Critique Skills as the Core Competency of IS Academics

Mike Metcalfe, Jonathan Wilson, and Carmen Joham
University of South Australia, Adelaide, Australia

mike.metcalfe@unisa.edu.au carmen.joham@unisa.edu.au

Abstract

This paper is about information systems (IS) academics. It seeks to suggest a unique core competency they may wish to consider developing in order to differentiate themselves from practioners. So, this paper will explore the argument that the core competency of IS academics should be a unique insight into how to critique technology related problems. There are multiple disparate critique methods that IS educators might seek to develop and apply. Examples include systems thinking, multiple perspectives, dialectic analysis and critical social thinking.

Keywords: Critique, IS academics, education

Introduction

This paper has been prepared in response to a request to consider how best to ensure that IS lecturers are kept relevant, both in terms of industry practice and academic research. As a starting point we believe it would prove useful to identify the core competency of an IS lecturer. We asked 2715 IS academics, on a dedicated email listserver for their thoughts. Some extracts follow.

The authors asked:

> *… what constitutes the core competency of IS academics? What is their long term, deep knowledge? It needs to be slightly different from practitioners, and be something that graduates can apply to every trendy new development. It also needs to be something that enables academics to be able to offer a unique service to undergraduates and to managers? My first guess is something like*
>
> * *being able to spot bulldust (i.e. critical skills).*
> * *how to design systems.*
> * *inquiry methodologies.*
>
> *This I would contrast with non core competencies such as*
>
> * *application knowledge,*
> * *specific [technique] knowledge.*
>
> *Moreover, how do academics hone these core competencies over the lifetime of their teaching career?*

The replies included the comments:

…particular skills and competencies of academics could be compared [to] the 7 attributes [see later]used to predict which will lead to sustained competitive advantage. This methodology would tend to agree with your preliminary conclusions that specific technical knowledge would not be a source of sustained advantage (also found in a number of studies, i.e. Mata, Fuerst and Barney, 1995, etc.)

Michael

I would think that our overall long term core competency has to be our broad knowledge and ability to integrate ideas and to avoid the hype and bias that often accompanies new technologies. Being level headed while at he same time open to new ideas and not dismissive. For example, looking at systems thinking (Senge rather than systems design) and the unintended consequences or new technologies. I think that being much more critical and rigorous in our thinking should be what separates us from the non-academic pop or faux science that is foisted on the industry by many of our non-academic pundits (not to mention anyone by name but there are a few eponymous research firms that come to mind), I have spent 20 years in industry and more than a few years as a consultant so I am familiar with what is presented in the name of practitioner research.

Peter

I'm tempted to say that the best spotters of bulldust are the practitioners and not the academics. eCommerce was less of an event for those working at the coal face than it appeared to be for the academics, who were dealing at a more ethereal level. There's nothing like having to make something work to bring home the reality of it's application. In the case of eCommerce, I'm not just talking about the IS professionals, but also the marketing people and the accountants, etc..

Mac

- *understanding technologies …*
- *understanding the importance of context and how to select inquiry and analysis methods to fit the problem*
- *understanding the interconnectedness of problems and the subjectivity of problem-definition.*

When I was a practitioner, these were the main things that I did not understand. I understood how to design a system for a particular environment, but I did not understand all the contextual and subjective issues that surround this. Now that I am an academic, I realize that it is management of these issues that tend to distinguish successful projects from unsuccessful ones.

Overall, I'd argue that the difference between (optimal) academic knowledge/understanding and practitioner knowledge/understanding is one of level. Academics should be able to take an overview, in whatever area they work. They should be able to

apply this "meta-knowledge" to other application areas (i.e. courses or research projects) and see the patterns that connect these disparate parts.

*Practitioners only need to understand inquiry and analysis methods and the relevance of context **in their area of operation**. They need to appreciate these concepts at a lower conceptual level, which involves how a person applies them in their individual or project scope of operations. So they need a conceptual understanding (which involves sensitization to generalized patterns of phenomena, rather than just skills training), but they do not need to be able to apply this conceptual understanding to every context they come across, only those in which they work, one at a time.*

<div align="right">

Susan

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- *understanding of research methodologies*

- *understanding of theories related to Organizational Phenomena*

- *Ability to translate lay/managerial cause and effect models (that tend to be very context specific) to more basic/fundamental relationships among theoretical constructs. This involves abstraction and knowledge of theory and is the critical skill that I believe differentiates researchers from practitioners and excellent researchers from good researchers.*

<div align="right">

Mani

</div>

Consultancy is one route, but only if time is available. I feel that the need for skills update is not fully recognised as an issue by employers (universities). A recent discussion highlighted the idea of using secondments to industry as a routine, accepted and rewarded part of academic life. However, the need to publish does not fit closely with the outcomes of such practical development (ie the development is not necessarily publishable), therefore the system does not encourage secondment. Part time positions might be good in theory, but the poor incumbent would find it difficult to meet the implicit overheads of two different jobs.

