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# ON THE IMPORTANCE OF TEACHING CRITICAL THINKING

The aim of the current paper is to reevaluate critical thinking /CT/ and its role in education. It is much talked about in many educational circles, but the main question still remains what CT is, how we can bring it into our classrooms and make regular practice in our teaching. Proceeding from the assumption that it is often much harder to teach CT than to define, we have attempted to explain the widely used concept in the light of Paul-Elder critical thinking framework. The practical purpose of the study is to help teachers apply some of the methods and techniques proposed below, to promote CT and ensure higher quality teaching results.

**Key words:** critical thinking skills, Paul-Elder critical thinking framework, prejudices and biases, universal intellectual standards, elements of thought

Critical thinking /CT/ is a core academic cognitive skill that teaches students to question or reflect on their own knowledge and information presented to them. This skill is essential for students working on tasks and performing research. They need it in all types of activities and assignments - debates, discussions, essays, reports, tests, presentations, projects, and exams. In the recent years CT has become a buzzword applied to nearly any field, topic or pedagogical activity. If we look at many education-based organizations, we will find critical thinking features in almost everyone's list of the core skills students need. The International Baccalaureate, the Common Core Standards, the Association of American Colleges and Universities, the New Zealand Ministry of Education, and ACARA are just some who reflect this. It is also an invaluable competency in many workplace scenarios. CT involves mindful communication, problem-solving, and freedom from bias or ego. Employers look for critical thinking skills in candidates, in conjunction with problem-solving and creativity, with many seeing it as more important to have than the mere subject knowledge in the particular area of work.

The given paper is an attempt to unveil the widely used concept - what CT is and why it is so important, as well as who critical thinkers are. The study sheds light on Paul-Elder critical thinking framework universal intellectual standards that should be applied to different elements of thought to develop intellectual traits necessary for CT. In the practical part of the given research some helpful guidelines are introduced to teachers to develop students' reasoning abilities.

Special emphasis is placed on the importance of asking right questions, and the benefits of the Socratic questioning in particular. At the end of the paper we present some techniques that can be implemented in the classroom to boost students' conceptual, critical thinking skills, thus ensuring higher quality teaching results.

One of the goals of education is to help students foster the skills necessary to be informed consumers of information /De Angelo et al., 2009/. Therefore, providing them with the tools to think scientifically, is a crucial component of reaching this goal. In order to survive in this fast-paced environment, maintain employability, how we approach education needs to adapt. We cannot but agree that today it is more valuable to teach students "how to think, rather than what to think". When you teach students how to think, you involve them in the process of their own learning, engaging their minds, instead of instructing to memorize texts or one possible answer, without questioning, probing, reflecting or criticizing. This involvement, attaining real understanding, keeps spark of curiosity and develops inquiring minds. CT also promotes creativity, and learning to think is undoubtedly connected with creativity. The greatest breakthroughs or inventions, are all products of creativity. Moreover, critical thinking is directly connected with originality, problem solving, innovation, and out-of-the-box thinking.

Unfortunately, the definition of CT has become so broad that it can encompass nearly anything and everything. The term *critical thinking* has come to refer to an ever-widening range of skills and abilities. Kahneman maintains that educators need to clearly define CT, and that in addition to teaching CT, a strong focus should be placed on teaching students how to think like scientists. Scientific thinking is the ability to generate, test, and evaluate claims, data, and theories /Kahneman, 2011/. Simply stated, the basic tenets of scientific thinking provide students with the tools to distinguish good information from bad. Students have access to nearly limitless information, and the skills to understand what misinformation is, are crucially important /Wright, 2001/.

For the start we will introduce the origin of the word "critical" to understand the essence of the concept. The word "critical" derives etymologically from two Greek roots - "kriticos" /meaning discerning judgment/ and "criterion" /meaning standards/. Etymologically, then, the word implies "the development of discerning judgment based on standards." While some definitions of CT include key elements of the scientific method, this emphasis is not consistent across all interpretations of critical thinking /Huber, Kuncel, 2016: 431/. In an attempt to provide a comprehensive, detailed definition of CT, the American Philosophical Association /APA/ outlined six CT skills, 16 subskills, and 19 dispositions /Facione, 1990/. Some of those skills include *interpretation*, *analysis*, and *inference*; dispositions include *inquisitiveness* and *open-mindedness*.

