Critical Thinking and the Moroccan Educational Context

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Abstract

The advance of the new technologies and the unprecedented explosion of information and its varied sources have made the need for teaching critical thinking abilities and skills more imperative than ever before. These skills are not elements to be acquired automatically but a mode of thinking and being which transcends discipline divisions. It is based on intellectual traits (ethical behavior, autonomy, integrity, fair-mindedness, courage, perseverance, etc.), on universal intellectual standards (accuracy, clarity, relevance, precision, and depth) and on elements of reasoning (purpose, inquiry, information, concepts, analysis, inference, interpretation, synthesis and evaluation). Despite the pedagogical challenges engendered by the slippery nature of the concept, there is some agreement over the benefits of explicit teaching, collaborative and practical learning.

Along the same vein, integration of critical thinking in the Moroccan educational system is inevitable. This system, however, presents serious drawbacks in terms of clarity and coherence of policies, information, accountability, access, equity, quality and efficiency. The urgency of a thorough reform cannot be overstated.

The uncontrollable advance of new technologies has engendered shifts of varying magnitudes at the human and societal levels and has raised high challenges for educational systems in general. The issue is critical for developing countries which, not only have to face the new technologies, but also have to make major choices in their educational policies to meet the greater than ever demands of change and integration within an increasingly competitive global economy and a complex world.

Diverse images, messages, exponential data, information, ideas, prejudice and stereotypes from different perspectives and distant horizons keep

invading the individual space all day long. The media have enabled governments, businesses, institutions, groups and individuals to sell their products, ideologies, values, and characters. They have also allowed the production of goods and services to be internationalized and raised demands for a labourforce with new skills and competencies.

Telecommunications and the internet have wiped out –or given the illusion of wiping out barriers between people. Knowledge is short-lived and needs continuous updating; its sources are numerous and diverse and require understanding, analysis and critical appraisal of ideas.

Formal education has to keep up with the new transformations. Digital natives no longer need to learn to obtain a body of facts and information, which are anyway forgotten shortly after passing the exams. They instead need to learn how to learn, how to find what they need, how to decide about what they are learning, and how to build their knowledge.

Critical skills and competencies combined with foundational knowledge are believed to assist learners in developing autonomy, sound judgments, ethical attitudes, and abilities to make appropriate decisions and to particpate fully in the media and new technologies saturated world. Promoting logical thinking and well-grounded reasoning is at the core of formal education in general, and higher education in particular.

The Association of American Colleges and Universities declares:

«The ability to think, to learn, and to express oneself both rigorously and creatively, the capacity to understand ideas and issues in context, the commitment to live in society, and the yearning for truth are fundamental features of our humanity. In centering education upon these qualities, liberal learning is society's best investment in our shared future.»[1].

The OECD Assessment of Higher Education Learning Outcome (AHELO), in its endeavour to evaluate students'performance at a global level, uses four strands as tools of measurement. Generic skills are one of these strands,

1- Association of American Colleges and Universities. Statement Adopted by the Board of Directors of the Association of American Colleges & Universities, October 1998, http://www.aacu.org/About/statements/liberal_learning.cfm: (visited 27th may 2011).

notably critical thinking, analytical reasoning, problem-solving and written communication. They are thought of as essential and lasting outcomes of quality higher education[2].

Making the case for a critical thinking approach in education, this paper examines the higher-order thinking skills and abilities and the challenges which their instruction faces. It also reviews the Moroccan educational context and focuses on the aspects which have to be reformed to facilitate the implementation of the proposed approach, especially in higher education.

1.Critical Thinking

Critical thinking and reasoning are concepts which go back as far as Socrates who sought the truth through reasoned questions and consistent arguments. Later, other scholars like Bertrand Russell, Alfred Whitehead and John Dewey pursued the tradition and stressed the importance of thought, inquiry and intellectual independence in education. These qualities matter not only in scholarly work but also in ordinary and public life[3].

In fact, an education embracing critical thinking as part of its foundation is a prerequisite for Democracy and social equity[4].

Critical thinking is also considered the basis of the scientific method. Deanna Kuhn (2009), who focuses on higher order skills as causal and scientific reasoning, recommends that «higher order thinking skills must become as real and serious curriculum objectives as are the kinds of basic literacy and numeracy skills that movements like No Child Left Behind have made a cornerstone and gauge of education in the USA in recent years.»[5]

2- OECD, May 2011, http://www.oecd.org/document/22/0,3746 en_2649_39263238_40624662_1_1_1_1,00.html, (visited 26th May, 2011)

3- HARE, W, «*Critical thinking as an aim of education*». Inquiry: Critical Thinking Across the Disciplines, (1998) 18(2), 38-51.

4- Bernard, R.M. et al, *Exploring the Structure of the Watson-Glazer Critical Thinking Appraisal: One Scale or Many Subscales* ? Thinking Skills and Creativity (3), 2008, 15-22.

