THE IMPACT OF "HOT COGNITION" IN PROFESSIONAL PERFORMANCE:
how academic communities may exploit it

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ABSTRACT

Today the business world claims for professionals able to interact in society in an emotionally intelligent way. In the last century, the Universities around the world did not address the issue in an explicit way. They form students technically competent, but not necessarily emotionally competent, limited to interact or collaborate in a professional community. This paper shows the importance of "hot cognition"[1] in the human decision-making during the knowledge creation process. We describe how the knowledge creation process is running in the academic communities during their daily activities. We also propose a prototype to register the subtle and tacit knowledge extracted during the academic communities interactions. That knowledge can improve the way to develop/update systematically the psychological abilities of students during their graduate experience.

KEYWORDS

Hot cognition, User Psychological Profile, Personality Traits, Emotional Intelligence, Soft Skills, SECI.

1. INTRODUCTION

Knowledge is a vital source of survival advantage in a professional space. The reason of being of academic communities is to continually create knowledge. Academic Environments have the purpose to literate and prepare their students as future successful professional citizens. However, unfortunately, a large number of Universities around the world are preparing their students to succeed in yesterday's world- not tomorrow's (Group 2003).

In most Universities, very little time is spent in the area of self-awareness, social skills, and relationship management. This occurs partly because those abilities are difficult to teach by traditional methods, and partly because of a conservative educational system (Goleman et al. 2002).
In the 21st century, higher education will attempt to develop much more than just knowledge related to hard skills (Group 2003). Many Universities and Colleges give, at the moment, no importance to the development of subtle[2] "knowledge" like personality traits[3], emotional intelligence[4] and soft skills[5]. They do not stimulate

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[1] cognition colored by affect - emotional intelligence, personality traits and soft skills.

[2] affective information which comes with a hot cognition process.

[3] "individual differences that are most salient and socially relevant in people lives" (Wikipedia 2006).

neither propose the development of this specific ability to their students in the graduate courses. Even, they do not incorporate the skill development in their traditional pre-established courses/classes. Daniel Goleman (Goleman 1995) affirms that our educational system and our culture ignore emotional intelligence. Universities' behaviour is strange because they usually know what involves the knowledge creation process. The creation of knowledge is influenced by human rationality during the decision making process, which is influenced by human psychological aspects (Simon 1983, Damasio 1994, Goleman 1995).

Damasio also proves that feelings are typically indispensable for rational decisions. When people are not emotionally stressed they are unable to make the "hard"/right decisions(Goleman 1995). Some "serendipitous"[6] important decision / sudden discovery, as Simon describes "AHA" experience, tend to evoke emotions (hot cognition). Actually, "AHA" experiences happen only to people who possess the appropriate knowledge. Inspiration comes only to the prepared mind, and "emotions keep the problem in background processing of our minds" (Simon 1983).

Simon said that the effectiveness of reason as a tool for making decisions depends critically on the nature of the input (data, knowledge). For this reason, the feedback described by Goleman is important. Indeed, "without feedback, people are in the dark, they have no idea how they stand with their peers or in terms of what is expected of them".

People level of emotional intelligence is not determined genetically, nor does it develop only early in childhood. Emotional Quotient seems to be widely learned and it continues to improve as we go through life and learn from experiences. Some competencies from emotional intelligence distinguished the most successful people from those who were merely good enough to keep their jobs (Goleman 1995).

Considering that, this work contributes showing how the hot cognition is present in the interactive academic daily life during its knowledge creation process. We propose a tool to extract cues leading to the assessment of personality traits, soft skills, and emotional intelligence (psychological knowledge). That knowledge may allow teachers to find gaps in the evolution of students' psychological aspects. Gaps found may allow an adequate development and improvement of individual's psychological Knowledge.

This paper proceeds as follows: in section 2, we present a definition of Academy; in section 3, we describe the flow of knowledge during the Academy members' interactions; in section 4, we present how the knowledge is created in Higher Education, we describe the Nonaka's models of knowledge construction (Nonaka et al. 2000); finally we present our prototype toward the User Psychological Profile development, followed by conclusions.

2. ACADEMY AS A COMMUNITY

Let us simplify Academy. Academy is a community. It may be real or virtual. Its members are scientists (researchers), teachers and students from a specific University, Center, Association, etc. In addition, its members can be also members of others communities.

Academy aims to create and transfer the knowledge (tacit or explicit) to literate citizens for their professional life. It creates dynamic knowledge by means of interactions of its members during the communication process in a teaching/learning environment.

