Teaching and Assessing 21st Century Critical Thinking Skills in Morocco: A Case Study

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Abstract

To meet the demands of the twenty-first century, most educational institutions across the world made critical thinking one of their primary goals. Very recently, some Moroccan universities, such as University of Moulay Ismail in Meknes, have also included critical thinking as a major course. Therefore, the purpose of this qualitative study is to examine the pedagogies Moroccan teachers use, the challenges they face, and their conception of how to effectively teach and assess critical thinking in the Moroccan context. A case study approach is used to collect data based on documents and a semi-structured interview. The results indicate that there are at least three main challenges that CT teachers face in Morocco: (1) lack of training, (2) students' background, and (3) education politics. The findings also reveal that good teaching practices are possible if some measures are taken, namely educational reform.

Key words: Assessment, critical thinking skills, dispositions, effective teaching

Introduction

The need for logical thinkers, good decision makers, creative thinkers/innovators, and effective problem solvers in the twenty-first century has made of critical thinking an essential skill for educators, employers and policy makers in most countries of the world (Bell, Stevenson, Neary, 2009; Halpern, 2003; Inch & Warnick, 2011; Paul, 2005). For Trilling and Fadel (2009), there are three crucial skills that can lead to “unlocking a lifetime of learning and creative work” in the twenty-first century:

- Critical thinking and problem solving (expert thinking)
- Communication and collaboration (complex communicating)
- Creativity and innovation (applied imagination and invention) (p. 49).

Trilling and Fadel (2009) put critical thinking in the first place because they know that it has become a must and one of the foremost requirements of the twenty-first century education and job market.

In higher education, most universities and colleges nowadays consider this skill one of the “core learning outcomes” of their students. Liu, Frankel, and Roohr (2014), for instance, reason that:

Critical thinking is one of the most frequently discussed higher order skills, believed to play a central role in logical thinking, decision making, and problem solving [...]. Despite contention, critical thinking has received heightened attention from educators and policy makers in higher education and has been included as one of the core learning outcomes of college students by many institutions. (p.1)

Also, in a very recent survey conducted by the Association of American Colleges and Universities, “95% of the chief academic officers from 433 institutions rated critical thinking as one of the most important intellectual skills for their students” (Liu, Frankel, & Roohr, 2014, p.1). Obviously, these facts show that critical thinking has become valuable today more than ever before inside educational institutions and within society at large. It can undoubtedly make students more rational and better citizens.

Statement of the Problem

In its attempt to redress the shortcomings of the 2003-2004 reform, the Ministry of Higher Education in Morocco launched a second reform in 2013. Thanks to this reform, Moroccan university teachers were given more freedom to suggest and offer their own **courses** in semesters 5 and 6. At University of Moulay Ismail, for example, the Faculty of Arts and Humanities in Meknes offered critical thinking as a course during the Academic year 2014-2015. However, research in the field of critical thinking has shown that teaching and assessing this course pose several extra difficulties. Different studies have shown that teaching critical thinking is not only “hard” (Willingham, 2008), but also challenging due to several factors such as the course objectives, course contents, number of students, logistics, etc.

Purposes of the Study

This study has three main objectives. The first purpose is to explore how Moroccan university teachers conceptualize teaching and assessing critical thinking. The second objective

is to identify the main challenges of teaching and assessing critical thinking in Moroccan higher education. The third objective is to examine how Moroccan university teachers perceive effective critical thinking teaching and to suggest a set of good practices and skills for teachers within the Arab world in general and in Morocco in particular.

Research Questions

RQ1: How do Moroccan teachers conceptualize and teach/assess critical thinking in Moroccan higher education?

RQ2: What are the challenges that teachers face in teaching and assessing critical thinking to Moroccan university students?

RQ3: How do Moroccan teachers perceive effective teaching and assessing critical thinking in Moroccan higher education?

Literature Review

In dealing with the issue of teaching and assessing critical thinking in the twenty-first century, researchers are often faced with the hard task of dealing with a set of questions that have been raised by a great number of scholars. The literature shows that the most frequently asked questions are the following: (1) what is critical thinking? (2) What is the difference between critical thinking and critical thinking skills? (3) Is critical thinking teachable? (4) Why is critical thinking hard to teach? (5) If critical thinking is teachable, what critical thinking skills do students need to develop? (6) How can we test critical thinking? (7) And what twenty-first critical thinking skills should we teach and assess? (Emerson, 2013). However, since the major aim of this study is to explore how critical thinking skills are taught and assessed in the twenty-first century, the focus of this review of the literature is on answering some of these questions more than others.

Critical Thinking Defined

Extant literature reveals that although several scholars from different disciplines have defined critical thinking differently, it is still hard to find an agreed upon definition of the term. The lack of an accurate definition of critical thinking is also reflected in the literature on teaching and assessing critical thinking in different areas and disciplines (Ennis, 1993; Facione, 1990; Paul, 1989). Consequently, many scholars today refer to critical thinking as a “contentious skill” characterized by controversy not only about how to define it, but also about how to assess its effects on students’ life inside and outside educational institutions. It is no wonder, then, that Liu, Frankel, and Roohr (2014) uphold that

It [critical thinking] is also a highly contentious skill in that researchers debate about its definition; its amenability to assessment; its degree of generality or specificity; and the evidence of its practical impact on people’s academic achievements, career advancements, and personal life choices. (p.1)

To understand why so much controversy revolves around critical thinking, it is deemed necessary to answer the following question: How has critical thinking been defined by some prominent critical thinking scholars?