More positively, involvement with applied student projects, and collaboration with industrial sponsors over new teaching developments can both help keep one not too far behind the leading edge for a little while!

<div align="right">

Andrew

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[Re] Being able to spot bulldust (ie critical skills).

While I would strongly support the notion that … academics SHOULD be able to do this, I have not seen strong evidence that we actually do spot the bulldust, or if we do, we do not alert practitioners to the fact.

Some examples:

There were even a number of … academics who started their own dot-coms or technology companies. I do not believe they fared any better than the technologists…

There are also a number of case studies of university e-learning disasters that suggest failure on the part of university academics to consider very basic business principles.

Frederick Brooks Jr. discusses some stuff on Academic fads in his famous "No Silver Bullet" article. There are also several reflective papers on … research that discuss fads. To me, the presence of fads in the …literature suggest that we are as susceptible to the bulldust as the practitioners are.

I believe that as academics, we can sometimes discern the bulldust from the truth. However, for any particular piece of bulldust, only a few academics discern the truth. These are invariably shouted down by the larger group that do not discern the truth. Furthermore, I would suggest that the group of academics that can discern the truth changes from bulldust to bulldust. As such, I cannot subscribe to the notion that we are better than the practitioners in this regard.

Cecil

…university staff, whilst perhaps lacking in cutting edge skills, can offer industry and business a different skill set, often the solution to a problem comes because we decided to think about it differently!

Andy

The two biggest gifts that we can give to industry are

1) our unbiased research,

2) not chasing the topic / thought of the day (eg. E-commerce, KM)

3) to speak their language a bit more often…

I am weary of having practitioners teach without theory –

…we are a university and should be helping people think, not teach them what will be obsolete when they leave.

Peter

Our interpretation of these comments, coupled with many years experience of our own, is that IS academics should not assume that their core competency is heightened critical skills compared to practitioners. As predicted by the action learning literature [Argyris and Schon, 1996], those who 'do and think' about something tend to understand it better than those who only think about it.

The other suggestion made that academics are able to take a "bigger picture" view is interesting; having an analysis of what 'most' companies do, or having read about some interesting cases, does appear to give them an advantage. This is particularly so if practitioners have become too inward looking on their own business. The authors, however, are not convinced that academics have such an advantage over practitioners who read the professional/consulting press and have good social networks. Couple this with the mobility that many modern managers have, combined with the tendency for academics to have gained the bulk of their knowledge from formal write-ups, and the perceived advantage fades somewhat. What remains is research (inquiry) methodologies as the possible core competency. Having some experience with both business reports and academic research, the authors agree that academics can be more rigorous in how they collect evidence but this is countered by academics often lacking relevance, comparable funding or having the scope of practitioner's reports.

However, good inquiry requires more than just relevance and more than mere evidence collection rigor. It requires an understanding of the alternative 'ways of thinking' problems. The last two commentators touch upon this.

> *"We should be helping people think,"*

> *"…often a solution to a problem comes because we think about it differently".*

A good inquiry will identify and discuss the critique method or perception used to think about the object being studied. For example, if an organisation is being studied from the perspective of employee motivation then the lens or way of thinking about employees is 'motivation' which (using the multiple perspective approach) may be studied at a personal level, an organisational/political level or with the assumption of people as an objectified unit of population (the scientific approach).

A social-critical approach would promote questions such as, "Do they want to be motivated"? and "Is employee motivation too divisive, and not in their best interest"?

As a metaphoric analysis the roots of the words 'employee' can be contrasted with 'colleague', 'mate', and 'expert'. Motivation would appear to have engineering roots, as in 'motion' and 'locomotion'. Perhaps a more social concept like encourage (from courage) would be more humane.

The Marx and Engels dialectic approach would be to ask what are the underlying tensions that have created this condition of lack of motivation.

A Systems Approach would be to make explicit the purpose of the group, the purpose of studying the group, and focus on the members relationships with themselves and relevant technical artefacts. Developing an understanding about these alternative critique methods may be a service only academics can offer.

