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From experience to knowledge in professional IT management education: exploring the applicability of classroom learning to real-life contexts

Research Article

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Abstract: By understanding knowledge to be performative – a 'dynamic and ongoing social accomplishment', rather than a representation or commodity – we view knowledge, or more accurately 'knowing', as a capability that emerges from, is embodied by, and embedded in recurrent social practices. The fluent knowing-in-practice that distinguishes an expert practitioner from a novice is developed through the reflexive interaction of the practitioner with their peers and their real-life work practices . Our key aim in this research was to explore whether it is possible for the abstracted classroom setting to approximate real-life work contexts, thereby enabling the active physical, mental, and emotional engagement of learner/practitioners within their community of practice, which have been demonstrated in the literature to be central to learning. How might training programmes actively engage learners in this way? We explored these questions through focus groups and interviews with participants on a professional IT management training programme and found that real-life contexts can be approximated to an extent, such that learner/practitioners are enabled to learn from their own and each other's experience of addressing issues in relation to IT management.

Keywords: *communities of practice; experience; knowledge; knowing; learning; practitioner*

INTRODUCTION

This paper represents an initial attempt to develop an understanding about how professional IT management education can be made more effective and applicable to real-life contexts. Using focus groups and interviews with participants on the training programmes developed by the Innovation Value Institute, a research centre based at Maynooth University, we have explored issues of knowing and learning in an abstracted classroom setting to improve the value of these IT professionals' learning experience.

The first section of this paper outlines the theoretical perspective that has informed our study; the Innovation Value Institute, its IT-Capability Maturity Framework, and the training programmes developed around it are described in the second; the third section describes our research approach and presents our case; our findings are discussed and analysed in the fourth section; and finally, in the fifth section, we offer some conclusions.

KNOWING-IN-PRACTICE AND PROFESSIONAL LEARNING

There is a growing body of literature that posits knowledge as a performative capability, a 'dynamic and ongoing social accomplishment' (Orlikowski, 2006: 460), rather than being a representation or commodity (Foucault, 1980) that can be shared or transferred unproblematically. This goes beyond merely understanding that knowledge can be

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both explicit and tacit (Polyani, 1966), or comprise knowing-*how* as well as knowing-*that* (Roland, 1958; Ryle, 1949), but requires a fundamental shift from thinking about 'knowledge' at all, and focusing instead on 'knowing', which emphasises the performativity of what people know. A practice perspective allows us to explore 'the embeddedness of the mental activities of understanding and knowing in a complex of doings' (Reckwitz, 2002: 258).

The notion that learning is largely a process of socialisation and identity building through demonstrated ability, that is *practice*, is central to the concept of communities of practice (Lave and Wenger, 1991; Wenger, 1998) and extended networks of practice (Brown and Duguid, 2001). A community of practice is characterised by its shared *domain* of interest, implying a commitment to this domain, a shared identity, and collective competence or expertise within the domain; its *community*, the relationships that members build with each other through engaging in joint activities and discussions that enable them to learn from each other; and its *practices*, which are comprised of a shared repertoire of stories, tools, and approaches to addressing recurring problems (Wenger, 2011). In a community of practice, learning therefore takes place through a dynamic web of complex social relationships (Lave and Wenger, 1991; Wenger, 2011). More than being the acquisition of a commodity (i.e. 'knowledge'), learning is instead conceptualised as 'fundamentally a process of identity formation and empowerment through *participation*' (Yukawa, 2010: 55, emphasis added) within the community.

This takes learning, and hence 'knowing', out of the domain of the individual brain, locating it instead in a more distributed and complex web of interactions between peers, more and less experienced practitioners, and their situated, contextually bound, practices. Through experiential learning-by-doing, learning from others, and reflexive engagement with their practice, practitioners build their own experience and expertise (Jordan et al., 2009). The rule-following, rote-learning behaviour that characterises the early stages of practicing a new skill comes to be supplanted by a more intuitive and discerning 'knowing', which draws on an ever expanding repertoire of prior experience, of what the most appropriate course of action is in a particular situation (Dreyfus and Dreyfus, 2005). As a learner builds upon their experience, engaging and reflecting upon the choices they have made and the consequences of those choices on the outcomes of their practice, they develop and enhance their own expertise (Dreyfus and Dreyfus, 2005).