In Webster's New World Dictionary, the relevant entry reads, "characterized by careful analysis and judgment; critical - in its strictest sense - implies an attempt at objective judgment so as to determine both merits and faults" /https://www.merriam-webster.com/dictionary/dictionary/.

M. Scriven and R. Paul define it as follows, "Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, analyzing, synthesizing, applying and/or evaluating information gathered from, or generated by observation, experience, reflection, reasoning, or communication, as a guide to belief and/or action. It is based on universal intellectual values: *clarity, accuracy, precision, consistency, relevance, sound evidence, good reasons, depth, breadth, and fairness...*" - a statement by Michael Scriven and Richard Paul, presented at the 8<sup>th</sup> Annual International Conference on Critical Thinking and Education Reform in 1987 /Scriven, Paul, 1987/.

The literature on critical thinking has roots in two primary academic disciplines: philosophy and psychology /Lewis, Smith, 1993/. Sternberg has also noted a third critical thinking strand within the field of education. These separate academic strands have developed different approaches to defining critical thinking that reflect their respective concerns. According to him this school of thought approaches the critical thinker as an ideal type, focusing on what people are capable of doing under the best of circumstances /Sternberg, 1986/. The writings of Socrates, Plato, Aristotle, and more recently, Matthew Lipman and Richard Paul, exemplify the philosophical approach. This approach focuses on the hypothetical critical thinker, enumerating the qualities and characteristics of this person rather than the behaviors or actions the critical thinker can perform /Thayer-Bacon, 2000/.

Everyone thinks, it is our nature to do so but much of our thinking, left to itself, is biased, distorted, partial, uninformed, or prejudiced. For most people, most of their thinking is subconscious, that is, never put under focus, explicitly put into words. The best thinkers are those who understand the development of thinking as a process occurring throughout many years of practice in thinking. These cognitive biases are usually the product of culture, upbringing, education, that might create limited beliefs and prejudices. The above mentioned in turn lead to inability to think clearly and logically, unwillingness to accept different opinions, to take different or contrary stances other than ours. The good thing is, that it may be corrected by realizing the importance of critical thinking, learning and teaching it. Excellence in thought, however, must be systematically cultivated. Someone with critical thinking skills can:

- understand the links between ideas,
- understand cause and effect link,
- recognize, build and appraise arguments,
- identify inconsistencies and errors in reasoning,

- approach problems in a consistent and systematic way,
- reflect on the justification of their own assumptions, beliefs and values,
- identify and recognize his/her own invalid assumptions and beliefs.

Not only does CT promote creativity, enhance efficiency, broaden comprehension, but it also helps separate facts from opinions. Recent developments in the media have made it easy for groups with political agendas to masquerade as impartial sources, and for fake websites to offer fake information. Facts and opinions are often used interchangeably; when in reality the terms have a huge difference in their meanings. Whether a statement is a fact or an opinion depends on the validity of the statement. While a *fact* refers to the something true or real, which is backed by evidence, documentation, *opinion* is what a person believes or thinks about something. In finer terms, a fact is a proven truth, whereas opinion is a personal view, that represents the outlook of an individual, which may or may not be based on the fact /https://keydifferences.com/difference-between-fact-and-opinion.html/. To become better critical thinkers we need to:

- be curious, ask questions,
- define terms,
- examine evidence,
- analyze assumptions and biases,
- avoid emotional reasoning,
- consider other interpretations,
- tolerate uncertainty.