One of the most popular definitions of critical thinking is that of Ennis (1985). For Ennis, “Critical thinking is reasonable reflective thinking focused on deciding what to believe or do” (1985, p. 44). Although Ennis (1985) defines critical thinking as “reasonable reflective thinking focused on deciding what to believe or do”, he himself acknowledged later on in 1993 that his definition was not accurate enough and needed to be refined: “As it stands, however, this definition is also as vague as Bloom's taxonomy” (Ennis, 1993, p. 180).

In 2003, Halpern suggested a more detailed definition including several aspects of critical thinking such as problem-solving, inference-making, using the context, and dealing with tasks that need thinking, and so on:

the use of those cognitive skills or strategies that increase the probability of a desirable outcome. It is used to describe thinking that is purposeful, reasoned, and goal directed—the kind of thinking involved in solving problems, formulating inferences, calculating likelihoods, and making decisions, when the thinker is using skills that are thoughtful and effective for the particular context and type of thinking task. (p. 6)

Very recently, Hunter (2014) has given a “deeper value” to critical thinking by tying it not only to truth, but also to citizens’ freedom, decision-making, and “personal autonomy”:

critical thinking has a deeper value than just its ties to truth. Critical thinking is also closely tied to one variety of freedom. By thinking critically, one can make up one’s own mind and making up one’s own mind is essential if we are to be the master of our own lives. Critical thinking ...is essential to personal autonomy. (p.2)

Critical Thinking Dispositions

To explore the role of dispositions in teaching and assessing critical thinking, several scholars have advanced several tentative definitions of critical thinking dispositions (Facione, 2000). Ennis (1996), for instance, thinks that “a disposition is a tendency to do something, given certain conditions. The brittleness of glass is a standard example of a disposition: a tendency to break into a number of pieces when struck” (p. 166). For Perkins, Jay and Tishman (1993), a disposition has three main components: (1) “inclination”, (2) “sensitivity”, and (3) “ability”.

In order to make critical thinking dispositions more practical in the classroom, some scholars have developed different lists and typologies of critical thinking dispositions (Facione, 2000). One of the most important contributions on dispositions is that of Ennis (1996). He writes a detailed review of the existing lists of critical thinking dispositions and suggests his own list of dispositions based on six criteria: (1) “simplicity”, (2) “comprehensiveness”, (3) “value”, (4) “comprehensibility”, (5) “conformity of its language to our everyday meanings”, and (6) “the fitting of subordinates (if any) under superordinates” (Ennis, 1996, p. 170). Ennis’s list is composed of 3 broad dispositions. The first disposition (Ennis, 1996, p. 171) is related to caring about the truth of beliefs and making justified decisions (“Care that their beliefs be true, and that their decisions be justified; that is, *care to ‘get it right’ to the extent possible*, or at least care to do the best they can”). This disposition is divided into 4 sub-dispositions:

A. *Seek alternatives* (hypotheses, explanations, conclusions, plans, sources), and *be open* to them;

- B. *Endorse a position to the extent that, but only to the extent that, it is justified by the information that is available;*
- C. *Be well-informed;* and
- D. *Seriously consider points of view other than their own.*(p. 171)

The second disposition (p. 171) concerns the representation of a stand in an honest and clear way (“*Represent a position honestly and clearly*”). This disposition, too, requires the use of other subdispositions:

- A. *Be clear about the intended meaning of what is said, written, or other communicated, seeking as much precision as the situation requires;*
- B. *Determine, and maintain focus on, the conclusion or question;*
- C. *Seek and offer reasons;*
- D. *Take into account the total situation;* and
- E. *Be reflectively aware of their own basic beliefs.*(p.171)

The third disposition relates to caring about dignity and people’s worth (“*Care about the dignity and worth of every person*”). This disposition includes three other subdispositions:

- A. *Discover and listen to others' view and reasons;*
- B. *Take into account others' feelings and level of understanding,* avoiding intimidating or confusing others with their critical thinking prowess; and
- C. *Be concerned about others' welfare* (Ennis, 1996, p. 171).

In a nutshell, the development of different typologies of critical thinking dispositions has made teaching, testing, and conducting research on critical thinking in the twenty-first century more practical in comparison to the past.

Teaching Critical Thinking Approaches

In the twentieth century, critical thinking gained much interest and became a rich field of research for scholars from different disciplines. The most important findings came from the fields of philosophy, psychology, and education. These findings strongly influence and guide the approaches and methods used in teaching critical thinking in the twenty-first century (Emerson, 2013; Van Gelder, 2005).

