

**REPUBLIC OF TURKEY
ÇUKUROVA UNIVERSITY
INSTITUTE OF SOCIAL SCIENCES
ENGLISH LANGUAGE TEACHING DEPARTMENT**

**THE EFFECT OF WEB 2.0 TOOLS ON CRITICAL THINKING WITH A SPECIAL
EMPHASIS ON COLLABORATIVE LEARNING**

Kubilay KAZANCI

MASTER OF ARTS

ADANA/2014

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Supervisor: Assoc. Prof. Dr. Hasan BEDİR

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Dedicated to my beloved wife who has been a great source of motivation and inspiration...

This thesis is also dedicated to my deceased father and my mother who has always believed me...

ÖZET

İKİNCİ NESİL İNTERNET ARAÇLARININ ÖZELLİKLE İŞBİRLİKÇİ ÖĞRENME İLE KULLANILMASININ ELEŞTİREL DÜŞÜNME BECERİLERİ ÜZERİNE ETKİSİ

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Bu araştırma ikinci nesil internet araçlarının özellikle işbirlikçi öğrenme ile kullanılmasının eleştirel düşünme becerileri üzerindeki etkisine cevap bulmak amacıyla yürütülmüştür. Düşünme becerilerinin hayatımızda büyük bir rolü vardır ve hayatımızın her alanında, kasıtlı veya kasıtsız, kullanılmaktadır. Bunlar, aynı zamanda, profesyonel veya kişisel hayatımızda da çok önemlidir. Özellikle, düşünme becerilerinden biri olan eleştirel düşünme, 21.yy'da çok önemli bir hale gelmiştir; çünkü her gün yeni bilgilerle karşılaşmaktayız ve bunlarla baş etmek güç hale gelmektedir. Eleştirel düşünme konusunda bugüne kadar çok sayıda çalışma yapılmıştır ve çok açıktır ki eleştirel düşünmenin eğitim üzerinde büyük bir etkisi vardır. Ancak, öğretmen açısından eleştirel düşünme entegrasyonu yönünden pratikte bazı sıkıntılar vardır. Öte yandan, literatür çalışmaları yüksek düşünme becerileri gerektirmeyen ikinci nesil internet araçlarının eğitim için etkin bir araç olduğunu göstermektedir. İkinci nesil internet araçları her geçen gün yaygınlaşmakta ve her gün yeni bir ikinci nesil internet aracı ile hem günlük yaşamda hem de eğitim alanında karşılaşmaktayız. Bloglar, wikiler ve sosyal ağ gibi ikinci nesil internet araçları çok yaygın olmakla birlikte, birlikteliği teşvik etmekte ve desteklemektedir. Son yıllarda Fatih Projesi ile eğitim ve öğretimde fırsat eşitliğini sağlamak ve okullarımızdaki teknolojiyi iyileştirmek amacıyla Bilişim Teknolojileri araçlarının öğrenme-öğretme sürecinde daha fazla duyu organına hitap edilecek şekilde, derslerde etkin kullanımı için; okulöncesi, ilköğretim ile ortaöğretim düzeyindeki tüm okullarda LCD Panel Etkileşimli Tahta, tablet ve internet ağ altyapısı sağlanmaktadır. Bu süreçte öğretim programları BT destekli öğretime uyumlu hale getirilerek eğitsel e-İçerikler oluşturulacaktır. Bu nedenle, öğretmenlerin ve öğrencilerin bu cihazları

kullanırken ve içerik oluştururken ikinci nesil internet araçları konusunda bilgilenmeleri ve pratikteki bazı sıkıntıların giderilmesi gerekmektedir. Aynı zamanda, işbirlikli öğrenmenin de eğitim üzerinde önemli bir rolü vardır. Öğretmenler, işbirlikli öğrenmeyi sınıfı canlandırmak, iletişimi artırmak ve birçok sebep için kullanmalıdır. Bu çalışmada ikinci nesil internet araçlarının kullanılmasından dolayı işbirlikli öğrenme önemli bir hal almıştır. Bütün bunları göz önüne alırsak, temel soru ikinci nesil internet araçlarının özellikle işbirlikçi öğrenme ile kullanılmasının eleştirel düşünme becerilerini destekleyip desteklemediğidir. Bu çalışmanın amacı bu soruya cevap bulmaktır. Aynı zamanda, elektronik ortamda eleştirel düşünmeyi destekleyecek olan bu çalışma öğretim stratejilerini ve eğitici tasarımı da ortaya çıkaracaktır. Bu çalışma, on hafta sürmüş, hem nitel hem nicel verilerle yürütülen bir çalışmadır. Kahramanmaraş, Dulkadiroğlu, Güzelyurt Ortaokulu, 20, 8.sınıf öğrencisi bu çalışmanın katılımcılarından. Çalışmanın başında, dakika notları ve katılımcıların tercihlerini görmek için Eleştirel Düşünme Anketi ve Web 2.0 araçları Anketi uygulanmıştır. Aynı zamanda, araştırmayı desteklemesi için, röportajlar kullanılmıştır. Çalışma esnasında, eleştirel düşünmeyi ortaya çıkarmayı hedefleyen özel notlar, Milli Eğitim Bakanlığı tarafından tasarlanan müfredattaki içerik ve konulara bağlı kalarak hazırlanmıştır. Çalışmanın başında uygulanan anketler çalışmanın sonunda öğrencilerin eleştirel düşünme becerilerinde herhangi bir ilerleme olup olmadığını görmek için tekrar uygulanmıştır. Nicel veriler, vaka incelemesinin bir ögesi olarak tanımlayıcı istatistikler kullanarak analiz edilmiştir. Nitel verilerden (Röportajlar ve dakika notları) elde edilen araştırma bulguları nicel verilere ışık tutmuştur.

Anahtar Kelimeler: Eleştirel düşünme, Web 2.0 araçları, işbirlikli öğrenme.

ABSTRACT**THE EFFECT OF WEB TOOLS 2.0 ON CRITICAL THINKING WITH A SPECIAL
EMPHASIS ON COLLABORATIVE LEARNING****Kubilay KAZANCI****Master of Arts, English Language Teaching****Supervisor: Assoc. Prof. Dr. Hasan BEDİR****August, 2014, 105 pages**

This study was conducted to find an answer whether Web 2.0 tools have an effect on critical thinking (CT) with a special emphasis on collaborative learning. Thinking skills have a great role in our life. In purpose or not, we are using them in every scope of life. Moreover, they are essential for our professional and personal lives as well. Especially, CT, one of the thinking skills, has been very significant in the twenty-first century because we are being exposed to a large quantity of new information every day and it has been very tough to cope with. A great many of studies have been conducted on CT and it is obvious that it has a great impact on education. However, there are some practical issues on how to integrate CT into curriculum. On the other hand, literature reviews have shown that Web 2.0 tools are effective tools in learning and teaching process. Web 2.0 tools are becoming more popular everyday and we come across new Web 2.0 applications in both daily life and educational arena. Web 2.0 tools such as blogs, wikis, and social networking are very common and they encourage and support the collective knowledge for the 21st century. In recent years, Fatih Project has been put into practice in all schools around Turkey with the aim enabling equal opportunities in education and improving technology in the schools including primary, secondary and high schools for the efficient usage of ICT tools in the learning-teaching. With this project, all schools will be equipped and transformed into computerized classes with the latest information technologies such as tablets, LCD Interactive Boards. In this transformation process, educational e-contents are going to be formed in accordance with the current teaching programs. Therefore, teachers and students should be informed about Web 2.0 tools and some practical issues should be eliminated. Moreover, collaborative learning has a

significant role in education. Teachers use this to enliven their classes, increase the communication and so many other reasons. As we use Web 2.0 tools and provide them to discuss, collaborative learning is essential. With all these in mind, the main question is whether Web 2.0 tools instruction can successfully promote CT with a special emphasis on collaborative learning. The purpose of this paper is to find an answer to this question. It also will identify the teaching strategies and instructional designs, which will successfully promote CT in an electronic learning environment. This study is both a qualitative and a quantitative, which lasted ten weeks. 20 8th grade students in Kahramanmaraş, Dulkadiroğlu, Güzelyurt Secondary School were the participants of this study. Critical Thinking Questionnaire (CTQ) and Web 2.0 tools Questionnaire (WTQ) were administered at the beginning of the study to see the preferences of the participants. Furthermore, interviews and minute papers were used to support the study. During the study, CT was infused into the curriculum through prompts in accordance with the language content and topics for the 8th grades that was determined by the Ministry of Education. At the end of the study, the same questionnaires used at the beginning of the study were administered again to see whether there has been an improvement in learners' CT skills. Quantitative data was analyzed by using descriptive statistics as a component of case study. Research findings from qualitative (Interviews, diary and minute papers) data shed light on the quantitative data as well.

Key words: Critical thinking (CT), Web 2.0 tools, collaborative learning.

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CHAPTER I

INTRODUCTION

1.1.Introduction

In the past, fixed ideas and theories were unquestionable. However, they have been exposed to criticism with the slow steps of science and fostered by the idea of enlightenment. Ideas and theories have been subject to new theories and ideas constantly. In other words, what we firmly used to know could turn into opposite direction as human beings have gained more freedom compared to the past. For instance, people have got the privilege of access anything they want. In the 21st century, processing information has become more important than labor. However, this development requires some skills. As stressed by Bedir (2013), "It is clear that there is a shift from traditional schooling which aims to educate students for society needs to a new system aiming to enable our students gain such thinking skills such as interpreting, analyzing, synthesizing and evaluating" (p. 1). According to Harris (1996), "Information Age citizens must learn not only how to access information, but more importantly how to manage, analyze, critique, cross-reference, and transform it into usable knowledge" (p. 15). Therefore, there is a rapid shift from simple thinking to *critical thinking (CT)*.

In the present time, we are using technology on a daily basis barely even imagined by our ancestors and we are being exposed to new information at an incredible speed. We cannot use a filter that can extract desirable information. However, we can teach students how to filter undesirable information, but it is not applicable in a short time. This could be possible with the teaching of thinking skills and encouraging students to think by starting a process altering and strengthening their worldview, beliefs, opinions, attitudes, and behaviors through their own reasoning capacity. They must do this not only for themselves, but also for the society's needs According to Bedir (2013), Thinking skills have become crucial for people from any level of society since they enable us to remain relevant and sophisticated in this fast-paced and competitive world. Therefore, teaching thinking is very important in our educational life and it can provide a great opportunity. However, they have been very common in the educational

arena in the 21st century. Most of the teachers neglect using thinking skills in their curriculum whereas there are many who know the value of them. Bedir (2013) states that there has been a consensus between teachers that thinking skills cannot be regarded as separate domains.

However, enabling individuals to gain appropriate thinking skills to process available information is not an easy task. For example, you cannot change an adult's mind easily, yet a child could be educated more easily as a belief of someone could easily affect them. Thus, students should not be left alone as we need to raise capable, analytic and reflective thinkers in order to deal with the large quantity of information and become open-minded, critical and democratic individual in the society.

CT, the umbrella term for thinking skills, has gained outstanding value in the educational area. Abelard (2009) states, "the first key to wisdom is constant questioning... By doubting, we are led to enquiry, and by enquiry, we discern the truth." (p. 101). Fisher (1992) divides *CT* into three significant components: a readiness to reason, willingness to challenge and a desire to truth (p. 66-67). He also suggests that there may be one way for being right but there are infinite ways of being wrong. Therefore, children should look into things from different perspectives and think about the other possibilities as well.

There are different ways of enabling students to gain *CT* skills. However, the common suggestion is that students should have opportunity to collaborate on tasks so that they could share ideas to look into matters from different angles. Almost one billion people are connected to the internet and people can have access to anything they want with a single click. Therefore, the *World Wide Web* (*WWW*), if used effectively, can provide an opportunity. According to Ozkan (2011), by using the Internet and the world wide web, students can have almost instantaneous access to a range of foreign experiences in their target language (p. 1).

The *WWW* consists of all the public web sites connected to the Internet. It is a beneficial means of gathering information for usage, called as *Web 1.0* consisting of static websites that were not yet providing interactive content. With rapid development

and mass expansion, innovations have been introduced and *Web 2.0* has emerged. It uses the *World Wide Web* sites that utilize technology beyond the unexceptional pages of earlier Web sites. The term was first introduced in 1999 by Darcy DiNucci and then popularized by Tim O'Reilly. Accordingly, *Web 2.0 tools* were introduced to the use of humankind on this platform.

Web 2.0 tools affect both our professional and personal lives, especially in education. We encounter a new web tool every day and many are free and available to everyone. Perhaps, students are the first discoverers of these tools. According to Tool and Resource Guide (2013), the shift to *Web 2.0 tools* could have a potential on schools and learning, causing a transformation in thinking. According to Can, C; Bedir, H and Inozu, J (2009), There are two major potential of IT: catering for a society transforming itself from industrial to information or knowledge society and addressing the potential of IT tools to improve education. Through these tools, teachers may find out some beneficial tools and discover new ways in which students can be supported with computer-based educational activities as an alternative to teacher-centered instruction because once students write or speak for a broader and international audience, they give more attention to polish their work and think more deeply about the content. This serves to strengthen all students' skills to be more active. Therefore, *Web 2.0 tools* can serve as a good vehicle for this objective.

According to Hayman (2007), *Web 2.0* can foster social collaboration and sharing features. It provides students with the opportunity to contribute, to take control and to regulate information. Such tools, for example, may provide new opportunities and reinforcement on learning; even if some forms of pedagogical reinforcement are already loaded (Daffy and Bruns, 2006). In addition, Browne (2000) states that "if students are going to rely on the internet to the extent that it seems they do and will, renewed attention to applying *critical thinking* to the internet is mandated" (p. 5).

1.2. Background to the Study

The existent literature suggests that *CT* can be encouraged by engaging students in collaborative inquiry into authentic problems (Garrison, 2007; Halpern, 1998; MacKnight, 2000; McPeck, 1990a). The use of computer-supported learning

environments is a great source to support collaborative inquiry and knowledge building. A number of studies indicate that student's *CT* skills can be taught through *Web 2.0 tools*, Web-based Instructions etc. For instance, Ozkan (2011), a study of blogging in a teaching skills course for pre-service teachers of English as a second language, finds out that the main contribution of blogging develops writing and self-evaluation, giving an opportunity for use of technology, reinforcing collaboration. According to another study, development of *CT* skills using an innovative *Web 2.0 tool*, conducted by Eales-Reynolds L.J. et al. (2012), students chiefly utilize traditional resources when preparing work for assessment. In addition, they do not understand the concept and they do not exercise, *CT* skills in such activities. In addition, Richardson (2006) asserts that blogs, wikis, and other *Web 2.0 tools* have a potential effect in an educational context. Richardson also states that those tools can foster *critical thinking* and analytical thinking and can trigger creative and intuitive thinking (cited in Duffy and Bruns, 2006).

Varaki (2006) discussed the skills related to *CT* and three specific web-based strategies for teaching these skills. He articulated that there are some indications that internet are effective for promoting *CT* because they are more focused, they are more concrete, and they can deliver learning relevant feedback more often than traditional classroom instruction. Duffy and Bruns (2006) denote that by using blogs, student can show their *CT*, creativity, taking risks and taking advantage of the language. In light of this, the students learn creative, critical, communicative and collaborative skills that are beneficial both in their personal and professional lives.

Similarly, Cruz (2008) asserts that the administration of *Web 2.0 tools* in education may foster the improvement of students' knowledge to cover the needs of the labor market, more dynamic and continuously changing. Thus, the application of *Web 2.0 tools* can provide students with showing those skills during their training and after. They are not confined to the areas in which they specialize, but they enable them to improve an open mind and flexible capacity of being adaptive to new situations. McLoughlin and Lee (2007) assert that *Web 2.0 tools* could be seen as a great potential to the needs of students, improve the learning and present new opportunities for collaborative working and networking.

1.3. Statement of the Problem

The 21st century, the beginning of the Digital Age and a time of unprecedented growth in technology and information explosion, has been very significant in our life. In this case, society needs many qualities and students should realize what society wants. Bedir (2013) states that “in preparing our students for life and for rapidly changing world, it is vital that we be aware of what society needs” (p. 1). In order to survive in this age, we need to have the skills of this age. Among the others, *CT* and collaboration with others are the most important ones, which we have to enable our students to improve. As Varaki (2007) states that “*critical thinking* is a higher order thinking skill that only appears when students can experience challenge-based instruction and related instructional designs” (p. 178). This challenge-based approach to instruction could encourage students’ engagement in the process and support them identify various applications for how the content is used and how to survive. Otherwise, students can easily accept what is told by what they see, be caught in their own thinking or they can be confined to be narrow-minded easily; whereas, they can be encouraged to use their own thinking reasoning capacity appropriately and systematically. To achieve this, we must teach students to be a purposeful critical thinker.

A couple of decades ago, most of the countries have realized the significance of *CT* skills that students should acquire. In Turkey, *CT* is not much of value as well. According to a study conducted by Munzur (1999), books prepared by the Ministry of education fail to impose creative thinking, *critical thinking* and *problem solving* (Cited in Keskin, 2010). Currently, it has been infused (not in purpose) into the curriculum but there are some practical issues that need to be solved. Teachers do not know how to teach *CT* and being aware of the importance of these skills and infusing those skills into the curriculum is a remarkable step. On the other hand, with the Fatih Project (Movement of Enhancing Opportunities and Improving Technology), 42.000 schools and 570.000 classes will be equipped with the latest information technologies and will be transformed into computerized classes enabling equal opportunities in education and improving technology in our schools for the efficient usage of ICT tools in the learning-teaching processes. Therefore, *Web 2.0 tools* has gained much importance in Turkey. However, teaching these skills entails practice and guidance as there are many factors, which can affect the teaching-learning process. Current efforts to promote *CT* in the

social studies will fail unless teachers know what it is, why it is important, and how to use it in the classroom.

