

## EDUCATION OF CRITICAL THINKING OF UNIVERSITY STUDENTS

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TOMAS, SAULIUS<sup>2</sup>**Abstract**

In order to fully understand the environment and the processes taking place in it, it is necessary to be able to think critically. The importance of developing critical thinking is manifested in the fact that a young person will be ready to purposefully choose and apply cognitive methods, safely research, consistently, logically, critically think, analyze and solve problems by drawing reasonable conclusions (Osipovič, 2019). Employers expect specialists who, after graduating from universities, have the ability to make decisions, think analytically, and know how to work in a team. There is a lack of research that reveals the characteristics of sports management students' critical thinking, so it is necessary to evaluate the possibilities of developing sports management students' critical thinking, which allows us to say that this topic is relevant in both theoretical and practical aspects. **Scientific problem:** To what extent does the information visualization technique (argumentation diagram) enable the development of critical thinking of university students? **The object of the article** is the development of critical thinking of university students. **The purpose of the article** is to reveal the aspects of critical thinking education of university students, reflecting the experience gained during the study process. **Research tasks:** 1. To reveal the theoretical justification of critical thinking and its development in the process of university studies. 2. To discuss the opportunities for the development of critical thinking of university students, experiential reflections, assumptions. **Research methods.** The method of theoretical analysis examines psychological, andragogic, etc. scientific didactic literature, defining and scientifically justifying the concepts and meanings of critical thinking, the conditions, strategies, methods, etc. of critical thinking education. in the process of university studies.

**Keywords:** Critical thinking, education, systematic training.

**Theoretical basis of critical thinking**

In modern society, a systematic change in the concept of education is inevitable, both learners and teaching methods are rapidly changing. The relevance and necessity of such an approach is recognized by many scientists studying critical thinking. In the face of European integration processes, a specialist in each field must be able to analyze, apply available knowledge in new situations, solve emerging non-standard problems, and also feel responsibility not only for individual work, but also for group work. According to Prakap and Česaitė (2011), the individual's ability to think critically becomes especially important. Critical thinking will make it easier to adapt to the needs of the 21st century, while providing an opportunity to objectively evaluate everything we learn and do Byers, et. al., (2022). According to Rimienė (2006), the ability to think critically is not only one of the most important factors of successful learning, but also a vital condition for the formation of a mature, thinking, independent, proactive personality with unique abilities to adapt

to a wide spectrum of social circumstances. According to Saulius (2020), the relevance of critical thinking education is also emphasized in 1992. in the adopted concept of Lithuanian education (2023), in which one of the most important goals is to educate a critically thinking person. In today's complex world, affected by the flow of information and the rapid development of technology, teaching cannot be limited to the idea of imparting knowledge (Rarita, 2022). It is necessary to direct students' attitudes towards the true spirit of inquiry, scientific thought about certain social phenomena, and form critical thinking skills (Rarita, 2022; Davies, & Nyland, 2022, García Franco, Ferrara Reyes & Gómez Galindo, 2022; de Schepper & Sotiriadou, 2018). Critical thinking is one of the most important sets of cognitive abilities and attitudes needed by both scientists and global citizens (Bielik & Krüger, 2022). According to Rarita (2022), critical thinking is considered the highest skill that is highly valued by the business world and organizations.

Critical thinking is a way of thinking about any topic, problem or content, intelligent thinking. Later, it implements and allows intellectual thoughts to form. The best thing about critical thinking is that it improves the quality of thinking.

It has intellectual values such as clarity, reliable evidence, accuracy, good reasons, relevance, consistency, depth, breadth, and fairness.

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Critical thinking is a skill that does not develop by itself, it must be practiced and encouraged in an appropriate learning environment (Rombout, Schuitema, & Volman, 2022). Critical thinking requires a proper process, including skillful conceptualization, analysis of different aspects, synthesis, and most importantly evaluation of whatever information is gathered, keeping a close eye on all factors and grasping the overall concept. Critical thinking has become one of the most important and educational goals for students in different educational institutions (Springer, Stokowski, & Zimmer, 2022). According to Arinze, Mala, Klein, and Evanovich (2022), high-impact educational practices that promote civic engagement and social justice outcomes are recognized when analyzing specific types of actions aimed at instilling critical thinking skills in instructional activities and society as a whole, identifying failures experienced and the limits

of such efforts. The Vilnius Declaration “Horizons of Social Sciences and Humanities Sciences” (2013) expresses the consensus among academic and political institutions that “encouraging the reflective abilities of society is very important in order to maintain a vital democracy”. This declaration shows not only the good intentions of European policy makers, but also the daily realities of higher education and labor markets, which are interdependent.

Critical thinking shows that we all operate under certain conditions of uncertainty, limited rationality –



**Figure 1. The Benefits of Critical Thinking & How to develop it**  
(<https://tscfm.org/blogs/the-benefits-of-critical-thinking-for-students/>, 2023)

we do not have complete information that would allow us to make completely objective decisions. But knowing this also comes with the understanding that we can't trust anyone completely, no one is completely right – we are all affected by internal and external circumstances, so truth is very conditional – only from someone else's situation and point of view.

In summary, it can be said that today's education should be perceived as a part of social transformation, characterized by the creation of a new educational style, educational integrity, and social ingenuity.

