Concept Maps: Making Learning Meaningful
Proc. of Fourth Int. Conference on Concept Mapping
Viña del Mar, Chile, 2010

COMBINING LEARNING TOOLS FOR USE IN HIGHER EDUCATION

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Abstract. This research will focus on the learning process as occurring through the interaction of three mental processes, namely Cognition (I think), Affectation (I feel) and Conation (I do). It will present a model of teaching and learning in Higher Education through the integrated use of Concept Maps and Let Me Learn advanced learning system. This research will put forward the argument that when using Cmaps along with an awareness of how students prefer to learn, the students will go through a metacognitive learning process which would eventually lead to meaningful learning thereby challenging the ever prevailing factory model of education.

1 Introduction

Prevalent literature in Higher Education calls for more emphasis on the student learning process through increased reflection and metacognition (Moon, 2000; Race, 2005; Cowan, 2006; Biggs & Tang, 2007). Yet with the ever increasing number of students in many university classes, Pinar argues that we are having a mass production of "passive intellectuals" (Pinar et al, 1995).

Many adult learners probably come to University relying on learning strategies that have worked well for them in their previous learning experiences including rote learning through memorization and recall of facts. This may have been a successful strategy to pass exams, but would not contribute to assist adult learners to become reflective learners and practitioners in their future work.

2 The Higher Education Experience

University students are more assumed to be more focused on passing their exams than to enhance themselves as critical and reflective learners. "They tend to study without reflecting on the purpose or strategy and to see the course content as discrete items of information" (Kinchin, Baysan & Cabot 2008:377). This approach promotes *surface learning* where "students see tasks as external impositions and they have the intention to cope with these requirements" (Prosser & Trigwell, 2002:3) as opposed to *deep learning* where "students aim to understand ideas and seek meanings" (Prosser & Trigwell, 2002:3). Similarly Woods (1994) and Biggs (1985) suggest that deep learning takes place when adult learners reflect and discuss about their learning and their learning strategies. Orr reveals that it is very possible "for a person to be clever without being very intelligent, or as Walker Percy put it to `get all A's and flunk life`" (Orr, 2004:51).

However, one cannot solely blame the students for this kind of experience. University teaching tends to ignore how students prefer to learn and many times it does not embrace the notion that students are capable of transformation (not only accumulation) and so leads to non-learning outcomes (Kinchin, Lygo-Baker and Hay, 2008). Consequently university students are rarely provided with opportunities for self-exploration. On the other hand, the university system would have become so ingrained in traditional methods of teaching and learning that it would be very difficult to introduce or implement different approaches to teaching and learning. Very often we tend to forget that the way in which learning occurs is as important as the content so that the goal of education revolves around the mastery of oneself rather than the mastery of subject matter (Orr, 2004).

In order for tertiary students to become professional practitioners they need to go through a critical and reflective educational journey which would eventually lead to a process of transformation. Through a transmissive approach, education is associated with the transfer of information therefore it would be instructive and imposed. On the other hand, through a transformative approach, education is associated with engaging the learner in constructing and owing meaning therefore learning would be constructive and participative (Sterling, 2004). If one wants to challenge the *status quo* one has to first and foremost transform oneself before being able to transform others (Mezirow et al, 2000).

Tertiary education is the ideal environment for this transformation to take place so that students would later on be able to contribute to society as agents of transformation.

3 The Research

As a starting point this research will focus on the learning process as involving three mental processes, namely, Cognition, Conation and Affectation (Johnston, 1996, 1998; Novak & Gowin, 1984). Furthermore, it will revolve around the notion that "meaningful learning underlies the constructive integration of thinking, feeling, and acting leading to empowerment for commitment and responsibility" (Novak, 1998: 15). It will present a model of teaching and learning in Higher Education through the integrated use of Concept Maps and Let Me Learn advanced learning system. Concept Maps and the Let Me Learn System are two metacognitively driven tools which respond effectively to meaningful learning and both have a substantial body of international research (Cañas & Novak, 2006,2008; Johnston, 1996, 1997, 1998).

4 Methodology

This research will put forward the argument that when using Cmaps along with an awareness of how students prefer to learn, the students will go through a metacognitive learning process which would eventually lead to meaningful learning.

