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Learning styles of adults and metacognitive approach to E-Learning "... Towards a cognitive and social constructivist view of learning"

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Abstract

Reports and bibliographical studies have shown that the main problem of e-learning training is not the lack of acquired knowledge, but the inability of technical educational choices that the NTIC (?) has adapted to the learning styles of adults and their relation to the mobilization of anticipation metacognitive processes, planning and control of such knowledge. Therefore, it is difficult at the various design approaches and diverse training devices. This research development, entitled "Styles of learning in adults and a metacognitive approach to e-learning; towards a socio-cognitive view of learning online" is a descriptive research of mixed type, combining both qualitative and quantitative data. The specific research question was: What connections are established between the learning style and the metacognitive functions in adult learners in a learning situation in the specific context of online training? The research questions and hypotheses, which were recommended, were based on the intersection of these different aspects. The quantitative data was collected from students at Casablanca Hassan University. Two questionnaires were submitted to respondents: a questionnaire for the identification of learning styles: Learning Style Questionnaire, abbreviated in French (LSQ-Fa) by Fortin, Chevrier, le Berge, Leblanc and Amyot (2000) and a grid of analysis and Anderson Krathwoh's "Learning High Cognitive Level", Taxonomy Bloom revisited. Qualitative data was collected from a sample of 32 respondents, following a semi-directed interview focusing on the preferred pedagogical method (concrete experience, reflected experience, or abstract conceptualization and active experimentation) training online.

Keywords: E-learning, learning styles, metacognition, pedagogy, adult education, Kolb of experiential learning, differentiated learning paths.

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1. Introduction

Online training is now part of everyday life for many adults, as we have moved into a society where life-long learning is now throughout life, rather than in preparation for our lives (Bernatchez, 2000; Marchand, 1997).

Morocco is now a country included in this global perspective as it considers education and training to be a national priority after territorial integrity (National Charter of Education and Training, 1999). The training of future citizens has an important role in the achievement of strategic objectives of comprehensive and integrated development and the guarantee of the right to education for all. The need for training is amplified by the prestigious development of the knowledge society, in information and communication.

This study is a descriptive mixed-methods study, which combines quantitative and qualitative data from assessments of the quality of training devices referred to in the national educational standards (the approach and the skills repository are a powerful lever reflective in teaching to learning).

The specific question of intervention was: "what is the nature of the relationship to be established between the learning styles and metacognitive approach in adult learners in a specific learning context online?"

The sub-issues of the research were:

Q1: Is there a dominant learning style among adult learners in a specific online training metacognitive context for development?

Q2: What correspondence was observed between the learning style and metacognitive development of adult learners in a specific context of online training?

Q3: How do you characterize the distribution of adult learners' learning styles next to the training performance and context-specific online training?

If one subscribes to the hypothesis that adult learners all have different learning styles, a computerized learning environment should provide adequate and different learning strategies.

We were located in an online training context which, therefore, placed the adult learner (Square & Moisan, 2002) at the centre of social and professional training systems and made him a dynamic player and aware of the learning process, so we would promote reflection on the learning styles (Kolb, 1985) as the translation of preference of an individual for a preferred operating mode in a context and specific learning situation. So this reduces, not only a mode of operation, but also reflects cognitive and emotional behavioral bonds of efficiency and quality of learning.

2. The literature review

Primarily, a level of reflection is provided by researchers who positioned themselves in engineering training in e-learning and insisted, at least initially, on factors such as educational activities, approaches, intelligent tutoring, learning styles, modalities of interaction and communication and the other parameters which were highlighted in these publications as techno, epistemological and pedagogical theories which underpinned this training support.

The reference framework that was used for the analysis and definition of the terminologies and the main working hypothesis lay in the influence and crossing areas of differential and cognitive psychology cognitive and socio-constructivist (Wertsch, 1979), but there were also traces of an ancient personality psychology (i.e., cognitive style). This reverential multiplicity prompted us to guide our thinking on key dimensions of learning for online courses. Further analysis of the behavior of adult learners and cognitive strategies used in the way to manage, organize information and interact in this multimedia environment and cognitive approaches are being developed in this training process. These

dimensions are put directly in relation to adult learning theories and, more specifically, with the theory of metacognitive learning in ODL.

The online training process is influenced by psychological dimensions, such as "its special operating modes", which are socio-affective and environment specific to the adult learner, as well as the cognitive dimensions to which it belongs, including review of learning styles (Peng, 2003) to create a state of awareness, procedures and meaningful construction to promote conditions for real learning metacognitive strategies, which are an "active and self-regulatory dimension of learning."

