

Critical Thinking Development: The Case of the English Course in the CPGE Classes in Meknes, Fes and Kenitra

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Abstract

Critical thinking is generally claimed to be an essential requirement to effective learning and productive living. In a world of rapid change and globalization, skills such as problem solving, decision making and critical thinking are believed to be particularly acute for engineering graduates. While the Moroccan public university has just started to gain interest in critical thinking development (Belghiti, 2012; El Kirat & Belghiti, 2014), the Moroccan engineering education has been fostering such skills for many years now; this has led the English Language Teaching (ELT) guidelines of the Classes Préparatoires aux Grandes Ecoles (CPGE) in Morocco to clearly emphasize the explicit use of critical thinking instruction in the English courses to develop the students' critical thinking and prepare them for the social and professional life. Accordingly, this study has attempted to investigate the extent to which critical thinking skills are important in the English course in engineering preparatory classes. It has also aimed to investigate the teaching and assessment practices used in the English classes to develop the students' critical thinking skills. Adopting the mixed methods approach, the study focused on the CPGE centers in Meknes, Fez, and Kenitra. The findings of the study revealed that both CPGE students and teachers are aware of the importance of critical thinking at the professional, academic, social and personal levels. The findings also revealed that the teaching and assessment of critical thinking is done in an explicit way in the CPGE English classes.

Keywords: CPGE, critical thinking instruction, critical thinking skills, engineering education

Introduction

Critical thinking has become a crucial skill in the modern era, especially with the spread of global economy and the advancement in knowledge and technology. Elder (2004) reviewed different studies conducted at the level of higher education and which unanimously agree on the importance of developing students' critical thinking and on making it a priority among faculty members. Experts in the field also argue that the mastery of such skills should not be confined to the school context since the present day situation "has stirred a high demand on effective critical thinking skills at the workplace" as well (Radzi, et al., 2009, p. 213). The mastery of knowledge and know-how are no longer the only requirements to access and success in the workplace. Critical thinking skills like analyzing, synthesizing,...etc have become a necessity for all professions. Such skills are also deemed to be crucial to cope with potential problems at the workplace. In the field of engineering, in particular, these skills are highly required since the profession of engineers relies a lot on the use very precise, logic and reasoned processes of thinking and judgment. Such skills are also particularly acute for engineering graduates since their decisions and managerial skills influence every aspect of human life such as: means of transportation, communication, infrastructure...etc. Being and thinking like an engineers, as Niewoehner (2006) puts it "entails having command" of the following standards: "clarity, accuracy, precision, relevance, depth, breadth, logical validity and fairness". Radzi et al. (2009) also stress the point that engineers need to be more critical and decisive in making judgments when facing unexpected uncertainties and novel problems.

Accordingly, employers in the field of engineering have grown convinced that excellence and success require more than the mastery of knowledge or the possession of "technical capabilities". They claim to have no problem in finding candidates with academic and technical qualifications, but they find it hard to find candidates with the disposition of what Idrus et al. (2010) call "soft skills". With the information technology expansion and office based economy, "Employers want new employees to have strong soft skills, as well as hard skills" (Robles, 2012, p. 453). Companies aspire to hire employees with skills "in communication, the ability to lead and work effectively as a team member, and an understanding of the non-technical forces that affected engineering decisions" (Idrus et al., 2010, p. 258). Thus, employers, nowadays, insist that their employees should "be able to work comfortably with people from other cultures, solve problems creatively, write and speak well, think in a multidisciplinary way, and evaluate information critically" (Idrus et al., 2010, p. 258).

Background

Moroccan engineering schools have been fostering critical thinking skills for many years now. To meet the urgent requirements of the job market, the advancement in knowledge and technology, Preparatory or Classes Préparatoires aux Grandes Ecoles (CPGE) classes, have as a mission to train and prepare future engineers and managers since their creation in 2004. In addition to mastering the knowledge of the domain, Moroccan engineering schools train students and equip them with certain thinking skills such as problem solving, decision making, and critical thinking. They are considered to be one of the rare educational institutions that prepare Moroccan students to integrate engineering and business schools be it in Morocco or abroad.

The idea of having well-trained and prepared students with the necessary knowledge and skills is reflected in the English Language Teaching (ELT) guidelines of engineering preparatory

classes. The National Charter of Education and Training (October, 1999) is the basic theoretical reference in the Moroccan educational system. The National Charter, in section three of article 9 on “Improving the Quality of Education and Training,” calls for the integration, the mastery and teaching of foreign languages. The ELT Guidelines for CPGE (2007) state that as a document it:

has been drafted in line with the general principles set forth in the National Charter of Education and Training (NCET) which aims to improve the quality of the Moroccan educational system in general and the teaching and learning of English in CPGE schools in particular (p.1).

The ELT guidelines of engineering preparatory classes (2007) in Morocco clearly emphasize the explicit use of the English language teaching and learning to “reinforce [...] creative and critical thinking skills” (ELT guidelines for CPGE, 2007, p.1).

The assumption underlying the present study is that a successful development of critical thinking in CPGE English classes relies to a large extent on the teachers and students’ awareness of the importance and utility of critical thinking skills as well as the teachers’ effective teaching and assessment practices. The study aims to investigate:

1. The teachers and students’ awareness of critical thinking.
2. The extent to which critical thinking skills are important in CPGE classes.
3. The approach (es) and techniques used in development and assessment of the students’ critical thinking skills in CPGE English classes.
4. The challenges faced in developing critical thinking skills in CPGE English classes.

The study addresses four research questions:

1. To what extent are critical thinking skills important in CPGE English classes?
2. How are critical thinking skills developed and assessed in CPGE English classes?
3. What impact does the promotion of critical thinking skills have on students?
4. What are the challenges faced in developing critical thinking skills in CPGE English classes?

Research Design

The present research is an exploratory study that is based on exhaustive fieldwork making use of different but complementary research instruments. It adopts a mixed method approach whereby both qualitative and quantitative data collection procedures are used so as to complement and crosscheck the findings and ensure the reliability and credibility of the findings.

First, a semi-structured questionnaire is administered to both teachers and students. The teachers’ questionnaire includes thirteen items that aim to elicit data related to the importance and utility of critical thinking, the CPGE teachers’ training in critical thinking, and the teaching and assessment of critical thinking. The students’ questionnaire, on the other hand, is composed of ten items that aim to investigate the importance of learning critical thinking and its utility. Before the administration of the questionnaires to the teachers and students, they were piloted to ensure stability, reliability and consistency. Table 1 provides details about the sample:

Table 1: Questionnaires

Targeted Population	Number of informants	Level	Major	Gender	CPGE Centers
Students	193	1 st & 2 nd year	Science, Science of Engineering & Economics	Males & females	Meknes: (Moulay Ismail & Omar Ibn El Khattab)
Teachers	18	1 st & 2 nd year	Science, Science of Engineering & Economics	Males & females	Meknes, Fes, Kenetra, Rabat, Sale, Settat, Marrakech, Safi, Casablanca, Beni Mellal

The study also uses classroom observation as a tool for data collection. Both participant and non-participant observations were relied upon. Observation as an instrument provides direct access to the respondents. In this context, classroom observation offers the opportunity to check the learning and teaching practices used by the teacher in order to develop the students' critical thinking skills and the interactions in the classroom. Table 2 sums up the details about classroom observation:

Table 2: Classroom observation

Targeted Population	Frequency of Classroom Observation	Level	Major	Gender	CPGE Centers
Students	3	2 nd year	Science, Science of Engineering & Economics	Males & females	Meknes: (Moulay Ismail)
Teacher			Science, Science of Engineering & Economics	Male	

It is worth mentioning that the courses observed involve basically listening, speaking and writing.

