Teaching Tacit Knowledge: The Role of "Intuition" or "Transrationality" in Educational Administration, Curriculum Development and Faculty Training at Post-secondary Schools

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Abstract. Hvorecký *et al* state that critical parts of knowledge management and the decision-making processes of higher-level managers have "a kind of reasonableness not fully controlled by our erudition and formal reasoning." [1] This study aims to build on the propositions of Hvorecký *et al* and apply them to key elements of the post-secondary educational system. If "managing [the] irrationality can be a rather rational process" [2], then it follows that it can be taught—or more likely fostered or "coached." The rational process proposed in the paper of Hvorecký *et al*—viz., "prevention-diagnosis-treatment" from the field of medicine would in turn be applied to the following areas: i. Post-secondary educational institution administration (and resultant organization culture); ii. Curriculum; iii. Teacher training.

1 Introduction: Tacit knowledge defined, rhetorical questions posed

Steve Jobs died a year ago. Did Apple die with him—at least the core, the attributes of the organization that set it apart from others? Dagada states that "his departure [was] a huge loss in the field of Knowledge Entrepreneurship" and that the danger is that when Knowledge Entrepreneurs or/and Knowledge Workers die, knowledge also goes six feet down…" [3] What becomes critical is how much of this knowledge can be transferred. But to what degree is this kind of knowledge even transferrable? And just how critical is this knowledge anyway, and how critical to any organization is a single personality? After all, selling five million iPhones in the first weekend of release isn't so bad.

Definitions of tacit knowledge typically include the concept that it is difficult to capture. If tacit knowledge is so elusive, so nebulous in nature, can it be taught? Tacit knowledge could be categorized to be largely in the area of the subconscious. If that is the case, then how can tacit knowledge be brought from the subconscious into the realm of the conscious? And if this can be done, how can it best be systematized and 'formally' taught? Or would even an attempt to do so effectively kill the process of tacit knowledge acquisition?

Hvorecký *et al* state that the critical parts of knowledge management and the decision-making processes of higher-level managers have "a kind of reasonableness not fully controlled by our erudition and formal reasoning" [4]. They go on to say that if "managing [the] irrationality

can be a rather rational process [5], then it follows that it can be taught—or more likely fostered or 'coached.' Going to a systemic level, how can it best be supported or fostered in the three areas of curriculum, teacher training and via academic administrators?

1.1 More questions to be answered and intent of this study

By what means can tacit knowledge most effectively be taught/coached/modeled? How best can we create tacit-knowledge-enhancing educational systems? How can tacit knowledge development opportunities be imbedded within and across curricula? What is the nature of an organizational culture that most effectively builds a sense of comfort, acceptance and support for developing creativity and risk-taking? How can tacit knowledge best be fostered in online learning in a medium which would tend to be intrinsically focus on quantitative and rational (i.e., "scientific") areas since it is inherently tied to text and the presentation of hard data?

To further clarify, this study will examine the role of post-secondary institutions in promoting and developing tacit knowledge, focusing especially on the role of administration and curriculum developers, and their respective processes and systems, but ultimately bringing it down to the learning activities within the classroom. Specifically, the questions of how transferrable tacit knowledge is and whether the development of tacit knowledge can be taught or enhanced, and what can be done in the classroom in order to do so, will be examined. The study also intends to have broader applications to organizations at large and trainings/workshops within a business setting. A concrete outcome of this study will be to list classroom best practices for enhancing the development of tacit knowledge, as well as to suggest ways to create an administrative culture that encourages the development of tacit knowledge.

2 Methodology; Or, how this study proposes to tackle the matter at hand

Having a specific title sometimes pays dividends. As the title of this study indicates, there are three pillars to support the development of tacit knowledge in a university setting: administration, curriculum and faculty training. Of course, these three broad areas only create a general framework, so let us break things down further and explain the methodology of this paper:

What can the direct supervisors of faculty do to create an environment that allows teachers to foster or coach the development of tacit knowledge? This study will begin with a survey of literature that will attempt to create a better understanding of the role and importance of tacit knowledge in the larger context of education. We will then look at how to move tacit knowledge from the realm of the subconscious into the realm of the conscious. Findings based on interviews with university administrators, program managers and department heads at a single teaching university will these be presented and discussed in order to get a sense of how much awareness there is of tacit knowledge as an element in education, determine its place in the learning process, and to find out what administrators do to create a supportive environment for

the development of tacit knowledge. In turn, each of the three pillars will be explored in terms of how they can best be developed to foster tacit knowledge development in learners. We will then arrive at a listing of best practices in the classroom to foster the development of tacit knowledge, and close the paper with conclusions and recommendations to give further direction on this topic.