5- KUHN, Daane, «*Do Students Need to be Taught How to Reason*». Educational Research Review (4) 1-6. P 45.

What do these skills and abilities exactly refer to? What issues are related to the development of these skills in formal education?

Specialists have carried research about critical thinking in domains as far apart as philosophy, engineering, business, history, literacy, psychology, ethics, media studies, or nursing. They have also used a wide range of terms to describe the concept such as «cognitive concepts», «higher order skills», «thinking skills», «reflective judgment», «argumentation», «problem solving», «thinking methods» or «processes»[6].

The difference in the disciplines to which the theories and the models followed adhere have produced ambiguities and overlapping in the definitions of critical thinking. Philosophers, for example, seem to be interested in the outcome and nature of the thinking, in the formulating of hypotheses, in the alternative ways of thinking, and in the universal intellectual values and ethics[7].

Psychologists, in contrast, view critical thinking as higher-level cognitive processes, or components used to tackle pedagogical and practical issues, to judge the credibility of sources, to evaluate arguments, to distinguish between facts and opinions, to recognize potential bias, to interpret, to analyze, to synthesize (information) to inform decisions and draw conclusions[8].

Other educators have used a critical thinking approach to the teaching and learning of discourse and argumentation. The logical, dialectical and rhetorical nature of arguments requires critical thinking to understand, interpret, infer, analyze, and verify the truth of premises, beliefs, perceptions, attitudes, and values. Logical thinking about the accuracy, clarity, precision and coherence of arguments and the methods of influence is also essential in assessing whether arguments are appropriate, reasonable, and ethical. The ability to think both profits from and promotes identifying fallacies;

6- MACKNIGHT, C.B. «*Teaching Critical Thinking Through Online Discussions*». Research Review (4) 1-6, 2001.

7- Ibid.

8- MARIN, L. M. et DF. HALPERM. Halpern, D.F., *Pedagogy for Developing Critical Thinking in Adolescents: Explicit instruction produces greatest gains*, Thinking Skills and Creativity (6) 1-13. 2011.

i.e. arguments flawed by erroneous reasoning, inadequate evidence or improper expression (e.g. false analogies, hasty generalization, false cause, false temporal succession, poor or no evidence, irrelevance of arguments, appeal to tradition or to popular opinion, exploitation of emotive or ambiguous language, etc)[9].

Amid the complexity and overlapping described above, some critical thinking experts try to provide a common vision about the concept. One of the best examples is the Delphi Report, a consensus Statement of 46 experts who together issued the following:

«We understand critical thinking to be purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based. Critical thinking is essential as a tool of inquiry. As such, critical thinking is a liberating force in education and a powerful resource in one's personal and civic life. While not synonymous with good thinking, critical thinking is a pervasive and self-rectifying human phenomenon. The ideal critical thinker is habitually inquisitive, well-informed, trustful of reason, open-minded, flexible, fair-minded in evaluation, honest in facing personal biases, prudent in making judgments, willing to reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the selection of criteria, focused in inquiry, and persistent in seeking results which are as precise as the subject and the circumstances of inquiry permit. Thus, educating good critical thinkers means working toward this ideal. It combines developing critical thinking skills with nurturing those dispositions which consistently yield useful insights and which are the basis of a rational and democratic society.»[10].

Richard Paul, a prominent figure in the field, views the different definitions as not mutually exclusive. Critical thinking transcends discipline divisions and can be integrated within any mode of thinking: scientific thinking, mathematical

9- INCH, E.S. et B. WARNICK (4th Ed.), *Critical Thinking and Communication: the Use of Reason in Argument*. Allyn and Bacon, Boston, 2002.

10- FACIONE, P. A, *Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction*. Millbra, CA: The California Academic Press, 1990. P.2.

thinking, historical thinking, anthropological thinking, economic thinking, moral thinking, and philosophical thinking. Critical thinking principles can be learnt and applied to any domain of study[11]. Content can be taught as a mode of thinking.

R. Paul also focuses on the moral aspect of critical thinking which can be either «weak sense» or «strong sense». Universal intellectual virtues and standards can cultivate the good quality and strength of the thinking.[12]

«Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action. In its exemplary form, it is based on universal intellectual values that transcend subject matter divisions: clarity, accuracy, precision, consistency, relevance, sound evidence, good reasons, depth, breadth, and fairness...»[13]

R. Paul's model[14] consists of three interdependent components:

- elements of reasoning : purposes, questions, points of view, information, inferences, concepts, implications and assumptions;
- intellectual standards : accuracy, clarity, relevance, logical sufficiency, precision, depth, significance, fairness and breadth;
- intellectual traits: humility, autonomy, fair-mindedness, courage, perseverance, empathy, integrity, and confidence in reasoning.