A semi structured interview is also conducted as a complementary qualitative instrument to the questionnaire. Teachers and students from different CPGE centers and streams are interviewed to get more clarifications and elaborations on some of the items in the questionnaires. The interview is used either to confirm or refute the data collected through the questionnaire and classroom observation. The issues raised in the interview are related to the importance and utility of critical thinking, teaching and assessment of critical thinking and the challenges that CPGE teachers face, and some recommendations for making critical thinking more successful and effective. Table 2 presents the people interviewed:

Table 3: Interviews

Targeted Population	Number of interviewees	Level	Major	Gender	CPGE Centers
Students	10	2 nd year	Science, Science of Engineering & Economics	Males & females	Meknes: (Moulay Ismail & Omar Ibn El Khattab)
Teachers	5	2 nd year	Science, Science of Engineering & Economics	Males	Meknes: (Moulay Ismail & Omar Ibn El Khattab) Fes: (Moulay Idriss) Kenetra: (Mohamed VI)

The choice for interviewing second year students is motivated by the fact that they have studied English for over a year and have been more exposed to critical thinking.

The data collected is analyzed both qualitatively and quantitatively. The quantitative data are coded and processed through the Statistical Program for Social Sciences (SPSS 20) to get the general percentages and frequencies of the respondents' choices. The qualitative data, on the other hand, are analyzed qualitatively; the interviewees' opinions are used as testimonies and quotes to support the trends revealed from quantitative data. Finally, the data collected through classroom observation is used as evidence for the qualitative and quantitative findings.

Analysis and Interpretation

The data analysis is undertaken in the light of the four research questions addressed. The results are presented in this section.

1. Definition of Critical Thinking

The classification of the concept of critical thinking is crucial in the teaching and learning processes. CPGE teachers' and students' understanding of critical thinking has a direct and indirect impact on the efficiency of the teaching and learning process. The teacher's view of critical thinking would certainly shape his/ her class teaching practices which in turn would shape the students' learning and understanding of critical thinking. In other words, the students' view of critical thinking reflects the teachers' vision of critical thinking.

1.1. Teachers' Definitions of Critical Thinking

The teachers' conceptions of critical thinking are reflected in their definitions. The data analysis revealed that CPGE teachers' understanding of critical thinking can be classified into three categories. The first category of the interviewed teachers defines critical thinking as the ability to question and not to take things for granted. As Souhail R. A male teacher of four years of experience at Omar Ibn El Khattab CPGE Meknes Center states that: "critical thinking is mainly to push students to not to take information for granted".

The second category of teachers perceives critical thinking as the ability to acquire a set of thinking skills like understanding, analyzing and evaluating information. This is very apparent in the statement of Assim M . A male teacher of two years of experience at Moulay Idriss CPGE,

Fes Center who mentions that: “teaching students how first to understand the information, analyze it and evaluate the information”.

Finally, the last category of the interviewed teachers asserts that critical thinking is the use of a set of criteria to evaluate information. It is a set of criteria used by students to evaluate the reliability of information. The testimony of Youssef El . A male teacher of two years of experience at Mohamed VI CPGE Kenitra Center asserts that:

Critical thinking is the ability to have selective criteria for the information you rely on in different fields concerning your daily life such as how reliable is the information what is its source what criticism you can give to it.

An analysis of the teachers’ questionnaires has confirmed the results of the interviews. Most of the teachers provided definitions of critical thinking that fall within one of the three categories of the definitions of critical thinking presented above.

It should be noted that the interviewed teachers in the first and third category made no reference to Bloom(1964)’s definition which is adopted in the CPGE ELT guidelines. The definitions provided echoed just the teachers’ own understanding of critical thinking only. The second group of the interviewed teachers provided a definition which is close to Bloom’s taxonomy and which refers to the acquisition of a set of skills.

1.2. Students’ Definitions of Critical Thinking

The CPGE students provided also different definitions of critical thinking. The analysis of the data collected from the interviews reveals three different definitions. The first group of students defines critical thinking as the active reaction to received information and to people’s opinions. Interviewee one, Hamza E. an Economics major male student from Moulay Ismail centre, Meknes, states: “so, for me critical thinking is when you receive an information, how you treat it, what will be the reaction: is it passive or active? mean will you be proactive?”.

The second group of the interviewed students perceives critical thinking as the ability to understand and react to received information. For this group of students, critical thinking is a combination of lower order thinking and higher order thinking where the student first understands and then judges so as to have a personal opinion. This can be clearly seen in the following testimony by Abd El Mounaim H. a science major male student from Moulay Idriss Centre, Fes: “[...] critical thinking is the ability to first of all to have the meaning of what you hear and secondly the ability to comment and to give your opinion about what you hear”.

The third group of students considers critical thinking as the ability to analyze information. They reduce the concept of critical thinking to one single skill: analysis. Majd. C., a Science Engineering male student from Moulay Idriss Centre, Fes illustrates this saying that critical thinking is the ability “to analyze different subjects in our life”.

The students’ personal understanding of the concept of critical thinking is a reflection of two years of exposure to critical thinking. Moreover, the students’ conception of critical thinking is related to and influenced by their majors: Science or Economics. Science students tend to be more specific in their definitions of critical thinking; they reduce critical thinking to a set of

skills like understanding, judging, and analyzing; Abd El Mounaim H. a science major male student from Moulay Idriss Centre, Fes claims:

Critical thinking is the ability to first of all to have the meaning of what you hear, and secondly the ability to comment and to give your opinion about what you hear if it is an idea or a sentence.

The Economics option students, however, seem to have a general view about critical thinking. Iman E. an Economics female student from Moulay Idriss Centre, Fes, states: “critical thinking maybe judging people, critical thinking maybe having ideas about people about something before really knowing about the subject”.

The analysis of the first year students’ views of critical thinking can be divided into two trends. The majority of students relate critical thinking to either logical analysis of ideas and information. For example a respondent states that critical thinking involves “being able to think rationally, logically and to criticize writings, idea, concepts...”. It is also viewed as the evaluation and judgment of issues. Once of the respondents argues that in critical thinking “the objective is analysis and evaluation of an issue in order to form a judgment”.

The fact that both first and second year students share more or less the same view about the concept of critical thinking shows the great influence of their teachers because they deduce the meaning of critical thinking from their teachers’ ways of teaching.