This approach starts off with a first Concept Map constructed to reveal prior knowledge about the topic under study (Figure 1).

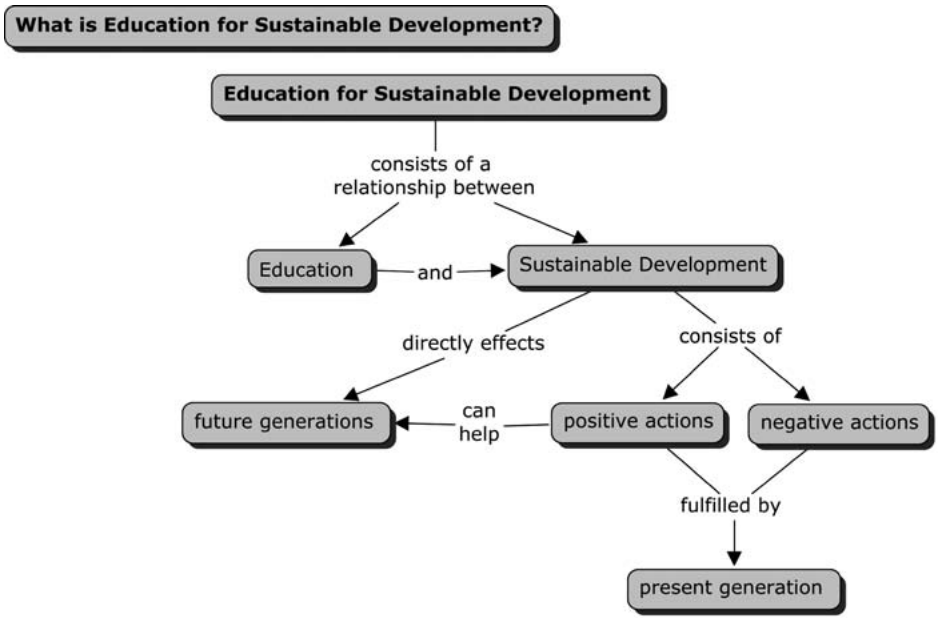

Figure 1. First Concept Map constructed by Carmen, B.Ed 3rd year student, before the learning programme

The teacher will then build a learning programme that responds to the student's learning preference as revealed through the Learning Connections Inventory (LCI as shown in Figure 2).

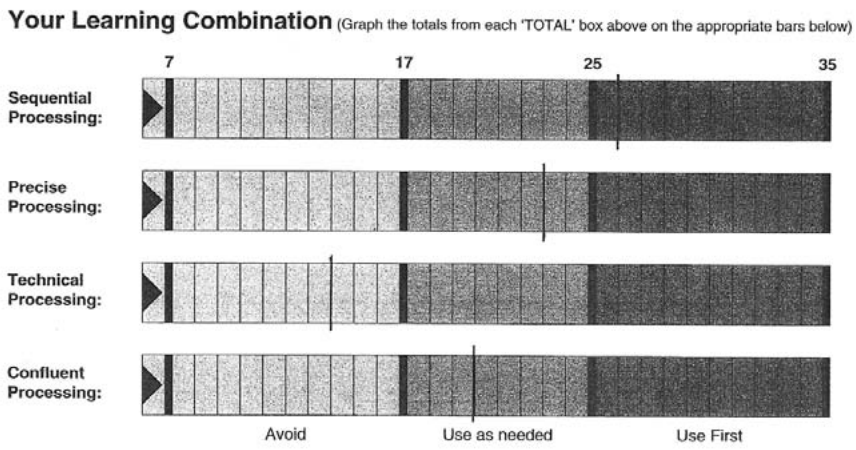

Figure 2. LCI revealing Carmen's preferred learning patterns of the student S:26, P:23, T:14, C:20

The student then constructs a second Concept Map at the end of the learning programme to reveal the new knowledge constructed.