Metacognition, or the ability of thinking about one's thinking, autonomy and the ability to evaluate one's or others' thinking are essential aspects in

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11- PAUL, R, *Critical Thinking: How to Prepare Students for a Rapidly Changing World. Santa Rosa: Foundation for Critical Thinking*, 1995.

12- SCRIVEN, M. et PAUL, R, «*Critical Thinking as Defined by the National Council for Excellence in Critical Thinking*». A statement presented at the 8th Annual International Conference on Critical Thinking and Education Reform, Summer 1987. Foundation for Critical Thinking, retrieved on the 15th May, 2011 from http://www.criticalthinking.org/aboutCT/define_critical_thinking.cfm

13- Ibid.

14- ELDER, L. et R. PAUL. *The Thinker's Guide to Analytic Thinking*. Foundation for Critical Thinking, 2007, retrieved on 29th May 2011 from http://www.criticalthinking.org/files/SAM_Analytic_Think2007b.pdf

critical thinking. "If you want to think well, you must understand at least the rudiments of thought, the most basic structures out of which all thinking is made. You must learn how to take thinking apart»[15].

Richard Paul's model, then, by presenting the quality of openness on any discipline, by including enough details about the different elements involved and focusing on strong moral values to guide the thinking, seems to be a suitable framework for implementing a critical thinking approach in formal education.

Instruction of Critical Thinking

Cognitive Research and developmental theories have shed light on the learning of cognitive abilities. According to J.D. Bransford et al[16].

three main findings, applicable to both adults and children, have a strong impact on teaching and learning, and on learners and teachers.

- Students come to the classroom with prior knowledge and preconceptions about the world. If their initial understandings and beliefs are not utilized in the new learning, they may fail to integrate new concepts and information. If they learn for the purposes of a test, they will revert to preexisting understandings outside class.

- Students must (a) possess a deep foundation of factual knowledge to develop competence in an area of study, (b) use a conceptual framework to understand facts and ideas, find patterns to organize their knowledge, and (c) generate arguments and explanations. These abilities are the factors which enable experts to have more facilities than novices at accessing and interpreting knowledge.

- An approach based on the students' awareness of their own processes of learning (i.e. metacognition) helps learners take charge of their learning, know their purposes, understand their weaknesses and strengths and manage their learning accordingly.

15- Ibid.
16- BRANSFORD, D.J. et al, *How People Learn*. National Academy Press, Washington D.C.: 2000.

- William Perry's[17] model of the intellectual development of college students' abilities suggests a continuum of maturity stages which can be described as four broad categories:

- Dualism/ received knowledge: at this stage, students view the world in terms of absolute realities (i.e. right or wrong) and therefore tend to rely on authority figures (author, professor; etc.) to obtain the right answer. They are mainly interested in facts and dislike doubt and abstraction.

- Multiplicity/ procedural knowledge: the students who reach this level are more open to multiple perspectives, start to use evidence to support their assertions. Still, they are inclined to hold to their preconceived knowledge.

- Relativism: students usually reach this level at graduation. They regard knowledge and values as relative, i.e. dependent on context and individual perspectives. They manage to evaluate the different alternatives but still have difficulty making a decision and somehow rely on authorities for answers.

- Commitment in relativism/constructed knowing: At this level (which is rarely reached according to Perry), students recognize the need to make commitments to values, beliefs and decisions based on questioning, evaluation and understanding. They are comfortable with unresolved questions.

The implications of these principles are: Firstly, information about the students' prior knowledge, stages of intellectual development, motivation, preconceived ideas and attitudes is essential. Academic teaching should be managed accordingly and needs to be supportive, challenging and grounded in real life problems and situations. Feedback and respect of students' differences are also emphasized. Collaboration among students, multiplicity of ideas and reasoning are advocated.

17- PERRY, WILLIAM G, *Forms of Ethical and Intellectual Development in the College Years: A Scheme*. Jossey-Bass, California: 1999.

Secondly, experts have a better grasp of the concepts and functioning of their field than novices. They can draw on this knowledge to access to a higher level of understanding than novices, to make the difference between the relevant and the irrelevant, the important and the less important, etc. Foundational and in depth knowledge of fewer topics of the discipline is more constructive than a superficial coverage of all topics of the subject.

Thirdly, focus is placed on the learner and his learning rather than the content alone. Attention is not only given to the information/ subject matter, but also to the learning context, the goals of this learning (why a given content is taught) and to understanding the required competencies. Continuous, formative assessment should reveal the stages and levels reached by learners; courses are designed accordingly.

Critical Thinking Instruction Challenges

Empirical research on teaching critical thinking tends to corroborate the principles of cognitive and developmental principles, but it also reveals some major challenges related to how to teach, and to how to evaluate this new learning.