2. Importance of Critical Thinking

The introduction of critical thinking in CPGE English classes is of a paramount importance. Its relevance clearly shows in the objectives of the ELT guidelines that prioritize the developing of CPGE students’ critical thinking capacities. The teachers and students conviction of the importance of critical thinking can contribute to their engagement in it. The following subsections investigate the teachers and students’ awareness of critical thinking.

2.1. The Importance of Critical Thinking for Teachers

When asked about the importance of teaching critical thinking to CPGE students, all teachers with no exception, agreed that the introduction of critical thinking to CPGE students is of great relevance. Mohamed Reda G. a CPGE male teacher for four years in Moulay Idriss Centre, Fes, says: “well, of course teaching or introducing students to critical thinking is very important in our era”. This shows that CPGE teachers are fully aware of the importance of critical thinking in the modern era.

The quantitative data also provides further evidence that illustrates the teachers’ support. That is, they either strongly agree (15 teachers) or simply agree (3 teachers) for the introduction of critical thinking in English classes in CPGE. Figure 1 shows the teachers’ deep awareness of the importance of introducing critical thinking in CPGE English courses.

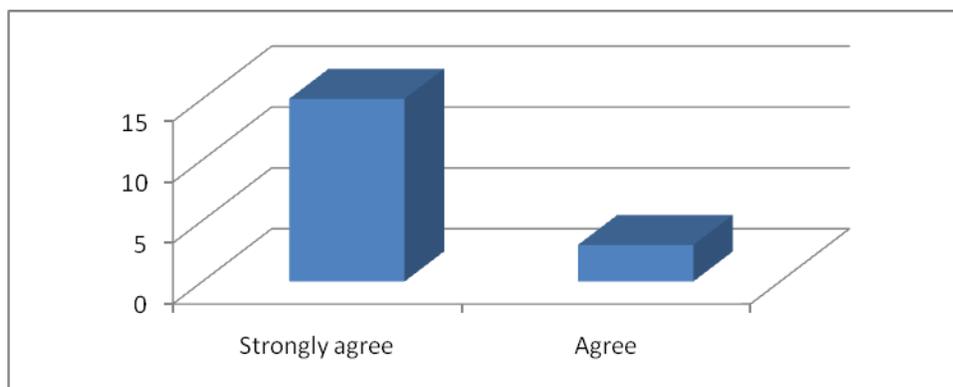


Figure 1: Importance of critical thinking for teachers

The fact of considering the introduction of critical thinking in CPGE classes important would normally be reflected in the teachers' teaching practices in class. Figure 2 reflects the degree of involvement in critical thinking in CPGE English classes.

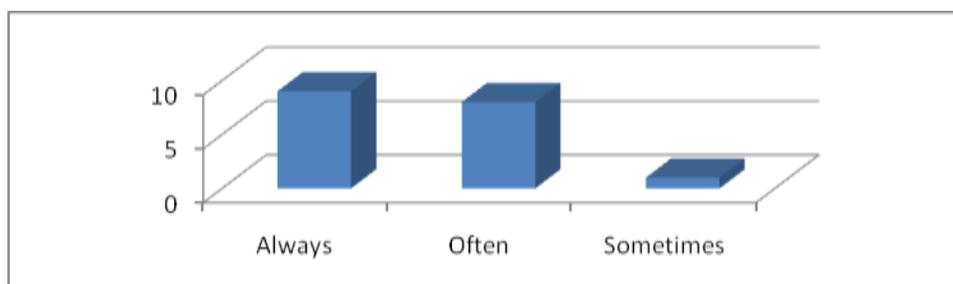


Figure 2: Degree of use of critical thinking in CPGE English classes

In Figure 2 nine teachers reported that they always introduce critical thinking in their classes, and that it is part of their lessons, while about eight teachers reported that they often incorporate critical thinking in their lesson. However, one teacher stated that s/he sometimes considers including critical thinking in his/ her lessons.

2.2. *The Importance of Critical Thinking for Students*

As for the results related to students' views about the importance of critical thinking, most of them strongly support the statement that critical thinking is very important as the Figure 3 demonstrates:

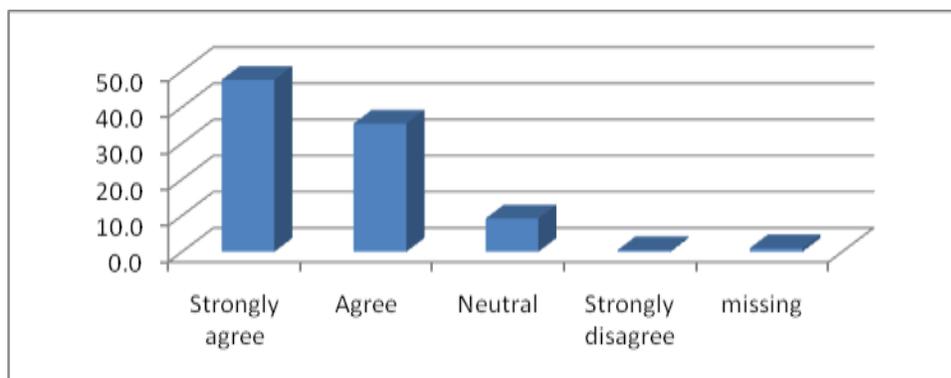


Figure 3: Importance of critical thinking for students

Indeed Figure 3 shows that 47.6% of the students strongly agree to have a course on critical thinking. This is so significant because it shows the extent to which students are aware of the relevance of critical thinking and their readiness and predisposition to improve their critical thinking skills.

Figure 3 also provides further evidence of the students’ deep conviction of the importance of critical thinking as it illustrates the frequency of the students exposure to critical thinking skills in class.

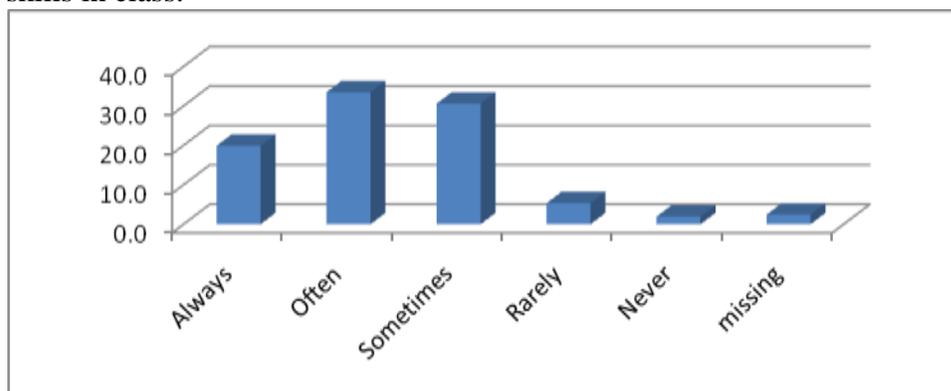


Figure 4: Frequency of studying critical thinking

A close look at Figure 4 reveals that 33.5% of the students said that they have often studied critical thinking; 30.6% report that they have sometimes been introduced to critical thinking. The frequency of studying critical thinking more often helps students increase their critical thinking abilities. Majd. C., an Science Engineering male student from Moulay Idriss Centre, Fes declares: “I think it’s really important this term critical thinking; it improve our skill, our way to find solutions to things and to problems in our life”.