Simultaneously, practitioners build their identity and reputation with their peers, through demonstrated capability and recognition by relevant others as expert in their field of practice (Lave and Wenger, 1991). Participation, encompassing both action and connection, is central to the development of identity in the context of the community of practice (Handley et al., 2006). Identity is realised through shared 'principles, practices, values, and leadership skills that help students become respected and contributing members' (Yukawa, 2010: 60) of the community.

It is no longer sufficient to conceptualise learning, and by extension 'knowing', in terms of knowledge acquisition by an individual. Instead, it comes to be understood as 'a dynamic and ongoing social accomplishment' (Orlikowski, 2006: 460) embedded within the community, enacted and reinforced through the practices of the community (Gherardi, 2009). It is this fluent knowing-in-practice, developed through the reflexive interaction of the practitioner with their peers and their real-life work practices (Gherardi, 2009; Jordan et al., 2009; Nicolini, 2011), that distinguishes an expert practitioner from a novice (Dreyfus and Dreyfus, 2005; Lave and Wenger, 1991).

Making classroom learning applicable in real-life contexts

Thus, if knowing (rather than knowledge) is a capability that emerges from, is embodied by, and embedded in recurrent social practices (Foucault, 1980), then designing training materials for classroom-based professional education presents a particular challenge (Becker, 1972). Not only is it necessary to account for the epistemological and ethical entailments of knowledge sharing (Duguid, 2005) between a trainer and participants from a potentially vast array of industrial sectors (Brown and Duguid, 1991, 2001), but also for the abstraction of the practitioner from the locus of their practice.

A lot of the practice-based research that explore how practitioners develop and demonstrate their expertise focuses on the learning that occurs whilst they are engaged in their work, for example Lave and Wenger's (1991) studies of the apprenticeship models of learning amongst butchers and seamstresses; peer learning and community development between insurance brokers (Wenger, 1998); or the negotiation, maintenance, and reinvention of medical professionals' identity (Korica and Molloy, 2010). Another key theme examines the formation of identity and cohesion of communities in virtual or online communities (c.f. Mills et al., 2014; Oztok, 2013). There is a thread of commonality running through these studies that transcends the variety of situations examined, however. Knowing is demonstrated and learning takes place through the learner/practitioners' active engagement within the community: physically (with practices and tools), mentally (reflection on actions and outcomes, storytelling), and emotionally (through connections and interconnections).

Our key aim in this research was to explore whether it is possible for the classroom setting to approximate real-life work contexts, thereby enabling the active physical, mental, and emotional engagement of learner/practitioners with their community of practice, which have been demonstrated in the literature to be central to learning. In what ways is this accomplished, and/or how might training programmes be adapted to compensate for the abstraction of the learners from the locus of their daily practice? By understanding better how to establish this dynamic in the classroom, we believe that we can provide a learning experience that is more readily applicable to real-life contexts and thus, enable more meaningful interchange of ideas and more robust learning.

THE INNOVATION VALUE INSTITUTE

The Innovation Value Institute (IVI) is a collaborative, multi-disciplinary research unit co-founded by the Maynooth University (MU) and Intel in 2006 (IVI, 2014b). Based on the MU campus, IVI is both an academic research unit and a viable commercialised entity, coordinating a global consortium that contributes to the development and validation of the IT-Capability Maturity Framework (IT-CMF) (IVI, 2014a). The IVI consortium currently has over 75 members, including public and private sector organisations, academia, professional associations, and professional service organisations from Europe, the US, Canada, Japan and Australia.

The IT-capability maturity framework

The IT-CMF is a framework designed to manage information technology (IT) to deliver business value across four main vectors, or macro-capabilities: *Managing the IT Budget*, which comprises the input to the production process; *Managing the IT Capability*, which is seen as the production engine; *Managing IT for Business Value*, which is the core output; and *Managing IT like a Business*, which provides feedback to adjust the inputs to optimise the output value (IVI, 2014c).