The flow of knowledge is created by an Academic community in a situated[7] and shared[8] context (Clancey 1997, Lave and Wenger 1991). Any Academic community forms smaller communities internally where new knowledge will be created. The Academy is formed by students' communities and teachers' communities. Many others communities from Academy derives from these ones. Each member of each community can participate to many communities (internal or external). There are no restrictions. They

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[4] describes an ability, capacity, or skill to perceive, assess, and manage the emotions of one's self, of others, and of groups (Wikipedia 2006).

[5] "soft skills refer to the cluster of personality traits, social graces, facility with language, personal habits, , and optimism that mark people to varying degrees. Soft skills complement hard skills, which are the technical requirements of a job".(Wikipedia 2006).

[6] to make discover "by accident".

[7] It means physically situated in the space (specific environment) and time. All human activities are influenced by their perception, their conceptions and their real actions in a situated environment.

[8] It means a situated context shared by a community.

participate to a community according to rules defined by the Academy administration. Communities can change during the Academy life cycle. The knowledge flow among Academy members is described next.

3. FLOW OF KNOWLEDGE IN ACADEMY

We define Knowledge as information interpreted by one or more people who are community[9] members inserted into a situated and shared context. Knowledge, during its process of creation, is influenced by the environment, the community and the time.

We propose a workflow to manage the extraction/acquisition of subtle psychological information in an Academic environment. The subtle information is extracted from interactions related to the daily behaviour of students and teachers (figure 1). Those behaviours are related to the Personality, Emotional Intelligence and Abilities (soft skills) of students and teachers involved in the process.
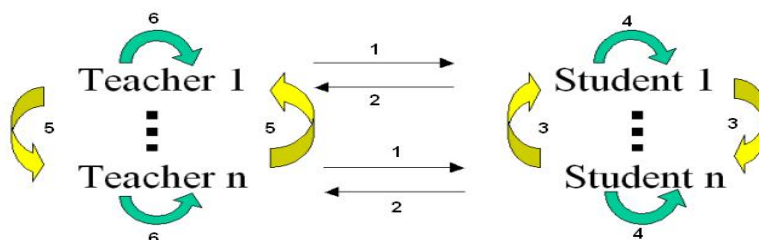
Figure 1 – Students and teachers interactions

In figure 1, students and teachers interact in the situated context of an academic environment generating a flow of dynamic subtle[10] knowledge. The flow is composed by the continuum and reciprocal conversational exchanges between teachers and students, as described below:

1. Teachers know their students (in a situated context), so they can give their opinion about their abilities, emotional intelligence and personality in a situated context (classroom, for instance);
2. Students know their teachers (in a situated context), so they can give their opinion about their abilities, emotional intelligence and personality in a situated context (classroom);
3. Students know their colleagues, so they can give their opinion about their abilities, emotional intelligence and personality;
4. Students also have a self-representation of themselves, so they can give their opinion about their own personality, emotional intelligence and abilities (in a general context);
5. Teachers knows each others (their colleagues), so they can give their opinion about the personality, emotional intelligence and abilities of their peers);
6. Teachers also have a self-representation of themselves, so they can give their opinion about their own personality, emotional intelligence and abilities (in a general context).

4. CREATION OF KNOWLEDGE IN ACADEMY

In Academy, teachers and students are engaged in a process where they create knowledge continuously. The knowledge creation process may be represented as a spiral that grows up according to the SECI (Socialization, Externalization, Combination, Internalization) and Ba[11] models inspired by Nonaka (Nonaka et al. 2000).

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[9] Real, Virtual, Dynamic (ba), Static.

[10] subtle knowledge is the emotional information expressed by humans during their "hot cognition" process. This information is rarely stored or registered, consequently it is lost even if it is extremely important to the human decision making process.

[11] "ba is defined as a shared context in which knowledge is shared, created and utilized" (Nonaka et al. 2000).

4.1. SECI model

The SECI model was originally proposed by Nonaka (Nonaka et al. 2000) to create and to manage the dynamic knowledge creation in a Japanese enterprise[12]. In that model, the spiral flow allows the knowledge conversion from tacit to explicit knowledge passing by the socialization, the externalization, the combination, and the interanlization process.

Knowledge is created through interactions, converting tacit into explicit knowledge. We can say that tacit knowledge is more related to human emotional state, traduced by subtle information and cues[13] transformed in subtle knowledge as soft skills, emotional intelligence abilities and personality traits. While explicit knowledge is more related to rational processes, traduced by hard skills (formal knowledge expressed by formulas, manuals, systematic language). The explicit knowledge can also be represented by the tacit knowledge crystallized, expressed by a specific psychological language (definition used in this work).