2.3. Utility of Critical Thinking

The study addressed the utility of critical thinking. Teachers and students were asked about whether they think critical thinking is useful. The points of views of each group are presented in turn.

2.3.1. Teachers' Point of View

Teachers' conviction of the necessity and benefits of what they teach motivates them to invest and make efforts to make their teaching more interesting and motivating. This is very apparent in the teachers' testimonies; Mohamed Kh. A male teacher of six years of experience at Moulay Ismail CPGE Meknes Center declares that: "critical thinking will help them [students] in their daily life not only the classroom".

All the teachers involve in the study agree that introducing critical thinking in CPGE classes is of a great importance because of its benefits at various levels. According to some CPGE teachers, critical thinking helps students at the academic level; it assists students in their studies in CPGE and later when they join high schools of engineering and business. Mohamed Kh. A male teacher of six years of experience at Moulay Ismail CPGE Meknes Center states that: "without critical thinking they do not do much in their [...]studies". Some other teachers, argue that critical thinking helps students in their future professional life and their careers as one of the teachers puts it: "it helps students to have qualities and abilities that will serve them even in their professional life". Critical thinking empowers students also at the social level. Teachers argue that critical thinking prepares students to integrate the social life and to be active and responsible citizens. Souhail R. A male teacher of four years of experience at Omar Ibn El Khattab CPGE Meknes Center argues that critical thinking "pushes students to practice and to show themselves as citizens, individuals". In sum, critical thinking teaching helps students in their daily life. Training in critical thinking allows students to deal with the flux of information they get from the media and social networks. This is clearly advocated by Mohamed Reda G. A male teacher of four years of experience at Moulay Idriss CPGE Fes Center:

The students when they read or use, when they read an article or just watch a video, they need sometimes, there are some ideas we said they are always biased; so teaching them critical thinking will help them in their daily life not only the classroom.

In sum, all teachers agree that teaching critical thinking to CPGE students has many benefits. The utility of introducing critical thinking to CPGE students is not only limited to their academic training but it also helps make them good citizens capable of thinking for themselves and for others and professional future managers or engineers capable of using clear, concise, structured and rational thinking.

The quantitative data confirm the qualitative findings. Teachers were asked to choose the aspects where critical thinking would be more useful for students: personal, professional, social, academic or all the levels. Figure 5 reveals that almost all CPGE teachers think that critical thinking is beneficial to students at all levels.

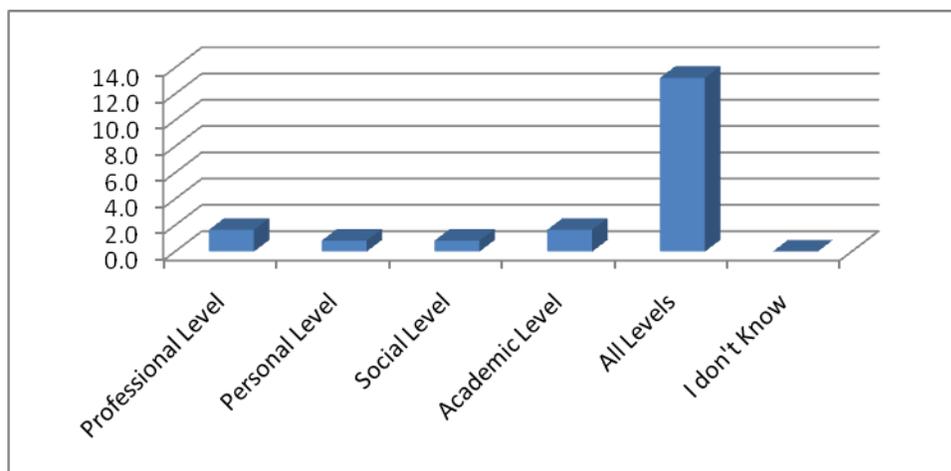


Figure 5: Utility of critical thinking according to teachers

CPGE teachers strongly believe that the introduction of critical thinking in CPGE classes empowers students for both inside and outside the classroom context and for their future professional life.

2.3.2. Students' Point of View

The data collected from the students provided more details about the benefits of critical thinking. Like their teachers, they all agreed that critical thinking is of great importance and utility to them.

The students consider the professional utility of critical thinking to be the most essential benefit. One of the professional benefits of critical thinking lies in the decision making skill. Hamza E. an Economics major male student from Moulay Ismail centre, Meknes, for example, explains that: “someone who is working and who will be asked to make a decision surely this decision will be based on some information if those information are not credible he will make a wrong decision”. The job market requires active and productive employees, and exposure to critical thinking in CPGE will help students learn to express their opinions and views. Imane Gh. an Economics female student from Moulay Ismail Centre, Meknes declares that: “if you are in the firm you are working in and you always give your opinion the director will be more motivated to ask you about your opinion”.

Indeed, as future engineers and managers, CPGE students may be given the responsibility of directing and managing a “task or a project”. Critical thinking in this case, instills in them basic managerial skills. Critical thinking also develops-in the student a sense of team work and collaboration as Badr Eddin R. A Science major male student from Moulay Idriss CPGE Centre, Fes puts it: “to understand his teammate and to collaborate a good relation between members”.

In addition to the professional benefits of critical thinking, second year CPGE students consider that it has personal benefits as well. Firstly, acquiring the skill of expressing one's opinions is one of the personal benefits of critical thinking; Abd El Mouaim H. A Science major male student from Moulay Idriss CPGE Centre, Fes declares: “of course, the ability to give an opinion about what happens here in the world”. Secondly, critical thinking makes students aware

of their rights and helps them become critical towards wrong acts and behaviors; they become responsible and mature citizens, etc. Imane E. An Economics female student from Moulay Idriss CPGE Centre, Fes mentions that: “now I try to talk about my rights and I criticize what I see it's not right”. Moreover, with the massive flux of information, critical thinking has become a pre-requisite tool because as Mohamed Kh. A male teacher of six years of experience at Moulay Ismail CPGE Meknes Center states: “critical thinking will help me to look for the truth in every information”. Accordingly, critical thinking provides them with the ability to evaluate information and not take it for granted. Finally, introducing critical thinking in CPGE instills in the students certain qualities and traits of character like open-mindedness as Badr Eddin R. A Science major male student from Moulay Idriss CPGE Centre, Fes states: “thinking critically make you open minded”.

The results also revealed that the introduction of critical thinking helps them a lot with other subjects. Students report that critical thinking assists them a lot in other subjects like French and economics. Critical thinking helps students get equipped with basic critical thinking skills and the abilities that can be used in other subjects. Amina K. An Economics female student from Moulay Idriss CPGE Centre, Fes claims that: “in economy it's requires a lot of analytic thinking and critical thinking”

A close look at Figure 6 reveals that more than 45% of the students believe that critical thinking helps to some extent in other subjects, and almost 35% of them think that critical thinking helps a lot.