In the 21st century, technology had a unique place in education and added a new dimension to the teaching learning transactions at all educational levels. As information has grown so rapidly, the tools for information and management have made huge effect on human beings. We come across a new piece of information and these changes drives us to check what we already know. In line with this, new technologies and tools emerge daily and these technologies are outdated soon after they reach the market. For this reason, to cope with the current issues, there are some crucial skills needed for success in the 21st century world like *CT*, *problem solving*, creative thinking and so on.

1.4. Purpose of the Study

Education is a process that students get through in which they acquire many qualities. They need to have a general understanding about what is going on around with the help of inquisitiveness in a collaborative way with some tools. That is why, thinking abilities like *CT* play important role in education. The main purpose of this study is to find out whether students' *CT* skills could be improved through *Web 2.0 tools* with a special emphasis on *collaborative learning* that is inevitable for this study. In this context, we will try to look for a meaningful correlation between the variables whether *Web 2.0 tools* has an effect on *CT* with a special emphasis on *collaborative learning*

1.5. Research Questions

1. Were students using certain *CT* skills before the study?
2. What were the perceptions of the students about *Web 2.0 tools* before the study?
3. Were students using certain *CT* skills after the study?
4. What were the perceptions of the students about *Web 2.0 tools* after the study?

1.6. Operational Definitions

Thinking skills: According to Monin (1992), thinking is a process that can be found in some of complex system and includes gathering information, memorizing the information, the subconscious, and consciousness.

CT: *Critical thinking* provides correct thinking in order to make use of relevant and reliable knowledge about the world. (Bedir, 2013, p.1)

Web 2.0 tools: *Web 2.0 tools* rely on the concept of the internet as a platform, and include blogs, wikis, podcasts, micro blogs, social networks.

Collaborative Learning: It has been called by various names like cooperative learning, *collaborative learning*, collective learning, learning communities, peer teaching, peer learning, or team learning etc. However, they all incorporate group work. (Dooly, M. 2008)

1.7. Abbreviations (In Alphabetical Order)

CT : *Critical thinking*

CTQ : *Critical thinking Questionnaire*

WTQ : *Web 2.0 tools Questionnaire*

1.8. Limitations of the Study

There are two limitations of this study. First, the participants were the 20, 8th grade secondary school students. Thus, the results cannot be generalized to other grades. Secondly, we used www.plus.google.com as a platform. On this platform, we *Web 2.0 tools* like blogs, mind mapping tools etc. Some other tools could be used to find different results.

CHAPTER II

REVIEW OF LITERATURE

2.1.What is Thinking and Why Develop It?

A plenty of our daily activities involve somehow *thinking*. For example, we decide what to wear in the morning, which route to take to arrive our destinations, which duties to perform in which order when we want to do something, what to have at lunch, and so on. All start with *thinking*, but we have a question in mind what *thinking* is and it may come as no surprise that different researchers and they all claim to study the phenomenon of *thinking*.

Many cultures for hundreds of thousands of years have addressed this topic. According to Monin (1992), *thinking* is a process that can be found in some of complex system and includes gathering information, memorizing the information, the subconscious, and consciousness. Baron (1993) states another definition, *thinking* is a mental activity that is to be suspicious what to do, what to believe, or what to desire or seek. Therefore, *thinking* is transferring the objects and events of the world into symbols. In line with this, the brain does many functions like inferring meaning from symbols, establishing hypothesis, calculating and producing the symbols.

Thinking about what to believe is also a part of learning. Paul and Elder (2004) highlight the importance of *thinking* in education. They state, “Shoddy *thinking* is costly, both in money and in quality of life. Excellence in thought, however, must be systematically cultivated” (p. 1). That is why, it is significant that *thinking* is valued and made important. We need to give time for students to think. Teachers should pose questions and we should expect them to come up with immediate answers. If we want higher quality learning, then students need time for more considered responses.

2.2.Thinking Skills

Thinking skills has several divisions. Most people divide *thinking skills* into two parts, i.e., macro-thinking strategies and micro-thinking strategies. The macro-strategies include critical and creative thinking as well as problem solving, decision-making, and

information processing. The micro-strategies, on the other hand, are used to process information within the macro-strategies. They are connected with a cognitive taxonomy or learning hierarchy. For example, cognitive taxonomy made by Bloom (1956), begins with knowledge, comprehension, and application that are lower-order skills and moves to analysis, synthesis, and evaluation that are higher-order skills. Another taxonomy, that is behavioral rather than cognitive, is Gagne's (1977) "conditions of learning." Gagne's "conditions of learning" are divided into eight levels, including signal learning, stimulus-response learning, chaining, verbal association that are lower-order skills and it moves to rule learning and problem solving that are higher-order skills.

2.2.1 Critical Thinking (CT)

CT is a skill that should be applied to all aspects of education. Students need to be able to think critically about whatever they use in their studies; they need to be critical, they should be capable of making arguments and looking from different perspectives and can express their own opinions based on sound judgments. *CT* is a widespread academic literature term that is not clearly or comprehensively defined. The definitions that are available in various sources are quite diverse. Although a variety of definitions has been suggested, most of them include the same underlying principles: it refers to the use of cognitive skills or strategies that increase the probability of a desirable outcome. Fisher (1995) contends, "*Critical thinking* describes *how* something is being thought about" (p.64). According to Scriven and Paul (2007), it is "the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action" (p. 1).

McGuinness (2000) in her ACT's programme highlights how thinking critically includes learning how to scrutinize and examine one's own thinking and to take a skeptical role. By doing so, students need to control the reliability of sources, to evaluate the logic of ideas and to examine cause and effect. The process of identifying the authenticity, accuracy or value is characterized by the ability to search for reasons, and alternative, perceive the sum of situation and alter one's view based on evidence.

This is called as logical or analytical thinking. McGuinness et al. (2003) denote that for students need:

- Developing habits of mind or dispositions for thinking critically;
- To be open minded and questioning about conclusions:
- To examine reasons for and against argument and not to ‘jump to conclusions’:
- To show concern for accuracy in using evidence and be ready to check the reliability of their sources;
- To practice relating reasons to conclusions for causal reasoning, making predictions, using evidence and drawing generalizations.

2.2.2. Problem Solving

Problem solving is available every corner of human activities and is a common indicator in fields such as the sciences, law, education, business, sports, medicine, industry, literature and so an. and as if there are not enough problems in our lives it could be hard survive in our professional and personal lives. Human, apes, and many other mammals are curious types who, for reason seemingly related to survive, seek stimulation and resolve conflict through a lifetime of creative, intelligent *problem solving*. We deal with *problem solving* when we need to overcome an obstacle so that we can answer a question or to achieve a goal. If we can quickly get an answer from memory, we do not have a problem. If we cannot get an immediate answer, then we have a problem to be solved.

As clearly stated by Ellis (2005), *problem solving* is just one umbrella term for Thinking skills that teachers use to teach students how to think. Other means of developing Thinking skills are problem-based learning, critical thinking skills, creative thinking skills, decision-making, conceptualizing, and information processing. Another definition is made by Azizi (2005), “*Problem solving* is thinking that is directed toward the solving of a specific problem that involves both the formation of responses and the selection among possible responses” (p. 2). Kirby and Goodpaster (2002) defines *problem solving* as the utilization of *critical thinking* to achieve the goals and personal harmony that are significant in a person’s personal and professional lives.

2.2.3. Decision-Making

Decisions are made at all levels of life. Everyone makes decisions about their health care, such as whether to brush their teeth, smoke, or take a pill, and most of us must make difficult decisions, such as whether to undergo a surgery and so on. A principal makes decisions concerning a school district's goals and strategies and decisions concerning those goals and strategies to accomplish them. Department heads and team leaders, teachers make curricular and operational decisions to carry out the day-to-day activities of a department or a class. Finally, Students make decisions in their classrooms, too.

According to Lunenberg, "*Decision making* is a process involving choices. The process generally consists of several steps: identifying problems, generating alternatives, evaluating alternatives, choosing an alternative, implementing the decision, and evaluating decision effectiveness" (2010, p.11). *Decision making* is a process of making a choice from a number of alternatives to achieve a desired result (Eisenfuhr, 2011). This definition has several key elements. First, *Decision-Making* is making a choice from many alternatives. Second, a process covers more than mere final choice from options. Finally, the "desired result" involves a purpose or goal resulting from the mental activity that the decision maker deals with for final decision.

Understanding of the *Decision-Making* processes can help us in preventing bad decisions and in stimulating the good ones. Nevertheless, there are many factors for our decisions and we do not know each one or their relationships.

2.2.4. Creative Thinking

The significance of *creative thinking* needs no emphasis. In every scope of life, you will have a competitive advantage if you come up with new ideas. Therefore, *creative thinking* can lead you into new paths of creative activity. It can enrich your life. According to Michalko (2000, quoted in Marapodi, 2003), *creativity* is something that "deviates from past experiences and procedures." Howard-Jones defines it as "*Creativity* is most easily considered in terms of outcomes: e.g. dramatic improvisations and artistic artefacts, but also innovative business ideas and scientific breakthroughs.

Such outcomes usually share the two common characteristics of being both original and appropriate" (2008, p.6).

In Webster's New World Dictionary, the word "*creative*" has three interrelated meanings: 1) creating or able to create, 2) having or showing imagination and artistic or intellectual inventiveness, and 3) stimulating the imagination and inventive powers. According to The Melbourne Declaration on Educational Goals for Young Australians (2008 - MCEETYA):

Critical and creative thinking are fundamental to students becoming successful learners. Thinking that is productive, purposeful and intentional is at the centre of effective learning. By applying a sequence of thinking skills, students develop an increasingly sophisticated understanding of the processes they can employ whenever they encounter problems, unfamiliar information and new ideas. In addition, the progressive development of knowledge about thinking and the practice of using thinking strategies can increase students' motivation for, and management of, their own learning. They become more confident and autonomous problem-solvers and thinkers (p.1).

Creative and critical thinking skills are considered essential for students (Crane, 1983). Scriven (1979) states that, "Critical skills go hand in hand with creative ones". If we realize that there is a relationship between these two constructs, then we will be able to enhance the capacity of their students to utilize both creative and *CT*.

2.2.5. Metacognition

Over last 40 years, *metacognition* has become one of the fields of cognitive developmental research. Research activity in *metacognition* started with John Flavell who is considered as the "father of the field" and following the steps, a notable amount of research about *metacognition* can be registered. *Metacognition* also includes self-regulation, the ability to control one's learning: to plan, monitor success, and fix errors

when necessary for effective purposeful learning. *Metacognition* also refers to the ability to reflect on one's own performance.

According to Dawson, T.L, "*Metacognition* is thinking about thinking. Metacognitive skills are usually conceptualized as an interrelated set of competencies for learning and thinking, and include many of the skills required for active learning, *critical thinking*, reflective judgment, problem solving, and decision-making" (2008, p.2).

This umbrella term of has uncover new terms through the years: Metacognitive beliefs, metacognitive awareness, metacognitive experiences, metacognitive knowledge, feeling of knowing, judgment of learning, theory of mind, metamemory, metacognitive skills, executive skills, higher-order skills, metacomponents, comprehension monitoring, learning strategies, heuristic strategies, and self-regulation are the terms we usually link up with *metacognition*. According to Dewey:

As long as our activity glides smoothly along from one thing to another ... there is no call for reflection. Difficulty or obstruction in the way of reaching a belief brings us, however, to a pause. In the suspense of uncertainty, we metaphorically climb a tree; we try to find some standpoint from which we may survey additional facts and, getting a more commanding view of the situation, decide how the facts stand related to one another. (1933, p. 14).

Lovett M.C also defines *metacognition* as "*Metacognition* involves thinking about one's own cognitive processes, thinking about one's thinking, learning, reasoning, *problem solving*. *Metacognition* is essential for effective learning in complex situations (2008, p.5).

2.2.6. Other Thinking Skills

Thinking is the ability to solve a problem and put a reasonable explanation forward for the solution. Good thinkers are good problem solvers, they can withhold making decisions before they have all enough information, they do not scare of the

unknown. Furthermore, good thinkers have strong metacognitive skills. They are able to "think about their thinking." Poor thinkers, on the other hand, limit their thinking. In addition to the thinking skills mentioned above, there are some other thinking skills such as *inference*, *making predictions*, *comparing and contrasting*, *mind mapping*, *reasoning*, *sequencing enquiry* and *evaluation* that are important for CT.

According to Pearson Education: "*Inferences* are implied through clues that lead the reader to make assumptions and draw conclusions. For example, instead of making a direct statement, "These people are rich and influential," an author could imply that idea by describing a palatial residence, expensive heirlooms, and prominent friends (2010, p.440). In the booklets "On Target" created by ESA, *Inferential thinking* is often called "reading between the lines." It is like mathematics in a way, because the answer is not given in an arithmetic problem. One has to figure out the correct answer from the information that is given. *Inferring* in reading – and in life itself – is figuring out answers from the facts to which we have access. According to the National Council of Teachers of English, *inference* is a powerful way of thinking and an important 21st century skill for all students to use and develop across the curriculum. According to Base "*Inference* means readers go beyond surface understandings and delve deeper into meanings of text. In other words, they must know what text says and what text means." (2006, p.17)

A *prediction* is a supposition concerning what might happen next or later. Think about clues in the story or passage, and then make your best supposition about what might happen next.

Comparison and contrasting are other thinking skills that are important for CT. A comparison examines how two or more things are similar. A contrast looks at how two or more things are different.

Mind Mapping is a creative way of recording ideas that was popularized by the author and psychologist Tony Buzan in the early 1970s. Buzan pointed out that the normal linear methods of taking notes and recording ideas do not make efficient use of the brain's powers. According to Davies,

Mind mapping allows students to imagine and explore associations between concepts; *concept mapping* allows students to understand the relationships between concepts and hence understand those concepts themselves and the domain to which they belong; *argument mapping* allows students to display inferential connections between propositions and contentions, and to evaluate them in terms of validity of argument structure and the soundness of argument premises (2010: p.2).

Reasoning refers to the process of drawing conclusions or inferences from information. *Reasoning* always entails going further the information. (Bruner, 1957). *Reasoning* is very crucial in students' education. *Reasoning* may also help students in other lessons; students not only have knowledge, but also utilize this knowledge for interpreting phenomena from different things.

Sequencing is the process of putting events, ideas, and objects in a logical order. Why is *sequencing* important? We sequence all day long—we divide our time into what we need to do first, second, and last; we understand events in our lives by understanding the order in which they occur. For some students, *sequencing* can be a hard concept to grasp, especially when they are trying to tell a story. Using good key words like “first,” “next,” “then,” and “finally,” cue your child as to what is coming next.

Inquiry refers to the work scientists do when they study the natural world, proposing explanations that include evidence gathered from the world around them. The term also includes the activities of students—such as posing questions, planning investigations, and reviewing what is already known in light of experimental evidence—that mirror what scientists do. “*Inquiry* requires identifying assumptions, use of critical and logical thinking, and consideration of alternative explanations” (National Research Council, 2000, p.23).

Evaluation is the collection of, analysis and interpretation of information about any aspect of a programme of education or training as part of a recognised process of

judging its effectiveness, its efficiency and any other outcomes it may have" (Mary Thorpe in "Handbook of Education Technology", published by Ellington, Percival and Race in 1998). According to Twersky and Lindholm, "*Evaluation* is an independent, systematic investigation into how, why, and to what extent objectives or goals are achieved. It can help the Foundation answer key questions about grants, clusters of grants, components, initiatives, or strategy" (2012, p.3).

Marzano, et al. (1988) provided a set of eight "core" thinking skills that are cognitive: *Focusing skills* - attending to selected bits and pieces of information and ignoring others information; *gathering skills* - skills used to bring to consciousness the substance or content to be used for cognitive processing; *remembering skills* - activities or strategies that are used to store information in long-term memory and to retrieve it; *organizing skills* - arranging information so it can be understood or presented more effectively; *analyzing skills* - clarifying existing information by examining parts and relationships; *generating skills* - using prior knowledge to add information beyond what is given; *integrating skills* - putting together the relevant parts or aspects of a solution; and *evaluating skills* - involving assessing the reasonableness and quality of ideas.

2.3 Historical background of CT

The intellectual and philosophical roots of *CT* trace back to the Greek philosopher, Socrates 2,500 years ago and he discovered by probing questions that people could not justify their confident arguments. Socrates fended thinking unreservedly and establishing the significance of seeking evidence, scrutinizing reasons and assumptions, and identifying implications of actions. Socrates is usually regarded as the establisher of *CT*. He established the significance of asking thorough questions that push people into thinking. He also established significance of seeking evidence, closely examining reasoning and assumptions, analyzing basic concepts, and tracing out implications not only of what is said but of what is done as well. His method of inquiry known as "Socratic Questioning" is the best-known *CT* strategy. He annoyed the authorities and they were embarrassed by the questions he asked, and they dragged him to death in 399 B.C.

At the time of Middle Ages and the Renaissance, Franciscan scholars, John Duns Scotus including William of Ockham kept going to contribute to the ongoing conversations on *CT*. Thomas Aquinas was another important theologian and philosopher of the middle ages. In his book “Summa Theologica” he presented his theory on thinking. Aquina’s contributions contained writings about developing his own thinking by anticipating what the readers might argue against him, and then answering imagined criticisms that his readers would develop for him to answer.