Therefore, it is being argued in this paper that the core competency of IS academics is, or should be, about understanding and improving, those critique methods that are available for dealing with technology related problems. These critique methods have a myriad of names such as conceptual schemes, ways of thinking, underlying assumptions, paradigms, diagnostic methods, mental models, lens, frames, filters, critical skills, inquiry systems, worldviews and perceptions. Examples include the scientific method, critical thinking and systems thinking. Many of the thought processes of the human brain are implicit and are thus difficult to appreciate. Conversely, methods such as argument structure are more explicit but are often not clearly located in relation to other critique methods. Their particular 'ways of seeing' are unclear. Understanding both the problem, and how to think about it, is considered important for innovation [Lawson, 1999]. How to think about technology-on people problems (issues) would appear to be the core competency of IS academics rather than IT academics or IS practitioners.

It therefore follows that we believe the ongoing education of IS educators should focus on their developing a clearer appreciation and application of the range of critique methods available to help deal with technology-in-people problems. This should enable academics to 'educate' graduates and thereby assist both graduates and industry to utilize these methods to deal with their myriad of highly complex social change problems. Making these critique methods explicit should help identify the essential difference between IS expertise and IS-academic expertise. However, we must emphasise we are not advocating academics merely 'think about thinking' but rather become very aware of contemporary technology related problems facing industry, and use these to validate their loft of critique methods. As the action learning literature points out [Argyris and Schon, 1996] the critique method and the action need to bounce off each other. Provided there is effective 'town and gown' communication, academics can develop, ponder and try to apply the critique whilst industry supplies the technology related problems. The complexities of how the brain thinks, coupled with the complexity of business problems, should provide plenty of challenge for academics; likewise academia, by applying the available critique method to the problem should be able to cope with the complex problems dealt by industry.

This division of labour also works for 'critical-social' IS academics that prefer to think of an education as being about a student's personal development rather than merely providing trained feedstock for industry. The same diagnostic thinking skills that should make a student effective in their working life should prove to be as valuable in enabling them to consider other important issues such as their own quality of life, ethics, equity and the impact of industry on culture and the environment. Technology problems include business as a problem. This is consistent with the generic advice that the role of the academic is not to tell people what to think, but to assist in how to think about important and complex social issues.

Therefore, the metaphor that is being invoked is for IS academics to become the critique experts and thus their role is to improve the critique methods for application on real technology related business problems. Business makes the product, suppliers provide the raw materials and machine tools, and Business Schools provide the critique methods either through consulting activities or well-educated graduates. These graduates, with their thinking skills, can also elect to consider the impact of business on the wider society.

Core Competency

Can critique methods really constitute a core competency? There is now an extensive, mainly economic based, literature that discusses core competencies, typically in relation to innovation (Belussi and Fabio, 1998; Lawson, 1999; and Prahalad and Hemel, 1990). An alternative terminology to "core competencies" and one well used in the IS literature is "worldviews". It is assumed that core competencies give the actors a certain worldview. Our interpretation of their work suggests that core competency in IS education is that certain knowledge can stand the test of time and provide the skills to evaluate any particular technique, fad or conventional-wisdom. Examples, of these fads and techniques include e-commerce, how to calculate a critical path, designing a spreadsheet, drawing supply curves, and citing the four Ps. These techniques are merely the 'momentary expression' of a deeper knowledge and graduates require the ability to tackle any new problem as it arises.

Wade [2001] reviewed the core competency management literature. He argues that:

> *The characteristics of competencies which lead to the CREATION of a competitive advantage are: value, rarity and appropriability.*
>
> - *The competency must be of value to the task (thus business graduates being able to accurately toss a Frisbee is out)*
>
> - *It must also be rare, in that others do not possess it*
>
> - *It must be appropriable, meaning that the resources necessary to acquire it do not eat up the benefit of having.*
>
> *Once a competitive advantage is created, it must be SUSTAINED. The characteristics of competencies relating to sustaining a competitive advantage are durability, imitability, substitutability and tradability.*
>
> - *the durability of an asset, capability, competence, skill or whatever is particularly germane to the … area. As time passes, low durability will affect value (equipment becomes obsolete, skills become outdated)*
>
> - *imitability and substitutability affect rarity. As capabilities are copied or as substitutes emerge, they become less rare, and thus less likely to be a competitive advantage.*
>
> - *tradability also affects rarity. As skills, assets and capabilities become available on factor markets, they become less rare.*