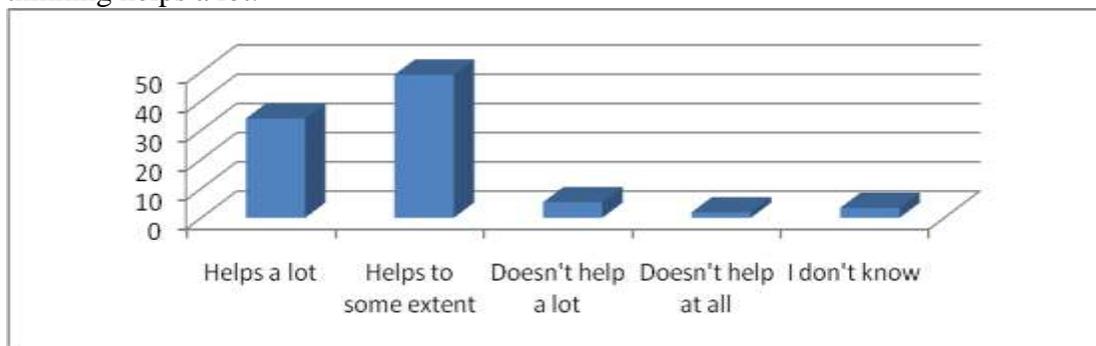


Figure 6: Utility of critical thinking in other subjects

Figure 7 illustrates the findings related to the students' opinion about the benefits of critical thinking. These findings support the qualitative data. For instance, more than 45% of the students believe that critical thinking helps them a lot in their future professional life. The personal level comes next with almost 27% of the students claiming that critical thinking helps them in their daily life.

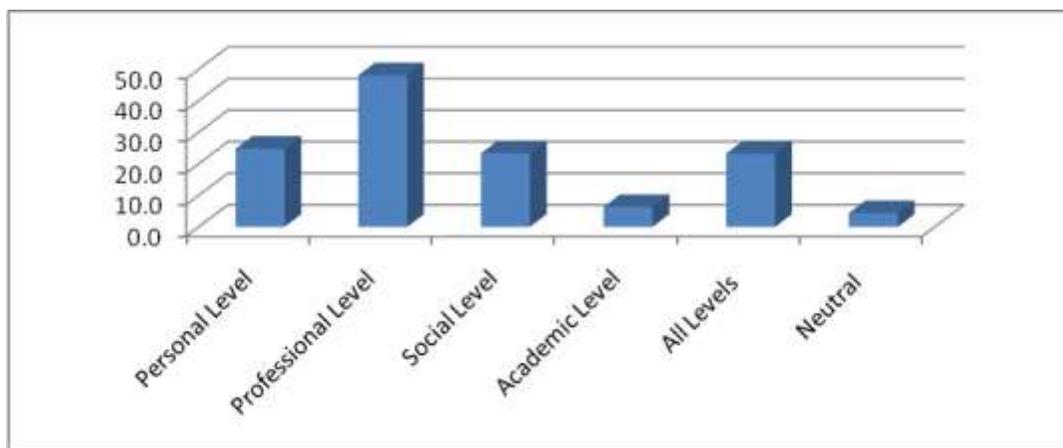


Figure 7: Percentages of the students' choices of the utility of critical thinking

Both the qualitative and quantitative findings reflect the maturity of the CPGE students, and their awareness of the utility of critical thinking at various levels.

3. Teaching and Assessment of Critical Thinking

This section investigates the teaching and assessment of critical thinking. The main objective is to find out about the teachers' practices in the teaching and assessment of critical thinking. The different subsections will look at the teaching methods, the teachers' training, the activities used in the teaching of critical thinking, the critical thinking skills developed, the impact of critical thinking teaching, and the challenges faced in critical thinking teaching.

3.1. Traditional Way of Teaching and Critical Thinking Based Instruction

Students were asked to choose which way of teaching they prefer: the traditional way of teaching or the critical thinking based way of teaching. All the interviewed students reported that they prefer critical thinking based teaching. According to them, they learn better in classes that adopt critical thinking based teaching; for example Amina K. An Economics female student from Moulay Idriss CPGE Centre, Fes considers the traditional way of teaching as: "kind of boring for the students and we are just passive persons; we cannot tell our opinions or develop our skills". Unlike the traditional way of teaching, critical thinking based teaching as Amal E. A Science of Engineering female student from Omar Ibn El Kattab CPGE Centre, Meknes states "encourages the students to express what he or she has in mind and it help all the students to develop all their skills for future life".

The findings related to the students' preferences of the teaching method reveal that almost 60% of the students disagree with the statement that traditional way of teaching is better than the critical thinking based teaching as Figure 8 illustrates:

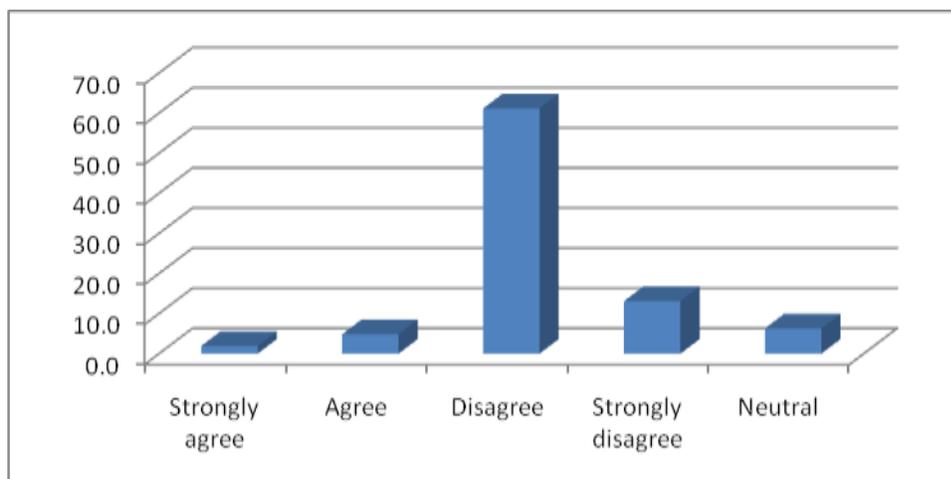


Figure 8: Students’ attitudes about the traditional way of teaching and critical thinking based instruction

The students’ testimonies and the Figure 8 show that the CPGE students prefer classes where critical thinking skills are encouraged and developed.

3.2. Teachers’ Training

Pre-service and in-service trainings plus the exposure to critical thinking at the university are pre-requisites for professional development and effective teaching practices. All the interviewed teachers mentioned that they had never benefited from any training in critical thinking based instruction. As Mohamed Kh. A male teacher of six years of experience at Moulay Ismail CPGE Meknes Center states: “we never receive any training related to this [critical thinking]...all what we do remains personal initiatives”. The statement also reveals that critical thinking based teaching in CPGE classes is based on the teachers’ own understanding of critical thinking.