Teaching critical thinking today is guided by four major approaches (Abrami, et al., 2008; Emerson, 2013). First, some teachers use the “mixed approach” which perceives critical thinking as a separate “unit within a course of other content”. Second, some teachers use the “immersion approach” where critical thinking is “a by-product of instruction”. Third, other teachers adopt the “general approach” which relies on explicit teaching of critical thinking. Lastly, some other teachers prefer to use the “infusion approach”: in this approach critical thinking skills are “embedded in the course content” in an explicit way (Emerson, 2013, pp. 8-9). In spite of the richness of the approaches used in teaching critical thinking, it has been subject to continuous criticism from both practitioners and researchers alike (Ennis, 1987; Ennis, 1993; Sternberg, 1985; Sternberg, 1987; Willingham, 2008). A telling example of this criticism is that of Court (1991). In an article entitled “Teaching Critical Thinking: What do we Know?”, Court

gives an accurate analysis of the existing approaches of teaching critical thinking. The central question in Court's article is on what teachers need to "foster the development of critical thinkers". She starts by dividing the approaches to teaching critical thinking into five types: (1) the process/skills approach, (2) the problem-solving approach, (3) the logic approach, (4) the information-processing approach, and (5) the multi-aspect approach. Then, she directs a harsh criticism to the ineffectiveness of the existing critical thinking teaching approaches. For her, although these approaches have some usefulness in teaching critical thinking, they all suffer from some weaknesses because "[n]one is perfect" and "[m]ost are incomplete in that they disregard the important role of values in making judgements" (p. 117). To produce good critical thinkers, Court (1991) maintains that there is a need for a new vision. But, what are the components of this new vision? Court maintains that for this vision to be effective, the following measures should be taken into consideration: (1) "we need to employ the many useful approaches we have for teaching critical thinking", (2) "we must work to redesign schools so that they are less authoritarian", and (3) we should make schools "less examination driven" (p. 117).

Teaching and Assessing Critical Thinking in the New Millennium

Research on teaching and assessing critical thinking in the new millennium has been characterized by two main features: (1) an ongoing criticism of the approaches used in teaching critical thinking in higher education, and (2) a better awareness of the need for developing new critical thinking assessment constructs (Hooks, 2010; Liu, Frankel, & Roohr, 2014).

Teaching Critical Thinking in the New Millennium: A Continuous Debate

Although teaching critical thinking is not a new concern in the field of education, there is still a large controversy on how to teach it (more particularly at university) even in those countries with a long experience in the field, such as the United States and Canada (Willingham, 2008; Moore, 2004).

The debate over critical thinking teaching approaches became more visible in the United States of America in the last decade of the twenty-first century when some prominent scholars of critical thinking started to criticize the teaching practices of critical thinking (Court, 1999; Ennis, 1993). The debate is still going on today between two different movements; it is commonly known as the "generic vs. discipline-specific debate" (Moore, 2007). The generalist movement, on the one hand, is championed by Robert Ennis and has two main characteristics. First, it sees critical thinking as "stand-alone" subject that aims to equip learners with a "set of critical thinking dispositions and abilities" (Moore, 2007, p. 5). These dispositions and abilities are used to enable students "to decide what to believe and to do" (Moore, 2007, p. 5). It also sees the test as a series of subtests dealing with different aspects of critical thinking. The second movement, on the other hand, is led by McPeck, who considers critical thinking a specific discipline. As a specifist, McPeck (1990) argues that "if we improve the quality of understanding through the disciplines (which may have little to do with 'logic' directly), you will then get a concomitant improvement in the thinking capacity" (p. 21).

Another important element in this debate is about the transferability of critical thinking skills and abilities (Abrami et al, 2008; Kuhn, 2001). For some scholars, the transfer of critical thinking skills and abilities from one context into another is not plausible. Halpern (2014) thinks

that students generally fail to apply the critical thinking skills they learnt in the classroom in similar contexts in real-life situations due to several factors such as the absence of clear “cues”.

Assessing Critical Thinking in the 21st Century: The Need for New Constructs

The lack of a general consensus on a specific definition of critical thinking is reflected on how critical thinking is assessed even at the level university (Court, 1991; Ennis, 1993). Teaching critical thinking at university requires setting the objectives of the course that can be tested/assessed. These objectives both determine the pedagogies used by the instructor in performing the lectures/lessons and play the role of guidelines in critical thinking assessment. However, research has shown that most of the time the tests given rarely foster critical thinking or meet the objectives of the course (Bensley, Crowe, Bernhardt, Buckner, & Allman, 2010; Paul & Edler, 2006).

In the United States of America, universities and colleges usually make use of the existing tests to assess their students' critical levels. The most popular critical thinking assessments are presented in Table 1:

Table1. Most popular assessments of critical thinking (Adapted from Liu, Frankel, & Roohr, 2014, pp. 5-7)

Test	Format	Forms and Items	Length
California Critical Thinking Disposition Inventory (CCTDI)	Selected-response (Likert Scale- extent to which students agree or disagree)	75 items (seven scales: 9–12 items per scale)	30 min
California Critical Thinking Skills Test (CCTS)	Multiple-choice (MC)	34 items (vignette based)	45 min
California Measure of Mental Motivation (CM3)	Selected-response (4-point Likert scale: strongly disagree to strongly agree)	72 items	20 min
Collegiate Assessment of Academic Proficiency (CAAP) Critical Thinking	MC	32 items (includes four passages representative of issues commonly encountered in a postsecondary curriculum)	40 min
Collegiate Learning Assessment + (CLA+)	Performance task (PT) and MC	26 items (one PT; 25 MC)	90 min (60 min for PT; 30 min for MC)
Cornell Critical Thinking	MC	Level X: 71 items	50 min (can also