Michael

This aligns with IS academics conception of critique methods as its core competency. To encourage a student to learn only a technique of learning which will fade away, such as linear programming, is to fail them. A more long term, stable and deep-rooted competency is required to assist the graduate to deal with the ever changing world. Critique is this type of knowledge, however it must pass the relevance test when it is to be applied to the large and complex social problems that are involved in organisational purpose and change. Rarity value can only be achieved if it is deeper and more considered than merely the average level of critical skills. Most non-graduate mangers have reasonable critical thinking skills; therefore the level of thinking that is required must extend beyond the reasonable level. Developing a unique set of critique methods will be essential. Thinking outside, and in a different dimension to, the 'square' will be required. Appropriability, should not be a problem. It is believed that the three-year undergraduate course, if structured properly, should be sufficient time for those with six years of university training, and numerous years of practice developing critique methods, to pass on their expertise.

Creative thinking is expected to be durable. The core competency of thinking skills will prove difficult for non-academics to imitate because new techniques will continually be tested by academics as a central characteristic of their profession. There cannot be a substitute for good thinking and it cannot be a bartered as commodity.

IS Lecturers: The Competency Owners

By IS lecturers it is meant those at any level involved in the undergraduate and postgraduate education of those seeking expertise in undertaking commercial technology related activities. It also includes those who wish to provide students with the skills to develop and grow as individuals in an increasingly business dominated world. The education of IS lecturers has traditionally been first from their own studies as undergraduates, some short period in commerce in some junior or middle management position, followed by a Masters degree. Increasingly this is being supplemented later by a mid career PhD studied while being involved in educating others. In most cases this learning experience is not refreshed by the lecturer undertaking ongoing published research. For many there will have been very limited discussion about critique methods beyond school level discussions about logic, scientific experimentation and research methodology for postgraduate thesis. Unlike subjects like psychology the undergraduate course contains little discussion about critique methods. Some may take a University wide critical thinking subject that discusses good argument applied to some generic social issues.

For the majority of IS lecturers, new knowledge comes from course text-books reinforced by articles and spasmodic conversations with practitioners. Of course this does not apply to all IS lecturers but the authors feel it does summarise the majority. The textbooks typically do not include any discussion about inquiry methodology, the source of the evidence and conclusions provided, nor do they provide contrasting views. Moreover, business literature tends to assume the managerial perspective of the specific actions required to affect an increase the profit margin. While science has very strict rules of evidence, and many lecturers would know these, much of the educational material is closer to 'absolutism' than scientific method. The dominance of the 'absolutism' as a style (or lack of style) of thinking and presenting evidence needs to be made more explicit. It deludes the student and lecturer into thinking about every business technique from the espoused owner-manager efficiency-effectiveness managerial perspective. In modern times the power of the relative stakeholders that enable projects to succeed has shifted from being entirely from the perspective of the owners; suppliers, customers, unions, consultants and skilled employees can all act to construct a project from their particular perspective. Mangers, as representatives of the project owners, need to accommodate alternative perspectives, and present them with more convincing evidence than absolutism.

The result of the dominance of managerial romanticism is that many IS lecturers are not well informed about critique methods. The authors estimate that this is less so for lecturers in the other humanities such

as history, sociology, geography or literature. This may explain the attraction of getting business students to take humanities studies to increase their critical skills. If critique methods is to be a core competency, then it will need to be explicitly included in lecturer's studies, course design requirements, journal article design requirements and thesis write ups.

Some Critique Methods

A further expansion of what is meant by critique methods may be overdue. Thinking, as an adjective or course of action is defined in the Oxford Dictionary as 'to meditate on a problem;' it is a precursor to inquiry or problem solving. It is assumed that vertebrate animals without language can think, process and store information, but cannot reflect on the methods they are using to think [Walker, 1983]. By methods it is meant techniques, aids, and schemas. Kant [see Blumenau, 2001] argues that the brain structure may force us the think in certain ways, such as in terms of cause and effect, and therefore judgementally (ethically). The argument literature [Crosswhite, 1996] child psychology [Piaget, 1973] and evolution theory support this [Crosswhite, 1996] by suggesting that, as information processors, humans have a tendency to very quickly jump to conclusions often prior to a full and careful evaluation of the evidence. Methods to aid thinking should appreciate the idiosyncrasies of the brain and complement its behaviour by such things as processing information more slowly, or in different ways.