At the time of 15th and 16th centuries, Francis Bacon and Thomas More from England, and René Descartes from France were the scholars who kept going *CT* conversations. Bacon established the foundation for modern science with an emphasis on the empirical approach. Science would not be based on careful observations any longer. Furthermore, in his manuscript titled “Utopia”, he criticized English politics. Finally, Descartes wrote “Rules for the Direction of the Mind” in which he illustrated the using that he titled as “Systematic Doubt”. He said that every kind of thinking should be questioned, doubted, and tested. This is exactly what the contemporary studies highlight for the cognitive process of *CT*.

In the Eighteenth Century, scholars contributed to *CT* literature and functions and developed the comprehension of the impetus of critical thought and of its subject areas. The consequences of these exertions aroused a very important study: “Adam Smith's Wealth of Nations” In the same years, when *CT* cut across the traditional era of loyalty to the king, it brought the Declaration of Independence into light. In line with this reason, Kant produced: “Critique of Pure Reason”. Aside from the scientific studies, critical thought can also be seen in a plenty of fields of arts and literature. Aesthetic, as a science, gave way artist to build a strong bridge between the personal ones and universal themes. In general, this century can be regarded as the wide use of *CT* in science and philosophy thanks to the previous studies as mentioned in preceding paragraphs.

During the 19th Century, *CT* was broadened even further into the social life by Comte and Spencer. By searching social and economic critique of Karl Marx is an exponent of an employment of *CT* to the problems of capitalism. Once applied to the

history of culture and the basement of biological life, it paved the way for Darwin's Descent of Man.

In the 20th century, John Dewey wrote, “How we Think” and “Quest for Certainty”. He focused on consequences and significance of applying *CT* to real-world issues. He also introduced more recent influences in the *CT* arena. Dewey (1909) called *CT* “reflective thinking” and defined it as “an active, persistent, and careful consideration of a belief or supposed form of knowledge in the light of the grounds which support it and the further conclusions to which it tends”

Over the past 50 years, debates on *CT* have started with behaviorist view and continued with developmental, cognitive, and educational views. During the behaviorist view, it is believed that if a student can do a certain behavior, then thinking will follow the behavior accordingly. The behavior is the proof of internalization that can be transferred to new contexts. Developmental scientists believe that *CT* relies on the physical and emotional maturity of the student and those students’ steps through stages where they can perform certain cognitive tasks.

Until the mid1980s, the *CT* act progressed merely with a small group of educators suggesting a shift from a didactic paradigm of knowledge and learning to a Socratic, critically reflective paradigm.

2.4 Definitions of CT

Most people are followers of authority: most do not question, are not curious. Most people, therefore, do not think for themselves, but rely on others to think for them. Most people, therefore, do not think critically. ~ (Steven D. Schafersman, 1991) ~

It is not an easy task to make an exact definition of *CT*, as there is a large quantity of definitions.

1. "Active, persistent and careful consideration of a belief or supposed form of knowledge in light of the grounds that support it, and the further conclusions to which it tends" (John Dewey, 1909).
2. Glaser (1941) believed *critical thinking* is the "attitude of being disposed to consider in a thoughtful way the problems and subjects that come within the range of one's experiences; knowledge of the methods of logical inquiry and reasoning; and some skill in applying those methods"
3. According to Chafee (1988), *critical thinking* is "our active, purposeful, and organized efforts to make sense of our world by carefully examining our thinking, and the thinking of others, in order to clarify and improve our understanding"
4. Another definition is stated by Hudgins and Edeman (1988), "*Critical thinking* is a complex intellectual skill that is consciously, deliberately, and consistently applied by a thinker when he/she confronted by a body of data from which a conclusion or solution must be derived, or by an argument of a third party who wishes the thinker to accept a predetermined interpretation, point of view, or conclusion" In this light, we encounter *critical thinking* in a large number situations, so have to give a special importance to this high thinking skill in every scope of life and especially in education.
5. Facione (1990) describes *critical thinking* as "purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or conceptual considerations upon which that judgment is based"
6. Schafersman (1991) noted that "*Critical thinking* means correct thinking in the pursuit of relevant and reliable knowledge about the world. Another way to describe it is reasonable, reflective, responsible, and skillful thinking that is focused on deciding what to believe or do."

7. According to Elder and Paul (1994), “*Critical thinking* is best understood as the ability of thinkers to take charge of their own thinking. This requires that they develop sound criteria and standards for analyzing and assessing their own thinking and routinely use those criteria and standards to improve its quality.”
8. Angelo (1995) defines *critical thinking* as the intentional application of rational, higher order thinking skills, such as analysis, synthesis, problem recognition and *problem solving*, inference, and evaluation.
9. Richard Paul (1995) defined *critical thinking* as “A unique and purposeful thinking in which the thinker systematically and habitually imposes criteria and intellectual standards upon the thinking, taking charge of the construction of thinking, guiding the construction of the thinking according to [*critical thinking*] standards, and assessing the effectiveness of the thinking according to the purpose, criteria, and the standards [of thinking] (p. 21).
10. Scriven (1996) noted that *critical thinking* is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action.
11. Mayfield (1997) defines *critical thinking* as consciously observing, analyzing, reasoning, and evaluating according to proven standards.
12. Halpern (1999) underline this definition: “*Critical thinking* refers to the use of cognitive skills or strategies that increase the probability of a desirable outcome. *Critical thinking* is purposeful, reasoned, and goal-directed. It is the kind of thinking involved in solving problems, formulating inferences, calculating likelihoods, and making decisions.”
13. According to Paul and Elder (2006), “*Critical thinking* is, in short, self-directed, self-disciplined, self-monitored, and self-corrective thinking. It requires rigorous

standards of excellence and mindful command of their use. It entails effective communication and *problem solving* abilities and a commitment to overcome our native *egocentrism* and *sociocentrism*.

14. As stated by Moore and Parker (2009), *critical thinking* is the careful application of reason in the determination of whether a claim is true.
15. Lipman (2003) maintains that *critical thinking* relies on criteria, is self correcting, sensitive to context, and provides intellectual empowerment.
16. “*Critical thinking* in any area involves being able to pursue one’s questions through self-directed search and interrogation of knowledge, a sense that knowledge is contestable, and being able to present evidence to support ones’ arguments” (Pithers and Soden, 2000 p. 239).
17. Eggen and Kauchak (2001) define *critical thinking* as the ability and disposition to make and assess conclusions based on evidence.

2.5 CT Skills vs. Dispositions

A skill is something a person can do, like reading, swimming, singing, or thinking. Skills are somehow developed within the range of abilities. A person may have the ability to play the violin, but not have developed his or her skill at playing the violin. A disposition is a habitual inclination, like being trustworthy, open-minded, or, on the negative side, biased, imprudent, or cowardly. Some individuals know about staying healthy through exercising and eating, but they do not always act in this way, and accordingly, one common theme that emerges throughout the literature on definitions of *CT* is an emphasis on the link from theory to practice. In line with this, Norris (2003) states that an individual can have the ability to think critically and not exercise it under certain circumstances. Under those circumstances, skills are not solely enough to enable a person to think critically; if a person does not have the disposition, there will be no *CT*. Equally, disposition is not sufficient either; if a person is motivated to think critically but does not know how to, there will be no *CT*. *CT* requires the activation of

both aspects. Halpern (1999) states "*Critical thinking* is more than the successful use of the right skill in an appropriate context. It is also an attitude or disposition to recognize when a skill is needed and the willingness to exert the mental effort needed to apply it." (p.19) According to Zoller et al. (2000), a student's disposition to think critically is a necessary precondition for *critical thinking* and greatly affects *critical thinking* capability.

Seven elements or aspects of the overall disposition toward *CT* were proposed when statistical factor analytic techniques were administered in the initial development of the California Critical Thinking Inventory. In their positive manifestations, these seven characterological attributes Peter A. Facione named them as truth-seeking, open-mindedness, analyticity, systematicity, *CT* self-confidence, inquisitiveness, and maturity of judgment (Facione and Facione, 1992).

Collegiate Learning Assessment (CLA) Project of the Council for Aid to Education has come up with a list of skills that covers almost everything that is important in *CT*.

- Determining what information is or is not pertinent;
- Distinguishing between rational claims and emotional ones;
- Separating fact from opinion;
- Recognizing the ways in which evidence might be limited or compromised;
- Spotting deception and holes in the arguments of others;
- Presenting his /her own analysis of the data or information;
- Recognizing logical flaws in arguments;
- Drawing connections between discrete sources of data and information;
- Attending to contradictory, inadequate, or ambiguous information;
- Constructing cogent arguments rooted in data rather than opinion;
- Selecting the strongest set of supporting data;
- Avoiding overstated conclusions;
- Identifying holes in the evidence and suggest additional information to collect;
- Recognizing that a problem may have no clear answer or single solution;
- Proposing other options and weigh them in the decision;

- Considering all stakeholders or affected parties in suggesting a course of action;
- Articulating the argument and the context for that argument;
- Using evidence to defend the argument correctly and precisely;
- Organizing the argument logically and cohesively;
- Avoiding extraneous elements in an argument's development;
- Presenting evidence in an order that contributes to a persuasive argument

According to Giancarlo and Facione (2001), seven dispositions have been directly connected with *critical thinking*: Truthseeking - a measure of intellectual honesty; Open-mindedness - a measure of tolerance for new ideas and viewpoints different from one's own; Analyticity - a measure of awareness to potential problems; Systematicity – a measure of the tendency to be organized, focused, and motivated; Thinking Self-Confidence - a measure of trust in one's own thought processes and the ability to lead others in decision-making; Inquisitiveness - a measure of intellectual curiosity; and Maturity of Judgment - a measure of one's ability to recognize the complexity of problems and make timely decisions, even when the outcome is uncertain.

Paul, Binker et al. (1990) have developed a list of 35 dimensions of critical thought:

A. Affective Strategies

S-1 thinking independently

S-2 developing insight into egocentricity or sociocentricity

S-3 exercising fair-mindedness

S-4 exploring thoughts underlying feelings and feelings underlying thoughts

S-5 developing intellectual humility and suspending judgment

S-6 developing intellectual courage

S-7 developing intellectual good faith or integrity

S-8 developing intellectual perseverance

S-9 developing confidence in reason

B. Cognitive Strategies--Macro-Abilities

S-10 refining generalizations and avoiding oversimplifications

S-11 comparing analogous situations: transferring insights to new contexts

S-12 developing one's perspective: creating or exploring beliefs, arguments, or theories

S-13 clarifying issues, conclusions, or beliefs

S-14 clarifying and analyzing the meanings of words or phrases

S-15 developing criteria for evaluation: clarifying values and standards

S-16 evaluating the credibility of sources of information

S-17 questioning deeply: raising and pursuing root or significant questions

S-18 analyzing or evaluating arguments, interpretations, beliefs, or theories

S-19 generating or assessing solutions

S-20 analyzing or evaluating actions or policies

S-21 reading critically: clarifying or critiquing texts

S-22 listening critically: the art of silent dialogue

S-23 making interdisciplinary connections

S-24 practicing Socratic discussion: clarifying and questioning beliefs, theories, or perspectives

S-25 reasoning dialogically: comparing perspectives, interpretations, or theories

S-26 reasoning dialectically: evaluating perspectives, interpretations, or theories

C. Cognitive Strategies--Micro-Skills

S-27 comparing and contrasting ideals with actual practice

S-28 thinking precisely about thinking: using critical vocabulary

S-29 noting significant similarities and differences

S-30 examining or evaluating assumptions

S-31 distinguishing relevant from irrelevant facts

S-32 making plausible inferences, predictions, or interpretations

S-33 evaluating evidence and alleged facts

S-34 recognizing contradictions

S-35 exploring implications and consequences" (p. 56)

Another group of scholars has proposed taxonomies of high-level thinking dispositions including dispositions. For instance, Robert Ennis currently recognizes fourteen separate *CT* dispositions (Ennis, 1994). According to Ennis, critical thinkers have a tendency to:

- Being clear about the intended meaning of what is said, written, or otherwise communicated

- Determining and maintain focus on, the conclusion or question
- Taking the total situation into account
- Seeking and offer reasons
- Trying to be well-informed
- Looking for alternatives
- Seeking as much precision as the situation requires
- Trying to be reflectively aware of one's own basic beliefs
- Being open-minded: seriously consider other points of view and be willing to consider changing one's own position
- Withholding judgment when the evidence and reasons are sufficient to do so
- Using one's *critical thinking* abilities
- Being careful
- Taking into account the feelings and thoughts of other people

In a comprehensive review, Beyer (1988) suggested that *CT* entails a set of skills and approaches to be operative. Beyer's *CT* skills are:

- Distinguishing between verifiable facts and value claims
- Distinguishing relevant from irrelevant information, claims, and reasons
- Determining factual accuracy of a statement
- Determining credibility of a source
- Identifying ambiguous claims or arguments
- Identifying unstated assumptions
- Detecting bias
- Identifying logical fallacies
- Recognizing logical inconsistencies in a line of reasoning
- Determining the strength of an argument or claim

2.6. Why CT counts?

Everyone thinks; it is our nature to do so, but much of our thinking, left to itself, is biased, distorted, partial, uninformed or down-right prejudiced. Yet the quality of our life and that of what we produce, make, or build depends precisely on the quality of our thought. According to Paul and Elder, "Shoddy thinking is costly, both in money and in

quality of life. Excellence in thought, however, must be systematically cultivated" (2006, p.1). Oliver and Utermohlen (1995) see students as passive receptors of information. Through technology, the quantity of information available today is very large. This information explosion is pregnant to expand in the future. Students need guiding to orient information not to passively accept it. Students need to improve and effectively administer *critical thinking* skills to their educational lives, to the complex problems that they will encounter, and to the critical options, they will be urged to make because of the information explosion and other rapid technological changes.

CT involves questioning. It is important to teach students how to ask good questions, to think critically, in order to continue the advancement of the very fields we are teaching. "Every field stays alive only to the extent that fresh questions are generated and taken seriously" (Center for *CT*, 1996a).

2.7. Characteristics of a Critical Thinker

According to Zhang (2003) "The ideal critical thinker is habitually inquisitive, well-informed, trustful of reason, open-minded, flexible, fair-minded in evaluation, honest in facing personal biases, prudent in making judgments, willing to reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the selection of criteria, focused in inquiry, and persistent in seeking results which are as precise as the subject and the circumstances the inquiry permit" (p. 1).

In *Peak Performance* (1997), S. Ferrett listed the primary attributes of a critical thinker below. These qualities can support your students achieve throughout their lives:

- Asking pertinent questions
- Assessing statements and arguments
- Being able to admit a lack of understanding or information
- Having a sense of curiosity.
- Being interested in finding new solutions
- Being able to clearly define a set of criteria for analyzing ideas

- Being willing to examine beliefs, assumptions, and opinions and weigh them against facts
- Listening carefully to others and are able to give feedback
- Suspending judgment until all facts have been gathered and considered
- Looking for evidence to support assumptions and beliefs
- Being able to adjust opinions when new facts are found
- Looking for proof
- Examining problems closely
- Being able to reject information that is incorrect or irrelevant
- Seeing that *critical thinking* is a lifelong process of self-assessment

According to Paul (1993), the critical thinker will routinely ask the following questions:

- What is the purpose of my thinking (goal/objective)?
- What precise question (problem) am I trying to answer?
- Within what point of view (perspective) am I thinking?
- What concepts or ideas are central to my thinking?
- What am I taking for granted, what assumptions am I making?
- What information am I using (data, facts, observation)?
- How am I interpreting that information?
- What conclusions am I coming to?
- If I accept the conclusions, what are the implications? What would the consequence be if I put my thoughts into action?

For each element, the thinker must consider standards that shed light on the effectiveness of his/her thinking (Paul, 1993, pp 20-23) (Gambrill and Gibbs, 2009).

2.8 Barriers to CT

Many people can find it difficult to order their thoughts in a logical, consistent, and reasoned way. Barriers vary from person to person, but they can usually be

overcome. Barriers to *CT* can harm, and even seriously injure *CT* concepts. According to Bassham et al. (2008, p.10), there are common barriers to *CT*:

- Lack of relevant background information
- Poor reading skills
- Bias
- Prejudice
- Superstition
- *Egocentrism* (self-centered thinking)
- Sociocentrism (group-centered thinking)
- Peer pressure
- Conformism
- Provincialism
- Narrow-mindedness
- Closed-mindedness
- Distrust in reason
- Relativistic thinking
- Stereotyping
- Unwarranted assumptions
- Scape-goating
- Rationalization
- Denial
- Wishful thinking
- Short-term thinking
- Selective perception
- Selective memory
- Overpowering emotions
- Self-deception
- Face-saving
- Fear of change

According to Pinder (2007) there are eight barriers. To keep in mind these eight, here is an acronym for them – CAT MAGIC.

1. Confirmation bias – bending evidence to fit one’s beliefs. A sensible way to overcome this natural temptation of confirmation bias is to actively look for information.
2. Attribution (or self-serving) bias – the belief that good things happen to us because of internal factors and bad things happen to us because of external factors
3. Trusting testimonial evidence – the fallacy of believing information from somebody, even if he or she has no evidence to support his or her statement.
4. Memory lapses – while this barrier seems on the surface to be fairly self-explanatory (everybody has gaps in memory), its danger lies in the common human trait of filling in the memory gaps with information that may or may not be true.
5. Accepting authority without question - this *critical thinking* failure continues to manifest itself today in the blind acceptance to people with questionable degrees or expertise.
6. Generalizing from too few observations – a common practice where a small group of people in a group determine the direction.
7. Ignorance and the failure to admit it – a belief that leads us to information and harsh speculation.
8. Coincidence – the mistaken belief that pieces of information have causality when, in fact, they are the result of a pure coincidence or the law of large numbers.