Each macro-capability is further broken down into distinct yet interrelated critical capabilities – currently 35 in total – that outline the key activities and procedures that will enable the IT organisation to plan and deliver IT solutions, measure the business value of its initiatives, and understand where IT is positioned within the wider organisational context. Each critical capability is described in terms of capability-building blocks, or elements that should be addressed at each level of maturity; a summary description of each level of maturity from initial (unmanaged) through to optimising (value-centric IT management); and a roadmap for incrementally improving maturity in the key areas identified (IVI, 2014c). Higher levels of maturity are achieved and evidenced through improved alignment between IT and the rest of the business, thereby enhancing both the value of IT to the business and the value the business can generate from its investments in IT.

Unlike other maturity models, for example, CMMi or Six Sigma, the IT-CMF does not necessarily recommend an organisation should aim for the highest levels of maturity across all critical capabilities. Rather, by taking an integrated and holistic approach to IT management within its organisational, industrial, and national contexts, the IT-CMF helps individual organisations to identify the areas of critical importance to its strategic and operational success, and provides an incremental roadmap to help improve IT capabilities to a contextually appropriate level in those key areas.

IT-CMF education programmes

Within IVI, the Education team has developed a five-tier training programme, and it is envisaged that professionals will move through these tiers as they develop and deepen their practice. Initially, participants develop a basic knowledge and elaborate their understanding of the IT-CMF through Tier 1 and Tier 2 courses. In Tier 3, 4 and 5 courses, however, participants begin to apply and evaluate their learning, becoming more reflexive and critical consumers of the IT-CMF and transforming their IT management skills in a way that reflects the intertwining of their prior knowledge with their experience of using the IT-CMF in real-world contexts.

Tier 1, a one-day ‘passport’ course, offers an introduction to the IT-CMF aimed at CIOs and high-level IT managers. By the end of the training, participants can articulate the business value of the framework, describe its structure, and explain how the framework can be used to assess the challenges faced by their organisation. Since assessment is an intrinsic part of using IT-CMF, they will also learn about the types and application of IT-CMF assessments, and the processes used to carry out an assessment. This is achieved with a combination of didactic presentation, hands-on exercises, and facilitated class discussion.

Tier 2 is a three-day offering (the *Passport* course forms the first day of this level of training) geared toward managerial level IT practitioners and IT consultants. Building on the learning of the *Passport* course, participants further develop their understanding of how to navigate the components of IT-CMF critical capabilities, and demonstrate how particular critical capabilities can be used to improve the business value of IT. This course focuses on two or three specific critical capabilities, such that participants can deepen their knowledge of these capabilities and apply this understanding to increase IT capability maturity. As before, this is achieved with a combination of didactic presentation, hands-on exercises, and facilitated class discussion.

Tier 3 and 4 training courses are intended to certify participants as assessors and change management leaders using the IT-CMF. Finally, training at Tier 5 has been encompassed by the MSc in IT Management offered through the IVI by the School of Business at MU.

RESEARCH APPROACH

Our primary data were collected through focus groups with course participants at the ends of the first and third days of two separate offerings of IVI's Tier 2 training programme, which were followed up with individual interviews approximately two weeks later. We took a focus group (Barbour, 2007) approach in an attempt to harness each group's collective sensemaking, extending the participants' engagement with each other, and allowing them to generate a 'communal' understanding of how they had engaged with the training exercises. The follow-up interviews (Kvale, 2007) allowed us to solicit the participants' opinions on an individual basis.

Most training programmes solicit feedback and evaluations from their participants to gauge how well the delivered programme matched the expectations of the participants. Such feedback is usually given via a simple survey tool, either on paper or online and is intended to allow the programme developers understand what elements of their course learners found particularly useful, or otherwise, and adjust the programme accordingly (Yukawa, 2010). Occasionally, such evaluations are supplemented with pre- and post-training assessments, surveys, or examinations to gauge the extent of learning that occurred over the period of the programme (Mills et al., 2014). In either case, such evaluations capture the individuals' responses to a standard set of questions in relation to their overall satisfaction with the training course. These may then be aggregated so as to extrapolate the average of participants' views. We feel that our approach enhanced the standard *individual* participant feedback evaluations applied to the IVI's programmes, as we were collecting the *groups'* feedback – the negotiated, co-constructed understanding of how the participants had worked together and learned from each other while engaging in the exercises. Focusing on the learners' responses to and engagement with specifically identified exercises (rather than a more general focus) also allowed us to interrogate the learning opportunities they presented more deeply.