Figure 9 shows that the majority of CPGE teachers have never been exposed to or benefited from any training, whether pre-service or in-service, in critical thinking based instruction. However, one teacher reported that he has participated in some online courses on critical thinking, but he has never had any formal training at the university for instance.

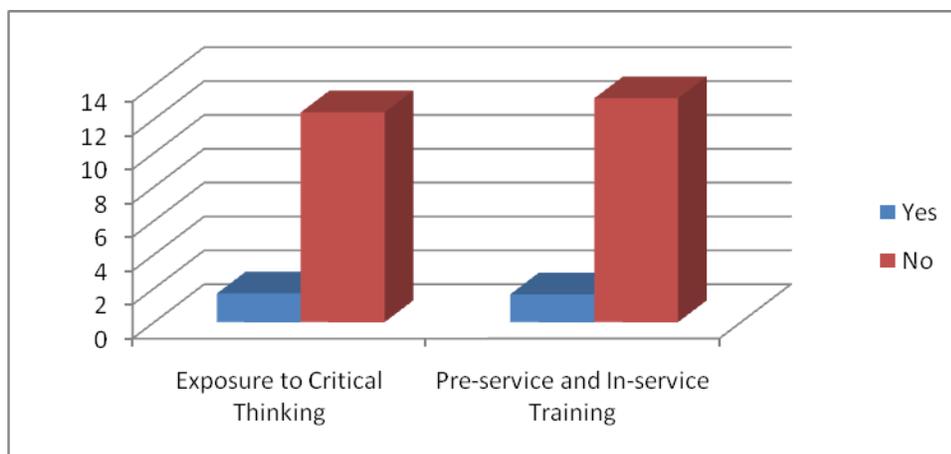


Figure 9: Teachers’ exposure to and training in critical thinking

It is quite clear that the absence of any sort of exposure or training in critical thinking surely affects the quality of teaching.

3.3. Teaching Approach

The ELT guidelines for CPGE classes state clearly that the teaching approach in English classes is the standards based approach and critical thinking. However, the study revealed controversial views as far as the best teaching approach in CPGE English classes.

Some of the teachers stated that they are not aware of any existing approach to teach critical thinking in CPGE; Youssef El . A male teacher of two years of experience at Mohamed VI CPGE Kenitra Center for example stated: "I am not aware of any approach to teaching critical thinking". Moreover, some of the teachers consider the Communicative Approach as the best teaching approach to develop students' centeredness and autonomy. Assim M . A male teacher of two years of experience at Moulay Idriss CPGE, Fes Center argues that "[...] communicative approach you know you ask students, it is mainly you leave the students do the job, and you intervene only when it is like students don't find the way to the task". However, only one teacher said that the best approach to foster critical thinking skills in students is the standard based approach. Mohamed Kh. A male teacher of six years of experience at Moulay Ismail CPGE Meknes Center declares that: "standard based approach is more likely to serve in situation like this because they set standards for students to achieve".

The existence of a suitable teaching approach helps in the teaching and learning processes. However, the lack of awareness of the existence of a critical thinking teaching approach impacts negatively the teaching and learning processes.

3.4. Activities Used to Teach Critical Thinking

The teaching of critical thinking requires a specific method and approach. The absence of any training in critical thinking based instruction and the teachers' reliance on personal efforts to teach critical thinking affect their teaching practices in class and has a negative impact on the students' learning.

The interviewed teachers stated that they tried to use various activities in class to teach critical thinking. Some of them declared that they integrate critical thinking in the teaching of the macro skills, namely reading, writing, speaking and listening. They do not dissociate critical thinking from the other skills; critical thinking is part of every skill taught to students as a teacher claimed: "we cover the four skills reading, listening, and speaking and writing and critical thinking should appear in all these skills".

A close analysis of Figure 10 reveals that all teachers mentioned that reading is the best way to introduce critical thinking skills to students; Almost 17 teachers revealed that they prefer writing. Only 2 teachers stated that they use translation to teach critical thinking skills.

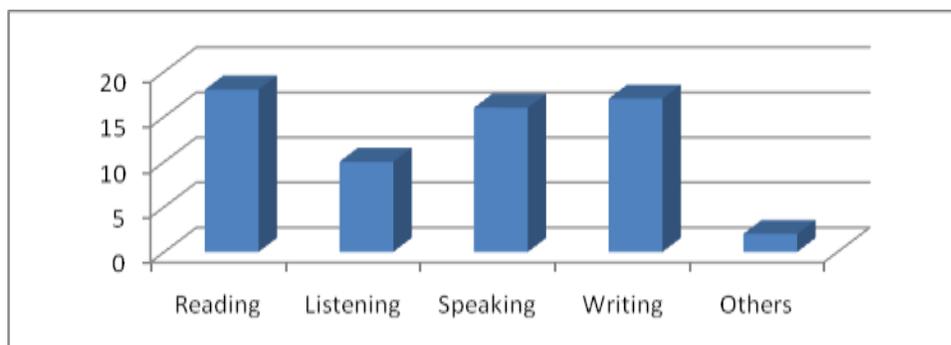


Figure 10: Language skills through which critical thinking is integrated

Moreover, two teachers stated that they use various activities that require logic and reasoning in speaking. For instance, Mohamed Reda G. a CPGE male teacher for four years in Moulay Idriss Centre, Fes, said that he used in class: “discussion, debates, organized debates [...] also try to analyze images [...] also work on videos” Students confirmed this since 45% of them reported that speaking is one of the language skills through which their teachers help them develop critical thinking skills.

Classroom observation data reveal that teachers use many activities to foster critical thinking in students. In speaking, questioning was one of the activities that the teacher used to trigger critical thinking in students. The teacher observed, for instance, encouraged students to reflect on each other’s answers and opinions and to express their point of view about their friends’ presentation. He also encouraged students to answer open-ended questions, and to try to investigate and explore other possibilities by asking questions like how about...?

In writing, the teacher made use of team work, peer review and evaluation to encourage students to think critically. Pair and group work is a way to make students interact and work together. In addition to the mode of work, the teacher asked the students to evaluate their peers’ work and ideas.

The teachers’ ways of teaching and using critical thinking in class reflect their personal efforts to introduce critical thinking in CPGE English course and develop it in students.

3.5. Critical Thinking Skills in CPGE Classes

According to the ELT CPGE guidelines, the CPGE teachers are required to introduce students to certain specific critical thinking skills. The guidelines state clearly that CPGE students need to be exposed to Bloom’s cognitive skills; besides, the guidelines add other skills like memorizing, paraphrasing and interpreting.

To ensure a successful development of critical thinking, the teacher needs first to determine the targeted skills. The results of the interviews yielded that some of the interviewed teachers use different critical thinking skills along with the four macro skills like reading and writing. When asked about the skills he wanted to instill in his students, Mohamed Kh. A male teacher of six years of experience at Moulay Ismail CPGE Meknes Center replied: “expressing opinions, being original, solving problems, logic reasoning, analyzing information from different perspectives, listening to and reflecting on their peers’ opinions, and questioning”.