Most studies maintain that explicit instruction is more effective than imbedded instruction within the content matter[18]. Others argue that while high order thinking skills must deserve the attention any other subject matter receives, they should be taught within traditional subject domains. In fact, critical thinking skills cannot be taught in isolation, and learners cannot be engaged in serious critical thinking unless they are provided with a meaningful rich, motivating context of a specific subject matter. In addition, learners who have to deal with different ideas and courses across different disciplines show greater gains in higher order thinking skills[19] .

Performance in reasoning skills, while enhanced by instruction, is confirmed to be related to several factors like learners' educational level, age,

18- BURKE, L.A. & WILLIAMS, J. M, «*Developing Young Thinkers: An Intervention Aimed to Enhance Children's Thinking Skills*». Thinking Skills and Creativity (3), 2008, 104-124.

19- DAM, G.T. & VOLMAN M.

awareness, parental attention, emotional security and other psychological and intellectual individual differences[20].

Explicit instruction is also demonstrated to be effective whether carried out individually or in collaboration, but collaborative learning is more effective than individual learning. Collaboration increases learners' competences and performance in higher order thinking skills[21]. Group discussions, real-life- role play, use of materials relevant to the students' current concerns, use of case studies, and student-instructor interaction are reported to increase students' motivation and engagement in their learning[22]. The active participation of students in their courses, in the form of attribution of meaning, analysis, synthesis and evaluation of statements, is positively correlated with the development of higher- order cognitive functioning [23].

D. F. Halpern's[24] model to teach and learn critical thinking somehow falls in line with the findings mentioned above. It consists of four parts: (a) a dispositional (i.e. intellectual traits) component which enables learners to engage in cognitive work, (b) instruction in the skills of critical thinking, (c) instruction in the structural aspects of problems and arguments to facilitate critical-thinking skills' transfer and (d) a metacognitive component which empowers learners to monitor their progress and check the accuracy of their endeavours.

The other major challenge in critical thinking education relates to its assessment. In fact, formative assessments are «ongoing assessments designed to make students' thinking visible to both teachers and students... they are not the Friday quiz for which information is memorized the night before, and for which the student is given a grade that ranks him or her with respect to classmates»[25].

20- Bowman, B.T. et al. (eds). *Eager to Learn: Educating our preschoolers*. The National Academy of Sciences, Washington, DC 2001.

21- Burke, L.A. & Williams, J. M. Dam, G.T. & Volman.

22- Green, L. Marin L. M. & D.F. Halpern.

23- Dam, G.T. & Volman, M. 2004.

24- Halpern, Diane F., «*Teaching Critical Thinking for Transfer Across Domains: Dispositions, Skills, Structure Training, and Metacognitive Monitoring*». American Psychologist, 1998. 53(4) 449-455.

25- Bransford, D.J. et al, 2000, p. 24.

The assessment of critical thinking skills should in theory be doing this; i.e. «make thinking visible», help identify the educational needs, and determine the students' strengths and weaknesses.

In practice, however, the implementation of this principle seems quite difficult. First, the absence of a clearcut theory of critical thinking and the slippery nature of the concept have led to fragmented, diverse forms of assessment and to limitations in terms of objectivity, reliability and validity of the instruments used[26].

Standardized tests like the Watson-Glaser Critical Thinking Appraisal Test (WGCTA) do not test the students' thinking but sub-skills (e.g. deduction, recognizing assumptions, inference, interpretation, and evaluating assumptions). R. M. Bernard et al[27]. corroborated several prior research findings which indicated the subscales utilized in the WGCTA overlap and do not measure the different skills they are supposed to measure. Critical thinking skills should not be assessed separately but as a set of closely interrelated skills and abilities functioning together as a whole.

Open-ended questions and self reports, on the other hand, are preferred to multiple choice questions. They measure the logic of the learners who can defend their arguments and show their reasoning. Problems related to the scoring process, and the narrowness of the assessment's context raise doubts about the objectivity, validity and reliability of the instrument.

Thus, critical thinking assessment has to be grounded in a holistic, trans-disciplinary perspective of the concept. The need to refine, expand the tests available, and even to rethink new test formats, is highlighted. One test format in a single context cannot elicit the learner's higher –order skills and abilities[28].

Another key element in the implementation of a critical thinking approach is the teacher. Professional development is essential for all teachers, but more pressing for the faculty, who generally have no or sporadic and variable training or development.

26- KU, K. Y. L, «*Assessing Students' Critical Thinking Performance: Urging for measurements Using Multi-Response Format*». Thinking Skills and Creativity (4) 70-76.
27- BERNARD, R.M. et al.
28- KU, K.Y.L. DAM, G.T. & Volman, M. BERNARD, R.M. et al.