Data collection

The collection of primary data was conducted over two separate sessions between April and June 2012. Participants on two of IVI's three-day Tier 2 training courses were invited to take part in a brief focus group at the end of both the first and the third days' training. Sixteen contributed to the focus group at the end of Session 1/Day 1, of whom thirteen participated at the end of Session 1/Day 3. There were seven contributors to both of the Session 2 focus groups.

Conscious that our participants had just completed a full day's training programme, the focus group sessions lasted no more than thirty minutes and aimed to understand how the exercises that are built into the training materials were used by the course participants to make sense of the IT-CMF within their own work-life contexts. The timing of these focus groups was deliberate to capture participants' views at different stages of their learning journey. The information gathered at this time was also fed back to the course designers.

Each participant was subsequently invited to participate in an interview with the authors. These interviews, which lasted about thirty minutes, were purposely scheduled to take place around two weeks after the training. This was to allow participants the chance to utilise the IT-CMF in their work, giving time for the framework to be further contextualised and grounded within their own practice, while the training programme was still a fairly recent memory. The data gathered thus far represent preliminary findings, and it is intended to carry on with this research agenda to confirm and expand the results to continue to improve the learning environment that we provide to our course participants.

Presentation of case

A great deal of complex information is presented to participants in the three-day course, and it is easy for participants to become overwhelmed or fatigued by this volume, depth and rate. The exercises have been designed to offer a change of pace: allowing participants to slow down; read, understand, and absorb the materials; and try to apply them in a non-pressurised context. These exercises are usually conducted as group work, with between two and four members. Quite often, the groups will form naturally, with participants from the same 'home' organisation teaming up together.

From an 'application to real-life' perspective, there are two types of exercise: Type 1 calls on participants to use their own real-world knowledge and experience and apply an aspect of the IT-CMF to develop a solution to a real-life issue; while Type 2 presents participants with a previously constructed problem, for which they must develop a solution. For the purposes of this research, we focused on two specific exercises, one of each type.

In the first exercise (Type 1), which we refer to as the *Clustering exercise*, participants are presented with a fairly large selection of pre-defined clusters of critical capabilities aimed at solving particular types of commonly reported problems or issues. Participants must first choose a real-life problem that they wish to tackle and then identify with which of the listed issues this resonates most closely. They must then narrow down the cluster of critical capabilities to the three key capabilities they will choose to address the problem. This exercise is on the first day's programme.

The second exercise we examined (Type 2) is conducted on the afternoon of the third day's training. Here, participants are presented with a pre-prepared problem, framed as an IT-CMF assessment report, from which they must identify the assessed organisation's problem(s) around a specified critical capability. Using this report and the POMs[1] provided, participants must extrapolate recommendations for the organisation's short- and medium-term development in order to address the identified problem and improve maturity in the specified capability.

KEY FINDINGS AND ANALYSIS

We identified four key themes that emerged from our analysis of the responses to the focus group sessions and interviews in relation to the exercises:

1. The participants' increasing engagement with the tool;
2. The applicability of other participants' experience and the significance of peer-to-peer learning within the groups;
3. The various 'selling points' of the tool identified by the groups and individuals; and
4. Potential improvements for the overall programme design.

Increasing engagement

Generic exercises allow those who are new to the IT-CMF to learn about how and when it can be a useful tool, giving them a chance to learn 'the rules' (Dreyfus and Dreyfus, 2005), that is, when it might be appropriate to use the tool and which of its permutations is more appropriate for the particular circumstances described. We found that having the participants use examples from their own experiences in the earlier exercises helped them to ground what they were learning within the context of their own experiential domain. By effectively acting as a thought experiment, the participants engaged with the exercises in a highly individualised and practical manner.

Through their engagement with the exercises, the participants came to view the IT-CMF as a flexible tool that can be used to address a wide range of specific issues.

> *It just brought home to me how deep the IT-CMF and just how extensive it is… I hadn't realised that… and how the bespoke aspect of it… how deep you can go and how much bespoking you need to do.*
>
> Participant G, Session 1, Day 1

Rather than being a series of stand-alone critical capabilities, it is an intricate and interlinked framework that can comprehensively address real-life issues.