Test (CCTT)			beadministereduntimed)
Ennis–Weir Critical Thinking Essay Test	Essay	Nine-paragraphessay/letter	40 mn
ETS ProficiencyProfile (EPP) Critical Thinking	MC	27 items (standardform)	About 40 min (full test is 2 h)
Halpern CriticalThinking Assessment(HCTA)	Forced choice (MC, ranking, or rating of alternatives) and open-ended	25 scenarios ofeveryday events (five per subcategory) S1: Both open-ended and forced choice items S2: All forced choice items	60–80 min, but test is untimed(Form S1)20min, but test isuntimed(Form S2)
Watson–GlaserCritical ThinkingAppraisal tool(WGCTA)	MC	80 items	Standard:40–60min(Forms A and B) if timed

In spite of their immense popularity in the United States, these assessments (California Critical Thinking Disposition Inventory (CCTDI) and Halpern Critical Thinking Assessment (HCTA), etc.) have started to lose their effectiveness. In the twenty-first century, several scholars have studied these tests in depth and found that they have several weaknesses and deficiencies at different levels (e.g., Liu, Frankel, &Roohr, 2014).

Scholars such as Condon and Kelly-Riley (2004) and Ennis (1993) argue that the weaknesses of these tests lie in the types of questions they use/ask. For Ennis (1993), tests using “multiple choice”, “rating alternatives”, and “selected response” do not accurately reflect students’ critical thinking levels. Other scholars think that tests, like the *Ennis-Weir Critical Thinking Essay Test*, are not efficient enough because they rely only on essay tests to assess students’ critical thinking abilities (Liu, Frankel, &Roohr, 2014).

Similarly, other scholars uphold that standardized tests have other risks. One of these risks is that the results of the students are sometimes “misleading”. Different analyses have shown that getting good grades in these standardized tests can never guarantee that the students have really become effective critical thinkers(Hatcher, 2011).Another misleading element is that effectiveness in teaching critical thinking depends, to a great extent, on the teacher’s personal competence in critical thinking(Court, 1991; Ennis, 1996).

For Liu, Frankel, and Roohr (2014),all the critical thinking assessments on Table 1 suffer from deficiencies at the level of “reliability or “validity”. These authors argue that there are common problems with these standardized assessments like “insufficient evidence of distinct dimensionality, unreliable subscores, noncomparable test forms, and unclear evidence of differential validity across groups of test takers” (Liu, Frankel, &Roohr, 2014, p. 8).

To solve some of thesetest deficiencies, Liu, Frankel, and Roohr (2014) propose their own framework for “next-generation critical thinking assessment”. The authors explain that:

This framework consists of five dimensions, including two *analytical* dimensions (i.e., evaluating evidence and its use; analyzing arguments); two *synthetic* dimensions, which assess students' abilities to understand implications and consequences and to produce their own arguments; and one dimension relevant to all of the analytical and synthetic dimensions — understanding causation and explanation. (Liu, Frankel, & Roohr, 2014, p. 14)

In their framework, Liu, Frankel, and Roohr (2014) present how they conceive the “foci of assessment” and some “possible tasks types”. Some of their ideas are summarized in Table 2:

Table 2: Framework for next-generation critical thinking assessment (Liu, Frankel, & Roohr, 2014, pp. 15-17)

Foci of Assessment	Possible Tasks Types
<ul style="list-style-type: none"> • Evaluate evidence in larger context • Evaluate relevance and expertise of sources • Recognize the possibilities of bias in evidence offered • Evaluate relevance of evidence and how well it supports the conclusion stated or implied in the argument • Analyze argument structure • Evaluate argument structure • Draw or recognize conclusions from evidence provided • Extrapolate implications • Develop valid arguments • Develop sound argument • Evaluate causal claims, including distinguishing causation from correlation and considering possible alternative causes or explanations • Generate or evaluate explanations 	<ul style="list-style-type: none"> ○ Categorize information ○ Identify features ○ Recognize evidence/conclusion relationships ○ Recognize inconsistency ○ Revise argument ○ Supply critical questions ○ Multistep argument evaluation or creation ○ Detailed argument analysis ○ Compare arguments ○ Draw conclusion/extrapolate ○ Information ○ Construct argument

The framework in Table 2 seems to be promising as it gives both teachers and researchers an idea about assessing critical thinking in the future. However, Liu, Frankel, and Roohr (2014) strike a warning note in the conclusion of their report; they think that designing assessment for the next generation is both difficult and complex because it:

requires the collaboration between domain experts, assessment developers, measurement experts, institutions, and faculty members. Coordinated efforts are required throughout the process of assessment development, including defining the construct, designing the assessment, pilot testing and field testing to evaluate the psychometric quality of the assessment items and establish scales, setting standards to determine the proficiency levels, and researching validity. (p. 19)

To sum up, the literature on teaching and assessing critical thinking is largely based on research and experiences in Western countries. A quick search for the literature on this issue

shows that there is a dearth of information in other contexts and cultures. The very few studies conducted in countries like Iran (Fahim&Bagheri, 2012), Turkey, China, and Morocco remain insufficient and cannot give enough insights about teaching and assessing critical thinking in places like Asia or the Arab world. In other words, there is a huge need for more research in this domain.