The most well known method for helping us process evidence and test quickly formed conclusions is the *scientific method*. It is a method designed for the physical world but over used in the social world. How this method is applied is well know to most High School children through considerations of logic, and exercises such as chemistry experiments. It is not merely a method for scientific discovery but can be used on a day-to-day basis. For example, a builder can have a problem with something not fitting correctly and can use falsification experiments to help clarify the problem. However, many are not so clear about the underlying assumptions of the scientific method as a critique tool. These include observer independence, universal laws, disaggregation; repeatability (maybe falsifying); logic; and innate objects of study (not self conscious). The universal law and objectivity aspects encourage it to advocate 'oneism', a belief in there being only one truth and one dominant correct method for evaluating ideas. While this may be beneficial in discouraging alternative 'sciences' when used in social inquiry it suppresses alternative way of seeing moral and social preferences such as indigenous knowledge about the meaning of life. The scientific method is undoubtedly the most pervasive critique method in the academic IS domain.

Critical thinking (scientific) is another critique method that aligns with the scientific method. Critical thinking is designed to evaluate claims, first written up by Plato when writing about Socrates. It is not designed to provide ideas or solutions directly, but can do so as a result of being critical about another claim. Lett [2001], who sees criticism as a scientific tool, summarises its underlying assumptions as 'rules' that need to be applied to any evidence. These are falsifiability, logic, comprehensiveness, honesty, repeatability, and sufficiency. Used in reverse these rules can advise on how to write up science.

Argumentative Critical thinking has been expanded by Aristotle, Hegel, Habermas, Toulmin [1958] and many others [see Walton, 1998] into a more pragmatic dialectic, rhetorical or argumentative form that allows for reasoned persuasion. In this form it more closely reflects how science and human inquiry is really done. It appears to be the means by which humans create and test knowledge, for example, when setting and enforcing legislation. It acknowledges that a debate is being set up between two humans each with very different backgrounds and biases. Emotion and power are acknowledged as real influences. It has been discussed extensively in the management literature in modern times from Mason in 1969 in titles such as, "The Dialectic Approach to Strategic Planning" which suggests setting up a two team debate. Myers et al [1989] and Metcalfe [1995] are more recent writers; see also the 'Argumentation' journal. This critique method is particularly useful for thesis and report writing as it provides strategic advice on how these should be structured.

Critical social thinking [Turner, 2000] is a sub set of argumentative critical thinking that is usually assumed to have emerged from the Frankfurt School which includes Adorno, Habermas and Marx. Rather than a 'how to do' method it is a 'what to think about method'. It is best known for calling for a "workers" or 'dis-empowered persons" perspective on business activity, and for exposing implicit power structures. It is therefore, a very person-level analysis rather than that typical of economics or sociology that undertakes studies at the level of nations or the whole of 'society'. Turner [2000] argues that the focus on 'empowerment' needs to be widened to view business problems as resulting from individual human needs. He believes that critical social thinking should be using the perspective of humans as sensory individuals who are striving for food, relationships and their place in a community. As a result of this 'state' being similar for most humans, various powerful stakeholders 'institutionalise' these needs, foibles and wants into organisations. For example, the need for safety becomes the police force or the army. Institutions of society should be examined and evaluated for the underlying human need and for how they became institutionalised.

Marx and Engels' critique method [Sowell, 1985] was to consider the '*underlying dialectic forces*'; in their case this was mainly to examine the underlying political and social forces resulting in the class struggle. For modern business not only is this a viable critique method but it still remains extremely useful: For example, in understanding e-commerce in terms of the political, economic, social and/or technical forces driving it could be very informative to IS students.

Systems Design [for example Churchman, 1973 Ulrich, 1983] is a critique method that places much emphasis on relationships and boundaries. The boundary concept can be particularly enlightening and can be used as either a 'scientific' (hard) or 'social' (soft) critique method. The hard form is most often used for 'engineering' systems like computers, or railways, while the soft systems are usually people and artefact combinations. The soft system is assumed to be self-conscious and purposeful, both in itself and for the person observing the system. So, for example, the systems thinking method provides a useful way of thinking about such 'things' as Venezuela, an organisation or a marketing strategy. If thought about systemically, rather than as inanimate objects, then a different perception emerges.

Another method to assist thinking, advocated by Mitroff and Linstone [1993], is the *Multiple Perspectives* approach that advocates the analysis of business systems via three perspectives; objective, subjective and personal. These three align with the theory of knowledge from philosophy. The Multiple Perspectives approach is embedded in the systems thinking approach, the dialectic and stakeholder analysis that argue for systems to be perceived from different users' point of view. This extends the critical social view beyond 'the un-empowered", to all stakeholders. This multiple view means that it also overlaps with the metaphoric analysis method for thinking about thinking.