> *It was important to understand the hierarchy between the anchor, the core and the supporting [capabilities]… but that it's not written in stone. The hierarchy keeps changing depending on the problem, or the issue, or the context that you're looking at.*
>
> Participant F, Session 1, Day 1

… where you were covering the relationship between CCs… that kind of locked into place then that there's a ripple effect, potentially from what you start with… so even that cluster has a ripple effect out into other areas.

Participant A, Session 2, Day 1

Engaging with the exercises gave participants the opportunity to test the framework against a scenario with which they were intimately familiar.

I found it very helpful to put it in the context of a real-life issue because that gave me something to stack the content up against and apply it

Participant D, Session 1, Day 1

What was useful about the Clustering exercise was applying it to a scenario in your own company, which helped to get your head around it

Participant B, Session 2, Day 1

Participants thus began to identify for themselves how the IT-CMF might have been applied in a real-life situation.

That scenario segment made me think… what are the problems we are trying to solve? And that Clustering maybe gives you the ability to step back and consider what are the priority issues we are trying to fix?

Participant C, Session 2, Day 1

As IT practitioners and managers, the participants already had first-hand experience of using various other tools and frameworks to guide their work. Whilst they were still learning about the intricacies of this particular tool, their fluency with applying such frameworks permitted an accelerated move away from rote-learning models and toward a more intuitive and competent application of the IT-CMF to their identified organisational issues based on their own expertise (Dreyfus and Dreyfus, 2005).

Applicability of others' experience

A relevant practice within a domain of experience is considered to be any activity 'that the action of engaging in it is consequential for the development of the activity' (Feldman and Orlikowski, 2011: 42). Physically engaging in practical activity is, therefore, just one way in which IT practitioners 'do' their work. Similarly, thought experiments, thinking through problems (both real and hypothetical), and discussing hypothetical solutions are also ways in which the activity of IT practitioners plays out. The learning environment we tried to create emulated these thought experiments and encouraged participants to (hypothetically) apply the tools they were learning about within the context their own real-life experience.

Despite the variation in participants' home organisation, including factors such as the size, sector, focus, and even country of operation, the examples discussed were, to a greater or lesser extent, analogous and relevant to all the participants.

I don't think [the others' examples] were that far removed [from my experience] though. We're talking about an IT organisation… they're all pretty much the same thing, just on a scale, size.

Participant C, Session 2, Day 1

At the very least, the issues of concern were understood by all, emphasising that as IT professionals, their community of practice was capable of transcending the apparent specificities of their organisational bases. This eased some of our concerns in terms of trying to develop materials of relevance to IT practitioners from a range of backgrounds.

Group learning

Short debriefing sessions around the table after the exercise exposed a range of thoughts about, approaches to, and hypothetical applications of the IT-CMF that often seeded further conversations about how the tool could be used in practice. Indeed, several of the participants commented that these debriefing sessions were a particular, albeit unexpected, highlight of the course because they opened avenues of thought that would have otherwise been missed, while simultaneously demonstrating how the IT-CMF might be applied in real-life.

There is no single 'right' answer for either of the exercise types outlined above, both of which were set up as team efforts. Participants were invited to share their approach to the exercises, and their interpretation and application of the framework to the particular problem. The participants found value in discussing possible relevant scenarios to fit the context of the exercise and their approach to solving the problem within their smaller teams.

We had to agree on a particular client situation first… our discussion of the client situation deepened our understanding of how the [tool] might have applied.

Participant D, Session 1, interview

Participants also identified significant learning opportunities from the larger group's discussion of each team's proposed solution to the exercise. A debriefing after each exercise allowed participants to present their recommendations and describe their choices. The subsequent discussion was found often to be just as informative as engaging with the exercises, as participants considered their peers' alternative interpretations of the provided artefacts and different approaches to making recommendations.

The feedback from the exercises was a really important opportunity for learning from the others.

Participant C, Session 2, Day 1

The good thing about the mixed group… was to hear their feedback, and to hear their application from real life… I found the application relevant from my own role, but I also found it very interesting hearing how other people found their argument against their real life roles.

Participant E, Session 1, interview

It was good to get the different perspectives

Participant E, Session 2, Day 1

It's a lot about language as well. The way people will use language differently that could be used to get across the message… just putting a different slant on it, a different emphasis with language. That was quite useful

Participant D, Session 2, Day 1

The socially embedded nature of learning (Orlikowski, 2006) was thus demonstrated by the participants own descriptions of their learning experiences, both within the focus group setting and the individual interviews. Through their interactions and the emerging connections developing within the larger group dynamic, participants created opportunities to negotiate a 'communal' understanding of various problems and potential solutions (Duguid, 2005).