Research Design and Methodology

Research Design

This qualitative study explores how teachers perceive teaching/assessing critical thinking and the challenges they face in Moroccan higher education. To be more specific, this study uses a case study approach to collect data about the issue of teaching and assessing critical thinking in Morocco (Paton, 2002).

The focus was just on one case for different reasons. First, the selected teacher in this study was the first to teach critical thinking at the Faculty of Arts and Humanities, University of Moulay Ismail. Second, the teacher has a long experience in teaching Moroccan university students and has been teaching critical thinking for two years. Third, in a study (Chouari, 2016) conducted during the academic year 2014-2015 on students' perceptions on learning critical thinking, there was a general consensus among the interviewees that the course had been successful thanks to their teacher's competence.

Data Collection

Since qualitative studies are inductive in nature, gathering data focused on speaking directly to a teacher of critical thinking in one of the Moroccan universities to have direct access to his teaching and assessment practices. The data for this study were collected from three primary sources: (1) the course description from the "filiere" (Department of English, School of Arts and Humanities, University of Moulay Ismail) accredited by the Moroccan Ministry of Higher Education in 2014, (2) the contents of the course used by the selected teacher (collected during March and April, 2016), (3) the tests administered by the selected teacher during the academic years 2014-2015 and 2015-2016, and (4) the semi-structured interview conducted with the teacher by the end of June, 2016.

Instrument

To collect data, a semi-structured interview was used (Creswell, 2003; Gillham, 2005). This type of instrument made it possible for the researcher to understand how the participant conceives and perceives the phenomenon under study.

The interview questions were divided in three categories. First, the interview started with some "warm-up questions" that have a general or neutral aspect such as "can you introduce yourself?" And "how long have you been teaching?". Then other questions and probes on teaching and assessing critical thinking were used. These included questions about defining critical thinking, lesson planning, objectives of the course, challenges faced by the teacher in the Moroccan context, designing critical thinking tests, and so on. The last category of questions focused on the interviewee's final remarks and a possible "follow-up".

The Participant

Given that this study is based on a case study, it is deemed necessary to give some general information about the participant. The main pieces of information on the participant are summarized in Table 2:

Table 3: Participant's fact file

Gender	Male
Degree	PhD: University of La Sorbonne (France)
Specialty	English Studies
Teaching Experience	University teacher since 1993
Experience in teaching critical Thinking	2 years
Current place of work	Faculty of Arts and Humanities, University of Moulay Ismail, Meknes, Morocco
Fields of Interest	Media studies, Visual Arts, Critical Thinking, and Literature

Documentation

This study used documentation as a primary source because documents are considered an important source of information in qualitative studies (Glesne, 2006). Therefore, the data were collected from the professor's documents (course syllabus, class assignments, and copies of exams of 2014-2015 and 2015-2016) and the course description accredited by the Ministry of Higher Education in Morocco.

Data Analysis

Data are analyzed based on qualitative content analysis. After collecting the data during March and April, 2016, they were transcribed (interview data) and coded based on predetermined themes and emerging ones (Paton, 2002).

Findings

The findings of this study are based on data collected from the documents and the semi-structured interview conducted with the participant (a case study). The findings are, therefore, organized according to the three research questions developed at the beginning of this study.

Findings for Research Question 1

RQ1: How do Moroccan teachers conceptualize and teach/assess critical thinking in Moroccan higher education?

The main objective behind this question is to understand if there is compatibility between how the respondent defines critical thinking and his goals behind teaching the course since research indicates that the goals of teaching critical thinking should go hand in hand with how critical thinking is defined by the teacher. To find out if this connection is made in the Moroccan context, three questions were directed to the respondent: (1) Briefly, how do you define critical thinking? (2) What are the goals that you take into consideration for teaching this course? (3) Do you follow the objectives given in the course description of the "Filiere"?

Indeed, the answers to the above questions reveal the presence of some problems both at the theoretical and the practical levels. First, the respondent defined critical thinking as follows: "generally speaking, critical thinking is the ability to rationally analyze texts either when

receiving or producing them. Some skills are required to achieve this goal and these are the technical body of a critical thinking course". Then, when asked about the goals behind teaching critical thinking, the respondents' answer seems to focus mostly on making students active generators of meaning, rather than passive recipients:

My ultimate goal is to prepare the students to be producers of meaning rather than passive consumers of ready-made answers and formulas. When students master the philosophy of critical thinking, they become intelligent, active and productive citizens.