3 Survey of the literature: Tacit knowledge deconstructed and demystified

Any study of tacit knowledge would be incomplete without mentioning its philosophical grandfather, Michael Polanyi. His expression, "I know more than I can tell," is a catchphrase that encapsulates the nebulous nature of tacit knowledge and the inherent challenge in capturing and transferring it. His work related to what we know, what we can know and the limits of knowing are important to any discussion of tacit knowledge: "What most forcefully struck Michael Polanyi was that, however ill-fitted the modern scientific methodological model was to substantive inquiry in the fields of the arts, society, and the humanities, it did not in fact correspond even to the way in which modern physical scientists themselves actually went about their work" [6]. He termed "the guidance available to all modes of human inquiry…'tacit intimation'—what we might call a kind of 'intuition'—but not 'intuition' understood in the sense of something subjective or mystical" [7]. He asserted it is a "'*trained* capacity,' one that is prepared only by our acquiring the competence that can come only from years of disciplined immersion…in our various fields of study" [8]. According to Polanyi, tacit knowledge, to a degree, can be explained, can be trained and, by implication, can be taught.

A wide reading of journal articles on the subject of tacit knowledge exposes one to language reminiscent of similar discussions on the development and importance of an organization's know-how, and falls within the realm of intuition and emotional intelligence. As well, much of tacit knowledge, the part related to how to lead and motivate a team of people, could be considered in the area of good old-fashioned sensitivity and the ability to take raw experience, process it and let it inform the dealings with others and situations within an organization.

How important is this tacit knowledge thing? Hvorecký *et al* open their discussion highlighting the critical aspect of "intuitive approaches" [9]. Callahan [10], maintains that "Some leaders…conclude that managers should let their tacit knowledge or intuitions guide them." Citing Klein, Callahan goes on to point out that "people make good gut decisions when their brains have stored 'large repertoires of patterns acquired over years and years of practice,' and that "Much of what we are doing when we develop expertise involves learning to recognize patterns" [11]. Looking for patterns is something that is part of our earliest education. Remember the simple pre-language exercises we were exposed to as children, where we were shown a sequence of shapes, colours or objects and asked what comes next? Obviously, the

elaborate use of tacit knowledge that goes into an experienced executives "gut feeling" that drives a decision is more sophisticated, but the ability to recognize patterns is at the heart of it.

Collins [12] describes a five-step process for transfer of "undocumented experience and knowledge"—how to arrive at a body of tacit knowledge, or "how to get it out": collecting (via interviews), organizing, validating, storing and transferring. If well-executed, these steps can not only help one arrive at the tacit knowledge an individual has, but also these steps can be deconstructed and analyzed in order to get at the process for understanding how to learn or foster tacit knowledge. Specifically, if the questions for an interview of an expert are known, this will tell us something about the quantifiable nature of the knowledge and/or intuition.

4 How to move tacit knowledge from the subconscious into the realm of the conscious and other semantic concerns

The literature seems to say that it is indeed possible to get at tacit knowledge, and to move it into the sphere of consciousness—at least enough to study it and the processes surrounding it. Hvorecký *et* al use the term "irrational" or "not-fully-rational knowledge" as the antithesis of "rational thinking and reasoning" [13]; however, the term "irrational" is somewhat problematic since it is widely used in psychology to denote a specific mental category or state. "Intuition" is another term that brings a lot of baggage, so perhaps the best approach would be to come up with a new term. "Transrationality," a combination of the words "transcendent" and "rationality" might serve the purpose of this discussion more aptly. And rather than just generic "intuition," let's have it more contextually refer to the *je ne sais quoi* element of leaders to transcend or explode the bounds of rational thought in the decision-making process. As such, it is grounded in rationality—in the recognition of patterns, gained from extensive experience—but goes beyond the rational world, transcending to the clouds, where a big-picture view informs their seeming 'snap' decisions.