However, a long-term approach to critical thinking professional development enables faculty to internalize and apply the fundamentals of critical thinking at a deep level. Through a long-term approach, faculty can restructure their courses so that students develop as inquisitive and disciplined thinkers and questioning minds. Its success depends on a number of variables. One develops as a critical thinker in a way similar to the way in which one learns to perform well in basketball, ballet, or on the piano. First of all, one must understand the basic principles. Secondly, one must regularly engage in self-monitored, self-evaluative practice (putting the principles to work in practice) progressively up-grading one's understanding and skill thereby.[29]

As mentioned above, this perception of teaching and assessment cannot be carried out in isolation, in a one classroom context. It should be part of a whole institutional and educational perspective.

To sum up, critical thinking is a slippery concept, and rather difficult to define. Likewise, the pedagogical implementation of the concept raises challenges related to the content of the courses, methods, assessment and professional development. Yet, the necessity of moving from a traditional vision of education and a focus on the content to a critical thinking approach is largely accepted as the goal of an effective education.

The next section discusses the possibility of implementing a critical thinking approach in a Moroccan educational context, especially in higher education.

2. Moroccan Context

Challenges of Primary and Secondary Education

The Moroccan educational system has been undergoing reforms for more than a decade now. Despite the relative progress realized in increasing literacy rates and access to basic education, the system has been revealed by the Conseil Supérieur de l'Enseignement[30] (2008) and, notably, by many other international organizations' reports (e.g. Sobhi, T. et al.'s report

29- Foundation for Critical Thinking, Long-Term Professional Development; Retrieved on 7th June 2011 from http://www.criticalthinking.org/professionalDev/higherEducation.cfm

30- Conseil Supérieur de l'Enseignement, Etat et Perspectives du Système d'Education et de Formation. Vol. 1. Réussir l'Ecole Pour Tous. Rapport annuel, Rabat, 2008.

published by UNESCO in 2010[31]; MENA Development Report 2008[32]; Arab Knowledge Report 2009[33] ; Human Development Report 2009[34], and 2010)[35] to present serious drawbacks in terms of access, equity, quality and efficiency.

Morocco is one of the least performers (Djibouti, Yemen and Iraq) in education among MENA (Middle East and North Africa) countries[36]. It is also ranked of 114 out of 156 countries in terms of achievements of education, access to education and efficiency and quality of primary education[37] 40% of Moroccans, aged 10 years and up are non literate, of whom 75% are women and 60% are rural areas' dwellers. The performance in the basic skills (Mathematics, Reading, Sciences, Arabic and French) is very low in comparison with international standards: 36% of the interviewed children have a minimal level in Arabic, 18% in French and 43% in Mathematics. In Sciences, the performance is the best with 65% of students reaching a minimal level. 7% of the students achieve mastery in Arabic, 1% in French, 11% in Mathematics and 20% in Sciences. In rural areas, learners show a lower level than their counterparts in big cities like Casablanca or Rabat. The high rate of dropouts and repetitions in rural areas ends up in unemployment and poverty. The Moroccan School does not promote the equality of chances and social mobility but increases the gap between the different socioeconomic groups[38] .

Among the challenges reported in Sobhi et al. report (2010), we can note:

31- SOBHI, Tawil. et al, *Education au Maroc: Analyse du Secteur*. UNESCO, Rabat, 2010.

32- Mena Development Report, *The Road Not Travelled: Education Reform in the Middle East and North Africa*, The World Bank, Washington D.C. 2008.

33- Arab Knowledge Report 2009, *Towards Productive Intercommunication for Knowledge*. United Nations Development Programme & Mohamed Bin Rashid Al Makhtoum Foundation, Dubai.

34- Human Development Report 2009, *Overcoming Barriers : Human Mobility and Development*. UNDP, New York.

35- Human Development Report 2010, The Real Wealth of Nations, Pathways to Human Development, UNDP. New York.

36- MENA Report 2008. p. 177.

37- Human Development report, 2010 : 194.

38- Sobhi, T. et al, 2010. p. 54-55.

- The introduction of relevant contents and methods to improve the learning quality: the 1999 reform introduced some new school books and new ideas respecting human rights principles, but more effort is still to be made.

- The development of the teachers' initial education and training : Teachers often lack the required educational and pedagogical competencies, and their relationships with learners is often based on unequal terms, fear and violence.

- The setting up of a clear and coherent linguistic policy: The linguistic situation is Morocco's Achilles' heel. Jamila Houdaifi Settar, Dean of the Faculty of law, Economic and Social Sciences of Ain Sebaâ, (2011) affirms (which is rare from a senior official) that the non mastery of French, the language of instruction in higher education, is «the cause of all dropouts and failure in college».

In fact, previous hesitant, inconsistent[39] and hasty linguistic decisions have created real barriers to learning both Arabic and French. Low linguistic abilities, in turn, curb learners' grasp of the other elements of the curriculum. The problem is so acute that the Learner is described in Sobhi et al. report as «the «semi-literate bilingual produced by the public educational system[40]».