Third, the respondent explicitly admits that he does not follow the objectives of the "filier", for the following reason: "I design the class myself, but I coordinate with other colleagues who teach the same class". The respondent's response shows that he is both creative and innovative as he does not follow formal instructions in a blind way; it also reveals that he is flexible and open enough to work in teams and share with other colleagues. Some of these traits are clearly displayed in the comparison between the course contents accredited by the Ministry and the contents of the teacher's lectures in Table 3 below:

Table 4: Contents of course description and respondents' lectures

Course description (Accredited by the Ministry)	Contents of respondent's Lectures
<ul style="list-style-type: none"> ❖ Understand the importance of critical thinking in their academic and professional life. ❖ Identify the difference between an argument, a pseudo-argument, and a non-argument. ❖ Recognize underlying assumptions and implicit arguments. ❖ Understand the difference between inductive and deductive reasoning. ❖ Identify logical fallacies in an argument. ❖ Find and evaluate sources of evidence. ❖ Understand features of critical, analytical writing. ❖ Use MLA/APA styles for in-text citations. ❖ Use MLA/APA style to format reference lists. ❖ Identify a topic worthy of academic research. ❖ Find, evaluate, and make notes from a variety of academic sources. ❖ Write a critical, analytical research paper. Deliver an oral presentation based on library research. 	<ul style="list-style-type: none"> ➤ General introduction ➤ Gains and barriers ➤ Basics: <ul style="list-style-type: none"> ○ Claims, evidence and , and reasoning ➤ Claims: <ul style="list-style-type: none"> ○ Factual claims, ○ Value claims, ○ Policy claims ○ Practice ➤ Evidence <ul style="list-style-type: none"> ○ Types of evidence: ○ Fact evidence; ○ Report and description, statistics, artifacts. ○ Opinion as to fact evidence ➤ Reasoning <ul style="list-style-type: none"> ○ Six forms: Quasilogical, analogy, generalization, cause, coexistence, dissociation. ➤ Understanding fallacies <ul style="list-style-type: none"> ○ Types of fallacies: Audience-based fallacies, language-based fallacies, grounding fallacies, and reasoning-based fallacies. ➤ Critical thinking and culture <ul style="list-style-type: none"> ○ The multicultural argument ○ Cultural argument development

	<ul style="list-style-type: none"> ○ Culture and values ○ Ethics and culture
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Findings for Research Question 2

RQ 2: What are the challenges that teachers face in teaching and assessing critical thinking to Moroccan university students?

Teaching and assessing critical thinking in Arab/Muslim countries, such as Morocco, is not an easy task. As the findings show, this course poses a variety of challenges due to the prevailing culture and the educational system adopted by the country.

In teaching critical thinking in Morocco, these two factors present serious barriers since they fundamentally contradict the essence of critical thinking itself. In the classroom, teachers are faced with both students' resistance as they are required to question everything by using "Socratic questions", analysis, logic, and reasoning. In dealing with different issues such as religion and taboos, students often become reluctant or unwilling to venture in areas where religion, culture, and matters of belief(s) are put under scrutiny. The second important challenge that teachers face is that of the educational system in the country – a system that is essentially based on memorization and rote learning. In other words, students are not trained to see themselves as active learners and generally lack the motivation to take risks or make mistakes since an early age (Tibi, 2001). These barriers/challenges are well-summarized by the respondent in the following:

The Islamic mindset is shaped by religion and absolute beliefs. Critical thinking interrogates all assumptions and validates only rational arguments and evidence. Moroccan students all come from an educational system that favors memorization and therefore are not prepared to understand a class where rote learning is obsolete.

At the level of testing, both designing and administering tests present daunting challenges to the instructor. The respondent thinks that there are four important obstacles to testing critical thinking in Morocco: "Big classes, cultural barriers, time pressure, and the newness of this class in Moroccan university". For the respondent, teaching and testing a class composed of 170 or 180 undergraduate students is a grueling task. What is more, in addition to the cultural background of the students and the time pressure, students find it hard to cope with questions that require them to use critical thinking skills that need long training to become habits of the mind.

To meet the objectives of the course, the instructor often designs questions that need high order thinking skills. The findings show that the instructor is aware of these difficulties, but he thinks that "the end justifies the means":

I never use definition questions. I rather test the critical abilities of the students. The question could be a given situation they should analyze, a magazine cover or advertisement they should consider critically, a popular dictum or tradition they interrogate, etc.

The testing strategies the instructor uses in assessing his students are compatible with what he said in the above quotation. The following set of questions taken from the exam of the fall semester of 2015-2016 are clear evidence of what the teacher said during the interview about the types of questions he uses in designing critical thinking tests:

Question 1: In one paragraph, provide a definition of Critical Thinking. Your answers should be personal. Plagiarized answers will be sanctioned.

Question 2: Write an argumentation according to the narrative pattern to explain how traditional schooling is boring.

Question 3: Read this letter and write a short analysis of its claim, evidence, reasoning and sphere.

Cocaine Is Even Deadlier Than We Thought

LOUIS L. CREGLER and HERBERT MARK

To the Editor:

In his July 3 letter about recreational cocaine use, Dr. Carl C. Pfeiffer notes that some of the toxic effects of cocaine on the heart have long been known to those versed in pharmacology. We wish to point out that cardiologists and neurologists are seeing additional complications not previously known. Indeed, little information on the cardiovascular effects of cocaine appeared until recently.