2.8.1. Egocentrism

According to Bassham et al., “*Egocentrism* is the tendency to see reality as centered on oneself. Egocentrics are selfish, self-absorbed people who view their interests, ideas, and values as superior to everyone else’s.” They also state that *egocentrism* manifests itself in two ways: self-interested thinking (The tendency to accept and defend beliefs that harmonize with one’s self-interest) and self-serving bias (Tendency to overrate oneself). (2008, p.11)

Those kinds of individuals are self-centered and think over their interests. This impedes *CT*. It is hard for many people to identify this characteristic within themselves. The egocentric person is not usually aware of his or her thinking. There are many successful business people, lawyers, etc. who are egocentric thinkers. They are closed-

minded to the thoughts and ideas of others. This is a huge danger for *CT* abilities. Open-minded thinking is one of the fundamental *CT* skills. The best defense to minimizing thinking egocentrically is to be aware of it and to be mindful of the needs of others.

2.8.2.Sociocentrism

Sonima, K. defines *sociocentrism* as: “Following the thought patterns common to a group, society or culture as well as thinking in favour of a particular group or community without judging its credibility is a barrier to *critical thinking*.” (2011, p.6).

Bassham et al. (2008), states that “*Sociocentrism* is group-centered thinking. Just as egocentrism can hinder rational thinking by focusing excessively on the self, so *sociocentrism* can hinder rational thinking by focusing excessively on the group. *Sociocentrism* can distort *CT* in many ways. Two of the most important are group bias and conformism. Group bias is the tendency to see one’s own group (nation, tribe, sect, peer group, and the like) as being inherently better than others, whereas conformism is Conformism refers to our tendency to follow the crowd—that is, to conform (often unthinkingly) to authority or to group standards of conduct and belief (p.13).

Each of us is unique in terms of age, race, genes, gender, culture, family, friends, and a wide range of other factors and they have a dramatic effect on how we view the world and the people we interact with. *CT* is not there when the world and people in it are viewed from biased conditioning without learning the needs and desires of others. Sometimes, it may not be possible to understand others, but open-minded *CT* can enable you to listen, learn and empathize. This helps you understand others better. For instance, just because of someone is devoted to any religion, that does not mean he or she cannot accept the beliefs of others. It is true for any religious, social or political belief system. Most probably, lack of acceptance is one of the biggest problems in the

world today. In another word; race, religion, culture, and a wide range of other factors can bring us together or tear us apart.

2.8.3. Unwarranted Assumptions and Stereotypes

Haskins, G.R. (2006) states that assumptions are necessarily reasons implied in an argument that are accepted to be true. According to Bassham et al. (2008), “An assumption is something we take for granted, something we believe to be true without any proof or conclusive evidence.” (p.16) Almost everything we think and do rely on assumptions. They further contended that *unwarranted assumptions* are unreasonable. An *unwarranted assumption* is something that is accepted without any good reason. Such assumptions often block our discerning things clearly. For example, our belief for someone’s wearing style may lead us to think that he or she is rich.

They also emphasize that one of the most common types of *unwarranted assumptions* is a *stereotype*. It comes from the printing press era, when plates, or *stereotypes*, were used to produce indistinguishable copies of a page. Typically, *stereotypes* pass through a process known as hasty generalization, in which one draws a result from a large class of things.

2.8.4. Relativistic Thinking

Relativism is the view that truth is a matter of opinion. It is a theory that knowledge is relative to the limited nature of the mind and the conditions of knowing or a view that ethical truths depend on the individuals and groups holding them (Merriam-Webster.com) According to Bassham et al:

Relativism is the view that truth is a matter of opinion. There are two popular forms of *relativism*: *subjectivism* and *cultural relativism*. *Subjectivism* is the view that truth is a matter of individual opinion. The other common form of relativism is *cultural relativism*. This is the view that truth is a matter of social or cultural opinion. In other

words, *cultural relativism* is the view that what is true for person A is what person A's culture or society believes is true (2008, p.19).

2.8.5. Teaching Trend

"Teachers complain about students who arrive at school with strong convictions but not enough knowledge to argue persuasively for their beliefs. ... Having opinions without knowledge is not of much value; not knowing the difference between them is a positive indicator of ignorance." (Diane Ravitch, The Schools We Deserve)

Landsman and Gorski, (2007) suggest that the current educational trend to standardize curricula and focus on test scores undermines instructors' ability to address *critical thinking* in the classroom. Therefore, "*teaching trend*" hinder the learning process instead of a student-centered instruction and give attention to the content. If the focus is on learning, students must be free to explore content, analyze resources, and apply information. However, students are not taught to think or learn freely, and they rarely "pick up" these skills on their own. According to Mandernach:

Barriers in teaching *critical thinking* are often the result of practical constraints of a traditional classroom. Specifically, instructors have only a limited amount of contact time with students, and the face-to-face classroom environment mandates that instruction be somewhat generalized to be applicable, understandable, and paced to simultaneously meet the needs of a large number of diverse students. This type of time-limited, group setting often dictates a more didactic teaching strategy in which the instructor leads students through a pre-arranged set of content material with minimal time spent on individual interaction or critical analysis of the information presented (2006, p.42).

2.9. CT and Constructivism

CT has always been an appealing phenomenon for theories. It has been reinforced by traditional theories that include *progressivism* and *idealism* and contemporary ones such as *cognitive information processing* and *Bloom's Taxonomy* and *constructivism* – a new trend in education that can play a dynamic role in the relationship between how teachers teach and how students learn.

Innovative ideas on teaching and learning have always been progressed over the past few decades, and traditional views have always been difficult to alter. Such views often regard students as “empty vessels” to be loaded with full of information. However, after years of implementation, *behaviorism* started to disappoint educators and fell short of impression within this complex system of the classroom, left teachers feeling helpless, and swindled by a system that placed the guilt for students' failure to learn. After a while, the early 1990s underwent a shift for instructional designers as a first challenge to positivist or objectivist psychology. In 1991, a special attention of educational technology was dedicated to *constructivism*. Students are now seen as learners with their unique backgrounds, experience, conceptual understanding, learning styles and personal circumstances; and teachers have the role of becoming learning facilitators rather than the owners of knowledge.

As *constructivism* gives special emphasis on high order thinking skills and current issues, there has been an inseparable bond between *CT* and *constructivism*. According to Wilson, (2001), “*Constructivist teaching* focuses on problem solving and *critical thinking*, and higher-order cognitive outcomes. These higher forms of learning, while challenging to accomplish in instruction, are critical objectives for education and training, and closer to the demands of expertise in the “real world” (p.4). It can be practiced by encouraging critical analysis in activities. Schools, teachers and students can be encouraged to move from traditional schooling standards to *constructive thinking*. Bentley et al. contended that “*Critical constructivism* places emphasis on reflection, imagination, social consciousness, and democratic citizenship, and is recommended as a central theoretical referent for all educational practitioners. (2011, p. 2), Lunenberg F.C. states that “Classroom teachers at all levels should consider *critical*

thinking and *constructivism* that offer real promise for improving the achievement of all students in the core subject areas." (2011, p. 2). Therefore, *CT* plays a key role in education with *constructivism*. Nanjappa, A. and Michael, M.G. emphasize that: Cognitive tools, along with *constructivist learning* environments, guide and activate cognitive learning strategies and *critical thinking* (Jonassen, 1994).

2.10. CT in Language Learning and Teaching

Education is important, as we need individuals who do not just accept whatever they receive but evaluate and criticize things they encounter everywhere. It aims at raising individuals who are sensitive to global and local changes, and can easily be adapted to ever-changing technology and new concepts. To support this, Halpern says, only with the development of *critical thinking* dispositions, can students succeed in school and throughout their lives (Halpern, 1998). Moreover, *CT* is gaining more importance gradually. Huitt (1998) said that *critical thinking* is one of the most important attributes for success in the 21st century. It is also significant that students should go beyond their boundaries and not stuck with the old and useless methods.. *CT* is also significant for survival in this era. Paul (2002) proposed that, "In a world of accelerating change, intensifying complexity and provide interdependence, *critical thinking* is now a necessity for economic and social survival. In addition, the optimal places to raise such equipped individuals are schools that shape the individual from certain to ages up to death. That is why; our schools have been one of the most significant agents in education, where the heart of a nation pulses.

According to Costa (1991), as education is our fundamental means of preparing students – our future citizens – for an active and responsible life within our technologically-based society, school at all levels should be the focus for the development of *critical thinking*. Nelson (2004) asserts that rather than a sole memorization, teachers and students should go into deep level of understandings like application, analysis, synthesis and evaluation. Nelson (1994) also emphasizes that, enabling students to think critically is one of the central objectives of liberal and professional education. Similarly, Grinberg (2004) argues that emphasizing *critical thinking* in classrooms; teachers engage students into activities that require students to

produce knowledge rather than just acquiring facts and prepare students for democratic life.

Kabilan (2000), suggests that for learners to master in a language, they need to think creatively and critically while using the target language. According to Brown (2004), in a desirable academic language program, the aims of the curriculum should go beyond linguistic factors to improve *critical thinking*. As Lipman (2003) says, teachers are responsible for encouraging *critical thinking* in the learners other than helping them to go from one educational level to another. Therefore, the responsibility of foreign language teachers is to encourage their learners to learn *CT* skills while learning the language. Baker and Delmonico (1999) state that teachers should teach their students the ability to think critically because when students develop positive thinking skills, they have the ability to progress beyond the memorization of content to the depth of understanding complex problems. Students will then be able to transfer these skills into lifelong learning. About the importance of *CT* in education, a leading researcher, Paul (1993) asserts that the most fundamental goal of education is to improve the intellectual development of students, and it is required to prepare activities and provide a suitable environment to this end.

2.11. Young Learners and CT

Students are remarkable thinkers. Once we catch out their potential, we can see the wealth of learning that is possible in their classroom. Therefore, we should not undermine what they are capable of. According to Cole, B. and McGuire, M.:

Young learners will engage in *critical thinking* and purposeful decision-making when they feel affectively involved or connected to a problem or decision point; cognitively challenged yet capable of working on the problem or decision; and operatively, or behaviorally, prepared and supported with thinking strategies or tools that will help them to organize their thinking (2012, p. 12).

Fisher (1999) states that "in preparing children to be full participants in a literate, democratic and multicultural society we need to focus on the ways of thinking that are involved in many uses of literacy in school and in the community." (p. 16) Therefore, Students need abilities of reflection, of *critical thinking*, investigation and *problem solving*. The National Middle School Association (1995) suggests that, young adolescent learners are curious, motivated to achieve when challenged, and capable of critical and complex thinking.

2.12. Web 2.0 Tools and Education

Technology has almost surrounded all of us in many contexts. Moreover, sometimes it is impossible to do without it. Every day, we meet a new device or program that can assist us, especially in education. Since 2003, there has been a great leap of social computing, such as blogging, podcasting, collaborative content (e.g. Wikipedia), social networking (e.g. Twitter, Facebook), multimedia sharing (e.g. YouTube), social tagging and social gaming. Punie *et al.*, (2006) suggest that these recent developments of social computing tools also have an impact on formal Education and Training. (EandT) They provide new ways of for lifelong learning, supporting the vision of personalized future learning spaces in the knowledge society. However, we do not use those developments as desired. According to the OECD, Programme for International Student Assessment (PISA), report conducted in 2008, while 86% of pupils aged 15 frequently use a computer at home, 50% of students in countries belonging to the European Union declare that they have not used a computer in the classroom in the past 12 months. This situation is in Turkey compared to Europe. A survey conducted by Ateş, E. (2013), Educational Technologies like *Web 2.0 tools* is not widely used in Turkey and there are several reasons such as insufficiency of infrastructure; teachers' insufficiency of knowledge about using educational technologies and infusing and the number of students in a class.

Web 2.0 tools rely on the concept of the internet as a platform, and include blogs, wikis, podcasts, micro blogs, social networks. They are set of tools and processes that let everybody to easily create digital content and collaborate with others without any special programming skills. *Web 2.0 tools* site allows users to interact and collaborate

with each other in a social media dialogue as creators of user-generated content in a virtual community. As stated by Franklin (2007), “*Web 2.0* has created new ways of working, including opening up new opportunities in learning and teaching that have not been possible on a large scale before” (p. 1).

Web 2.0 plays to the strengths of educators — curiosity and love of learning — by opening the doors to collaboration and participation. It encourages and facilitates the natural desire to share what you know and to learn from your colleagues. And fully embracing *Web 2.0* is a logical extension of the attempts that so many educators have made to use the internet to connect, collaborate, and create since the first days of bulletin boards and list serves.

Examples of *Web 2.0* include social networking sites, blogs, wikis, video sharing sites, hosted services, web applications, mashups and folksonomies and so many others.

2.12.1. Blogs

A *blog* is a system that allows us to write and publicly display time-ordered articles. Readers can add comment to posts. Depending on the author’s wishes, *blogs* can contain visual, audio and video content, as well as features such as links to other *blogs*, information about the author, and comments from readers (Ellison and Wu, 2008; OECD, 2007).

Example of educational uses:

- A group of bloggers using their individual *blogs* can construct something interrelated knowledge through posts and comments. This can be a group of learners in a class, encouraged and facilitated by a teacher.
- Teachers can use *blogs* for course announcements, news and feedback to students.
- *Blogs* are useful for syndication technologies to enable groups of learners and teachers to easily follow new posts.

2.12.2. Wikis

A *wiki* is a web-based platform that provides users to collaboratively add, remove and edit and change content, usually text (Owen et al., 2006; OECD, 2007). The most important example of a *wiki* is *Wikipedia*, a collaboratively created online encyclopedia. Since it was created in 2001, *Wikipedia* has grown progressively and has become one of the biggest reference websites, attracting at least 684 million visitors yearly by 2008. There are more than 75,000 active contributors dealing on more than 10,000,000 articles in more than 250 languages. The English version of *Wikipedia* is the largest, with 2,573,854 articles in October 2008.

There are many examples where they are widely used. For example, at the State University of New York, the Geneseo Collaborative Writing Project uses *wikis* for students to work in a harmony to translate texts, articles and essays, share ideas, and boost their research and get communication skills collectively.

2.12.3. Tagging, Social Bookmarking and Folksonomies

Tagging is commonly used in *blogs*, site authors attach keyword descriptions to identify images or text within their site as a categories or topic. Web pages and *blogs* with identical tags can then be linked together allowing users to search for similar or related content. A social bookmarking allows users to save web pages, and label these records with keywords that describe the pages being recorded (Franklin and van Harmelen, 2007) Different social bookmarking sites encourage different uses: some sites encourage more playful and personal tagging, for example Flickr, the phototagging site; while others afford a more deliberate style of tagging with a very clear idea of a specific audience, such as the academic sites Connotea or CiteULike (Owen *et al.*, 2006; Vuorikari, 2007). A folksonomy is a system of classification derived from the practice and method of collaboratively creating and translating tags to annotate and categorize content; this practice is also known as collaborative tagging, social classification, social indexing, and social tagging.

2.12.4. Podcasts and Vodcasts

Current learners live in a world that is characterised by information overload (Siemens, 2006). According to Jackson, “A podcast is an audio - and sometimes a video - recording made available online. The word is a combination of the words "broadcast" and "iPod," Apple's MP3 player.” There are three types of podcasts: A basic podcast contains only audio and it is the easiest to make up and listen to; an enhanced podcast has both audio and slides; a vodcast includes video and audio and it is the most difficult to create and view.

Podcasting allows listeners to catch up with recent audio or video content; vodcasts are video versions of podcasts (Franklin and van Harmelen, 2007). Mobile-casting, i.e. receiving video and audio podcasts on mobile phones, is expected to develop rapidly (OECD, 2007). Compared to other social computing services, however, podcasting is less popular: only around 2% of Internet users in Europe used it in 2007 (Pascu, 2008).

Digital technologies have not only penetrated people's private and professional lives, but are also beginning to transform learning patterns. Alamutka, (2008) states that social computing applications in particular are progressively being used for work, leisure and learning in a digital society, by authorizing users to produce, publish, share, edit and create content. We can easily see that this new web is going to change the 21st century in education, giving a new shape how students approach learning, how educators approach teaching, and, how educators are collaborating, and learning from, each other.

2.12.5. Mind Mapping Tools

A *Mind Map* is a powerful graphic technique, which uses the full range of cortical skills in a single, powerful manner. It gives you the freedom to expand your brain. The *Mind Map* is used in every aspect of life where improved learning and clearer thinking enrich human performance.

According to Learning Guide (2009), *mind mapping* was developed as an effective method for creating ideas by association connections. It starts in the middle of

the page with the central theme and from that point you try to find new connections. It can be used for assignments and essay writing relates for initial stages. It is an ideal strategy to use for your 'thinking'. *Mind mapping* can be used for creating, visualizing, organizing, note-taking, problem-solving, decision-making, revising and clarifying your university topic. Essentially, a mind map is related with brainstorming. There are a lot of mind mapping tools such as *Bubble.us*, *Mindomo*, *Mindmeister*, *popplet*, etc.

Mindomo, for example, is a *Web 2.0* mind-mapping tool that lets users create mind maps to organize, explore, analyze and evaluate ideas. To begin, the main topic/concept is entered into the topic bubble. Subtopics are then linked to the topic bubble. Users continue to add subtopic bubbles to the map. Multimedia can be linked to subtopics to help organize information and to make it more interactive. It was created by Tony Buzan is a leading expert on the brain and learning and considered to be the originator of the mind mapping technique.