Teachers were given a number of critical thinking skills and were asked to choose the skills they focus on more in their classes. The majority of them mentioned that they use all the suggested critical thinking skills: analyzing, summarizing, argumentation, synthesizing and evaluating as Figure 11 demonstrates:

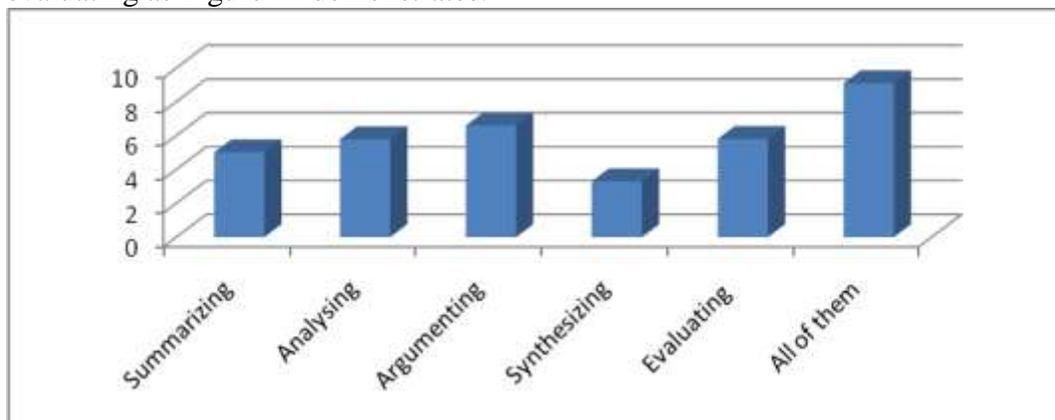


Figure 11: Critical thinking skills taught in class

The use of various critical thinking skills in class is confirmed by the classroom observation. Throughout the lessons of speaking and writing the teacher made use of specific skills, namely defining, comparison and contrast, evaluation and argumentation.

As far as the students are concerned, 50% of the respondents declare that they study analysis more than other skills. Argumentation comes in the second position with about 43% and summarizing in the third place with 34%.

Apparently, teachers and students seem to have different perceptions about the critical thinking skills taught in class. The teachers' targeted critical thinking skills can be perceived differently by the students. The absence of the use of meta-language in class, when giving instructions can be interpreted differently by the students. This is indeed, what Mohamed Reda G. a CPGE male teacher for four years in Moulay Idriss Centre, Fes, states in his testimony: "we have a text we had to read it and discuss it and after giving the idea of the text we go to the commentary". Obviously the students are not informed and made aware of the skills they are supposed to use.

3.6. Assessment of Critical Thinking Skills

Both continuous and summative assessments are part of the teaching process. Assessment helps to check the students' learning progress and detects any potential difficulties. The CPGE ELT guidelines stipulate two types of summative assessment, written and oral. According to the CPGE ELT Guidelines (2007), the written exam "should mirror the actual classroom teachings and should also comply with the general format of the Common National Examination" (p. 13). The oral tests, Colles, on the other hand should test the students' communication skills and higher order skills namely "paraphrasing, commenting, arguing and debating" (p. 14). In addition to the summative assessment, the guidelines insist on continuous assessment; the guidelines state that "the teacher should make room for other components such as the student's classroom participation, attendance, assignments, and quizzes". (Op.cit)

The teachers involved in the study reported that they use a mixture of continuous assessment and summative assessment. Mohamed Kh. A male teacher of six years of experience at Moulay Ismail CPGE Meknes Center argued that presentations allow teachers to assess students' critical thinking skills namely: defining, analysis, synthesis, explanation, and argumentation. Argumentative writing, according to Souhail R. A male teacher of four years of experience at Omar Ibn El Khattab CPGE Meknes Center, is a way to assess the students' ability to analyze and argue. The following topic is an example of the types of argumentative writings where students have to show their ability to analyze and argue: "In a paragraph say why you would or wouldn't prefer to work for the common good of your community". Commentary writing is another type of writing way where students have to analyze, evaluate and argue for or against experts' opinions, quotations from texts, proverbs...etc. For instance, the proverb "A bad beginning makes a bad ending" is the type of sayings students have to comment on by using certain critical thinking skills like evaluation and argumentation. The last way to assess the students' critical thinking is the oral test based on the readings. Students are required, to summarize, analyze, argue, and evaluate texts orally; Youssef El . A male teacher of two years of experience at Mohamed VI CPGE Kenitra Center mentioned that the teacher can test the students via "argumentative questions, debates and Colles sessions".

As far as the quantitative data are concerned, the teachers were asked to choose the activities they rely on most in their assessment of critical thinking skills. Almost 14 teachers reported that they rely both on reading and writing as the basic activities to assess critical thinking skills. While 12 teachers said they resort to speaking for assessment, 6 teachers prefer listening as the Figure 12 reveals:

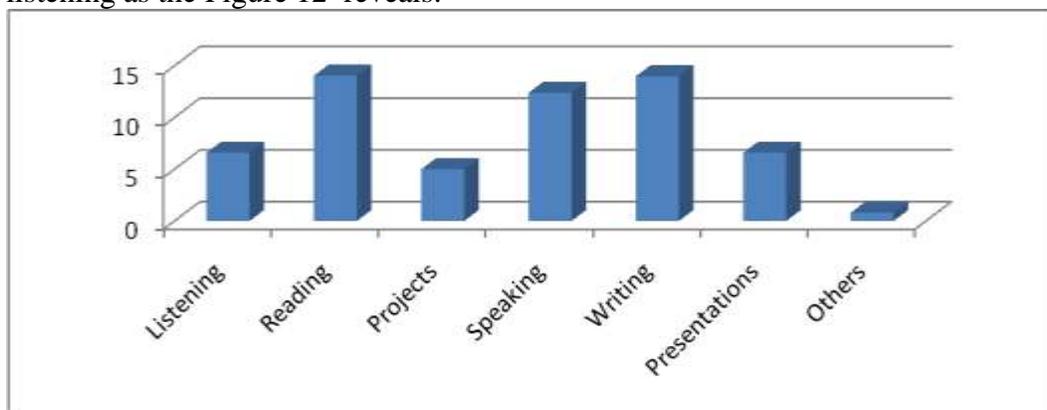


Figure 12: Methods for critical thinking assessment

The choice of the methods for assessment of critical thinking skills goes in perfect alignment with the teachers activities used in classes. The teachers said that they use reading and writing more often as a way to develop critical thinking skills in their classes, and they use the same language skills when assessing their students' critical thinking skills. The teachers interviewed mentioned that they rely more on writing and presentations and commentary. This latter is the activity that assesses students' critical thinking in reading.

4. Impact of Critical Thinking Based Instruction

The investigation of the teachers' opinion about the impact of critical thinking based instruction on the students revealed that they all admitted that the approach has very positive

results. The students who are exposed to critical thinking start to show the ability to express and defend their opinions as Mohamed Reda G. a CPGE male teacher for four years in Moulay Idriss Centre, Fes, states: “I can see their ability to express that opinion and be able to defend that opinion by using plausible arguments”.