Metaphoric analysis [Richards,1936] sees the social construct of artefacts as being achieved through the use of constantly refreshed linguistically derived images. The classic study in business is Morgan's 'Images of Organisations', with different metaphoric perspectives of organisations, such as the mechanical, organism, and psychic prison and so on metaphoric perspectives. Each image powerfully reveals a different way of seeing the management issues related to organisational life. Even social constructs like accountancy, marketing and other business disciplines can be better appreciated using this method. It is particularly effective as it is embedded in language, which is entirely metaphorical.

The *evolutionary view* [Dennett, 1996; Schumpter, 1942] is related to Marx and Engles' underlying dialectic forces, as reflected in the famous saying, 'you can't understand the caterpillar, if you don't know about the butterfly". Given the impact of Darwin's work on Europe and that Marx was writing immediately after Darwin the connection would be expected. While the evolutionary view has been misused as support for right wing politics, it remains still a very useful way of understanding some problems, especially those involving biological entities. Where did the problem come from? What are the forces over time acting on the problem? The power problems endemic in soft systems can be understood in terms of

humans as a hierarchical species, competitive cooperation and people's motivation could therefore be rooted in their families needs rather their own.

There are numerous other possible methods. It is assumed that they will fall under the general classifications of objective or subjective (hard and soft). Emergent/complexity science is an example. Indeed, it is sometimes difficult to determine what is not a possible critique method, particularly under metaphoric analysis. The answer to this is the type of issues that those claiming critique methods as their core competency, need to consider. Take, for example, SWOT analysis. It is possible to perceive this as a sub-set of the dialectic method. Strengths versus Weaknesses, Opportunity versus Strengths, Internal versus External analysis which, in turn, is related to the powerful 'compare and contrast' tool for thinking". Strict classification is not considered helpful but some consideration of these methods relative to each other seems wise.

Awareness of these methods must surely be important education to any IS graduate so as to equip him or her to deal with new problems. These problems include how best to undertake an inquiry deciding on the usefulness of a new technology, whether to enter a new market or to support a proposal for new regulation.   Practice at applying these methods, and any other methods, to IS problems is essential and should not be taken for granted. It would be appear to be IS academics' core competency to know about these methods and be able to compare and contrast them. For example, a metaphoric analysis of gravity may explain how humans understand gravity, but it would be of less use to understand the physical force. Which are the useful methods for which problem? If they are methods then what are their attributes and relationships to the other methods. Exposing this often requires some practical applications, or doing things.

Learning By Doing

Finally, I think there is less of a distinction between the core and non-core competencies - the "core" can only be honed and tested 'for real' through design and implementation in the "non-core" techniques.

Andrew

There is extensive management literature on 'learning by doing,' action science, double loop learning or action learning [Agyris and Schon, 1996]. This presents the argument that learning (inquiry) is best considered a reflective dialectic, with two interactive elements. The first is what this paper has been calling critique methods," most of the action learning literature calls it "theory". The second is some 'action (doing activity). A looped process in suggested so that the learning is:

- Think about the task,

- Try and apply that thinking to doing the task,

- Maybe note a difference between what you had thought will happen and what actually happened,

- Reflect on this difference,

- Maybe modify you thinking about the task and try doing the task again.

An IS lecturer's example may be to help students learn the concept that problems could be 'thought about' using Marx and Engle's underlying dialectic forces method. Then, the lecturer might get them to read a corporate case study, or listen to a manager recount a current real problem or learn a technical skill like mastering a computer package. They may next ask the students to try and use the 'underlying' dialectic' to review the task (eg. the manager's problem). Different students could use different methods, and present their thoughts to the rest of the group.

This process of honing the critique methods (core competency) against real pragmatic tasks is considered essential for deep learning.

The second element in the action learning loop should provide direct sensory inputs. This 'doing' element is particularly relevant in a professional discipline such as business studies, where course designers feel under some pressure to provide graduates who have a reasonable level of specific 'hands on skills', for example, Chairing a meeting, writing a report or drafting a spreadsheet. However, it is important to remember that these tasks are being done as part of trying to organise some very complex, purposeful, social systems. In the 'action world' of commerce these 'doing' things can easily dominate the day-to-day routine of managers to the extent that even they can fail to appreciate what perception is being used to deal with this complexity. Plans have to be drafted, meetings concluded and analysis completed; this is the 'doing' that will only involve surface or 'first loop' learning if some thought is not given to altering the 'doing' and refining the perception. For example, learning a few new spreadsheet commands is considered surface learning, compared to thinking about a systematic approach to learning now to use any new software that comes along in the future.