Bubbl.us is a *Web 2.0 tool* that enables users to create mind mapping and brainstorming diagrams online. To begin, the main topic/concept is entered in to the parent bubble. Then ideas and thoughts are recorded in colorful text bubbles linked to the parent bubble. Users continue to add text bubbles, which are color coded according to hierarchy.

2.12.6 Story-jumper

Story-Jumper is a site that gives parents, kids, and authors a fun set of intuitive tools for writing and illustrating kids' stories. The goal is to inspire anyone who wants to write a kids story to get started! It is for all kids, ages 1 to 92. While the activity of reading stories is an educational goal in itself, it is believed that kids should also experience the joy of creative process, as well. *Storytelling* requires focus and concentration, and our product is designed to enable kids to attain a state of creative 'flow' as easily as possible, and without disruption from distracting elements such as overly complex tools or intrusive advertising (www.storyjumper.com).

2.13. Why Web 2.0 Tools?

Computers has dramatically changed education, They quickly became a part of almost every individual and transformed day-to-day tasks and the business landscape completely, transformed the goals of educators, or even the methods used to achieve those goals. According to Can, C., Bedir, H and Inozu, J (2009) state that "being able to use IT is seen as one of the core competencies for the 21st century and education should adequately prepare students to play an active role in this society." Hargardon (2009) states: "I believe that *Web 2.0* is the perfect environment for educators, which is why forward-thinking school systems and academic institutions are working hard to make it a part of their practices." (p. 2) *Web 2.0 tools* are becoming more and more common in schools. It is obvious that it is going to alter the 21st century landscape in education; shaping students to approach learning, educators to approach teaching. According to Solomon and Schrum (2007), "The shift to *Web 2.0 tools* can have a profound effect on schools and learning, causing a transformation in thinking. These tools promote creativity, collaboration, and communication involving learning methods in which these skills play a part (p. 13). Thus, teachers are trying to find new ways in which they can engage technologically working students in computer-based educational activities. These social networking services allow users to create an online profile and then communicate with other users of the service with similar or overlapping interests. Publishing student work is a means of providing an authentic global audience for classroom productions. For Jarcho (2008) "Having a blog, a permanent presence on the web, becomes the jumping off point for deeper professional discussions. Producing a blog also opens a person up to criticism, so once again, an open attitude to learning is essential." (p. 24) Therefore, when students communicate for a broader and more international audience, they pay more attention to their work, think more deeply about the content they produce, and consider cultural norms more thoughtfully. They serve to strengthen all students' abilities. As we possess a gift of time like *Web 2.0 tools*, we must look for ways to extend English language acquisition beyond the school day and means of maximizing learning for our students. Besides, *Web 2.0 tools* can provide students with extra opportunities to do meaningful language-learning tasks from the comforts of their own homes or local libraries.

2.14. Web 2.0 Tools and the Impact on CT

CT could be positively supported by the application of *Web 2.0 tools* within the educational context. Educators should guide their students for the increasingly important task of filtering Web-based content and discerning whom and what to trust. The best way to prepare educators for this is to teach *critical thinking* skills through educational networking and other web forums.

Recently, many studies have indicated that student's *CT* abilities can be fostered through the application of *Web 2.0 tools*. Duffy and Bruns (2006) state that, when using a blog student can demonstrate their *CT*, creativity, taking risks and making use of the language. In light of this, the students acquire creative skills, critical, communicative and collaborative abilities that could be beneficial both in academic and professional contexts. By using those tools students become more capable to show that the skills acquired during their education are not long confined to the areas in which they specialize, however they provide them to improve an open-mind and flexible capacity of being adaptive to new environments.

2.15. Web 2.0 Tools and Collaborative Learning

Collaborative learning requires group members, but also phenomena like the negotiation and sharing of meanings. *Collaborative learning* involves individual learning as well, but is not reducible to it. (Stahl, G., Koschmann, T. and Suthers, D. 2006) *Collaborative learning* requires working together toward a common goal. It has been called by various names like cooperative learning, *collaborative learning*, *collective learning*, *learning communities*, *peer teaching*, *peer learning*, or *team learning* etc. However, they all incorporate group work (Dooly, M. 2008).

Collaborative learning can be used with technology. It may provide with a vast amount and varied benefits. Educators can benefit from these tools, and how they can be used most effectively in support of specific teaching and learning goals. Recently, many studies have reported that the wiki supports teaching effectiveness and learning goals. For example, Vaughan (2008) stated that when wiki is used in the classrooms, it can encourage peer collaboration and support learning. Similarly, Wang (2008)

reported that a wiki is a useful digital tool for teaching. A study implemented by Chou, P. and Chen, H. (2008), a two-week wiki activity in a programming language class, showed that this new teaching method could motivate students to engage in *collaborative learning* and could support learning outcomes. Moreover, students felt that this facilitated their group work. Although some students complained about the burden, effectiveness drawn from the wiki activity can exceed those uncomfortable feelings. On the other hand, a study “Using Wikis for *Collaborative learning*: a Case Study of an Undergraduate Students’ Group Project in Hong Kong conducted by Leung, C. and Chu, S. K. W. (2009) revealed that analyze of wiki history logs and discussions to examine how students used wiki in group projects limited the collaboration among the group members.

In the *Web 2.0* environment, social networking highlights collaborative user-to-user interaction (Vickery, 2007). The objective of social networking is to make up a community-based website where people can share personal experiences and create their knowledge (The Horizon Report, 2007). According to McLoughlin and Lee (2007), *Web 2.0 tools* are regarded as a great potential for the needs of students, developing the learning experiences and providing with opportunities for collaborative working and networking. Franlin, T. (2007), states that *Web 2.0* has different meanings that include an increased emphasis on user-generated content, data and content sharing and collaborative effort. This is, of course, realized by the use of miscellaneous kinds of social software, new ways with web-based applications, and the use of the web as a platform for creating, content. *Web 2.0 tools* is also essential for social software that enables groups of users to socialise, collaborate, and work with each other. Australian Learning and Teaching Council Priority Project (2009- 2010), suggest that:

Staff and students working together, and students working independent of staff, are technically freer than ever before to choose how they use these web authoring forms and features to support learning and teaching, inside and outside of academic policies and protocols (p. 6).

2.16. CT and Collaborative Learning

Based on a comparative study between traditional course and web based discussion forum, Newman, Johnson, Cochrane, and Webb (1996) elucidated that using the discussion forum resulted in better *critical thinking*, because it provided more learning materials available and more learning opportunities for students and related more often the students arguments to each other.

Collaborative learning, the grouping and matching students for the objective of attaining an academic purpose, has been widely researched throughout the professional literature. The term “*Collaborative learning*” means an instruction method whereby students work together in small groups. The students are responsible for one another’s learning as well as their own. Therefore, the success of one student helps other students to be successful. Proponents of *collaborative learning* claim that the mutual exchange of ideas in small groups not only increases interest among the participants but also fosters *CT*. According to Johnson and Johnson (1986), there is persuasive evidence that cooperative teams achieve at higher levels of thought and retain information longer than students who work quietly as individuals. The shared learning gives students an opportunity to engage in discussion, take responsibility for their own learning, and thus become critical thinkers (Totten, Sills, Digby, and Russ, 1991).

CHAPTER 4

METHODOLOGY OF THE RESEARCH

3.1. Overview

This chapter presents the nature of the research, the selection of the participants, the instruments, the data collection procedure, the methods used for data analysis and the procedure. The fundamental concern of this study is to seek for an answer to the question whether *Web 2.0 tools* have an effect on *CT* with a special emphasis on *collaborative learning*. The study was conducted for ten weeks in the second semester of the 2013-2014 Academic Year to seek answers to the research questions related to the topic.

3.2. Research Design

This study was designed as a case study to develop *CT* skills of the twenty, 8th grade students of the study at a state secondary school. Mixed method research design was used. This study provides data about the progress of *CT* skills and *Web 2.0 tools* of the participants and about the perceptions of the participants. The data were collected through *Critical thinking questionnaire (CTQ)*, *Web 2.0 tools questionnaire (WTQ)*, *semi-structured interview* and *minute papers*.

3.3. Participants

The participants of the study are 20, 8th grade students who attended Güzelyurt Secondary School in Kahramanmaraş. All the members of the class were included by the researcher. At the beginning, one of the participants was excluded since his irregular attendances. Thus, nine male students and eleven female students participated in the study. The data were obtained from all of the students except one student. Their ages range between 14 and 15. The participants had been taking English lesson for four hours a week during a year. They belong to the low socio-economic and cultural level.

3.4. Procedure

In the very beginning of the study, *minute papers* were given to students to measure to what extent they showed *CT* dispositions. They were given some prompts according to the affective and cognitive strategies (See table 1 & 2). Then, they were told to write whatever they want on the *minute papers*. *CTQ* (see Appendix 2) and *WTQ* (see Appendix 4) were also applied in the beginning of the study after *minute papers*. And then, some prompts to elicit critical answers from the participants were prepared. In preparing those prompts that were going to be discussed online through *Web 2.0 tools*, the researchers relied on the book and the current unit so that the students could be able to adapt themselves easily. Then, the prompts inspired from the books were shared online (blogs, wikis etc.) and participants submitted their answers as shown in figures 1, 2, 3 and 4. During this procedure, the researcher encouraged them to discuss their answers in a collaborative way and write their comments independently. To fortify this procedure; interviews was used after the discussion to find out students' *CT* dispositions. Students answered the questions in Turkish; that's why, they were translated by the researcher and another colleague for double-check. At the end of the study, *CTQ* and *WTQ* were applied to see whether there was any improvement or not.



Figure 1: Brainstorming activity for *intellectual humility*.

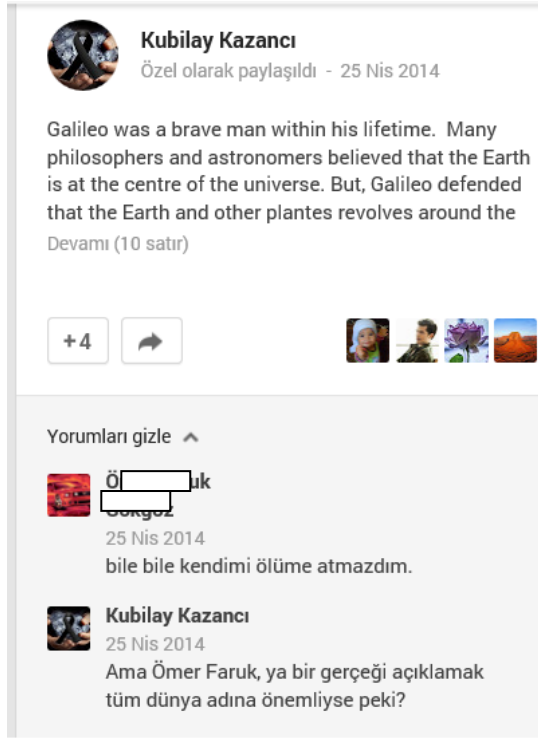


Figure 2: Google plus discussion activity for *intellectual courage*.

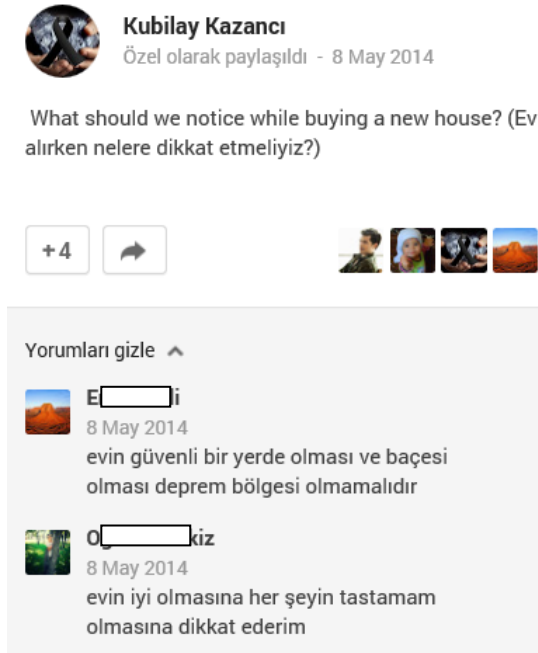


Figure 3: Google plus discussion activity for *intellectual integrity*.

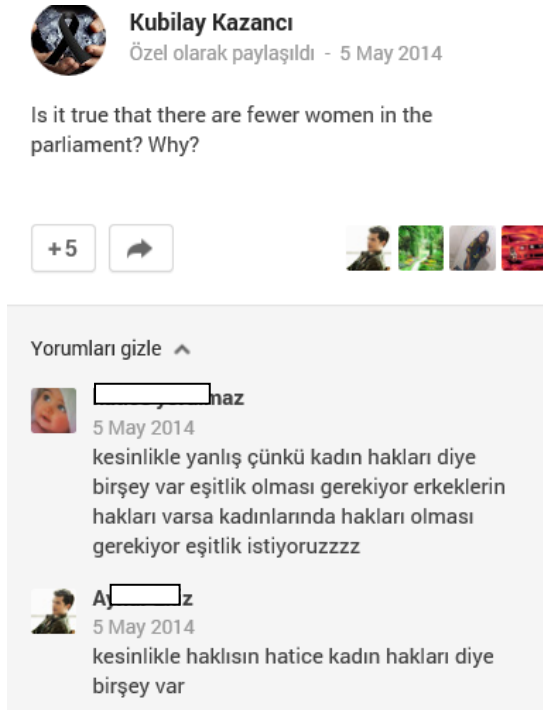


Figure 4: Google plus discussion activity for *fair-mindedness*.

3.5. Instruments

The researcher used as many instruments as possible to gather data about *CT* skills because those instruments fortified the study to be more valid. At the beginning of the study, *CTQ* was applied whether the participants have *CT* skills or not. If so, to what extent do they have *CT* skills? The same questionnaire was applied at the end of the study to determine if any difference happened in *CT* skills of the participants. The questionnaire comprise of 16 statements. These statements are associated with the Essential Intellectual Traits suggested by Paul, R. and Elder, L. (2001) in the book “The Miniature Guide to *Critical thinking* – Concepts and Tools” The statements in the questionnaire were closed-type and scaled statements. This means participants responded as “Always”, “Usually”, “ Sometimes”, “Rarely” and “Never” to the statements which are behaviors entailing *CT* skills. However, only some of the skills were applied for the study. These were *intellectual humility*, *Intellectual courage*, *confidence in reason*, *Intellectual integrity*, *fair-mindedness* and *intellectual empathy*.

Table 1.
Affective Strategies (Skills)

Nr.	Items	Strategies
1	2 and 6	<i>Fair-mindedness</i>
2	1 and 5	<i>Intellectual Empathy</i>
3	11 and 14	<i>Intellectual Humility</i>
4	8 and 13	<i>Intellectual integrity</i>
5	7 and 12	<i>Intellectual courage</i>

Table 2
Cognitive Strategies-Micro Skills

Nr.	Items	Strategies
1	9 and 15	<i>Confidence in reason</i>

The questionnaire was simplified and translated into Turkish by another English teacher together with the researcher. The questionnaire included two scales to investigate: Affective Strategies and Cognitive Strategies-Micro Abilities included in the CTQ. Affective Strategies were intended to be gauged through CTQ. Items included in each scale are presented in the form of tables for data analysis purposes (Table 1 and Table 2). The items were chosen according to Paul and Elder's (2001) "The Miniature Guide to *Critical Thinking* for Children" and "The Miniature Guide to *Critical thinking*-Concept and Tools."

The Item 2 and 6 aimed to exercise *fair-mindedness*, one of the affective strategies. Paul, R. and Elder, L. (2001), states that is the consciousness of the need to treat all viewpoints alike, without reference to one's own feelings or vested interests, or the feelings or vested interests of one's friends, community or nation. Items 1 and 5 are the *intellectual empathy* that is a consciousness of the need to imaginatively put oneself in the place of others in order to genuinely understand them, which requires the consciousness of our egocentric tendency to identify truth with our immediate perceptions of long-standing thought or belief. This trait correlates with the ability to reconstruct accurately the viewpoints and reasoning of others and to reason from premises, assumptions, and ideas other than our own. This trait also correlates with the

willingness to remember occasions when we were wrong in the past despite an intense conviction that we were right, and with the ability to imagine our being similarly deceived in a case-at-hand. Items 11 and 14 are *intellectual humility* which is the consciousness of the limits of one's knowledge, including a sensitivity to circumstances in which one's native egocentrism is likely to function self-deceptively; sensitivity to bias, prejudice and limitations of one's viewpoint. *Intellectual humility* depends on recognizing that one should not claim more than one actually knows. It does not imply spinelessness or submissiveness. It implies the lack of intellectual pretentiousness, boastfulness, or conceit, combined with insight into the logical foundations, or lack of such foundations, of one's beliefs. Items 8 and 13 are *Intellectual integrity*. It is the recognition of the need to be true to one's own thinking; to be consistent in the intellectual standards one applies; to hold one's self to the same rigorous standards of evidence and proof to which one holds one's antagonists; to practice what one advocates for others; and to honestly admit discrepancies and inconsistencies in one's own thought and action. The last items of Affective Strategies, 7 and 12 is the *Intellectual courage* that is consciousness of the need to face and fairly address ideas, beliefs or viewpoints toward which we have strong negative emotions and to which we have not given a serious hearing. This courage is connected with the recognition that ideas considered dangerous or absurd are sometimes rationally justified (in whole or in part) and that conclusions and beliefs inculcated in us are sometimes false or misleading. To determine for ourselves which is which, we must not passively and uncritically "accept" what we have "learned." *Intellectual courage* comes into play here, because inevitably we will come to see some truth in some ideas considered dangerous and absurd, and distortion or falsity in some ideas strongly held in our social group. We need courage to be true to our own thinking in such circumstances. The penalties for nonconformity can be severe. Items 9 and 15 are Cognitive Strategies. It is the *confidence in reason* which is one's own higher interests and those of humankind at large will be best served by giving the freest play to reason, by encouraging people to come to their own conclusions by developing their own rational faculties; faith that, with proper encouragement and cultivation, people can learn to think for themselves, to form rational viewpoints, draw reasonable conclusions, think coherently and logically, persuade each other by reason and become reasonable persons, despite the deep-seated

obstacles in the native character of the human mind and in society as we know it (p.13, 14).