Most researchers working in the area of critical thinking agree on the important role of background knowledge. In particular, they see background knowledge essential if students are to demonstrate their critical thinking skills /Willingham, 2007/. As McPeck has noted, to think critically, students need something to think critically about. Similarly, Bailin et al. argue that domain-specific knowledge is indispensable to critical thinking because the kinds of explanations, evaluations, and evidence that are most highly valued, vary from one domain to another /www.researchgate.net/publication/2616262\_ Conceptualizing\_ Critical\_Thinking/.

A comprehensive conception of critical thinking based on the substantive approach has been developed by Dr. Richard Paul and his colleagues at the Center and Foundation for Critical Thinking over multiple decades /Elder, Paul, 2009/. It is relevant to every subject, discipline, and profession, and to reasoning through the problems of everyday life. It entails five essential dimensions of critical thinking:

- 1. the analysis of thought,
- 2. the assessment of thought,
- 3. the dispositions of thought,
- 4. the skills and abilities of thought,

## 5. the obstacles or barriers to critical thought.

According to Dr. Paul assessing students' reasoning requires that we focus our attention as teachers on two inter-related dimensions of reasoning. Students need to master the above mentioned dimensions in order to learn how to upgrade their thinking. They need to be able to identify the "parts" of their thinking, and they need to be able to assess their use of these parts of thinking /Elder, Paul, 2006/.

In the Paul-Elder critical thinking framework the first dimension consists of the elements of reasoning; the second one - of the universal intellectual standards by which we measure student ability to use, in a skillful way, each of those elements of reasoning. Once we progress from thought, which is purely associational and undisciplined, to thinking which is conceptual and inferential, thinking which attempts in some intelligible way to figure something out - in short, to reasoning - then it is helpful to concentrate on what can be called "the elements of reasoning" /https://www.criticalthinking.org/pages/universal-intellectual-standards/527/.

The elements of reasoning are those essential dimensions of reasoning whenever and wherever it occurs. Working together, they shape reasoning and provide a general logic to the use of reason. These elements, then - purpose, question at issue, assumptions, inferences, implications, point of view, concepts and evidence, constitute a central focus in the assessment of student thinking. When we assess student reasoning, we want to evaluate, in a reasonable, defensible, objective way, not just that students are reasoning, but how well they are reasoning. We will be assessing not just that they are using the elements of reasoning, but the degree to which they are using them well, critically, in accord with appropriate intellectual standards. What follows are some guidelines suggested by Dr. Paul helpful to students as they work toward developing their reasoning abilities /http://www.criticalthinking.org/pages /defining-criticalthinking/766/:

- 1. All reasoning has a purpose:
- Take time to state your purpose clearly.
- Distinguish your purpose from related purposes.
- Check periodically to be sure you are still on target.
- Choose significant and realistic purposes.

# 2. All reasoning is an attempt to **figure something out**, to **settle some question**, to **solve some problem:**

- Take time to clearly and precisely state the question at issue.
- Express the question in several ways to clarify its meaning and scope.
- Break the question into sub questions.

- Identify if the question has one right answer, is a matter of opinion, or requires reasoning from more than one point of view.
  - 3. All reasoning is based on **assumptions**:
- Clearly identify your assumptions and determine whether they are justifiable.
  - Consider how your assumptions are shaping your point of view.
  - 4. All reasoning is done from some **point of view:**
  - Identify your point of view.
- Seek other points of view and identify their strengths as well as weaknesses.
  - Strive to be fair-minded in evaluating all points of view.
  - 5. All reasoning is based on data, information and evidence:
  - Restrict your claims to those supported by the data you have.
- Search for information that opposes your position as well as information that supports it.
- Make sure that all information used is clear, accurate, and relevant to the question at issue.
  - Make sure you have gathered sufficient information.
  - 6. All reasoning is expressed through, and shaped by, **concepts** and **ideas**:
  - Identify key concepts and explain them clearly.
  - Consider alternative concepts or alternative definitions to concepts.
  - Make sure you are using concepts with care and precision.
- 7. All reasoning contains **inferences** or **interpretations** by which we draw **conclusions** and give meaning to data:
  - Infer only what the evidence implies.
  - Check inferences for their consistency with each other.
  - Identify assumptions which lead you to your inferences.
  - 8. All reasoning leads somewhere or has **implications** and **consequences**:
  - Trace the implications and consequences that follow from your reasoning.
  - Search for negative as well as positive implications.
  - Consider all possible consequences.