The failure of the Moroccan public school to provide adequate language learning has also caused the conversion of the linguistic ability into a tool of discrimination. It is a commodity which the private sector and the international foreign schools sell to a limited group of people who can afford the money to buy it. Only an elite can achieve a linguistic proficiency (especially French) and later follow studies in first-rate institutions of higher education.

Urgent action is therefore required to tackle this very complex and crucial issue. The teachers' linguistic ability has to be reviewed as well.

39- Primary and secondary school instruction is carried out in Arabic. Scientific, Mathematics and engineering studies in tertiary education are carried out in French.

40- «Il convient donc de trouver des solutions au phénomène des «semi-analphabètes bilingues produits par le système éducatif public». p.61.

• The establishment of an appropriate school climate encourages emotional security, trust and sound human relationships among all the actors (parents, learners, teachers, and authorities) involved in the educational project. A good school climate helps in the fight against class repetitions and dropouts. Tools to measure the school climate are necessary to safeguard its good quality.

With such a backgound, implementing a critical thinking approach can prove hard. A critical thinking approach requires an educational policy which allows open- mindedness and reflective thought, continuous updating of educators' formation , a supportive school climate and a minimum level of linguistic proficiency and quality contents.

Still, the approach has its place as an integral part of the system. The Moroccan educational system, while still struggling with «old» challenges, cannot afford to ignore the virtual world which is invading our institutions and our daily lives. In 2000, only 100,000 Moroccans used the internet, now they are 10,442,500 users, i.e. 33% of the Moroccan population. Facebook users were 2,478,940 on December 31st 2010[41]. Morocco has to keep up with the pace of the advent of the new technologies and the ensuing upheavals at the knowledge, economic, human social and cultural levels.

Higher education and the Cultivation of Higher Order Thinking Abilities

Higher education in Morocco has been undergoing substantial reforms to address the new economic and social needs of the country. According to the law 01-00[42], the missions of higher education are :

a. competencies' formation, development and dissemination of knowledge in all domains;

b. the contribution to scientific, technical, professional, economic and cultural development of the nation, taking into account development needs, economic and social progress;

41- Internet World Statistics 2011, retrieved from http://www.internetworldstats.com/stats1.htm on 10th June 2011.
42- the platform of higher education reforms in Morocco since 2004.

c. the mastery and development of science, technology and knowhow, through research and innovation;

d. the development of the Moroccan cultural heritage and transmission of its ancestral values[43].

Accordingly, higher education is challenged to meet the economic and social goals of the nation, to integrate a global competitive knowledge economy and to actively contribute to the formation of quality human capital, responding to the labour market.

Funds have been raised, varied initiatives have been undertaken, and bold changes in contents and organisation of the programmes have been introduced. Yet the Moroccan higher education is far from meeting its challenges and the educational standards are judged low or irrelevant to the labour market. The continuously rising numbers of unemployed graduates protesting in front of the parliament are just one evidence of a failing system.

In fact, the reforms introduced seemed to be in line with the requirements of their counterparts in developed countries, notably France. The curricula in varied institutions, the LMD system (Bachelor (Licence) / Master and Doctorate degrees), the use of credits and modules mirrored the European studies' organisation. But it soon became clear that a serious reform needed more than packages of laws and recommendations.

Reforms in Morocco are politico-bureaucratic at the core. Detrimental old governance beliefs and behaviour, soundless but increasing control of academic freedoms by the administration, deep-seated traditions of teaching based on rote learning of facts, lack of professional development of the faculty, lack of incentives and of motivation, shortage of a critical mass of full time faculty, low budgetary allocations, lack of research and

43-la formation des compétences et leur promotion ainsi que le développement et la diffusion des connaissances dans tous les domaines du savoir;
- la contribution aux progrès scientifique, technique, professionnel, économique et culturel de la Nation, en tenant compte des besoins du développement économique et social ;
- la maîtrise et le développement des sciences, des techniques et du savoir faire, par la recherche et l'innovation ;
- la valorisation du patrimoine culturel marocain et le rayonnement de ses valeurs ancestrales. (Loi 01-00, Article Premier).

innovation, the non coherence and coordination among the departments of the same institution and between basic education and higher education (the most striking is the linguistic policy which stipulates Arabic as the language of basic and secondary instruction and French the language of instruction in higher education), are dimensions which require to be overhauled. No reform, however well packaged, can succeed without serious attention to the educational environment and its underlying mechanisms.