Furthermore, *WTQ* was administered together with the *CTQ*. It aimed at eliciting their perceptions about *Web 2.0 tools*; whether they had any training about them, which one(s) of the tools they were using in their professional or personal life, how they rated themselves while using *Web 2.0 tools*, what their aims were while using them, to what extent they had a role in participating, how many hours they were spending on the internet in a week, for what reason they used the internet, whether they ever collaborated online, what they affected their education life, whether they had a personal computer and finally whether they had internet connection at home?

Another instrument used to collect data was the *semi-structured interview*. It was conducted during the research for gathering information about the variables. It is a method of research used in the social sciences. According to Merriam (2009), researchers start asking questions related to participants question regarding topics that are predetermined prior to the interview, but the largest part of the interview consists of researchers exploring suitable topics as well that might appear during the course of the interview. According to Harrel and Bradley (2009), *semi-structured* is used with questions and topics that must be covered. The interviewer has some discretion about the rank in which questions are asked, however the questions are standardized, and probes may be offered to make certain that the researcher covers the correct material. While a structured interview has formalized, limited set questions; it is flexible and open up new questions during the interview according to what the interviewee says. The interviewer in a generally has a framework of themes to be explored.

Another instrument was *minute papers*. *Minute papers* is a very commonly used classroom assessment technique. It really does take about a minute and, while usually used at the end of class, it can be used at the end of any topic discussion as well. Its major advantage is that it provides rapid feedback on whether the professor's main idea and what the students perceived as the main idea are the same. Additionally, by asking students to add a question at the end, this assessment becomes an integrative task. Students must first organize their thinking to rank the major points and then decide upon a significant question.

3.6. Data Collection

The data was collected through *CTQ*, *WTQ*, *semi-structured interview*, and *minute papers*. In the beginning of the study, the participants were informed about aim and scope of the study. Once they were informed about what they were supposed to do, they looked volunteered and excited. Data was first collected through *minute papers*. After several days, *CTQ* was administered to reveal to what extent the participants have *CT* skills and *WTQ* were administered to reveal their perceptions about *Web 2.0 tools*. They were given 40 minutes to respond to the items of the questionnaires and the researcher was there for any question from the participants. The participants were told to be fair while responding to the statements in the questionnaires. Then, prompts that were shared online were given and they were interviewed after. The same questionnaires were applied at the end of the study to reveal whether there was any development or not. Data collection was done for a purpose that was consistent with and freedom of information and privacy protection.

3.7. Data Analysis

The instruments were analyzed in two ways. The questionnaires were analyzed quantitatively. *Statistical Programming for Social Sciences (SPSS)* was used in the analysis of the *CTQ* and *WTQ*. Therefore, *CT* skills development of the participants within four and a half month was identified through descriptive statistics to find whether there were any changes between the responses of the participants at the beginning and at the end of the study. Descriptive Statistics were analyzed through mean, standard deviation and P value. The *semi-structured interviews*, *minute papers* via prompts to support the quantitative data were analyzed qualitatively. The *minute papers* and *semi-structured interviews* were compared and contrasted via content analysis method to classify their answers. Owing to this method, we identified some categories to link students' answers and listed them as major categories (or themes) and / or minor categories (or themes) according to the barriers of CT, affective strategies and cognitive strategies.

CHAPTER 4

DATA ANALYSIS AND FINDINGS

4.1. Introduction

This study aims to reveal whether there was any improvement in young learners' *CT Skills* through *Web 2.0 tools* with a special emphasis on *collaborative learning*. Keeping the purpose in mind, *CTQ* and *WTQ* were administered to all participants before and after the study. Prompts were prepared in order to integrate *CT skills*. In order to support data, *minute papers* were used supported with *semi-structured interviews*.

4.2. Analysis of the quantitative and qualitative data

Mixed data analysis method was applied in the analysis of the data obtained through *minute papers*, *semi-structured interviews*, *CTQ* and *WTQ*.

4.2.1. Analysis of the CTQ and WTQ Items supported by Interviews and Minute Papers

The *CTQ* applied at the beginning of the study comprised of 16 items prepared to assess the *CT skills*. The skills were selected by considering the criteria suggested in The Miniature Guide to *Critical Thinking* for Children and The Miniature Guide to *Critical thinking* – Concept and Tools (Elder and Paul, 2001).

The students were expected to show their preferences on a five points scale questionnaire as “Always”, “Usually”, “Sometimes”, “Rarely” and “Never” The same questionnaire was administered at the end of the study, again to reveal if any change occurred in the preferences of the participants or not. In the data analysis, *SPSS*, a *Statistical Program for Social Sciences* was used. The scales were changed into numeric numbers; five, four, three, two and one for Always, Usually, Sometimes, Rarely and Never respectively. The means, standard deviations and P values of the items were tabulated and displayed below.

Table 3:
Analysis of CTQ

	ITEMS	PRE		POST		P
		Mea n	Std. Dev.	Mean	Std. Dev.	
1	<i>I try to understand my parents</i>	1,83	,78	1,94	1,05	,49
2	<i>I can't believe a lot on what I see on TV.</i>	2,22	1,16	2,38	1,03	,65
3	<i>I try to do my own thinking, to figure things out for myself.</i>	1,77	,64	2,22	,87	,02
4	<i>When reading is hard, I stick to it so I can learn to read better.</i>	1,33	,48	1,72	,82	,03
5	<i>Whenever I disagree with people I try to see things the way they do.</i>	2,33	,97	2,27	,89	,71
6	<i>I shouldn't say things are true when I don't really know they are.</i>	2,61	1,28	2,05	1,21	,21
7	<i>I shouldn't be afraid to disagree.</i>	2,50	1,46	2,05	,99	,16
8	<i>I try to be the kind of person I expect others to be.</i>	2,27	1,22	2,00	,84	,23
9	<i>I ask lots of questions in a learning environment.</i>	2,44	1,04	2,66	1,02	,40
10	<i>Sticking to a problem is always better than giving up.</i>	1,88	1,36	2,00	,84	,69
11	<i>There is a lot that I don't know.</i>	2,55	1,04	2,50	,98	,87
12	<i>I should be ready to speak up to for what I think is right, even if it is not popular with my friends or the kids I am with.</i>	2,05	1,10	2,22	1,11	,64
13	<i>When I get angry, I ask myself why I am angry.</i>	2,38	1,33	2,72	1,40	,42
	<i>Because I expect others to respect me, I respect them.</i>	1,27	,57	1,55	,85	,17
14	<i>Because I expect others to consider my feelings, I consider their feelings.</i>					
15	<i>I enjoy finding answers to challenging questions.</i>	2,27	1,17	2,11	1,02	,48
	<i>It is good to listen to others to find out what they are thinking,</i>	2,55	1,04	2,38	1,24	,57
16	<i>but I must always do my own thinking to decide who and what to believe.</i>					

The overall analysis of the data presented in Table 3 reveals that there is uniformly positive correlation between pre and post administration of the questionnaires. The participants seemed to use their preferences during the period the tasks requiring higher order skills, especially items two and three. The qualitative data will shed more light on the quantitative data.

4.2.2. CTQ and WTQ Items and CT Skills

The data obtained through *semi-structured interviews* and *minute papers* were sorted and content analyzed. The analyzed data sorted and categorized under the headings of items in the questionnaire. The related excerpts categorized from the *semi-structured interviews* and *minute papers* were named as student 1,2 and so on.

4.2.2.1. Item 2 and 6: Exercising Fair-mindedness

Item 2 and 6 aimed to develop *fair-mindedness*. Students were given a prompt via www.plus.google.com and they wrote their comments under the heading and discussed it. The prompt was “Is it true that there are fewer women in the parliament? The values indicate that the mean has risen and standard deviation is close to one in the Item 2. However, in the Item 6, the scores has not risen but the standard deviation is closer to 1 compared to the pre-test There was uniformly positive change that occurred in the participants’ preferences of *fair-mindedness*.

From the Minute Papers

Student 15,

It is true because women should not be in every milieu.

Student 17,

It is not appropriate for women to be in the parliament because men discuss important things.

Student 6,

It is not true because men get angry very quickly; but as women are more elegant, they do not get angry and there could be equality.

Student 3,

I think women are more vulnerable. That is why there must be fewer women.

From the Students' Interview

From the first interview

T: Is it true that there are 550 members in the parliament?

S1: It is not a good thing, teacher.

T: Why do you think so?

S1: Because they are paid a lot.

T: OK, What if it is good for democracy?

S1: What is democracy?

T: Many ideas in a community

S1: That is reasonable, teacher.

From the second interview

T: Is it true that there is an entrance exam for university?

S2: No, teacher

T: Can you elaborate? Why?

S2: Everybody can go to any university they want.

T: What if everybody wants to go to the same university?

S2: That's true teacher.

From the Students' Comments

Student 14,

Absolutely wrong, there are women's rights. There must be equality. If men have rights, women have rights, too. We want equality.

Student 16,

I think, there must more women in the parliament because there must be equality between women and men. That is why; women must be in the parliament. However, women should not interfere with the work life.

Student 6,

If I were a woman, I would give a right to men.

Student 3,

I think women are more vulnerable. That is why there must be fewer women.

Student 4,

It is not true there are fewer women in the parliament because the minority of the women causes men to swear and fight more than usual. Women can come up with different ideas.

Student 20,

I definitely do not agree because there are women's rights and equality.

Student 13,

It is true because women should not be in every milieu.

Student 11,

I think, it is better for the parliament to have fewer women because they look at things more in detail. That is why, things reach a deadlock.

4.2.2.2 Item 1 and 5: Exercising Intellectual Empathy

Item 1 and 5 aimed to develop *intellectual empathy*. The students were asked some questions online via www.plus.google.com about women-men inequality and the Stephan Hawkins' being disabled to exercise *intellectual empathy*. They discussed those issues and commented to each other. The values that were taken from the questionnaires indicate that there was a positive change in both of the items.

From the Minute Papers**Student 3**

1. *This is the rule of the nature: men shouldn't do the housework.*
2. *We should always empathize. It is essential for every issues. some people do not like disabled people, but they don't think it may occur to them. Every problem could be solved with empathy.*

Student 16,

1. *Men should not do the housework because they are the mainstays of a family. They are the breadwinner.*
2. *If I were Hawking, I would do my best to survive.*

Student 11,

1. *Women should empathize and consider that men are coming late and they are tired.*

2. *I cannot empathize with hawking. It is tough to be like him.*

Student 5,

I would do whatever I can if I were in Hawkins' shoes.

Men should not do the housework because they work and regulate the expenditures.

From the Students' Comments**Student 18,**

Being disabled is the last thing human wants. We should value our health and thank to God.

Student 15,

Being disabled is a bad thing. It may happen to anyone. If I were disabled, I would not struggle like him.

Student 12,

If I were disabled, I would feel alone and desperate. God may not reduce us to distress.

Student 19,

If I were disabled, I would be sad and reduce to distress but I would not give up. I would always deal with good things.

From the Students' Interviews**From the first interview**

T: *What is it like to be a female?*

S1: *It is not a good thing, teacher.*

T: *Why do you think so?*

S1: *They are always prone to violence.*

T: *Ok!. What would you do if you were a subject like this?*

S1: *I do not know*

From the second interview

T: What is it like to be a child in a war?

S2: Very bad

T: Can you elaborate? What would you do?

S2: I would go to another country like Syrians did.

T: Would you turn back to your country?

S2: No, teacher

From the third interview

T: What is it like to be someone with a cancer?

S3: Not good

T: What would you do if you were someone like this?

S3: First, I would not care about this. I would have fun.

T: Wouldn't you want to be cured?

S3: Of course!

T: Which is more important?

S3: To be cured, teacher.

4.2.2.3 Item 11 and 14: Exercising Intellectual Humility

Item 6 and 11 aimed to develop *intellectual humility*. The students were given a prompt online via www.plus.google.com to exercise *intellectual humility*; they were given a prompt about the causes of global warming. The values indicate that there was a positive change in the Item 14, but negative change in the Item 11 occurred in the participants' preferences of *intellectual humility*.

From the Minute Papers

Student 7,

Sometimes, we think that we are smart but there are always people who are better than us. We look from our point of view, and evaluate in terms of people around us. However, we always have flaws. We should see these.

Student 1,

Everybody has flaws but they should work and try to complete them.

Student 5,

No one can now everything, there are many things that we do not know.

Student 19,

We have a mistake even though we struggle. We cannot look from different perspectives. We cannot know everything. We have many flaws.

From the Students' Comments**Student 3,**

I think, there are more precautions to be taken.

Student 18,

I think, there are more things that we do not know. We should try to prevent global warming with the precautions we know.

Student 12,

I think, there are more things to prevent global warming. We are responsible for many more things and we should strive more for this. One of them is to be clean and economical in our neighborhood and at home. We should do this with a campaign. Keeping the environment means long life span.

Student 7,

We can count more precautions and with these precautions, we can protect our nature. We can put up posters and enlighten people. There could be more precautions.

Student 9,

There are many precautions. We can use TV and posters.

From the Students' Interviews

From the first interview

T: How many capitals of a country do you know?

S1: Not many, teacher.

T: Can you count?

S1: Ankara, Tokyo...

T: Do you only two?

S1: Yes, teacher.

T: I think, there are about two hundred countries

S1: Are they so many?

T: Yes.

From the second interview

T: How many Asian countries do you know?

S2: Syria, India, Azerbaijan, Iran, Iraq...

T: Is that all

S2: No, teacher.

T: I see. As far as I know, there are 45 Asian countries.

4.2.2.4 Item 8 and 14: Exercising Intellectual Integrity

Item 8 and 14 aimed to develop *Intellectual integrity*. The students were asked some questions online www.plus.google.com to exercise *intellectual integrity* and they were given a prompt about what we notice while buying a new house. The values indicated that there was a positive change in the Item 14, but not in the Item 8 occurred in the participants' preferences of *intellectual integrity*.

From the Minute Papers

Student 7,

When we decide on something, the rank of importance is important. We should consider, decide rationally when we are sure.

Student 3,

We should think rationally when we decide on something. We should pay attention to it. We should first take the importance into account.

Student 18,

We should notice our own mistakes. We should not comment on what we desire and think personally.

Student 10,

We should not be bound to anything blindfold. We should consult to do a good job.

From the Students' comments**Student 13,**

It must be safe and with a garden and must not be in an earthquake area.

Student 16,

While buying a house, it must be with a garden. There should not be houses around. And it has to be nice-shaped and it must stand against earthquakes.

Student 17,

We should first care the environment because, as our ancestors say, choose a good neighbor before buying a house. If you do not have, you live there one or two months. The house must be well designed and its garden must be safe. There must be no flaws.

Student 5,

I would like to have quiet, near the lake, earthquake free, without famine, with yielding soil and a peaceful one.

From the Students' Interviews**From the first interview**

T: What is the most important quality while buying a car?

S1: The motor, teacher.

T: Is there more?

S1: Brake and tires

T: Isn't there something else more important?

S1: Safety belt, teacher.

T: I think, it has to be in every car. We cannot regard it as a quality.

S1: What do you think about security and fuel?

T: Are they more important?

S1: Yes, teacher.

From the second interview

T: What causes cancer?

S2: Cigarette, nutrition and not being vaccinated

T: I think, vaccination is for other diseases. It is not related to our topic. What else?

S2: Marriage to close relatives

T: I think it is related with the disabilities. Not with the cancer.

4.2.2.5 Item 7 and 12: Exercising Intellectual Courage

Item 7 and 12 aimed to develop *intellectual courage*. The students were given a prompt online via www.plus.google.com about Galileo's being courageous to explain that the earth is round. The values indicated that there was a uniformly positive change in the Item 12, but not in the Item 7 occurred in the participants' preferences of *intellectual courage*.

From the Minute Papers

Student 18,

If I were him, I wouldn't be like him. I do not care people believe me or not.

Student 7,

If I were him, I wouldn't continue because I will die in the end. For this reason, I do not tell the truth.

Student 3

Galileo's being decisive, brave and faithful affected me very much.

Student 10,

He told the truth, as he is a brave person.

From the Students' Comments

Student 6,

If I were him, I would tell the truth. I would risk my life.

Student 13,

If I were Galileo, I would keep my words.

Student 2

If I were Galileo, I would try to prove the truth. I agree with Vahide and Şerife about this topic.

Student 5

I would not risk my life on purpose.

From the Students' Interviews

From the first interview

T: Your friend has cheated in the exam; your teacher has seen that you have seen. Would you tell truth?

S1: I would tell the truth

T: What if you lose your friendship?

S1: I would do that again

T: what if he or she offended?

S1: I would tell the truth anyway.

From the second interview

T: You have got a question in your mind; but if you ask, all the class will laugh at you. Would you ask anyway?

S2: I would ask

T: What if people make fun of you

S2:.no matter what happens

4.2.2.6 Item 9 and 15: Exercising Confidence in Reason

Item 9 and 15 aimed to develop *confidence in reason*. Students were given a little complicated video via www.plus.google.com and required to reason in confident.