In order to foster tacit knowledge in students, then, it is necessary to immerse them in experience. However, some people are very experienced but never seem to be able to acquire the ability that some leaders have. Is this ability, then, mostly innate? At the heart of the development of tacit knowledge is a parallel development of critical thinking skills. Perhaps more important that any innate ability is the creation of conditions for tacit knowledge to be fully developed. In a university setting, the critical components for fostering tacit knowledge are organizational culture (i.e., the tone set by administration), curriculum and teacher training.

5 Teaching tacit knowledge

One basic question asked all interviewees for this study was, "Can tacit knowledge be taught?" All respondents said it was, but also said it wasn't easy or can be "tricky." One of the challenges of getting at tacit knowledge to begin with is, according to one graduate program manager at an international university, "There may be a resistance to sharing tacit knowledge because it is something under the ownership of people, and if they are aware of owning it they may not be willing to share it since it gives you a certain advantage over others," either because it makes you irreplaceable in your organization or gives your organization a competitive advantage. Another barrier inherent in arriving at tacit knowledge, with the end goal of fostering or teaching it, is that perceptions are individual in nature. We all have a lifetime of experience—what we've seen, read, learned, how we've been raised, etc.—that we bring to every new situation. Because of this, two people, even who seem to be from identical backgrounds and education, may have entirely different responses when exposed to the same experience.

To teach or foster the development of tacit knowledge, then, is far from a set piece; you most likely wouldn't set an examination and have an answer key, nor would you likely simply lecture how to develop tacit knowledge. The means to teach tacit knowledge would be more along the lines of creating experience that students can react to, and setting up situations where they can observe a leader make decisions and have the opportunity to discuss the process. This approach would most likely be more replicable in an organization, where an intern could "shadow" an experienced executive; however, how can the exploration and development of skills related to tacit knowledge be developed in a more typical university setting?

5.1 How university administration can foster the development of tacit knowledge building: Go for pizza

First of all, the agar must be full of the right nutrients in order for the tacit knowledge to grow. If the culture at a university is overly sterile or clinical, and focuses too much on quantitative research and teaching, it may impede the development of tacit knowledge in students; moreover, if the atmosphere at the university does not support non-traditional approaches to learning, the opportunity to get at tacit knowledge may be effectively nipped in the bud.

Arriving at tacit knowledge typically begins with an interview of the subject, or possibly a situation is created where the subject can be closely observed. It follows that the best environment to extract knowledge or to observe a functioning leader in his/her natural decision-making habitat, there must be a significant amount of comfort and an environment in which the subject would feel he/she could take risks. Subjects are more likely in an informal setting to be reflective and share information about their know-how and how they make decisions. According to one interviewee, you need "to give employees space and freedom and provide them [with] opportunities to meet…. If you have a group of people who enjoy being around each other, if

they go out for pizza together, at some point they end up talking about their jobs anyway." University administration, if trying to encourage the development of tacit knowledge need to create opportunities for faculty to explore their approaches to teaching, and they in turn must feel a level of comfort and support using less conventional means of instruction, coaching and facilitating in the classroom.

Psychologist Jozef Šimúth, one of Prof. Hvorecký's co-authors, says you get at tacit knowledge "in an unstructured way, by talking with and observing a person" in action. However, he goes on to say, that you will "get the result" and not necessarily "the process." Šimúth maintains it is "hard to describe" since it is "on the subconscious level. Sometimes people can go back and describe the process. From the article [Managing rational and not-fully-rational knowledge], there's a lot that the managers to not know—it may be based on a 'gut feeling.' Actually you can talk about it in a way that you talk about previous experience." But again, a core activity within the classroom would have to be how to 'interpret' experience, how to find patterns, and how to identify what is applicable from past experience to new situations—in short, how to step off the curve of experience and extrapolate accurately in entirely new territory to arrive at a sound decision.

According to Šimúth, there may be limitations on the development of tacit knowledge-related skills, and it is related to different communication styles: people tend to be either "intuitive or rational (or analytic). Intuitive people decide on tacit knowledge and don't pay much attention to details and facts, while the analytic people tend to create the experience again by analyzing the data"—sort of like replicating the original experiment repeatedly in order to achieve the same results. He goes on to say that "analytical people will decide more slowly and will be able to describe the process," while "intuitive or cognitive styles will not [necessarily] be able to describe the process." So a university's administration does not want to create so much as a laboratory environment but rather replicate the 'wild' or natural conditions so the subject can thrive and feel comfortable to act in 'natural' way, not overly confined by the conventions of traditional teaching methods.