Information about the New Technologies in higher education Paves the Way for a Critical Thinking Approach

As argued above, Moroccan higher education has to move from an old vision of education which focuses on contents to an approach which equips students with the necessary abilities to answer «such questions as, "Do you know how to do such and such?» «Where and how do you find such and such information?» «How do you assess the value of the knowledge you have obtained?» and «How can this knowledge be put to use?» It is through competencies of this sort that individuals become knowledgeable in varying degrees and ways. Thus they become persons aware of the underlying substance and intrinsic value of things and of how to deal with them, educators capable of contributing to the dissemination of knowledge, and active players in their environment and society through their ability to take decisions and espouse views on the basis of available knowledge, as opposed to superstitions, traditions, prejudices, random improvisation, or personal whim[44].

The need for a critical thinking approach is even more pressing in «first-rate» institutions and colleges, where it is quite common to get connected and to use the new media and technologies.

The faculty have recourse to the new technologies for their research, and for the preparation and presentation of their lectures. Most libraries (60 to 80%; IFLA World Report, 2010) have access to the internet and to online databases. Students use the internet both for their studies, for research, for blogging, and for communicating through Facebook. Mobile phones and laptops are familiar sights in schools and campuses.

44- Arab Knowledge Report 2009, p. 97- 98.

This picture, however, has many gaps. No exact information is available about access, the extent and nature of use of these technologies either in classrooms, or on campuses. We do not know whether they are used for studies or for leisure, and in what language . Data about the users' needs and libraries' access to online databases are not available.

Likewise, the impact of digital information on the methods and quality of learning, on students' motivation, and on the faculty and students' relationships, needs to be studied. The ability and the degree of the use of the new technologies by the faculty, by the students, and by the staff in the different institutions is not known.

The International Federation of Library Associations' (IFLA) World Report provides data about libraries, the use of information, the use of the internet, freedom of access to information and freedom of expression, the digital divide, etc. Morocco contributed to this Report for the first time in 2010. The problem is, however, that too many questions of the report remain unanswered.

In the absence of a systematic collection of reliable and precise information about the content, access and use of the new technologies in higher education, an overall coherent vision, planning and adequate measures cannot be implemented. A critical thinking approach can be carried out at best in the individual classroom.

Academic Freedom, Transparency and Accountability: Prerequisites for a Critical Thinking Approach

A coherent vision of education and coordination among the faculty, across departments within the same institution, facilitate the implementation and the reinforcement of methods and programmes. Likewise, a critical thinking approach cannot be effective unless it is integrated within a framework which adopts it as a mode of thinking and way of working within the whole institution.

But such a pedagogical decision is the right of the authority responsible for the higher education institutions, considered "first-rate". The director (or head of the institution) has carte blanche (Articles 22, 34 and 35 of the law 01-00).

In fact, higher education schools and institutions are run by directors, deputy directors, secretary generals and councils of institutions.

The head (the director) of the institution is selected by a committee appointed by the governmental authority in charge whereas the deputy directors and the secretary general are proposed by the director to the governmental authority in charge.

The members of the council of the institution consist of official members (the director, deputy directors, secretary general), members appointed by the director and representatives of the administration's staff, the full time faculty and the students. The faculty members and the students are a small minority in these councils. The members representing the administration are under the director's pressure since he[45] is the one who decides on their promotions, bonuses and allowances.

Except for disciplinary measures related to students, the council of the institution has only a consultative power.

The committees emanating from the council of the institution are small ones (not exceeding 6 persons) and the director has the right to appoint to these committees anyone he judges capable of «illuminating» the others by their knowledge or savoir–faire.

The council of the institution, then, not only has no decisional power, but its very make up can be dictated by the director of the institution. The purpose of the council seems to be that of giving the illusion of the existence of elections and representativity of the different actors involved in education within a given institution. The council's meetings may be a real farce. The director has the right to lead the dance alone if he wants to.

The director has also the power to take any decision related to the budget allocation, to courses, and to the recruitment of administrative staff and the part time faculty recruitment. The full time faculty recruitment is usually done by a committee. The director appoints the members of the committee and can invite external members he considers able to help in the selection of the candidates.

45- «Her» does not apply here as the overwhelming majority (if not all) of these officials are men.

The scientific commission which decides the advancement and tenure and discipline of the faculty is made up of members nominated by the director and elected members. The parity between the nominated and the appointed members has to be respected. In case of disagreement, the director has the right to decide on the issue.

The faculty who have been enjoying total (sometimes excessive) freedom to run their classes, are being put under the control of the director. The academic freedom is being eroded, and with it the quality of education, innovation and creation.

The director also negotiates and decides on agreements and conventions of cooperation with national and international bodies. He provides short term courses, training and services for external organisms and administrations in exchange of payment. He is also the one to decide on the faculty or administrative staff to participate in or benefit from these agreements. The rest of the faculty or the institution's staff may not even be aware of the existence of such agreements. Alliances can be made at the expense of collegial work, academic collaboration, and quality enhancement.