To assess a student's response, whether written or oral, in structured discussion of content or in critical response to reading assignments, by how clearly or completely it states a position, is to assess it on the basis of a standard of reasoning. Universal intellectual standards are standards which must be applied to thinking whenever one is interested in checking the quality of reasoning about a problem, issue, or situation. To think critically entails having

command of these standards. In order to help students learn them, teachers should pose questions which probe student thinking, questions which hold students accountable for their thinking. The ultimate goal, then, is for these questions to become infused in the thinking of students, forming part of their inner voice, which then guides them to better and better reasoning /https://theelementsofthought.org/the-intellectual-standards/.

A question then can be raised – what appropriate intellectual standards do students need to assess the "parts" of their thinking? There are many standards appropriate to the assessment of thinking as it might occur in this or that context, but some standards are virtually universal, that is, applicable to all thinking. They are - *clarity, precision, accuracy, relevance, depth, breadth*, and *logic*. How well a student is reasoning depends on how well he/she applies these universal standards to the elements/parts of thinking, e.g.:

Clarity: Could you elaborate further on that point? Could you express that point in another way? Could you give me an illustration? Could you give me an example? Clarity is the gateway standard. If a statement is unclear, we cannot determine whether it is accurate or relevant.

**Accuracy:** Is that really true? How could we check that? How could we find out if that is true? Accuracy makes sure that all information is correct and free from error. If the thinking is reliable, then it has accuracy.

To summarize, critical thinkers should routinely apply intellectual standards /clarity, relevance, accuracy, logicalness, breadth, precision, significance, completeness, fairness and depth/ to the elements of reasoning /purposes, questions, points of view, information, inferences, concepts, implications, and assumptions/ in order to develop intellectual traits like intellectual humility, autonomy, integrity, courage, empathy, perseverance, confidence in reason and fairmindedness. The above mentioned begs the question - are there some simple but useful tips to implement in teaching that will help students develop CT skills? As a result of the given study we suggest using the following techniques to be applied in any domain at teaching irrespective of the subject /https://www.thoughtco.com/how-to-practice-critical-thinking-31722/:

# 1. Clarify Your Thinking

Our own thinking usually seems clear to us, even when it is not. But vague, ambiguous, thinking is a significant problem. If we are to develop as thinkers, we must learn the art of clarifying thinking, of pinning it down, spelling it out, and giving it a specific meaning. Here is what can be done to begin. An efficient strategy is to summarize in your own words what has been explained to you. Strategies for clarifying thinking:

- stating one point at a time,
- elaborating on what you mean,
- giving examples that connect thoughts to life experiences,
- using analogies and metaphors to help people connect ideas to a variety of things they already understand.

Language that can be used for this purpose:

- ✓ I think . . . (state your main point),
- ✓ In other words . . . (elaborate your main point),
- ✓ For example . . . (give an example of your main point),
- ✓ To give you an analogy . . . (give an illustration of your main point).

To clarify other people's thinking, consider asking the following:

- ✓ Can you restate your point in other words? I didn't understand you?
- ✓ Can you give an example?
- ✓ Let me tell you what I understand you to be saying. Did I understand you correctly?

#### 2. Stick to the Point

While working through a problem, it is necessary to make sure one stays focused on the central question, that helps address the problem and do not allow the mind to wander to unrelated matters. Frequently ask, "What is the central question? Is this or that relevant to it? How?". It is useful to ask these questions to make sure thinking is focused on what is relevant:

- ✓ Are we focused on the main problem or task?
- ✓ How is this connected? How is that?
- ✓ Does the information directly relate to the problem or task?
- ✓ Are we being diverted to unrelated matters?
- ✓ How is your point relevant to the issue we are addressing?
- ✓ What facts are actually going to help us answer the question? What considerations should be set aside?