Another interviewee, an instructor and PhD candidate in a Knowledge Management program, pointed to the importance of dialogue in fostering tacit knowledge: "It's not only definitions, table and graphs students can learn from but also from mentors, teachers and case studies. Because there are different types of learners…some can get a better understanding of the materials from case studies and discussions, [while] others get better from reading graphs and tables." But even interpreting graphs and tables brings its own set of experience and has an element of 'art' to it; like experience, two people can be given precisely the same data or be presented with the graph and come up with entirely different interpretations that drive radically different decisions.

As has been stated, the primary function of administration then is to create opportunities for front-line educators to share knowledge in less formal settings, and to build a supportive organizational culture where various learner-centric approaches can be freely used.

5.2 How concepts to enhance the development of tacit knowledge can be embedded into curriculum

Underpinning the activities in the classroom is a solid curriculum—which in a way is anything but solid. Curriculum that supports steps necessary to foster the development of tacit knowledge would be better characterized as 'fluid' or 'flexible' and must account for different types of learners. In fact, it may be further explored how visual elements and especially social interactions have a bearing on eliciting what tacit knowledge a learner already has, and using various techniques how best to further build the readiness for expanding this knowledge base. A curriculum development process that integrates various teaching strategies, and is outcomes- and skill-based (rather than test-driven) would be more effective in supporting such an educative process.

The literature and the interviewees consistently pointed to the importance of having students mimic experience in the classroom in order to better get at and develop tacit knowledge-related skill sets. Case studies and simulations particularly lend themselves to the classroom setting, but in terms of extra-curricular settings, internships and mentoring programs could potentially work even better. If set curriculum could allow for such flexibility and give university credit for this sort of hands-on, external experience, with frequent 'debriefing' and reflection sessions, it would potentially be ideal for fostering the growth of tacit knowledge. Students could then apply what they learned variously to new situations to see if they have been able to identify useful patterns. The curriculum should also put less emphasis on statistical data, and more emphasis on "gut feelings," restricting decision-making time, in a low-risk environment—in other words, situations set up to mirror conditions that leaders who rely on tacit knowledge face on a daily basis. But beyond curriculum, how can teachers best support tacit knowledge in the classroom?

5.3 How teacher training can support tacit knowledge development

Short of the analytical hierarchical process (AHP), developed by Saaty (1980) and articulated by the study of Wu, Kao and Shih [14], which applies rather quantitative methods to the subject of tacit knowledge, what can the teacher specifically do in the classroom? Perhaps the best thing is to apply tacit knowledge themselves to draw students out. The five steps Collins

identifies above can be a good starting point; this process can then be examined itself and students can learn how to improve each phase.

For example, students can design their own interview questions to get at specific know-how that any of them may have—for purposes of keeping it simple, perhaps a class member is able to play the piano, or Polanyi classic example of facial recognition could be used [15]. Students can run through Collins' suggested steps, first designing an interview intended, with teacher modeling, to elicit information of which the subject was not necessarily aware. The teacher can guide them through the process, and stop at every step to analyze what was being done and why, reviewing the various answers to help students delve further into the subject's knowledge base. Techniques of psychological inquest may be used as a guide to help students explore the thought and decision-making process. The instructor should have a skill set that includes reflection and discussion techniques, with a focus on modeling ways of thinking and analyzing various situations.

Teacher training then should be in the areas of leadership development, psychology, emotional intelligence and critical thinking. If case studies and role-playing are key activities, an ability to guide students them in an exploratory, analytical approach would definitely be an asset. Whether the teacher were conversant in pscyho-lingual parababble or knowledge management nomenclature is not critical, but a functional acquaintance of KM concepts might, in turn, help the educator be able to 'break it down' for students. Enough of this theory then—let's get down to practical concerns: What should instructors do in the classroom to foster the development of tacit knowledge?

6 How teachers can coach the development of tacit knowledge in students: Best practices in the classroom

The fundamental takeaway from this paper is directed at teachers. Here is a list of best practices in the classroom to foster the development of tacit knowledge, based on the foregoing discussion:

Case Studies – Harvard University hasn't been using case studies since 1924 for no reason. Realistic, fully-articulated cases that demand the highest analytical skills from students replicate real-world decision-making processes. When students encounter repeated situations that have parallels with previously studied cases, they can be coached, via a reflective process, to recognize the patterns that eventually become internalized and enter the realm of intuition.