3. Methodology

Our working approach was inspired by the research method development used by Nonnon (2002) (It is a search that can be described in both research and development (development of a tool for conceptualization and formalization for the e-learning context, such as feeding research (Guichon, 2007) that is an action research, which involves both the epistemological responsibility entrant teacher researchers (to avoid "institutional bricolage" and respect of ethics in practice, to ensure the validity and ethics (Narcy-Combes, 2005).

This study aims at the conceptualization and formalization of a design andragogical - pedagogical and didactic online training course for adults, while trying to enroll in the new epistemological paradigm of metacognitive knowledge (Bloom, 1969).

Indeed, the higher-level problem solicitation of the knowledge dimension and the dimensions of cognitive process, (Anderson & Krathwol, 2013) which are involved, will be addressed in its rational aspect, organized in two stages. Firstly, to show how to operationalize and symbolize the concepts of adult education engineering; the conceptual organization of learning styles and a metacognitive view of the concept in connection with the instrumental theory of distance open learning (ODL). Secondly, we discuss the development of a conceptual model approach, a program of content, training and evaluation procedures.

Furthermore, it seems important to note that the technological aspects of online training materials should not overshadow the educational aspects of organizers of educational learning activities.

Background Analysis: (Facing the problems of the e-learning stall(?) in relation to the learning styles of adults and the results of microscopic analysis of different didactic learning activities that have shown limitations in this former case (solicitation of a lower level in Bloom's Taxonomy: memorization- understanding and application).

Open question: teachers addressed to the students in ODL (open distance learning ENS CASA "Ecole Normale Supérieure Casa"):

Q1: Educational activities proposed in the e-learning platform and repository style of the student.

Q2: Educational activities advocated and reflexive approach proposed by the repository of skills (metacognitive knowledge).

Q3: Training approach and the need for adult learners in professional training.

The purpose of the intervention is to highlight at least two lines of thought. On the one hand, it speaks directly to teachers, designers, tutors and teachers who seek to emphasize the need to develop and deliver a variety of training courses. But it is also intended for adult learners as a motivational tool through a better understanding of their own learning mechanisms and as an optimization factor for learning approaches in metacognitive "methods and proceduralization, and constructed skills" (Pastre, 2004).

The major challenge here is to try to optimize the performance of online training by providing differentiated learning paths that are the most appropriate possible learning styles of learners of these formations, while creating favorable conditions for a metacognitive approach.

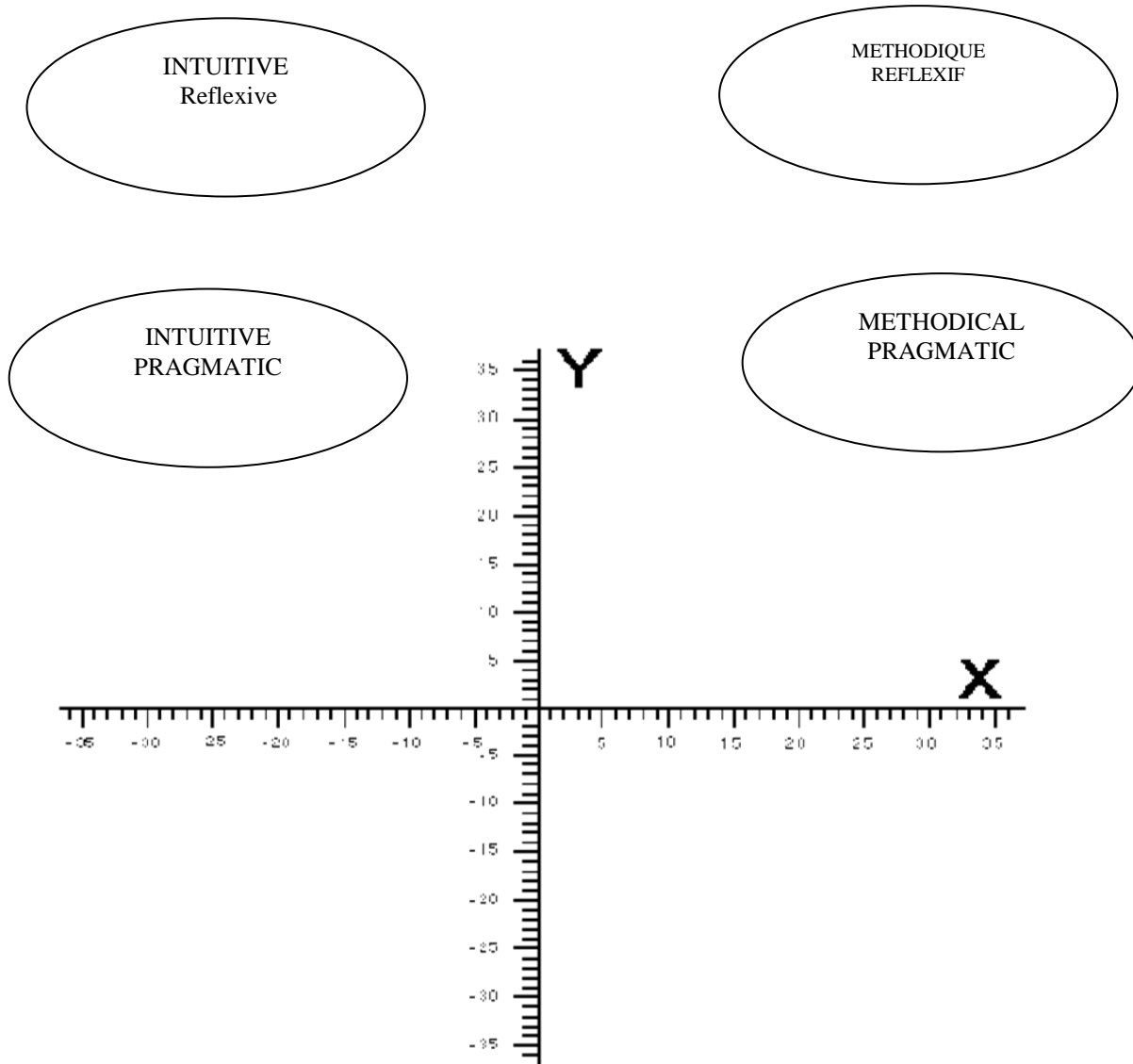
Table 1. The recommended grid analysis: Anderson and Krathwohl "High Cognitive Learning" Bloom Taxonomy revisited