The same is true in the classroom. Learning how to 'do' things, such as presenting reasoned arguments, essay writing, drafting critical path analysis, costing assignments or remembering the 'four Ps' are relevant for a business student. Different types of organisational structures and the role of different specialists are also important for a student to appreciate. But these problems are just a sample of old problems that graduates have had to face in the past. It is being argued that the problems that can be identified now should be thought of as 'pilot problems' to be used as the testing ground for the application of the critique methods. They should be used to develop the more generic competency of thinking so as to be able to deal with the myriad new problems they will face in later life (second loop learning). So for example, consider teaching first years how to use Excel spreadsheets. Assume that the lecturer had first outlined the systems thinking method. Then the student is introduced to spreadsheets and given some assignments to learn the commands and how to structure a simple calculation: a typical 'doing' activity. The system thinking can be used to ask how spreadsheets might be used as part of a corporate electronic information system, or how to think systematically and systemically about both learning new software applications and new financial models.

It is important that both parts of the learning loop be present at the same time. There is an essential recursive interaction between the two. As the commentators above pointed out, the core competency comes from 'doing' experience and 'doing' is directed by core competencies. Separation or the minimisation of one without the other is not considered useful. Adler [2001] argues against separate critical thinking courses for undergraduates, at first glance this seems strange as being able to think critically would appear to be a core competency. However, his concern is that this competency is better developed against a relevant action. He is against thinking about thinking with no locating action. In this case, the action would best be some IS related activity.

It must therefore be possible to construct a hierarchy of useful activities for someone seeking an IS education. At the lowest level would be general knowledge. Thus, the development of critical skills against activities, such as 'who to vote for' or 'whether to re-cycle' may be a good starting place but not as useful as developing those skills specific to IS problems. Not only is there a need for students to usefully criticise how the spreadsheet is designed, but also there is a need for students to usefully criticise its role in the planning process. With Chairing meetings there is a need to be critical about how the meeting is designed, how contributions are to be evaluated and how to critically appraise the effectiveness of the meeting. The problems then become more complicated, how to design a well balanced critical report; how to critically appraise an organisation's strategic planning; and how to critically appraise the functioning of an organisation in a global marketplace or under a regional government. While there are rudiments of how to think critically, they need to be honed on very relevant activities.

Relevant Activities

Although the textbooks and present courses abound with examples of techniques for students to master, it does seem important that lecturers be very aware of contemporary issues in their discipline: the use of 'love-labels', in marketing.

This means that there is first a very strong need for business academics to keep in touch with business or the community. Second, is appreciation that the reason for contact is to acquire contemporary problems to which the critique methods may be applied. How, and how best to maintain these links between business and Business Schools? Another question was put to the academic listserver:

The authors said:

Industry and University Interaction.

This may include academics moving between the University and industry, running short corporate courses and consulting. However, there are often glass barriers to these activities by those locked into a 'humanities' view of the role of Universities. For example, industry collaboration can be discouraged implicitly by time spent in industry not be as highly regarded as academic publications or by inflexible salary and superannuation exchange arrangements...

I would like to hear your comments on these issues. How do we better educate the educators? What are the main problems, and how might things be improved?

Mike

The replies included:

... making tenure dependent on staying current; tenure should not be automatically renewed if you don't spend (say) one full summer every 3-4 years in collaboration with industry.

Open-sourcing classroom content (like MIT is now doing) would also help;

it's much easier to keep existing content up-to-date than it is to reinvent a course every time the teacher changes.

Karl

As a practitioner most of my peers and I felt that we were pretty educated on leading edge ideas if we read HBR or the occasional item by Krugman, Arthur, Shapiro, Varian or Norman. Frankly, we did not even think of academic stuff and got most of our learning from consulting institutes like E&Y's centre in Boston, the Santa Fe institute or some other similar place. Most of the academics I met seemed to be totally unaware of the operational issues that we faced and were like the old joke about economists - seeing stuff work in practice and wondering if it works in theory.

Attend the occasional practitioner conference.

Peter

...Send staff to practitioner conferences from time to time.

As Head of School and now a director of a research centre I have sponsored extensive industry networking of staff, at launches, breakfast and industry seminars, and frequent guest speakers to staff and students - we have also appointed an adjunct professor from industry who comments on programmes and research issues, as well as … grant schemes. Our research centre has an industry advisory panel who also help ensure research directions are industry relevant.

…student placement schemes and practicum

I have also been studying a dot.com closely to see how its business model holds up, and this is relevant in my current e-commerce teaching.- used as a running current example. …also videos of current authorities when available but this needs evaluation.