Selling points

Unexpectedly, we found that the training programmes also served as a sales tool, both for the IT-CMF itself and for the participants taking the framework back to their organisations and/or clients. On the one hand, some participants reported that they were evaluating a number of potential IT management frameworks and had attended the training to learn more about the IT-CMF. Through engaging with the practical exercises, they not only developed an understanding of the IT-CMF, but also realised that this was a framework that would work with their clients.

We were still wondering, we were asking ourselves… 'what is this? what is that?'… We started with some questions based upon the fact that we had no prior knowledge… and so we were just wondering, 'will it work? yes or no?'

Participant A, Session 1, interview

Through the training programme, participants began to more clearly identify and articulate how they might leverage various aspects of the framework to sell it, either within their own organisation, or to client organisations.

Coming from a consulting background… what would help take this to a client is that clearly there's so much work gone into validating the framework and collecting a body of evidence behind it and I think that is a differentiator

Participant F, Session 1, Day 1

Somebody like myself involved in day-to-day delivery, I'm not going in and selling the concept and selling the framework. I would be selling the optimisation and the physical improvements.

Participant D, Session 1, Day 1

Another participant saw engaging with the IT-CMF and the certification process through the tiered education programme, as being a useful way to move up the career ladder. By approaching the IT organisation from a managerial perspective, and understanding what and how IT can contribute to developing and enhancing the value of IT to the overall business, he felt that he was strengthening his position in terms of career progression.

I have to gain management experience and management roles in order to further my own career, and this again is more pitched at managing as opposed to doing… that's what I'm trying to do is try and move up to more of a managerial or strategy direction.

Participant E, Session 1, interview

Participants thus identified the potential to enhance their professional identity and legitimacy through demonstrating fluency or expertise with the IT-CMF – not simply with their learning peers, but more significantly within their home organisations and wider networks (Dreyfus and Dreyfus, 2005; Korica and Molloy, 2010).

Programme design

The views expressed by the participants in the focus group sessions also helped us to understand how aspects of the course delivery were perceived. Based on this, we were able to support some elements of the programme design and make some adjustments to other aspects.

Timing

Following the focus groups with the first set of training participants, we realised that we had not been sufficiently exploiting the potential for learning during the debriefing sessions. Therefore, we explicitly adjusted the timings of the course, extending the time spent on facilitated conversations during the second course. This allowed us to accommodate longer discussions and take further advantage of peer-to-peer learning.

Exercises

We found support for maintaining the variation in types of exercise, that is, using own experience and 'canned' examples, as participants believed their learning experiences were enhanced beyond mere rote memorisation.

There was a good balance between the exercises and they were a great way of making sure that the information was processed, not just memorised… combination of remembering and visualising

Participant D, Session 1, interview

Of course, it is not always possible, nor even desirable, to use such a wide range of examples. As the training programme progressed, the exercises became increasingly elaborate and complex. For this reason, the 'cases' to which the IT-CMF was being applied needed to be very clearly bounded in order that the participants not become side-tracked or overwhelmed. These more elaborate exercises tended to happen toward the end of the three-day training programme, which transpired to be a fortuitous coincidence, as participants reported more fatigue by the end of the third day and were less in the mood to think up suitable examples that would fulfil the criteria of the exercise themselves. This was most apparent with the first training group: at the end of the first day's training, they had been very enthusiastic about applying the framework to their own experiences, but by the end of the third day were decidedly subdued about having to come up with more examples of their own.

I think if you could take us through a scenario... and then just take that thing through… and just build that out, so you've got that context and you're building on that story. I think it would just give us something to latch onto.

Participant D, Session 1, Day 3

Course materials

Participants were each supplied with a professionally bound reference book that listed all the critical capabilities and included a high-level description and an overview of the capability-building blocks for each. This document was found to be difficult to use, particularly during the Type 2 exercise, which called for much cross-referencing and 'riffling' through the pages. The tight binding also caused frustration as the books were liable to close over and participants complained of 'losing their page.' Based on the suggestions from both sets of participants, this book has since been republished: within each macro-capability, the critical capabilities are now listed alphabetically; page numbers are provided for each; and the book is now spiral bound to enable easier access to each page.