As Dr. Pfeiffer says, cocaine sensitizes the heart to the normal stimulant effects of the body's adrenaline. This ordinarily makes the heart beat much faster and increases blood pressure significantly. Cocaine abuse has also been associated with strokes, heart attacks (acute myocardial infarctions), and sudden deaths. Individuals with weak blood vessels (aneurysms or arteriovenous malformations) in the head are at greatest risk of having a stroke. With the sudden surge in blood pressure, a blood vessel can burst. Cocaine can also cause blood vessels supplying the heart muscle itself to undergo vasoconstriction (coronary spasm), and this can produce a heart attack.

Deaths have been reported after administration of cocaine by all routes. Most such deaths are attributed to cocaine intoxication, leading to generalized convulsions, respiratory failure, and cardiac arrhythmias, minutes to hours after administration. Much of this information is so new that it has not found its way into the medical literature or standard textbooks.

Cocaine abuse continues to escalate in American society. It is estimated that 30 million Americans have used it, and some 5 million use it regularly. As cocaine has become less expensive, its availability and purity are increasing. It has evolved from a minor problem into a major threat to public health. And as use has increased, greater numbers of emergency-room visits, cocaine-related heart problems, and sudden deaths have been reported. With so many people using cocaine, it is not unexpected that more strokes, heart attacks, and sudden cardiac deaths will be taking place.

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Question 4: Read the information provided in this ad and explain the main goal of the arguer. Then explain if this argument would be effective in the Moroccan context.

Figure 1: (see Rottenberg, 1994, p. 244)

Findings for Research Question 3

RQ3: How do Moroccan teachers perceive effective teaching and assessing critical thinking in Moroccan higher education?

As stated above, teaching critical thinking in Morocco is a daunting task, but the findings of this study indicate that effective teaching is also possible. The documents and the responses of the instructor demonstrate that good teaching can take place in Moroccan higher university when, and if, some measures are taken at different levels.

First and foremost, at the classroom level, effective teaching requires innovative, creative, flexible, and risk-taking teachers (Halpern, 2003). To be an effective critical thinking teacher in Moroccan higher education, you need to adapt and adopt different materials (including online references and activities), and to create situations that can make students reflective thinkers and that relate the course contents to their own lives. This process is explained by the respondent as follows:

Most books are written by American scholars. There are no textbooks designed for Moroccan students. Therefore, I use these books and try to contextualize them. For example, the cases we study in class or the exercises are taken from Moroccan media, society, culture, etc.

To possess a spirit of collaboration in dealing with other colleagues is also an important element to effectively teach critical thinking in Morocco. The respondent acknowledges that “a

class requires a lot of research and preparation. I have to read all the available books on a given issue, compare them, select which is more useful and sometimes combine several references to design one class". He further admits that he does not always work alone: "I design the class myself, but I coordinate with other colleagues who teach the same class".

The last crucial measure for effective critical thinking teaching is that of reform of the politics of education in Moroccan higher education. Without implementing radical reform in the politics of education in Morocco, personal efforts at the level of the classroom would remain ineffective. This view is strongly emphasized by the respondent when he articulates the importance of this type of reform in the context of higher education in Morocco:

I personally believe that the issue is more complex than personal effort; it is a systemic and structural question related to the politics of education at large. Serious reforms should be applied to curricula to favor rationality, modern thoughts, diversity, among others.

Discussion

The findings of this study have a lot of things in common with several studies in the literature (e.g., Fahim&Bagheri, 2012; Van Gelder, 2005). However, the findings also demonstrate that teaching/assessing critical thinking in Morocco has its own specificities and challenges due to the context and the culture where it takes place. Additionally, the finding make is clear that good/effective teaching is also possible if several requirements are met.

The documents provided by the participant (contents of the course, course description and objectives, and exam samples) show that Moroccan higher education teachers use specific pedagogies in teaching/assessing critical. First, most of the teaching is done in a "direct"/"explicit" way since critical thinking is taught as a "stand alone" course. Second, the teacher uses the lecture as the main strategy of teaching. As a result, teaching is most of the time done in a frontal way with the teacher acting either as a "controller" or "knowledge-provider" (Chouari, 2016). The instructor explains that the lecture strategy is used due to two major factors: (1) the large class-size, as the number of students sometimes exceeds 180 in each group, and (2) the difficulty of the course as Moroccan students did not have the opportunity to study critical thinking before coming to the university. Third, the instructor is aware of the importance of using ICTs (laptop, Data show, videos, etc.) in teaching. It seems obvious that new technologies are part of the success he enjoys in teaching this course as they ensure better student involvement and motivation. Finally, the main assessment strategy used by the instructor is one final exam given at the end of the term (2 hours long). In other words, there is total absence of quizzes, continuous assessment, or papers in the assessment of the students. To remedy to this shortcoming, the teacher resorts to an analytic approach of grading, taking into consideration three essential elements: students' "language, their consistency, and logical reasoning".