They were a given video prompt to evaluate *confidence in reason*. The values indicated that there was a positive change in the Item 9, but not in the Item 15 occurred in the participants' preferences of *confidence in reason*.

From the Minute Papers

Student 4,

No one can know the future, only guess. People prefer using their emotions but we must not trust anybody and give our heart until we found the true one, "A little stone may upset a large cart" if we are sure of our love, we must say that clearly.

Student 17,

People should not believe what they see first. They must wait and see.

Student 20,

I think, we should criticize everything and we should not believe everything. We should wait in patience. We should let the things go.

From The Students' Comments

Student 7

I think, he will make it smaller.

Student 3

Because he is carrying a drill and walking towards dog.

Student 17

Robot man is walking towards dog with a drill in his hand. He will either make it smaller or break into pieces and throw it. Because robot man was angry. The reason was that everywhere is in mess and the dog messes up. Therefore, he walks towards dog with a drill.

Student 17

I think he will not do anything to the dog. He may buy the house for sale. .

From the Students' Interviews

From the first interview

T: *Do you think there are angels?*

S1: Yes

T: How do you know? Can you see them?

S1: No, I cannot

T: How can you prove it?

S1: I cannot teacher

From the second interview

T: Do you think there are untouched areas on earth?

S2: Yes, teacher

T: How do you know?

S2: The world is so big, teacher.

T: What else?

S2: From the news

T: Do you believe everything you see on the news?

S2: No, teacher

4.2.2.7. Analysis of WTQ Items

Table 4. Analysis of the Item 1: How did you learn Web 2.0 Tools?

	<i>Pre-test Total Answers</i>	<i>Post-test Total Answers</i>
<i>Educators</i>	1	14
<i>Search Engines</i>	6	8
<i>Friends</i>	11	12
<i>Courses</i>	-	2
<i>News</i>	2	4
<i>Other</i>	1	3
<i>Never heard</i>	1	-

The purpose of the Item 1 was to gauge students' choices on how they learned Web 2.0 tools. According to the Item 1, the most important development among the

answers was “educators”. While only one of the students has learned *Web 2.0 tools* from educators in the pre-test, 14 of 18 students has changed their answers. There has been no meaningful in other answers because they have learned almost everything from the researcher. However, there are some positive improvements on the other sub-items, yet not as “educators”. According to these results, the researcher has an important effect on instructing *Web 2.0 tools* and raises their awareness on how to use those tools.

Table 5. *Analysis of the Item 2: Have you ever received education about Web 2.0 tools?*

	Yes	No
Pre-test	1	17
Post-test	15	3

The purpose of the Item 2 was to find out whether they received any education about *Web 2.0 tools*. This item is closely related with the Item 1 because 14 students chose the educators in the previous item. Interestingly, 15 students admitted that they received education on *Web 2.0 tools*. Only one student said that he/she received instruction and 17 students said they did not receive any education on *Web 2.0 tools* in the pre-test, while 15 students said that they received education in the post-test.

Table 6. *Analysis of the Item 3: What do you think of the following Web 2.0 tools?*

		PRE-TEST		POST-TEST		P
		Mean	Std. Dev.	Mean	Std. Dev.	
1	<i>Bookmarks</i>	2,88	1,32	3,16	2,61	,682
2	<i>Collaborative Writing Online</i>	4,00	1,49	2,27	1,12	,002
3	<i>News, Blogs etc.</i>	3,72	1,48	2,33	1,08	,005
4	<i>Photos and Digital Imaging</i>	2,88	1,36	2,05	1,34	,031
5	<i>Instant Messaging</i>	2,72	1,70	2,00	1,37	,011
6	<i>Video Sharing tools</i>	3,16	1,79	1,88	1,07	,001
7	<i>Social Network Platforms</i>	2,66	1,64	1,94	1,10	,028

The overall analysis of the Item 3 showed that there has been meaningful development in all sub-items except sub-item one. As shown in the table, sub-items two, three, four, five, six and seven has positively changed because they received

education about those sub-items. There is no meaningful development in sub-item 1 because they did not receive any education about bookmarks.

Table 7. *Analysis of the Item 4: What do you think of the following Web 2.0 tools?*

	<i>Pre-test Total</i>	<i>Post-test Total</i>
	<i>Answers</i>	<i>Answers</i>
<i>Chat</i>	9	15
<i>Education</i>	14	17
<i>Surf</i>	1	8
<i>Social Network</i>	6	12
<i>Entertainment</i>	11	12

According to the Item 4, there has been an improvement on the views of the students. While 9 of the students answered “chat” in the pre-test, 15 of the students answered in the post test. Actually, there must be improvement in the sub-item “education” the activities carried out for *CT* skills through *Web 2.0 tools* required students to work together. Thus, it is assumed that they used the internet for chatting on what they did in the classroom. We can observe improvement on the sub-item “surf”. While only one of the students answered positively in the pre-test. There has been a significant improvement in the post-test.

Table 8. *Analysis of the Item 5: Have you ever experienced any collaborative writing?*

	<i>Yes</i>	<i>No</i>
<i>Pre-test Answers</i>	1	17
<i>Post-test Answers</i>	15	3

The aim of the Item 5 was to help students discuss what activities they involved in the classroom. The Item 10 in the *WTQ* has an important value because in the beginning of the study seventeen of the participants said “No” while only one student said “Yes”. At the end of the study, there has been a considerable raise in the students’ perceptions.

CHAPTER 5

CONCLUSION AND DISCUSSION

This chapter presents the conclusions, discussion, implications, and prospects for further research drawn from the data through *CTQ*, *WTQ*, interviews, and *minute papers*.

5.1 Conclusion and Discussion

The purpose of this study was to find out whether *Web 2.0 tools* have an effect on young learners' *CT* skills with a special emphasis on *collaborative learning*. Prompts were prepared and introduced mainly via www.plus.google.com in accordance with the language content and topics adapted from the 8th grades' books designed by the Ministry of Education. In order to collect eligible data, four different data collection tools were used: *CTQ*, *WTQ*, *semi-structured interviews*, and *minute papers*. With these variables, we aimed at finding answers answer to the questions below.

1. Were students using certain *CT* skills before the study?

The findings revealed that students were not using any certain *CT* skills in the beginning. In addition, the mean and standard deviations of the items showed that the responses were scattering. During administration of *minute papers*, they showed the barriers of *CT* dispositions such as egocentrism, sociocentrism, closed-mindedness, prejudice, scape-goating etc in the data analysis section. According to Snyder and Snyder (2008), "Lack of training, limited resources, biased preconceptions, and time constraints conspire to negate learning environments that promote *critical thinking*." (p. 1) For example, some of the students said that they would not tell the truth when they were under threat considering *intellectual courage* drawn from the *minute papers*. Another example can be seen considering *intellectual empathy*: some of the students said that they would not empathize the other gender under some circumstances. Another example can be seen considering *intellectual integrity*: Some of the students showed that they were lack of *intellectual integrity*. For not surprise, during the interviews, some of the students went on showing the barriers of *CT*, yet some of them seemed to be showing *CT* dispositions such as truth-seeking, open-mindedness, analyticity,

systematicity, *CT* self-confidence, inquisitiveness, and maturity of judgment proposed by Facione and Facione, 1992.

2. What were the perceptions of the students about *Web 2.0 tools* before the study?

We know that the alteration of the students' perceptions about *Web 2.0 tools* cannot come so quick because we still live in a very teacher-centered society where they do not have a word to say. By making them aware of the cognitive and metacognitive strategies available to them, we should start them off on the road to gain their intellectual thinking via these tools. The use of information technology, and especially *Web 2.0 tools*, was essential in maintaining contact that makes a bond between us. This lets our students reach anything they want just a click away, and at the same time giving them a sense of critics to work on the areas of their learning that they consider suspicious. That is why, these tools may promote *CT* an environment and at the same time, helps prepare them for the new things that they see for the first time. Moreover, this could open the paths for students whose self-esteem has grown, who are capable of criticizing with regard to their own learning, setting their own goals and working toward achieving them.

Before the study, almost all the students were aware of the *Web 2.0 tools* to some extent. However, they mainly did not know what exactly they were and how to use it. When we observe the Item 1 (Table 4), only one of the students preferred the answer "educators" in the pre test. This showed that they had received no education before. The Item 2 (Table 5) is closely related with the Item 1 because only one of the students admitted that he/she received education on *Web 2.0 tools*. This demonstrated that they had neither learned these tools nor received education about these tools. The Item 3 (Table 6) was one of the most interesting one among the items in the questionnaire because it was obvious that they did not receive any education on the sub-items. According to the Item 4 (Table 7), students chose more than one sub-items. That is why; there were forty-one answers. Nine of the students preferred the sub-item "Chat", 14 of the students preferred the sub-item "education", only one of the students preferred the sub-item "surf", six of the students preferred the sub-item "social network" and finally eleven of the students preferred the sub-item "entertainment". Overall, they mainly chose the sub-items "chat" and "education". The Item 5 (Table 8) in the *WTQ*

had an important value because in the beginning of the study seventeen of the participants said “No” This means that almost no students were involved in a collaborative activity before.

3. Were students using certain CT skills after the study?

This research question of the study seeks to reveal whether *Web 2.0 tools* affect students' *CT* skills. In the beginning, *minute papers* were used to measure to what extent they show *CT* dispositions. After that, *CTQ* analysis results comprised of 16 items were prepared for the aim of revealing *CT* preferences of the participants. This questionnaire was used as pre and post data collection tool and consisted of seven affective dimensions and one cognitive dimension (micro skill) of critical thought. When we analyzed the standard deviations, means and the P values, we could be able see that there existed a uniformly positive change. However, there was no overt shift from Never to Always because *CT* skills are not something that appears suddenly. According to the study conducted by Abrami P.C. et al. (2008), the scores of the *CT* skills were not uniformly positive. They found some negative effects. This shows that we cannot always accept a sudden positive change. They further contended that improvement in students' *CT* skills and dispositions cannot be a matter of implicit expectations. Another study conducted by Tishman, Jay, and Perkins (1992), while acknowledging the importance of thinking abilities, they have argued that a skills-centered conception of good thinking is not sufficient to account for people's on-going intellectual tendencies to explore, to probe, to strategize, to be reflective, to be adventurous, and to be reasonable — in short, to think creatively and critically. Tendencies such as these are dispositional, and we propose that good thinking is indeed a dispositional matter, involving a triad of appropriate abilities, sensitivities and inclinations. This view has a significant message for the teaching of thinking: In broad stroke, it says that instruction must attend to all three aspects of the dispositional triad in order to be effective.

A survey of literature on the assessment of *CT* dispositions (Norris, 1992) and habits of mind (Marzano, Pickering and McTighe, 1993) indicates that *CT* dispositions has been assessed using approaches such as direct observation, rating scores, essays. In light of those studies above, although the students did not seem to make a significant

improvement, qualitative data, including minute papers students' interview responses revealed that students showed they had tendency to show *CT* dispositions to some extent. Each week the study revealed that students were able to overcome their barriers for *CT* with the help of the researcher. For example, some of the students told that they would not tell the truth when they were under threat considering *intellectual courage* drawn from the *minute papers* in the beginning, yet later they contended that they would tell the truth during the interviews. Another example can be seen considering *intellectual empathy*: some of the students said that they would not empathize the other gender under some circumstances in the beginning, but later they realized that they should empathize for some reasons. Considering *intellectual integrity*, some of the students showed that they were lack of *intellectual integrity*, but during the interviews, after some silence, students admitted that they are in conflict in their speeches and sharing. As we discussed before, during the interviews, some of the students went on showing the barriers of *CT*, yet some of them seemed to be showing *CT* dispositions such as truth-seeking, open-mindedness, analyticity, systematicity, self-confidence, inquisitiveness, and maturity of judgment proposed by Facione and Facione, 1992. The *CTQ* also supported all the qualitative data and vice versa. Furthermore, we also conclude that students may have exaggerated their responses in the pre-test, but after some time, they may have become aware of themselves.

Overall, the findings of this study demonstrated that it is possible to promote *CT* skills and dispositions in the students by means of *Web 2.0 tools*.

4. What were the students' perceptions about *Web 2.0 tools* after the study?

After infusion of *Web 2.0 tools* into our classes, we saw a remarkable increase in our learners' willingness to participate actively. Ozkan (2011) have found similar results that blog comments and interviews that the experience was very useful in that it encouraged students to improve certain skills such as writing, self-evaluation, technology use, etc.

Almost all of the items show that the students' views about *Web 2.0 tools* have changed in a positive way drawn from the *WTQ*. We can also draw from the data that this alteration comes very quick if technology steps into students' life. This means that

student can adapt to technology very easily. It is also significant to make students aware of who they are, what they know and how they get rid of daily challenges.

When we observe the Item 1 (Table 4), the main alteration in their responses occurred in the sub-item 1. Only one of the students preferred the answer “educators” in the pre test, yet in the post-test, 14 students preferred that item. This showed that researcher’s instruction has been beneficial during the study. Interestingly, two of the students preferred the sub-item “course”. This could be because they regard researcher’s instruction as a course. There has been no meaningful in other answers because they have learned almost everything from the researcher. However, there are some positive improvements on the other sub-items, yet not as “educators”. According to these results, the researcher has an important effect on instructing *Web 2.0 tools* and raises their awareness.

The Item 2 (Table 5) is closely related with the Item 1 because 14 of the students preferred the sub-item “educators” in the previous item. Interestingly, 15 students admitted that they received education on *Web 2.0 tools*. Only one student said that he/she received instruction and 17 students said they did not receive any education on *Web 2.0 tools* in the pre-test, while 15 students said that they received education in the post-test. This demonstrated that education about the tools was successful and this does not conflict with the Item 1.

The Item 3 (Table 6) is one of the most interesting one among the items in the questionnaire because there has been a meaningful development in the sub-item 2, 3, and 6. There has been no meaningful development in the sub-item 1 because they did not receive any education on bookmarks. There is also no meaningful correlation in the sub-item 4. The one reason for sub-item 4 is that they also have not done anything about photos and digital imaging; instead, they used www.plus.google.com that is similar to blogs. The sub-item 5 is not also meaningful because they have not sent messages to each other; instead, they commented on the sharing and commented to each other. There has been no meaningful change in the sub-item 7 because almost all the students are already good at social network platforms. For that reason, we cannot see any change here.

According to the Item 4 (Table 7), there has been an improvement on the views of the students. While 9 of the students answered “chat” in the pre-test, 15 of the students answered in the post test. Actually, we cannot see a meaningful improvement here because our main objective was not “chat”, but students may regard writing comments on the sharing as “chat”. In fact, there must be improvement in the sub-item “education”, but the result is not so much satisfactory. On the other hand, we can observe improvement on the sub-item “surf”. While only one of the students answered positively in the pre-test. It has increased to 8 in the post-test. This showed that this study could encourage students to surf. Sub-item 4 showed that there has been an improvement for the students’ preferences for social network. This could be feasible because students have started to use those tools as a vehicle for communication.

The Item 5 (Table 8) in the WTQ has an important value because in the beginning of the study seventeen of the participants said “No” while only one student said “Yes”. At the end of the study, there has been a considerable raise in the students’ views. This means that almost no students were involved in a collaborative activity before. However, it has turned into a desirable situation in the end.

5.2 Implications and Suggestions

This study is important because it showed that the *Web 2.0 tools* could be beneficial for 8th grade students in developing *CT* skills. In other words, using *Web 2.0 tools* as a community used by the participants as a discussion space could open up the path for the ones who would like foster students' *CT* skills and dispositions. According to Yang (2009) "... by using blogs as a platform for reflection, participants got more opportunities to make comments and challenge each other's viewpoints. They could still converse about or express what had been left out in the traditional classrooms. (p. 18) Furthermore, according to a study conducted by Aydın (2014), the use of blogs enhances reading processes, results in positive perceptions of reading, encourages classroom discussions, and develops literacy and *CT* skills. As Gifford (2010) suggested, there needs to be the continued inclusion of these technologies in the classroom. This will promote student *CT* especially when students are given guidance as to *how* to reflect.

Furthermore, teachers should become aware of the significance of teaching *CT* skills to students and of making them conscious agents in the future. According to Thompson (2011), "As part of their professional development teachers may examine more closely how they implement curricula or interpret educational standards and program goals and collaboratively agree on the applicability of *critical thinking* in and across their disciplines." (p. 6) Moreover, not only language teachers, but also other teachers (i.e. Social Science, Math etc.) should use *Web 2.0 tools* since they are not confined to only foreign language teachers. In addition, this study may suggest some useful implications for curriculum designers who would like to foster students' *CT* Skills in a more influential way rather than traditional methods. Thus, Using *Web 2.0 tools* might foster students to be involved in controversial activities. All the findings, implications, and suggestions mentioned in this study may establish a basis for a startup point, as it indicates how to administer the process of using *Web 2.0 tools* to develop students' *CT* skills.

Recognizing the role of thinking skills in education and integrate them into our courses might not be sufficient, yet; in order to introduce them no matter what course we are teaching, we should be good models for them while introducing *CT* skills. According to Snyder and Snyder (2008) "... by encouraging students throughout the process and modeling thinking behaviors, students' *critical thinking* skills can improve. The effort is worth the reward: students who can critically think for themselves and solve real-world problems" (p. 97).