Figure 13 clearly shows that the majority of teachers strongly believe in the impact of critical thinking on their students.

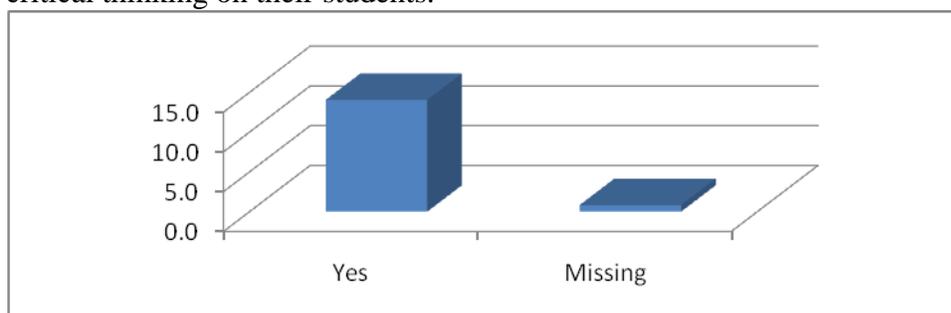


Figure 13: Impact of critical thinking on students

Moreover, the interviewed students themselves agreed that they have learned and benefited a great deal from the critical thinking based instruction. They have improved their critical thinking abilities during the two years of exposure to critical thinking. Mohamed Kh. A male teacher of six years of experience at Moulay Ismail CPGE Meknes Center, for instance, claims: “I’ve changed the way I used to think [...] critical thinking improves our way of thinking”.

The students’ belief in the positive impact of critical thinking has pushed them to ask for a course on critical thinking. Figure 14 demonstrates that more than 50% of the students are for a course on critical thinking:

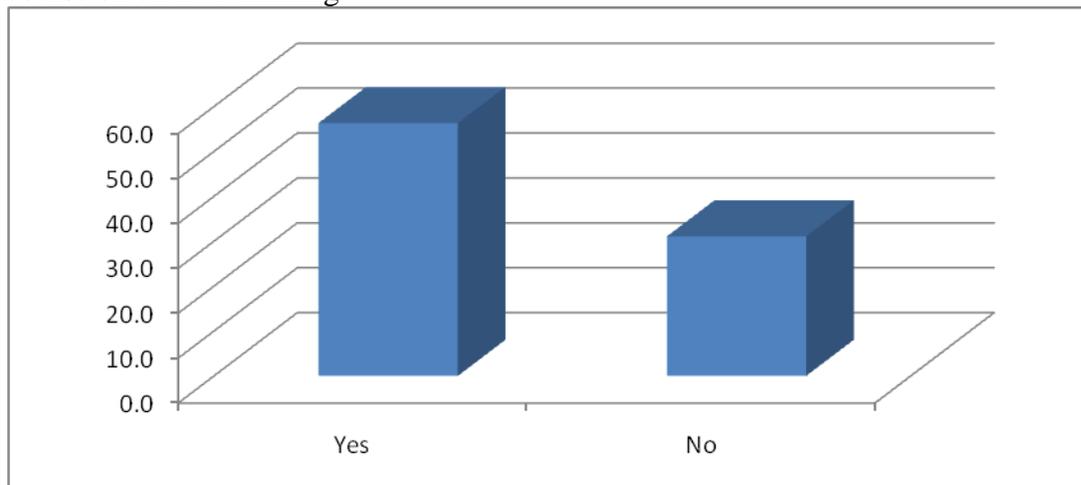


Figure 14: Suggestion of a course devoted to critical thinking

5. Challenges Facing Teaching Critical Thinking in CPGE

Effective teaching is based on identifying the challenges that affect the process of learning and teaching. The interviewed teachers listed a number of challenges that affect the introduction and development of critical thinking in CPGE classes. The lack of in-service training and the

number of hours devoted to the English course for science students are some of the main challenges teachers expressed. Youssef El . A male teacher of two years of experience at Mohamed VI CPGE Kenitra Center sums up these challenges in the following statement:

The first obstacle I think is teachers are not trained in teaching critical thinking, or they haven't been exposed to any modules to enables them to have a close and detailed information about this approach [...] students are not having sufficient time of English teaching like you meet students once a week I think it's not sufficient at all to develop critical thinking.

Moreover, lack of technology equipments makes it hard for teachers to teach some skills like listening. Assim M. A male teacher of two years of experience at Moulay Idriss CPGE Fes Center states: "you tend to find problems in terms of finding the equipment [like] the data show [video projector] and the loud speakers". Finally, class size is another issue that CPGE teachers complained about. It highly affects the teaching process.

Conclusions & Implications

A successful implementation and development of CPGE students' critical thinking skills is, as it was reported in the teachers' and students' data, highly influenced by the teachers and students' awareness of the importance and utility of critical thinking, their perception of the concept of critical thinking, the teachers training, and the teaching and assessment practices used in class. This awareness boosts the teachers' and students' productivity and their motivation to teach and learn.

However, the absence of training in critical thinking teaching affects the teachers' perception of critical thinking and their in-class practices, This has a direct impact on the students' understanding of the concept of critical thinking. One of the consequences of the lack of training is the teachers' ignorance of the efficient teaching approach in CPGE classes. In addition, the teachers' obsession with the final exam leads to inconsistencies in the teaching and assessment practices in class among teachers. This clearly appears in the focus on all the macro skills except listening. Likewise, the teachers' assessment of the students' critical thinking skills is done primarily through reading, writing and speaking, but listening. As far as the critical thinking skills are concerned, CPGE teachers focus on certain critical thinking skills namely analyzing, summarizing and argumentation. Therefore, the teaching and assessment in CPGE is a preparation for the national exam rather than the social, academic, personal and professional life. This reflects the teachers' obsession with the final exam where listening is absent.

A successful implementation of critical thinking skills teaching that would help students acquire and develop critical thinking skills requires pre-service and in-service training. This training will help teachers have a clear idea about the concept of critical thinking and the different skills that it entails. The training will also introduce teachers to the most efficient teaching approach and methods that would facilitate the students learning and finally improve the assessment of the students' critical thinking skills.

A unified syllabus prepared by the CPGE teachers' coordination can help develop the quality of critical thinking teaching and assessment. This syllabus, which is based on the critical

thinking and standards based approach, can help CPGE teachers design authentic teaching materials. Additionally, the syllabus would not only ensure that all CPGE teachers adopt the same approach and teach using the same materials, but it would also specify the critical thinking skills that CPGE students need to develop and use at the personal, social, professional and academic levels. In short, the syllabus would be designed according to and in respect of the CPGE ELT guidelines.

It is worth mentioning that although the findings of this study confirm the extent to which both CPGE students and teachers are aware of what critical thinking is and the extent to which they think it is important and useful, and although the teaching and assessment of critical thinking is done in an explicit way in the CPGE English classes, more data need to be collected in order to assess the students' critical thinking skills in the CPGE English classes and to investigate the extent to which students are actually capable of manifesting different critical thinking skills.

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