The knowledge dimension	The cognitive process Dimension					
	Remember	Understand	Apply	Analysis	Evaluate	Create
Factual knowledge	58%	32%	16%	8%	4%	
Conceptual knowledge	38%					
Procedural knowledge	32%					
Meta-cognitive knowledge	08%					
	02%					

Table 2. Questionnaire semi headed: identifying learning styles semi headed: identification of learning styles

Preferred mode online training	Answer N 766 students
Experience real "Accommodator"	165
Thoughtful experience "divergent"	116
Abstract conceptualization "assimilation"	360
Active experimentation "Convergent"	125

Questionnaire 2. Quantitative data The ISALEM-97 Questionnaire



Facing diagnosed observation: We have made a number of questions:

Q1 : Is There a dominant Learning style in adult learners, online apprenticeship situation allows?

Q2 : What correspondence observed between the learning style and metacognitive development of adult learners in a specific context online training ?

Q3 : How to characterize the distribution of learning styles of adult learners facing learning?

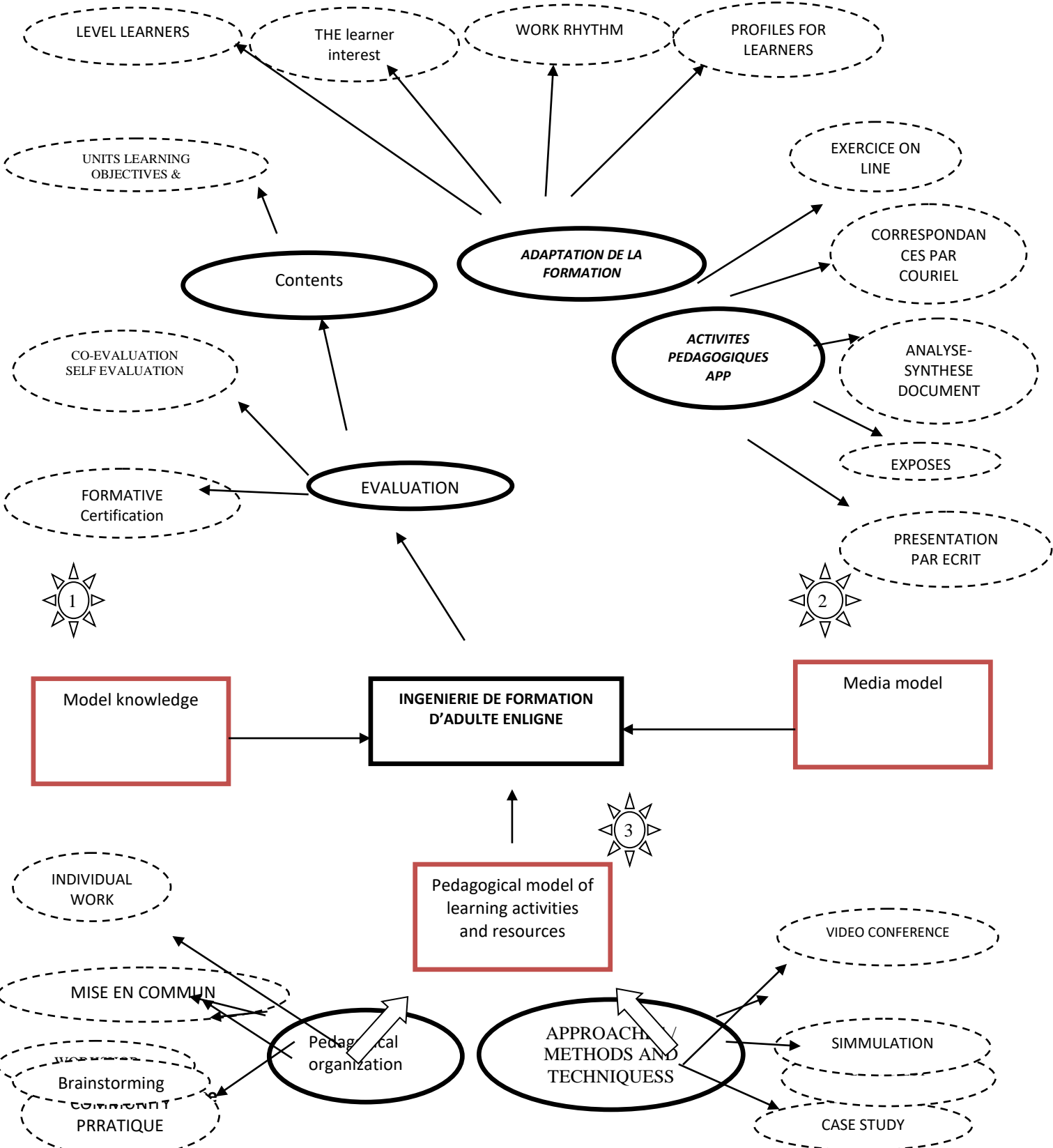
Q4 : What are the processes and strategies they implement in an online training ?