Accordingly, the question to be raised is about the prudence of granting all the power of decision in an institution of higher education to a single person who does not have to demonstrate any scientific or pedagogical competencies. The selection of a director (especially of an institution not belonging to a university) relies on a project (which may be prepared for him by other people) and the views of appointees of the administration (Article 33, Law 01-00). It is possible that partisan considerations are behind inappropriate choices.

In such an environment, where decisions are taken in a top- down manner, where transparency and accountability are not of the agenda of the system, the product is a deep malaise with dire consequences.

It is hard to imagine how a critical thinking approach can be implemented in these circumstances. The approach is not a simple method to be applied in the classroom, but a mode of thinking and being, based on rationality, ethics, equity and fair-mindedness.

Faculty Education and Development

One of the key elements of any successful educational system is the teaching staff. They are recruited on the basis of the merit of their academic qualifications; they receive pre-service and in-service training, closely collaborate with their colleagues, and share and discuss academic knowledge and teaching experience. They are motivated and committed to teaching (OECD, 2010).

In contrast, higher education in the Arab World is characterised by high student-teacher ratios, and crowded classes which curb the interaction between the faculty and the students; heavy teaching loads, little time for scholastic research or activities which can enrich courses and advance creativity and innovation, scarcity of "fully-fledged" professors, high ratios of part time instructors who lack time and availability for students, and faculty inappropriate qualifications[46].

In addition to this, Moroccan higher education presents a lack in regular and widespread programmes for advancing the faculty's teaching methods and abilities. It is the practice of non-stop teaching which prevails in Morocco. It is common for many faculty members to spend their life teaching without ever having the opportunity to mark a pause in order to renew their knowledge and learning outcomes. It goes without saying that the role of the faculty, the quality of education provided and its place in society are influenced negatively.

The next issue, then, is related to the faculty's consent and capacity to implement a critical thinking approach in a Moroccan higher education context which has no requirements and no opportunities for professional development and training.

In fact, it is usually assumed that people who have developed expertise in particular domains are able to perceive patterns, relationships, inconsistencies and underlying meanings of that domain.

The faculty are assumed to be experts in their fields of study. They are

46- Arab Knowledge Report 2009, p.114.

capable of understanding their subjects, the principles, the logic and mechanisms utilised in that field. They are also supposed to be capable of imparting their knowledge to their students.

Research has, however, revealed that «though experts know their disciplines thoroughly, this does not guarantee that they are able to teach others»[47]. In any case, reforms require new knowledge, competencies and training.

In Morocco, despite a recognition of the need to adapt to the advent of new technologies, change is mainly thought of in terms of the material utilization of these technologies: laptops, multimedia and presentation softwares, sparkling programs, and tactile screens, at least in «first-rate» higher education institutions.

The traditional vision of education is prevailing; learning still consists of «silently» copying down contents of lessons projected on a screen, rote memorising them and regurgitating them during the examination. Screens replace the faculty's dictation, with the difference that they may end up with a power or mechanical failure.

The faculty need to develop not only their research ability and deep understanding of their subject matter and its structure, but also their pedagogical abilities, knowledge about theories and strategies of learning, learners' environment, beliefs, prior knowledge and attitudes towards their learning and subject of learning.

«If teachers are to prepare an ever more diverse group of students for much more challenging work -- for framing problems; finding, integrating and synthesizing information; creating new solutions; learning on their own; and working cooperatively-- they will need substantially more knowledge and radically different skills than most now have and most schools of education now develop»[48].

The goals of teaching have dramatically changed and so should contents, methods and modes of assessment. The faculty should be provided with the opportunity to develop professionally at a regular and sustained pace.

47- Bransford, D. J. et al, 2000. p. 31
48- Darling-Hammond, 1997: 154, quoted in Bransford, D.J. et al, 2000: 190.

Conclusion

The new technologies have resulted in dramatic changes and a continuous flow of information and messages produced by the new media. To face these overwhelming transformations and participate actively in a media and technologies saturated world, citizens should cultivate some key competencies to better understand, analyse, and make appropriate decisions. Education, and higher education in particular, can meet this objective by embracing a critical thinking approach.

A critical thinking approach does not consist only of skills to be acquired in a mechanical manner. It is a mode of thinking and being which relies on elements of reasoning (purpose, inquiry, information,, analysis, inference, interpretation, implications and assumptions), on intellectual standards (e.g. accuracy, clarity, relevance, logical sufficiency, depth, etc.), on intellectual traits (e.g. ethical behaviour, autonomy, fair-mindedness, courage, perseverance, etc.), and on the ability to know and self-regulate one's knowledge and abilities.

To be implemented successfully in the Moroccan context, this approach should be integrated within the framework of a coherent and consistent reform. Coherence and consistency are achieved through close cooperation among all the actors involved (governing authorities, institutions, faculty, and students). Information about the media and the new technologies situation in the country, curricular and modes of assessments changes, and accountability, transparency, decision sharing, rational allocation of resources and development of the faculty are the main challenges.