The findings also reveal that teachers of critical thinking in Moroccan higher education face extra challenges in addition to those common ones, such as the large size of the class and mixed ability students. The teacher, for example, raises the issues of students' mindsets, perspectives, and education politics as structural obstacle that impede students' learning in the critical thinking classroom. In fact, all these issues are interrelated and sometimes become harder to overcome in a limited time and in a classroom with huge numbers of students. This challenge is well-understood by Halpern (1998) when she explains that:

Beliefs that have been constructed over many years and the habits of mind that have developed along with them will take multiple learning experiences, distributed over time and settings, before they will be successfully replaced with new ways of thinking and knowing about the world. Students need to be told that to expect a thoughtful consideration of evidence and arguments will require expenditure of mental effort so that they do not expect quick and easy answers. (pp. 454-455)

Another important challenge that emerged in this study is the lack of training in teaching critical thinking in Morocco. The teacher admits that he has never received any theoretical or practical training. He explains that he learnt about critical thinking through his academic experience and personal efforts. Yet, studies conducted in countries like the United States show that unlike other courses, teaching critical thinking requires much guidance and help from experts in the field to ensure better professional development (Ennis 1993; Sternberg, 1987). The last challenge is that of using Information and Communications Technologies in teaching critical thinking in Morocco. The instructor makes ample use of ICT; however, the way he uses these technologies remain limited. For example, some studies make a strong link between better student achievement and effective use of technology inside and outside the classroom (Landis, Swain, Friehe, & Coufal, 2007). Other scholars uphold that effective ICT integration in teaching needs intense training to foster professional development (Archambault & Barnett, 2010; Figg & Jaipal, 2012; Koehler & Mishra, 2008; Mishra & Koehler, 2006; Mouza, 2003). Lastly, although the findings make it clear that effective and good teaching of critical thinking are possible in Moroccan higher education, there is today an urgent need for educational reform based on critical thinking. The respondent in this study highlights that educational reform is now an “imperative” to have students with higher-order thinking skills. This point is also highlighted in a study by Abdullah (2010), who thinks that critical thinking “needs to be emphasized across the curriculum” (p. 662) in the Islamic world.

Applying this reform would undoubtedly help students develop sophisticated critical thinking skills required to live and work in the twenty-first century. Equipping students with these skills is one of the best means of protecting students from falling easy prey to radical/extremist discourse which relies on several tools of false logic such as logical fallacies and emotional arguments. Critical thinking skills can also help students become more flexible, more open to diversity and cultural differences, more aware of some dangers of globalization, and effective global citizens. That is, when educational reform is based on critical thinking, it has the potential of effecting change within society, making it more rational, and preparing students (the leading generation of Arab/Moroccan countries in the future) to gain “intellectual autonomy” (Kaplan, 1999) and compete in a world where “there is an increased demand for a new type of worker – this new job category has been dubbed ‘the knowledge worker’ or the ‘symbol analyst’” (Halpern, 1998, p.450).

Conclusion

Although the findings indicate that there are several factors that pose considerable challenges to teaching and assessing critical thinking in Morocco, effective and good teaching is possible. Unlike in other countries, teachers in Morocco receive no special training for teaching critical thinking. As a result, the pedagogies and the materials used in teaching and assessing this course depend heavily on the teacher’s own approach, efforts, and

creativity. Other obstacles, like class size, students' background, absence of adequate sources, lack of time, make teaching the course a heavy burden even for veteran teachers. Additionally, the teachers face the difficulty of designing valid and reliable tests due to several factors like the absence of tests, time constraints, and exam requirements. However, it can also be concluded that effective teaching can be attained if teachers adopt some effective practices through collaborative work, "active learning" and "student-centered" approaches.

Implications for Teaching

The findings of this study gave rise to the following recommendations for both practicing teachers and researchers:

Firstly, as far as teaching is concerned, critical thinking skills and dispositions can be learnt when teachers have an operational definition of critical thinking and enough information of critical thinking approaches (Court, 1991; Emerson, 2013). One of the most effective approaches is the "mixed approaches", in which critical thinking is taught in a direct and explicit way. Yet, it should also be noted here that Moroccan students tend to be more collectivistic (Hall, 1959) as they belong to a culture that favors "high-context" communication (Hall, 1976; Ting-Toomey, 2001).

Secondly, teachers should receive adequate professional development training in how to teach and assess critical thinking. In other words, pre-service and in-service training should be a must for the critical thinking teacher (Hooks, 2010).

At the level of assessment, testing should be used as a means of learning critical thinking skills. Adopting tests that have been developed in the west can be detrimental and misleading as they do not take into consideration the specificities of other cultures and contexts. In designing tests, designers should take into consideration the different facets of critical thinking (Ennis, 1996; Liu, Frankel, & Roohr, 2014) and the cultural and educational backgrounds of the students. Above all, teachers should adopt a grading system that is more analytic -- rather than impressionistic.

Lastly, at the level of researcher, further research should be carried in other Arab countries to develop more understanding of the best practices that teachers can adopt/adapt in the local classroom. It must also be noted that more research is needed in the assessment area to design adequate tests that can foster critical thinking skills and dispositions in these contexts.

Limitations of the Study

The results of this study are not without some limitations. Since it is first a case study, the results cannot be generalized. For example, using a mixed method can unravel the intricacies of teaching and assessing critical thinking in a better way. Besides, including other Moroccan faculties in one study can lead to more insights on the challenges and the best practices of teaching and assessing critical thinking in the Moroccan context.

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