Q5 : The (or) type (s) of learning induces dominant there a particular learning strategy?

4. Conclusion

In the field of education, understanding our own learning styles and cognitive strategies solicitation constitutes a powerful lever fight against the problem of dropping in e-learning. Thus, the development of metacognition according to the social constructivist and interactive perspective remains dependent on the design of learning objects (break relative to the transmissive pedagogy knowledge "digital platform in the form of press-book"). In this work we use different learning styles and dimensions of the level of knowledge at stake, as well as dimension of the cognitive process applied in relation to the Anderson model Krathwol. This analysis model emphasizes the existing cross between these two dimensions, we have shown in the identification of learning styles is a determining factor in the behavior of learners in a learning situation analysis and reflection. Using these styles as input mode of teaching - learning creates favorable conditions for the quality of interaction and investment (through better knowledge of self and others as well as the preferred cognitive strategies put into play in this process) (Fredri, 2000). It is possible to direct reflection on teaching practice putting the focus on the activities of awareness and self-regulation (Knowles, 1980) (new national repository of skills) to develop metacognition. This exploratory research study among university students, we deduce that it is possible to conceptualize learning objects eLearning developing these dimensions (metacognitive knowledge and formative evaluation approach: self-assessment and Co-rated their skills) significantly. These results open a thorough reflection on adult education engineering (Knowles, 1980) in a computerized environment (conceptualization and formalization of teaching and learning objects). To conclude the modalities of diagnostic observation openly conducted among students who have been called to judge and describe in a free and fair verbalization preferential situations ensuring quality training. Earlier research students demonstrate behaviors of fear and anxiety about this situation of new formation, which generally do not meet their needs and values, or their experiences or their updated personal action project (AHS) (Wittorski & Arduin, 2012). Analyze educational objects "educational micro-engineering" of this online training fails metacognitive dimension (which is the way it is, and conceptualizes its procedural learning) highlighting the valuation of conceptual and procedural knowledge and the dimension of the cognitive process that is entirely limited to memory activities, understanding and application. Certes deeper reflection based on the differential consciousness-raising and conceptual organization of components of educational activities are proving highly effective in the act of E-learning. The awareness of his own learning style becomes a powerful self-recognition lever to get to know better and interact better (awareness of learning strategies and direction of construction). The design phase of the didactic engineering process (Pastre, 1999) and educational online training should focus on the establishment of an educational instrument aimed learning computerized environment that scales to different styles 'learning to address development issues individualized professionalizing courses (Astolfi & Develay, 1991) and adapting the learning in e-learning (the educational content, exercises, work instructions, etc. terms of ratings ...).

Schematics SYHNTSE TRAINING ENGINEERING TRAINING AD ADULT ONLINE ENLIGNEULTE



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