5.3 Suggestions for Further Research

This study can be applied with more participants. The whole lesson may also be recorded on a camera to reach more eligible date to evaluate the participants' *CT* skills. The study may also done out by collaborating with teachers of Social Sciences, Math or others. By this way, we can see the effect of the technique on *CT* skills of the students more deeply. Another study to see the effect of *Web 2.0 tools* may be conducted with two classes; one group would be evaluated through traditional methods and the other through *Web 2.0 tools* to be able to compare the results. *CTQ*, *WTQ*, *semi-structured interviews* and *minute papers* provided the data in the study. Some other data collection methods could have been employed in order to provide deeper analysis. Furthermore,

the school facilities for conduction of the study were inadequate; no computer lab, limited internet access. Thus, the study was conducted under hard conditions, usually the efforts of the researcher and the participants to apply the study more efficiently and interactively. Thus, this study should be done in eligible conditions. The findings also showed that a 15-week course could have not been enough to instruct students to use the components of *CT* because it is not set of skills or dispositions that can be instructed in such a period. Finally, due to the complexity of *CTQ*'s statements, we could have had results that are more eligible. Instead, we could have simplified the statements in the beginning of the study, but this was not something that we could have easily recognized.

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APPENDICES

APPENDIX 1

ELEŞTİREL DÜŞÜNME ANKETİ

Öğrencinin ismi:

Tarih: .../.../...

Soruları dikkatle okuyun ve cevaplayın.

1 = Hiç 4 = Genellikle
2 = Nadiren 5 = Daima
3 = Bazen

	Daima	Genellikle	Bazen	Nadiren	Hiç
1. Anne ve babamı anlamaya çalışırım.					
2. TV de gördüğüm şeylere çok fazla inanmam.					
3. Bir şeyleri anlayabilmek için kendi düşünme sistemimi kullanırım.					
4. Okumak zorsa, onun üzerine düşerim. Böylece daha iyi okumayı öğrenebilirim.					
5. İnsanlarla aynı fikirde olmadığımda, olayları onları gözüyle görmeye çalışırım.					
6. Gerçekten doğru olduğunu bilmiyorsam, doğru olduğunu söylemem.					
7. İnsanların benimle aynı fikirde olmamasından korkmam.					
8. Diğer insanlardan ne bekliyorsam, ben de onu yapmaya çalışırım.					
9. Bir öğrenme ortamında çok soru sorarım					

10. Bir probleme yapışmak vazgeçmekten daima daha iyidir					
11. Bilmediğim çok şey var.					
12. Düşündüğüm şeyin doğru olduğunu savunmaya hazır olmalıyım, bu birlikte olduğum arkadaşlarım ya da çocuklar arasında popüler olmamama neden olsa bile.					
13. Kızgın olduğumda, kendime neden kızgın olduğumu sorarım.					
14. Diğerlerinin bana saygı duymasını beklediğim için, ben de onlara saygı duyarım. Çünkü ben başkalarının benim duygularımı önemsemesini isterim, ben de onlarınkini önemserim.					
15. Zorlayıcı sorulara cevap bulmaktan hoşlanırım.					
16. Diğerlerini dinlemek, ne düşündüklerini anlamak için iyidir fakat ben neye ve kime inanacağıma karar verirken daima kendi fikirlerime göre hareket etmeliyim.					

APPENDIX 2

CRITICAL THINKING QUESTIONNAIRE

Name of the student:

Date.../.../....

Read the questions carefully and answer them.

1 = Never 4 = Usually

2 = Rarely 5 = Always

3 = Sometimes

	Always	Usually	Sometimes	Rarely	Never
1. I try to understand my parents. Intellectual Empathy					
2. I cannot believe a lot on what I see on TV. Fair-mindedness					
3. I try to do my own thinking, to figure things out for myself. Intellectual Autonomy					
4. When reading is hard, I stick to it so I can learn to read better. Intellectual Perseverance					
5. Whenever I disagree with people, I try to see things the way they do. Intellectual Empathy					
6. I should not say things are true when I do not really know they are. Fair-mindedness					
7. I should not be afraid to disagree. Intellectual Courage					
8. I try to be the kind of person I expect others to be. Intellectual Integrity					
9. I ask many questions in a learning environment. Confidence in Reason					

10. Sticking to a problem is always better than giving up. Intellectual Perseverance					
11. There is a lot that I do not know. Intellectual Humility					
12. I should be ready to speak up to for what I think is right, even if it is not popular with my friends or the kids I am with. Intellectual Courage					
13. When I get angry, I ask myself why I am angry. . Intellectual Integrity					
14. Because I expect others to respect me, I respect them. Because I expect others to consider my feelings, I consider their feelings. Intellectual Humility					
15. I enjoy finding answers to challenging questions. Confidence in Reason					
16. It's good to listen to others to find out what they are thinking, but I must always do my own thinking to decide who and what to believe. Intellectual Autonomy.					

APPENDIX 3

WEB 2.0 ARAÇLARI ANKETİ

1-) Web 2.0 araçlarını nasıl öğrendiniz? Lütfen işaretleyiniz. (✓)		Adı:				
Eğitimcilerden		Soyadı:				
Arama motorlarından		Sınıfı:				
Arkadaşlarımdan		Tarih:				
Eğitim kurslarından		Cinsiyetiniz:				
Online Haberlerden		Erkek ()				
Diğer (Lütfen belirtin)		Kız ()				
2-) Web 2.0 araçları ile ilgili bir eğitim aldınız mı? Lütfen işaretleyiniz. (✓)						
Evet						
Hayır						
3-) Aşağıdaki Web 2.0 araçlarından hangisi kişisel hayatınızda kullandınız veya kullanmaktasınız? Lütfen işaretleyiniz. (✓)						
Blogs (Web Günlükleri)						
Wikis						
Youtube						
Flickr						
Facebook						
GoogleDocs						
Diğer (Lütfen Belirtiniz)						
4-) Aşağıdaki Web 2.0 araçlarından hangisi profesyonel hayatınızda kullandınız veya kullanmaktasınız? Lütfen işaretleyiniz. (✓)						
Blogs (Web Günlükleri)						
Wikis						
Youtube						
Flickr						
Facebook						
GoogleDocs						
Diğer (Lütfen Belirtiniz)						
5-) Web 2.0 araçlarını kullanırken kendinizi nasıl değerlendirirsiniz? Lütfen işaretleyiniz. (✓)						
	Mükemmel	Çok İyi	İyi	Kötü	Hiç Kullanmadım	Hiç Duymadım
Yer imleri araçları (Bir internet sitesine kolay ulaşmak oluşturulan)						
İşbirlikli Yazım (Ortaklaşa metin oluşturma)						

Haberler, web Günlükleri (Bloglar)						
Fotoğraf ve Dijital Görüntüleme (Picasa – Paint, Photoshop vs.)						
Anlık Mesajlaşma (Facebook gibi)						
Video paylaşım siteleri? (Youtube, izlesene)						
Sosyal Paylaşım Siteleri (Facebook, Twitter)						

6-) Lütfen Web 2.0 araçları kullanmadaki amacınızı belirtiniz. Lütfen işaretleyiniz. (✓)

	Eğitim	Sosyal ve Eğlence	Eğitim ve Sosyal	Eğitim ve Eğlence	Hepsi	Hiç Kullanmadım
Yer imleri araçları (Bir internet sitesine kolay ulaşmak oluşturulan)						
İşbirlikli Yazım (Ortaklaşa metin oluşturma)						
Haberler, web Günlükleri (Bloglar)						
Fotoğraf ve Dijital Görüntüleme						

(Picasa – Paint, Photoshop vs.)						
Anlık Mesajlaşma (Facebook gibi)						
Video paylaşım siteleri? (Youtube, izlesene)						
Sosyal Paylaşım Siteleri (Facebook, Twitter)						
7-) Aşağıdaki Web 2.0 araçlarından hangisinin sizin katılımdaki rolünüzü en iyi şekilde anlattığını belirtin. Lütfen işaretleyiniz. (✓)						
	İçerik Paylaşımı	İçerik Hakkında Yorum	Paylaşım ve Yorum	İçeriğe Göz Atmak	İçerik Toplamak	Kullanmıyorum
Yer imleri araçları (Bir internet sitesine kolay ulaşmak oluşturulan)						
İşbirlikli Yazım (Ortaklaşa metin oluşturma)						
Haberler, web Günlükleri (Bloglar)						
Fotoğraf ve Dijital Görüntüleme (Picasa – Paint, Photoshop vs.)						
Anlık Mesajlaşma (Facebook gibi)						

Video paylaşım siteleri?						
Sosyal Paylaşım Siteleri						
8-) Haftada kaç saat internette harcıyorsunuz? Lütfen işaretleyiniz. (✓)						
0-5						
6-10						
11-15						
16-20						
21 saat ve üzeri						
9-) İnterneti daha çok ne için kullanıyorsunuz? (Birden fazla cevap olabilir)Lütfen işaretleyiniz. (✓)						
Sohbet						
Eğitim						
Sörf (Farklı siteler arasında						
Sosyal Ağlar (Facebook, Twitter vs)						
Eğlence (Oyun vs.)						
10-) Hiç internet üzerinden ortaklaşa bir iş birliği içinde bulundunuz mu? Lütfen işaretleyiniz. (✓)						
Evet						
Hayır						
11-) İnternette yaptıklarınızın eğitim hayatınıza bir katkısı oluyor mu?Lütfen işaretleyiniz. (✓)						
Evet						
Hayır						
12-) Kendinize ait bilgisayarınız var mı? Lütfen işaretleyiniz. (✓)						
Evet						
Hayır						
13-) Evde internet bağlantınız var mı? Lütfen işaretleyiniz. (✓)						
Evet						
Hayır						

APPENDIX 4

WEB 2.0 TOOLS QUESTIONNAIRE

1-) How did you learn Web 2.0 Tools? Please put a tick. (✓)		Name: Surname: Class: Date: Sex: - Male () - Female ()
From Educators		
Search Engines		
Friends		
Educational Courses		
Online News		
Other (Please, specify)		
2-) Have you ever received any course about Web 2.0 Tools? Please put a tick. (✓)		
Yes		
No		
3-) Which one(s) of the following Web 2.0 Tools do you use in your personal life? Please put a tick. (✓)		
Blogs		
Wikis		
YouTube		
Flickr		
Facebook		
GoogleDocs		
Other (Please, specify)		
4-) Which one(s) of the following Web 2.0 tools do you use in your professional life? Please put a tick. (✓)		
Blogs		
Wikis		
YouTube		
Flickr		
Facebook		
GoogleDocs		

Other (Please, specify)						
5-) How do you rate yourself while using Web 2.0 tools? Please put a tick. (✓)						
	Excellent	Good	Very Good	Poor	Very poor	I have never used
Bookmarks						
Collaborative Writing						
News, Blogs						
Photo Imaging						
Instant Messaging						
Video Sharing						
Social Networks Platforms						
6-) Please, specify your purpose for using Web 2.0 tools. Please put a tick. (✓)						
	Educ ation	Social and Fun	Educatio n and Social	Education and Fun	All of Them	I have never used.
Bookmarks						
Collaborative Writing						
News, Blogs						
Photo Imaging						
Instant Messaging						
Video Sharing						
Social Networks Platforms						

7-) Which one of the following Web 2.0 tool describes your participation best? Please put a tick. (✓)						
	Sharing Content	Comment on Content	Sharing and Comment	Look over Content	Collecting Content	I don't use
Bookmarks						
Collaborative Writing						
News, Blogs						
Photo Imaging						
Instant Messaging						
Video Sharing						
Social Networks Platforms						

8-) How many hours do you spend a week on internet? Please put a tick. (✓)		
0 - 5		
6 - 10		
11 - 15		
16 - 20		
21 hours and over		

9-) For what purpose do you use internet? There may be more than one answer. Please put a tick. (✓)		
Chat		
Education		
Surfing		
Social Networks (Facebook, Twitter etc.)		
Fun (Games etc.)		

10-) Have you ever been involved in a collaborative activity on internet? Please put a tick. (✓)	

Yes		
No		
11-) Does what you do on internet contribute to your education life? Please put a tick. (✓)		
Yes		
No		
12-) Have you got a personal computer? Please put a tick. (✓)		
Yes		
No		
13-) Have you got any internet connection in your house? Please put a tick. (✓)		
Yes		
No		

APPENDIX 5

The prompt and Students' Comments for Intellectual Courage on Web 2.0 Tools

The prompt: Galileo was a brave man within his lifetime. Many philosophers and astronomers believed that the Earth is at the centre of the universe. However, Galileo defended that the Earth and other planets revolves around the Sun. He met with bitter opposition from some philosophers and clerics. The Catholic Church said that this is "false and contrary to Scripture" In February 1616, The Catholic Church warned Galileo to stop his support. However, he wrote this in his book. Later, they interrogated him and declined it as a heresy. They also wanted to kill him.

What would you do if you were Galileo?

Student 5

I would not risk my life.

Researcher

But Ömer Faruk. What if telling the truth is very important considering the whole world?

Student 17

If I were Galileo, I would stand behind the truth I knew and I would insist on it to the end. If that were true, it would show up eventually.

Student 15

I would not give in as him. I would not say I did not know although I know that it is true. I would think as Galileo. Why do you think so Ömer?

Student 18

If I were Galileo, I would tell my thoughts clearly if that would be a important discovery for the world?

Student 12

I would tell the truth anyway. I would risk my life.

APPENDIX 6

The prompt and Students' Comments for Fair-mindedness on Web 2.0 Tools

The prompt: Is it true that there are fewer woman in the parliament?

Student 14

It is absolutely incorrect. Because there are women rights. There has to be equality. If men have rights, women have to have rights too. We want equality.

Student 20

You are right Hatice. Women have rights.

Student 16

I think there should be more men than women at the parliament but there are equality between men and women, rights and freedom. Therefore, women should take part in parliament too.

Student 13

That is right they should be less. Because women cannot go into the places that men go into. I agree that women are less.

Student 6

I would favor men if I were a woman.

Student 3

I think women are more vulnerable than men. There should be more men at the parliament.

Student 3

I agree with you my friend Kubra.

Student 7

It is totally wrong. We have equality in our country, our world. Therefore, there should be women at the parliament.

APPENDIX 7

The prompt and Students' Comments for Intellectual Integrity on Web 2.0 Tools

The prompt: What do you notice while buying a new house?

Student 13

The house should be in a safe place with a garden. It should not be in earthquake zone.

Student 6

I would pay attention to house being well prepared.

Student 9

The house should not be constructed at the mountains because these places are unsafe. It has to be in a smooth place as it will be safer.

Student 16

While buying o house, I remark that it should have garden, there should not be more buildings around it, and its construction should be nice and pleasant.

APPENDIX 8

The prompt and Students' Comments for Intellectual Empathy on Web 2.0 Tools

The prompt: Unfortunately, Hawking became ill. One day when he was at Cambridge University, he lost his balance and fell off the stairs. He was suffering a severe illness when he was 21. At that time, he was planning to marry. He got married to Jane Wild in 1965. By the time, he could not move first his arms, second his legs and finally he could not speak. He was completely paralyzed in 2009.

Question: What is it like to have a disability?

Student 6

If I were him, I would desire to run and enjoy, wander in the streets, do what I want. Being paralyzed is not good. Everybody should think once and empathize with him.

Researcher

Thank you very much for your comment Oğuzhan.

Student 18

Being disabled is the last thing that a person wants in the world. We should care with our health and thank God.

Student 7

Being disabled means death. Being disabled is the last thing a person wants.

Student 17

If I were him, I would hold on to life. I would think the good side of it. Being disabled is not a problem. Each obstacle has a way out.

Student 20

I would seek for a way that goes to success, continue to my success and improve it. Being disabled is not an obstacle for going on to our lives.

Student 15

Being disabled is not a bad thing. Any of us may be disabled. If I were disabled like him, I would not struggle a lot.

APPENDIX 9

The prompt and Students' Comments for Intellectual Empathy on Web 2.0 Tools

The prompt: Should women and men share the housework equally?

Question 1: You are a man. Do you help the housework?

Question 2: You are a woman. Do you help for woodcutting, repairing the car etc?

Student 18

I think men should help with housework from time to time because women cannot catch up with all of the housework.

Student 18

If I were a man, I would help my wife and my mother.

Student 6

Men and women should share the housework equally because everybody has rights to live. You cannot use your wife as a slave. If I were a woman, I would help as much as I could.

Student 7

I think they should share the housework equally. In our world, each work is done with sharing. Therefore, we should be sharing. If I were a man, I would help because sharing is good.

APPENDIX 10

The prompt and Students' Comments for Confidence in Reason on Web 2.0 Tools

The prompt: What is going to happen at the end of the movie? Open to your guesses.

Student 3

Man will repair the television or the electronic dog.

Student 9

I think he will pull the dog into pieces.

Researcher

Why do you think so, Bircan?

Researcher

Why do you think so, zeliha?

Student 7

I think, he will make it smaller.

Student 3

Because he is carrying a drill and walking towards dog

Student 17

Robot man is walking towards dog with a drill in his hand. He will either make it smaller or break into pieces and throw it. Because robot man was angry. The reason was that everywhere is in mess and the dog messes up. Therefore, he walks towards dog with a drill.

Student 17

I think he will not do anything to the dog. He may buy the house for sale.

APPENDIX 11

The prompt and Students' Comments for Intellectual Humility on Web 2.0 Tools



Question: Do you think there are more things to prevent global warming? If there are, more, do we know all of them?

Student 3

I think we can take more precautions.

Student 18

I think there are more precautions that we do not know. We should take precautions we know and prevent global warming as far as possible. .

Student 17

There are a lot of things to stop Global Warming.

Student 7

I think there are more precautions to be taken. We can count more.

CURRICULUM VITAE

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Educational Background

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- 2006-2010 (BA) Anatolian University Faculty of Education, English Language Teaching Department
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Experience

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- 2011- 2012 English Point Private Course (Foreign Language Teacher)

Languages :

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