According to our purpose, we adapted the SECI original model. We propose a SECI model as a dynamic knowledge creation process, to be applied in academic communities using the Academy as a scenario. The SECI model at Academy is presented as:

- Socialization:
  – Students and teachers have a self-representation of their own soft skills, personality and emotional intelligence abilities. During their social interaction with their peers and colleagues, they socialize their specific abilities. Their abilities are subtle cues during the interaction in the conversational process. The cues show their emotional state, personality traits and soft skills abilities. Left cues can be socialized by others students and teachers.
  – The knowledge to be socialized[14] represents the mental models of each one in the group. The mental models are made of different views about each other. The mental models consist in the individual information collected during the conversational process which is transformed into knowledge according to each one's beliefs and trusts.
  – The socialization of tacit knowledge is made by: students to students, or teachers to teachers, or students to teachers.
- Externalization:
  – The knowledge is crystallized, that means, the tacit knowledge is transformed into explicit knowledge to be shared by others. It becomes a new knowledge. Students and teachers might formalize their psychological knowledge about others. That psychological knowledge is the one that was extracted during the socialization process. The crystallized knowledge, now made explicit by the actors of the communities, is stored in a data base as a psychological user profile of each academic member.
  – Students and teachers store their new knowledge about their colleagues and peers' psychological profile.
- Combination:
  – It is the combination of explicit knowledge coming from the many members: each one has externalized his/her knowledge and now they can connect and combine their beliefs and trusts, giving a better feedback to the user psychological profile database.
- Internalization:
  – The students and teachers embody the new knowledge, trying to apply the feedback provided by others in the data base.
  – In the internalization, the individuals (students or teachers) access to and use the knowledge of the group.

4.2. Ba model

According to Nonaka (Nonaka et al. 2000), "Ba" is the place where Information is interpreted to become Knowledge. "Ba" has some similarities with the concepts of communities of practice (Wenger 1998). The main difference between "ba" and communities of practice is the dynamism of the community identity. In

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[12]a japanese convenience store franchiser, called Seven-Eleven.
[13]subtle information or subtle cue, after the human interpretation, can be described as a subtle knowledge (defined in a footnote 10).
[14] shared by a community according to the social rules.

"Ba" the community is constantly changing, the members "come and go". In communities of practice, the community is more formal, the participants need time to learn about the community and to be transformed in an active full participant. Also, in "Ba", the knowledge is created, whereas it is learned in communities of practice, as it is considered to be embedded in the community.

Types of Ba were originally created and applied to a Japanese commercial enterprise, as we described before in the SECI process.

Here, we propose types of Ba applied to academic communities based in our scenario illustrated by the Academy:

- Originating Ba:
  – Individual face-to-face interaction among teachers and students where shared psychological experiences take place.
  – Individuals' mental models about personality traits, soft skills abilities and emotional state come up.
  – the physical interaction allows the socialization of tacit psychological knowledge, creating an "ontological" common language.
- Dialogging Ba:
  – collective face-to-face interaction
  – Individuals' mental models are shared and articulated as personal features and abilities;
  – consolidation of an "ontological" common language
  – dialogging Ba is more conscious of originating ba, it allows the individual feedback and self-reflection of his/her own personality traits, soft skills abilities and emotional intelligence.
  – tacit psychological knowledge transformed into an explicit psychological knowledge
- Systemizing Ba:
  – teachers and students should store explicit psychological knowledge in the database to make it available to the Academy;
  – stored knowledge is defined by each one about him/herself and about others (peers, colleagues).
- Exercising Ba:
  – each student and teacher have access to the database with the new psychological knowledge stored;
  – each student and teacher should internalize the new knowledge; the process of originating restarts...

5. PROPOSITION OF USER PSYCHOLOGICAL PROFILE

Instead of merely transferring knowledge, Academy creates and redefines knowledge based on member's action and interaction in a situated context during a period of time. In the previous sections, we presented a scenario where the Academy creates its own knowledge. We also presented how the knowledge flow grows up during the Academy internal community interactions. And finally, how the knowledge is classified and processed gradually to be produced/created. Considering that, we agree with Goleman (Goleman 1995) when he considers emotional competencies twice as important as purely cognitive abilities (mainly to create leaders). Humans with poor emotional competencies, not only do not become leaders, but may be put in a margin of the normal social life. They are technically competent, but limited to communicate and interact in their work group. These factors block the flow of knowledge creation which is the life of a dynamic enterprise.

According to the SECI and the Ba models concerning processes of knowledge creation, the Academy does already manipulate and extract their explicit (conventional) and tacit (psychological) knowledge. That knowledge should be stored to be used as a feedback of academic interaction among their internal communities.

According to Goleman (Goleman et al. 2002), each person has a representation of "his ideal self", and also each person has a representation of "his real self". The difference between "ideal self" and "real self" gives us the "learning agenda" of personality traits, soft skills and emotional abilities which should be improved. Considering that, we propose the creation and registration of the *"his ideal self"*, the *"real self"* and the *"learning agenda"* based on the model proposed by Boyatzis at (Goleman et al. 2002).