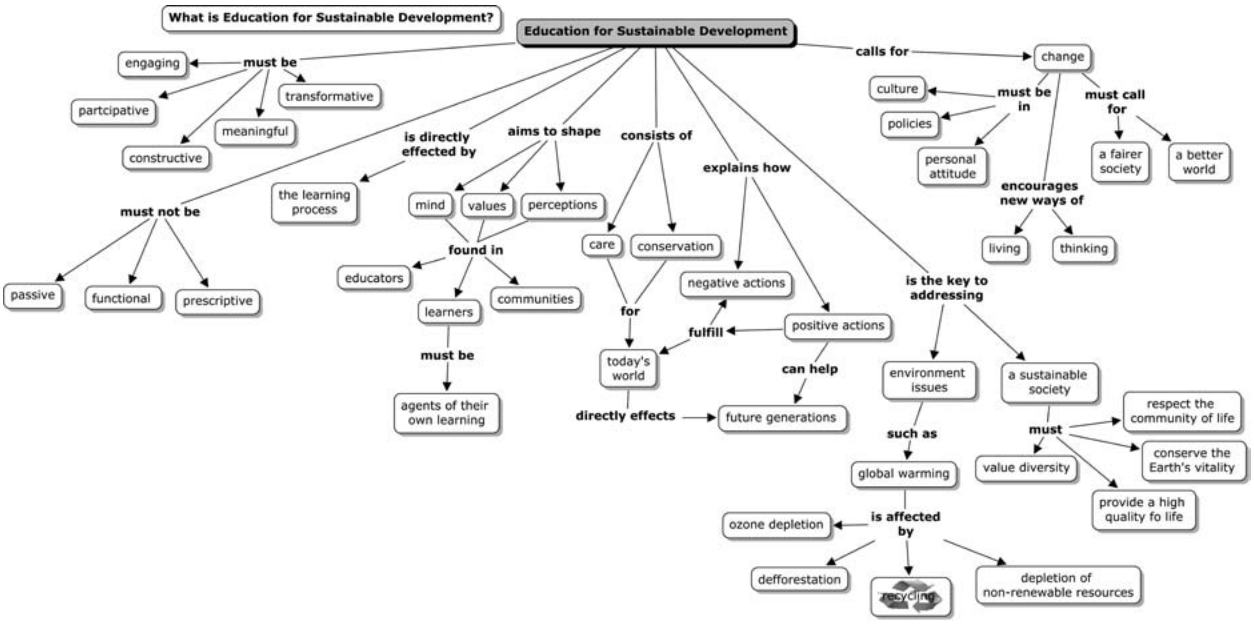

Figure 3. The second Concept Map constructed by Carmen, B.Ed 3rd year student, at the end of the learning programme.

4.1 Concept Maps

The main focus of this research revolves around the learning process as an interaction of thinking, feeling and acting. Although Concept Maps in themselves do not reveal the affective side of learning, however, the actual process of constructing a Cmap does involve these three mental processes. On the contrary to "traditional" teaching and learning where the students are asked to represent their knowledge through ways which mainly rely on memory in order to produce chunks of information (surface learning), when students are asked to represent their knowledge by constructing Concept Maps, they would be going through a process of metacognition (deep learning). Metacognition is a process which entails mulling, connecting, rehearsing, expressing, assessing, reflecting, revising and learning. Actually, when one is constructing a Concept Map, one goes through these processes and this is the reason why Concept Maps facilitate meaningful learning and challenge rote learning. Furthermore, when one is constructing a Concept Map one would not be simply reproducing chunks of information which would be totally irrelevant to one's own experience

because it would have been studied by heart. When constructing a Cmap, since one would be presenting knowledge according to one's own cognitive structure, one would be creating knowledge according to one's own perspective and automatically this would be related to one's own personal experience and this is why learning becomes more meaningful.

4.2 Let Me Learn: An Advanced Learning System

The Learning Connections Inventory (LCI) is a validated instrument developed by Johnston & Dainton to profile an individual's learning patterns. The theoretical basis for the LCI posits that learning occurs through the interaction of three mental processes: Cognition (thinking), Affectation (feeling) and Conation (doing). Each of these components is taken into consideration and through their interaction learning patterns are formed and each pattern is distinguished by a number of features (Vanhear, 2008). Unlike other learning styles the Let Me Learn (LML) does not place the learner into one single quadrant but instead it reveals that all the learning patterns are used by all the learners but to varying degrees. In this way, by being aware of how the learners prefer to learn, the learning patterns are used with intention by both teacher and student for the successful completion of any task. Consequently, LML is value added to this whole process. Through the first Concept Map, the teacher can at a glance observe the valid, invalid and missing ideas about the topic under study. Then, by taking into consideration how the students prefer to learn, the teacher can build a learning programme which directly responds to the students needs and therefore learning will make more sense to the students.