### 3. Question Questions

Voltaire said, "Judge a man by his questions rather than his answers". The given statement really makes sense, because the quality of the questions determines the quality of the answers. So, if one can get better at asking questions, they can get better answers, which results in a whole host of benefits, like being better informed

and making better choices. Critical thinkers start by asking questions. It is necessary to always be on the lookout for questions. Questions that are superficial or "loaded" do not get right answers, help solve problems or make better decisions. Good thinkers routinely ask questions in order to understand and effectively deal with the world around them. Right questions make real problems explicit, discipline the thinking through those problems, and lead to a deeper understanding. Strategies for formulating more powerful questions:

- Whenever you do not understand something, ask a question of clarification.
- Whenever you are dealing with a complex problem, formulate the question you are trying to answer in several different ways (being as precise as you can) until you hit upon the way that best addresses the problem at hand.
- Whenever you plan to discuss an important issue or problem, write out in advance the most significant questions you think need to be addressed in the discussion. Be ready to change the main question, but once made clear, help those in the discussion stick to the question, making sure the dialogue builds toward an answer that makes sense. Questions that can be asked to discipline thinking:
  - ✓ What precise question are we trying to answer?
  - ✓ Is that the best question to ask in this situation?
  - ✓ Is there a more important question we should be addressing?
  - ✓ Does this question capture the real issue we are facing?
  - ✓ What information do we need to answer the question?
  - ✓ What is our point of view? Do we need to consider another?
  - ✓ Is there another way to look at the question?
  - ✓ What are some related questions we need to consider?
  - ✓ What type of question is this: an economic question, a political question, a legal question, etc.?

# 4. Be Reasonable

Being on the lookout for reasonable and unreasonable behaviors is a must. One of the hallmarks of a critical thinker is the disposition to change one's mind when given good reason to change. Good thinkers want to change their thinking when they discover better thinking. They can be moved by reason. Yet, comparatively few people are willing to change their minds once set and to suspend their beliefs to fully hear the views of those with which they disagree. It takes intellectual courage and integrity to admit one might be wrong, to be willing to change the mind when given good reasons. Strategies for becoming more reasonable:

Realize that you are being close-minded if you:

- are unwilling to listen to someone's reasons,
- are irritated by the reasons people give you,
- become defensive during a discussion.

After you catch yourself being close-minded, analyze what was going on in your mind by completing these statements:

- ✓ I realize I was being close-minded in this situation because...
- ✓ The thinking I was trying to hold onto is . . .
- ✓ Thinking that is potentially better is . . .
- ✓ This thinking is better because . . .

Another approach to developing CT skills besides asking questions is seeking information and analyzing with an open mind. Once the questions are asked it is time to investigate and research information that will help those questions. The wider the variety, the better. Analyzing with an open mind is another challenging task as it can be rather difficult to recognize the filters and biases instilled in people by their upbringing and education. This needs an ability to be mindful of biases and turning them off. Critical thinkers are more interested in solutions than in placing blame or complaining. Solutions have to be presented in a way that everyone can understand them. This is the time for intellectual traits like compassion, empathy or diplomacy.

A very efficient method used in critical thinking teaching practice is the method of Socratic questioning. The Socratic approach to questioning is based on the practice of disciplined, thoughtful dialogue. Socrates, the early Greek philosopher/teacher, believed that disciplined practice of thoughtful questioning enabled the student to examine ideas logically and to determine the validity of those ideas. The art of Socratic questioning is intimately connected with critical thinking because the art of questioning is ultimately important to excellence of thought. It is an effective way to explore ideas in depth, can be used at all levels and is a helpful tool for all teachers. By using Socratic Questioning, teachers promote independent thinking in their students and give them ownership of what they are learning. These types of questions may take some practice on both the teacher and students' part since it may be a whole new approach /https://en.wikipedia.org/wiki/Socratic\_questioning/.