Limitations of the study

There were different course presenters for each of the training sessions explored. The differences in their presentation styles and approaches to facilitating the group discussions could have a considerable effect on how the course participants engaged with the exercises, and how they subsequently described their learning experiences. In carrying on with our research in this area, we would intend to explore this potential correlation further.

Similarly, there were a different set of participants for each of the training sessions, with a different mix of genders, nationalities, sectors, organisation sizes, and types represented. Whilst both groups were energetic and motivated, the inter-group dynamics were markedly different, and this also had an impact on the direction of the focus group discussions.

Rather than trying to 'control' for these differences between presenters and participant groups, we acknowledge and welcome the disparities, which allow 'room for the complexities and contradictions' (Korica and Molloy, 2010: 1882) to emerge. As we expand this research agenda, we would intend to harness these differences to highlight various aspects of the learning experience, thereby improving the training programmes delivered.

Although this research represents preliminary findings based on a limited sample, we believe that our findings are of significance to the design and development of IT-CMF training programmes and can, to some extent, be extrapolated to IT professional education in general.

CONCLUSIONS

We have viewed learning and knowing through a practice lens, which emphasises the 'embeddedness of the mental activities of understanding and knowing in a complex of doings' (Reckwitz, 2002: 258) and attempted to show how the 'doings' of engaging with various types of exercise within a professional IT management training programme can provide a solid basis for developing and negotiating learning and new ways of knowing for participants.

For IT professionals, discussing hypotheticals is a part of their active practice. Thus, despite the apparently abstracted environment of the classroom, we found that the exercises in the training programme allowed participants to discuss, interpret, and apply the IT-CMF to both real and hypothetical scenarios – situating their learning and knowing within their practices (Nicolini, 2011). In this way, and in this case, the classroom environment did, to a greater or lesser extent, approximate aspects of real-life practice. We recognise that this is not the same as actually implementing the framework, that is, engaging with the assessment process and applying recommendations to improve capability maturity in an organisation, however, there was real practice-driven learning taking place.

As our participants increased their familiarity with the intricacies of the IT-CMF tools, their existing expertise as users and implementers of various other frameworks and tools came to the fore. Whilst still largely in 'rule-following' mode when it came to the specifics of the IT-CMF, this was off-set by a fluency and expertise in the principles of applying a framework for exploring IT problems. We would expect that practitioners will become more fluent and nuanced in their application of the critical capabilities through ongoing and reflexive engagement with the framework (Dreyfus and Dreyfus, 2005).

We must, however, acknowledge that these practitioners/learners are (to varying degrees) already expert in their field of knowing. Applying 'the framework' is not in itself a learning issue; rather it is the specific, relevant details of the IT-CMF for which they still require reference materials and 'rules.' Indeed, as familiarity increased, participants were more reassured and comfortable with the levels of complexity and interrelatedness embedded in the critical capability approach to understanding IT management.

The applicability of others' experience, despite the range of home organisations, confirmed for us that IT practitioners may be conceived of as a community of practice (Lave and Wenger, 1991; Wenger, 1998), demonstrating

a shared domain of interest, practices, and relationships (Wenger, 2011) that transcended the apparent variety of backgrounds. The exercises gave participants the opportunity to contextualise their learning, thus rendering the classroom context more applicable and relatable to their own real-world context, further grounding their learning in real-life experiences.

This is not to suggest, however, that the training experience is neither a necessary nor a valuable one. The experiential focus of the exercises within the training modules, using both real-life and 'canned' examples, and the opportunity to talk through their approach to the specific problem with their peers, offers participants the opportunity to discuss, test, and enhance their understanding of what the IT-CMF can do, and in what circumstances.

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Endnote

[1] The POMs (Practices – Outcomes – Metrics) are one of the artefacts associated with each of the critical capabilities that outline indicative practices, outcomes, and metrics at each level of maturity and correspond to each of the capability building blocks (CBBs). These POMs are not a prescriptive tool, but rather offer some guidelines to assessors (and assessed organisations) as to the types of behaviours and practices for which they should be seeking evidence, or aspiring towards.