I think that students appreciate more being told a good story by someone they can respect as qualified rather than be told - "read the MIT site and see you in 13 weeks". A good secondment, or consultancy facilitation model would be an answer here…

John

I was interested in an idea where the Chamber of Industry and/or some community group was asked to publish an annual list of research questions it would like studied by IS academics.

Yes, that's an idea I would wholly endorse! I have heard of this happening in limited cases …

Suggested Solution:

- *Involve leaders in industry as teaching partners with the faculty*

- *Maintain the curricula on a "perpetual leash"*

- *Faculty research should become more pragmatic - highly integrated with industrial practice and with the classroom*

- *broad based invasion in traditional curricula*

- *Industry pull-driven teaching styles*

- *Regular, executive and international programs*

- *Industry driven research*

- *Holistic approaches to research*

- *Understanding how traditional problems may not fully capture the nuances of the new problems.*

Ram

I have found that writing teaching cases in real corporate IS settings to be an excellent mechanism for staying relevant. Writing cases gets the faculty member into real organizations and investigating current, real issues, but in a fashion that does not normally raise barriers.

Sid

… ensuring that industry is providing the education sector with feedback and guidance as to what is relevant, this is not only in terms of teaching but if the relationship is at the right level, hopefully also in terms of research. By doing this we are hoping to keep education (and by extension educationalists) relevant.

Although looking for industry-based work is certainly viable and a good idea I would certainly like to also see this as a relationship where perhaps someone coming from education can offer a different skill set. An academic who is coming to work in industry to gain experience almost has a negative connotation and maintains an "us and them" attitude. Increasingly though areas such as developing a research capability can have a value-add for industry and who better to provide this service? In my view the ideal is a partnership where each side sees the value in what the other is able to offer, although this might take a leap in faith from both for it to work!

Andy

Conclusion

This paper has sought to argue that the IS academic's core competency may be developed as methods for critiquing technology related problems. IT academics can be experts on engineering design, and IS practitioners can be the experts on implementing appropriate technology to assist their business. But IS academics could develop their core competency as how to go about thinking about whatever new people related problems these managers may come across. Examples of these thinking methods include critical thinking, metaphoric analysis and use of the dialectic, which need to be validated and developed against a range of contemporary business problems. This task of validation and development of suitable critique methods would be the task of IS academics.

While technologies to assist IS academics develop relevant critique methods may be worth developing, care would need to be taken that design and using the technology did not distract from creative and flexible thinking. It is accepted that designing technologies can assist thinking processes but the mechanisation of thinking may not expand the supply of new ideas.

Thinking about our thinking, especially in a way that will improve out problem solving about technology issues, is not going to be easy. Critique methods do exist but they need to be understood and developed against relevant problems. Industry does not have the time for such development nor have the overview of several similar projects. Unless they change path, IS academics expect to remain second-class practioners, as they will struggle to catch up with the knowledge of those who are immersed in technology related problems everyday. One way for IS academics to go is to focus on the thinking process. That the future will be full of new problems is about the only safe forecast in the IS industry. Having ways to set about thinking about those problems is going to be useful.

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Biographies

MIKE METCALFE: associate research professor, University of South Australia, PhD (Adelaide, Australia) 1994, M.Sc. in Business Planning (Salford, UK) 1981. His publications include 4 books plus refereed articles on 'the design of human inquiry', including information strategies, research methods and forecasting; he is 50 yrs, and has worked in the merchant navy, the army reserves, system design, teaching and consulting including two and half years as adviser to the Deputy Premier of South Australia; present research interests include the use of argument and multiple perspectives to define projects; present employment is as thesis advisor for the Information Systems Doctoral School.

JONATHAN WILSON: PhD Candidate, University of South Australia, BSSc in Information Management and Philosophy (Queens, Belfast) 1999. He is 27 years old, and currently employed as Contracts Manager in the Industrial Supply Field. Research interest is the use of information systems to persuade via CMC, especially at a level of personal interaction; rhetorical criticism and hermeneutics.

CARMEN JOHAM has held a number of management positions where she has designed, programmed and supervised the implementation of information systems for business like General Electric, Mobil and IT Universities. She is also a PhD candidate and Research Associate at the University of South Australia's Information Systems Doctoral School. She holds a BA and BSc in Computer Science from the University of CUMT-Venezuela and a Masters in Business Administration from the Adelaide University. Her present research interests include information policy systems and strategies, social aspects of information for socio-economic development and IT diffusion models in developing countries.