When teachers use the Socratic method efficiently, they 1) determine students' knowledge on the given topic, issue or subject, 2) understand and assess the thinking of others, 3) find flaws and biases in reasoning, 4) distinguish what they know from what they do not know help them acquire intellectual humility in the process/, 5) differentiate between systematic and fragmented thinking, 6) foster their abilities to ask more powerful questions and engage in deeper dialogues,

- 7) help students become active, independent thinkers. To use Socratic questioning teachers can apply the following simple techniques /https://www.thoughtco.com/how-to-practice-critical-thinking-31722/:
  - plan significant questions that provide meaning and direction to the dialogue,
  - use wait time / allow at least thirty seconds for students to respond,
  - follow up on students' responses,
  - ask probing questions,
  - periodically summarize in writing key points that have been discussed,
  - draw as many students as possible into the discussion,
  - let students discover knowledge on their own through the probing questions the teacher poses.

To conclude, the extent to which any of us develops as a thinker is directly determined by the amount of time we dedicate to our development, the quality of the intellectual practice we engage in, the depth, and the commitment to becoming more reasonable, rational in our thinking practices. No matter how skilled the thinkers are, they will at times fall prey to mistakes in reasoning, irrationality, prejudices and biases, uncritically accepted social rules or vested interest. That is why we need to put consistent and conscious effort to diminish the power of the egocentric and sociocentric tendencies, work diligently to develop the intellectual virtues of intellectual integrity, humility, civility, empathy, sense of justice and confidence in reason.

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L. **ԲԱՐՍԵՂՅԱՆ** – **Քննադատական մտածողության ուսուցման կարևորության հարցի շուրջ.** – Սույն հոդվածի նպատակն է վերաարժևորել քննադատական մտածողությունը և դրա դերը կրթության ոլորտում։ Վերջինիս մասին շատ է խոսվում տարբեր կրթական շրջանակներում, բայց գլխավոր հարցը հետևյալն է՝ ի՞նչ է քննադատական մտածողությունը, ինչպե՞ս կարող ենք այն կանոնավոր կերպով կիրառել դասապրոցեսի ընթացքում։ Ելնելով այն ենթադրությունից, որ քննադատական մտածողությունը հաճախ շատ ավելի դժվար է սովորեցնել, քան սահմանել՝ հոդվածում փորձ է կատարվել բացատրել լայնորեն օգտագործվող հասկացությունը Փոլ-Էլդերի քննադատական մտածողության համակարգի լույսի ներքո։ Ուսումնասիրության գործնական նպատակն է օգնել ուսուցիչներին կիրառել որոշ մեթոդներ՝ խթանելու քննադատական մտածողությունը և ապահովելու ավելի որակլալ ուսուցման արդյունքներ։

**Բանալի բառեր.** քննադատական մտածողության հմտություններ, Փոլ-Էլդերի քննադատական մտածողության համակարգ, նախապաշարմունքներ և կողմնակալություն, համընդհանուր մտավոր չափանիշներ, մտքի տարրեր, մտավոր հատկություններ

Л. БАРСЕГЯН – О важности обучения критическому мышлению. – Целью данной статьи является переосмысление критического мышления и его роли в образовательном процессе. Несмотря на то, что развитию данного навыка уделяется много внимания в разных образовательных кругах, главный вопрос попрежнему остается — что такое критическое мышление и как мы можем использовать его в преподавании. Исходя из предположения о том, что гораздо труднее научить критическому мышлению, чем дать ему определение, в статье делается попытка объяснить широко используемую концепцию в свете системы критического мышления Пола-Элдера. Практическая цель исследования — помочь учителям в применении некоторых методов и приемов технологии развития критического мышления и обеспечении более качественных результатов обучения.

**Ключевые слова:** навыки критического мышления, система критического мышления Пола-Элдера, предрассудки и предубеждения, универсальные интеллектуальные стандарты, элементы мышления

Ներկայացվել է՝ 23.03.2021 Երաշխավորվել է ԵՊ< Անգլերենի թիվ 2 ամբիոնի կողմից Ընդունվել է տպագրության՝ 14.04.2021