The Boyatzis model is described as (our contribution is between brackets):

- MY REAL SELF : represented by:
  ▪ Who am I? (How Academy sees someone's psychological aspects?)
  ▪ What are my strengths and gaps? (What are member's gaps identified by Academy?)

- MY IDEAL SELF : represented by:
    - Who do I want to be? (Someone's transformation in ideal psychological model desired by Academy)
- MY LEARNING AGENDA : represented by:
    - How can I build on my strengths while reducing my gaps? (What is the protocol to transform a specific member from Academy into a "socially skilled person"?)

Aiming at the creation of a "learning agenda" we propose first the development of the "MY REAL SELF" data base by using a user psychological profile (UPP). The UPP may allow Academy social help aiming to eliminate or minimize their "socially limited students".

"MY REAL SELF" will be created during the first Academy members' interactions occurring when using the web based tool. They can insert members' knowledge (their own model or colleagues' model) about personality traits, emotional intelligence and soft skills created during the described SECI and *ba* processes. In the figure 2, we present a screenshot of our prototype which includes a part of an interface of the NEO-IPIP Personality Traits Test[15] (Buchanan, T., Johnson, J. A., and Goldberg, L. R. (2005) in the User Psychological Profile.

Figure 2 – Personality Traits Test

The UPP will be fed by each user in the community. It must be fed manually, the user will fill the personality, soft skills and emotional intelligent tests (available at http://www.lirmm.fr/~nunes/big0.1), as presented in figure 2. The UPP is based on works done by (Buchanan et al 2005), (Goldberg et al. 2006), (Barchard 2001) and (Kantrowitz 2005). The UPP will be accessible from a web-based interface or by using an enhanced presence tool[16] (Lemoisson et al. 2004, Nunes and Cerri 2005,Jonquet et al. 2005, Eisenstadt et al. 2005).

Therefore, in order to allow a dynamic feedback to Academy members, "MY IDEAL SELF" will be created as a reputation data base. It will be described by other's members of academic community. The

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[15] Test adopted by us to extract the user personality.

[16] computer based tool which improves the feeling of human presence during their communication and interaction in a virtual environments.

reputation presents what the others think about someone's psychological profile. That means, what the other community members think about "someone real self" ("MY REAL SELF"). "MY IDEAL SELF" (user psychological reputation) of each member of the academic community will be fed by other users who have been interacting with someone (me) in the community. Academy members (students and teachers) should RATE their colleagues who they have already been interacting with. The rating will be based on the UPP traits extracted from personality, soft skills and emotional intelligence tests. The reputation of members grows up according to the feedback they give to other's members of Academy.

We propose the creation of a Psychological Reputation because we need a measure of individual's "lively" personality as opposed to the individual's self rating (Barkhuus and Csank 1999). Many times the Academy members (every human) do not know exactly about their own real self. Generally, a person has not a complete representation of himself, because many aspects of his personality do not pop up at the surface before his interaction with others (Allport and Allport 1921)[17].

The *"Learning agenda"* (in development) will be created based on the difference between "MY REAL SELF" and "MY IDEAL SELF". It stores user's traits which should be improved by the academic community. The *"Learning agenda"* will be known by teachers. They will try to develop traits not yet developed in members with "social limits" in order to improve their "hot cognition" aspects to reach a better professional performance.

6. CONCLUSIONS

During the Academy creation of knowledge process, members' psychological knowledge (soft skills, emotional intelligence and personality traits) are gradually created considering their gradual interaction in the community. The tacit knowledge, thus, is being created. That knowledge can be perceived also gradually by the others members of community and, after that, it can be registered in a database as a reputation (Nunes and Cerri 2006).

The User psychological traits and the reputation are fundamental to show the user psychological image perceived by him/her and other members of the Academy community. We want to stress the importance of the member's feedback in a community during an interaction process, as previously indicated (Goleman 1995). If we have no or only poor feedback when we are in some community, we have no capacity to measure the quality of our skills (hard or soft), emotional intelligence or personality traits. We always have our own representation of ourselves, but that representation can be a poor representation. We need a social feedback to give us the security to grow up and improve our "social limits".

As we discussed before, our scenario was presented by means of an academic community who can give us feedback about how our skills are ; what are the gaps of our emotional growth; how the academy can give us better stimuli; how much we can improve our own emotional properties by acting in our academic environment. This process of making people aware of their emotional intelligence abilities, personality traits and soft skills by using the UPP (User Psychological Profile) and reputation, can help communities within Academy to contribute substantially to the development of "socially skilled persons" what goes in the direction of current request from our Society.

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[17] classical definition in a Personality traits area.

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