5 Conclusion

Higher Education must nowadays highlight quality of education not just certification, continuous appraisal not just exams, creativity and reflection not just memory work, dynamic and relevant learning not just prescriptive and detached teaching. This research will hopefully shed some light on how Concept Maps along with an awareness of how students' mental mechanisms work most effectively for them may lend themselves for a meaningful learning process leading to transformation for both the teacher and the student. These two tools merged together present a process of praxis which is "an activity that combines theory and practice, thought and action for emancipatory ends" (Kincheloe, 2005:22).

More importantly, these two metacognitive tools lay open what's going on in the learner's head so that they are empowered to embark upon a meta-learning journey. Consequently, they will be better equipped and trained in decision making, reflective and problem solving skills. Furthermore, these two tools don't occur in a vacuum but they build on the learner's prior knowledge. They take into consideration the diverse and personal experiences therefore making learning more meaningful.

As educators we cannot keep disregarding the affective and conative factors in the learning process since they play a major role in the whole learning process. Novak suggests that "human beings are not only remarkable in their acquisition, storage, and use of knowledge; they also manifest complex patterns of feelings or emotions. Feelings or what psychologists call affect, are always a concomitant of any learning experience and can enhance or impair learning" (Novak, 1998:24). This is clearly referring to the prevailing factory model of education which highlights cognition, and therefore rote learning, at the price of affective and conative factors which contribute to meaningful learning.

These principles might seem too idealistic for some but I suggest that creating the product more of the same will not suffice. The use of Concept Maps integrated with an advanced learning system may bring about a change in Higher Education systems which would hopefully lead to creative and reflective practitioners in our society.

References

Biggs, J. & Tang, C. (2007) (3rd Edition) Teaching for Quality Learning at University: What Student Does. UK: Open University Press.

Cowan, J. (2006) On Becoming an Innovative University Teacher: Reflection in Action. UK: Open University Press

Johnston, C.A. (1996). Unlocking the Will to Learn. California: Corwin Press.

Johnston, C.A. (1998). Let Me Learn. California: Corwin Press.

Johnston, C., & Dainton, G. (2005). The Learning Connections Inventory (Manual). Thousand Oaks, CA: Corwin.

Kincheloe, J.L. (2005) Critical Constructivism. New York: Peter Lang Publishing.

Kinchin, I., Baysan, B., Cabot, L.B. (2008) Towards a Pedagogy for Clinical Education: Beyond Individual Learning Differences. Journal of Further and Higher Education. Vol 32,(4) pp373-387.

Kinchin, I.M., Lygo-Baker, S. and Hay, D/B. (2008) Universities as centres of non-learning. Studies in Higher Education, 33(1): 89 – 103.

Mezirow, J and Asscociates (2000) Learning as Transformation: Critical perspectives on a theory in progress. San Francisco, Jossy-Bass.

Moon, J. (2004) A Handbook of Reflective and Experiential Learning: Theory and Practice. UK: RoutledgeFalmer.

Novak, J.D. & Gowin, D.B. (1984). Learning How To Learn. USA: Cambridge University Press.

Novak, J.D. (1998). Learning, Creating, and Using Knowledge: Concept Maps as Facilitative Tools in Schools and Corporations. New Jersey: Lawrence Erlbaum Associates.

Orr, D.W. (2004). Earth in mind: On Education, Environment, and the Human Prospect. Washington; Island Press.

Pinar, W.F., Reynolds, W.M., Slattery, P. and Taubman, P.M. (1995). Understanding Curriculum. New York: Peter Lang.

Prosser, M. & Trigwell, K. (1999) Understanding Learning and Teaching: The Experience in Higher Education. UK: Open University Press.

Sterling, S. (2004). Sustainable Education:Revisioning Learning and Change. UK: Green Books Ltd.

Vanhear, J. (2008) Concept Mapping, Vee Heuristics and the Learning Process: Towards a Meta-Learning Experience. Third International Concept Mapping Conference Estonia/Finland.