Discussions – Controversy can foment discontent, but it can also ferment thought. If students have to defend a position in real time, requiring them to process ideas and think quickly, they can begin to practice intuitive skills.

Teams/Cohorts – With the two-heads-are-better-than-one approach, students can play off one another's ideas and learn from each other. The communicative skills necessary to analyze a problem within groups can assist with the development of social intelligence. In more well-established cohorts, students can develop similar skills over the long haul, which can bring a richer interplay as they learn how to function as a more integrated unit.

Role-playing – Like cases, role-playing helps students to mimic the actual decision-making process, but add an increased richness: If you *are* a manager or leader, rather than just reading about it 'second-hand,' and are provided with a scenario, raw data, and variables that can take it out of the realm of pure textual analysis and discussion to a more experiential plane. Again, the experts point to the key element of experience in order to develop tacit knowledge, and role-playing can be about as close as you can come to real-life experience in the classroom.

Problem-Based Learning (PBL) – Pioneered at the Medical School at McMaster University, Hamilton, Canada, in the 1960s, PBL takes role-play to its logical conclusion, with actors playing patients exhibiting specific symptoms. Teams around a tutor or mentor diagnose the patient and propose treatments and approaches to patient care. Much of the learning focuses on problem solving, collaboration and self-learning, but as guided by an expert. Hmelo-Silver *et al* maintain that the PBL learning environment is highly effective and promotes cross-disciplinary approaches, and pushes "students to explain their thinking to help them build a casual explanation or identify the limits of their knowledge. This helps support students in sense making and in articulating their ideas" [16].

Business Simulations – Computer-based business games, like Capsim and a variety of others, replicate conditions and provide sophisticated contexts for making decisions, in a realistic environment. Again, teams can be a significant part of the dynamic of such games and students learn in a cyber-experiential mode. As new situations are presented, students have an opportunity to build pattern recognition and make market predictions competitive environment.

Leadership Modeling – Whether it's the instructor him- or herself or via pairing with mentors within a profession, students have a chance to observe a leader and see him/her in a real or simulated work environment. Key to this approach is having a reflective mentor who can guide students through the decision-making process and examine what factors influenced it beyond the numbers.

Guest Speakers – Some experienced business leaders are able to articulate what goes through their minds when faced with situations where they have to make snap decisions based on intuition or 'instinct.' If students have an opportunity to interview the speaker, they can participate in the exploratory process first hand, and their line of questioning (as a guided learning experience) can help them understand the process of tacit knowledge acquisition.

Reflection and Journal Keeping – While stopping to reflect on an experience annoys many business people and tends to be too touchy-feely, there is merit internalizing an approach that

periodically makes one stop and analyze what happened. Keeping a journal is one effective way to track tacit elements, especially if written at the time of a critical decision that was made in a seemingly intuitive manner.

Break It Down/Holistic Approach – Paradoxically, teachers need to break things down into their constituent parts in order to help students see the big picture—sort of like taking a close look at the pixels and then stepping back to view their overall effect. Perhaps the best way to do is through chunking and clustering, so students can see connections between inherently disparate pieces and how they fit together in the larger puzzle. One activity might actually be to have a team build a puzzle together, but by describing the shapes, colours and patterns to their teammates.

Shared Experience – Students always learn more the moment they step out of a classroom. Take students on a field trip to explore a complex business environment—like a business simulation but in 3D. (Students may be confused, but you can tell them it's like a computer-based simulation…)

Move Beyond Mere Text – Visual and tactile learners are frequently forgotten, and the fact that many of the strongest and most lasting educational experiences are from seeing and doing is underestimated. Present problems in unconventional ways and demand that students respond to them similarly—not in writing but in mind maps, posters, presentations heavy on the visuals, three-dimensional mock-ups, blogs, mash-ups, technological solutions, web design, video materials, etc. The sophisticated task of moving ideas into a different medium can support the development of tacit knowledge.

7 Conclusions and recommendations

If tacit knowledge is not transferrable, then this study is still not moot. The point is not whether it is transferrable but rather that the conditions under which tacit knowledge flourishes can be identified and replicated to some extent. Perhaps there is some innate tendency or degree of perceptiveness that makes tacit knowledge more likely to be developed further in some and less in others, but the techniques described above should foster a measure of improvement of intuitive skills in most. Regardless, a classroom situation that uses a modicum of these approaches, while perhaps not producing the next Steve Jobs, would at least be a little less boring than a three-hour lecture.

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