78.

UK Government (2016) *Research Excellence Framework Review* (28 July) [Online]. Available: <https://www.gov.uk/government/publications/research-excellence-framework-review> [20 May 2017].

United Nations (2017) *Sustainable Development Goals* [Online]. Available: <https://sustainabledevelopment.un.org/?menu=1300> [20 August, 2017].

Yarger, H.R. (2012) Strategic Appraisal: The key to effective strategy, *US Army War College Guide to National Security Issues* [Online]. Available:

<http://www.strategicstudiesinstitute.army.mil/pdffiles/PUB1109.pdf> [20 August 2017].