Table 1

**Concepts of critical thinking (prepared by the authors, based on Prakapas, Čepaitė, 2011)**

The bottom line	
1	2
Directional, strategic thinking	<ul style="list-style-type: none"> <li>- Purposeful, causal, directional thinking, necessary for solving tasks, formulating conclusions, evaluating, making decisions (Halpern, 1996).</li> <li>- Independent social thinking, starting with problems, based on arguments, based on the testing, evaluation, development and application of ideas, and ending with the processing of learned knowledge (Klooster, 2001).</li> <li>- Active and interactive cognitive process characterized by improvement of thinking (Visockienė, 2003).</li> <li>- The way of independent reasoning (Jovaiša, 2007).</li> </ul>
Higher level thinking	<ul style="list-style-type: none"> <li>- The ability to distinguish opinions from facts, essential and secondary views (1993).</li> <li>- Thinking according to the laws of logic, searching for possible solutions, based on analysis and a review of many sources (Butkienė, Laurinčukienė, 1997).</li> </ul>

1	2
Holistic, systemic thinking	<ul style="list-style-type: none"> <li>- A process of considering information focused on deciding what to believe and what to do (Active Learning Methods, 1998).</li> <li>- A process that begins with the perception of information and ends with decision-making (Gudžinskienė, 2006).</li> <li>- Best thinking that makes sense of ideal rationality (Siegel, 1980).</li> <li>- Finding and using cognitive skills and strategies in practical activities (Koffemanas, 1983).</li> <li>- Self-improving disciplined thinking (Paul, 1993).</li> <li>- A phenomenon that gives meaning to being curious, the ability to apply research strategies, raise questions, consistently and systematically search for answers, rational and reasonable arguments both in defending one's point of view and taking into account the opinion of others (Critical thinking development in higher education: study programs, 2004).</li> <li>- The discipline of systems thinking, which allows you to look at problems and goals in a different way (Senge, 2008).</li> </ul>
	<ul style="list-style-type: none"> <li>- Use of ideas and resources, rethinking and reshaping of concepts and information, based on active communication (Integrating the principles of critical thinking education into the Lithuanian general education system: research report, 2010).</li> </ul>

Education must be re-created as a social mission, the goal of which is to develop an open, inventive, cosmopolitan knowledge society, and in the 21st century. the social movement born at the core of the changes is to arouse the public's favor for investments in an education system that serves everyone, in which the development of critical thinking emerges as an inseparable and integral part of it. Thus, critical thinking is the ability to evaluate incoming information, distinguishing what is true and facts, and what is false. Critical thinking allows us to objectively evaluate the environment around us and to properly solve even the most complex problems.

By thinking critically, we are able to think clearly and understandably and express our ideas, make appropriate decisions. Critical thinking is developed by systematizing, evaluating information, having a broad point of view. In other words, critical thinking is not acquired by itself, but is developed through study and learning.

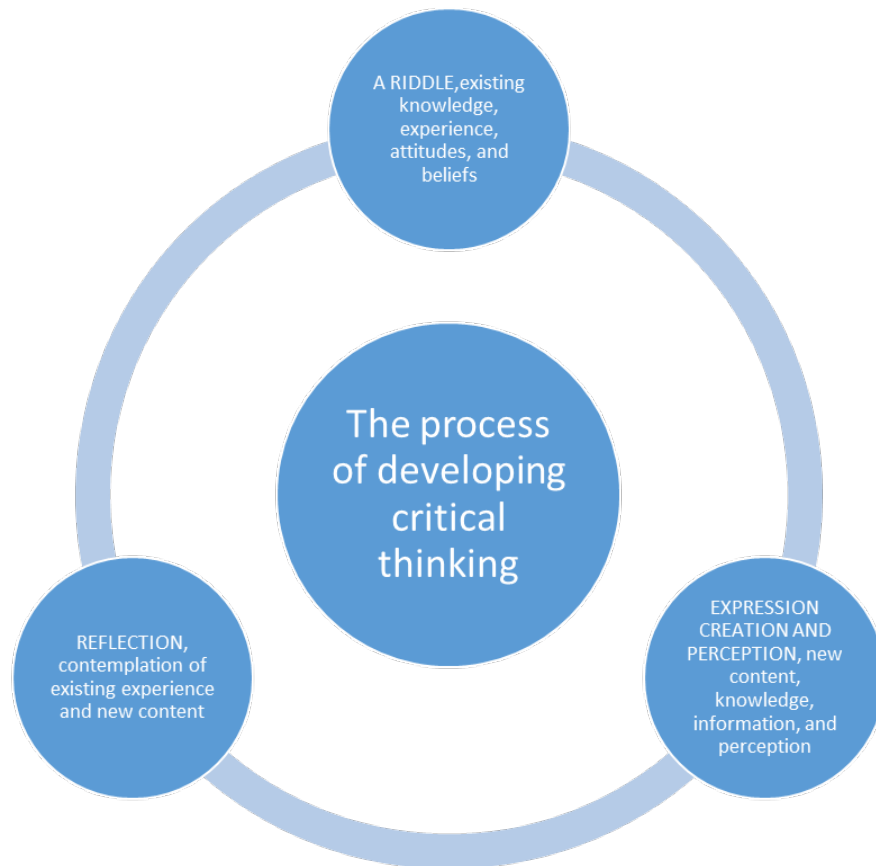
**Prerequisites for the development of critical thinking of university students**

Scientists have long been interested in critical thinking: pedagogues, psychologists who studied thinking processes. The Watson-Glaser critical thinking assessment concept is one of the most widely used and researched critical thinking tools (Petrasová, Bernátová, Kruszewska, 2019; Afify, 2019; Fountzoulas, Koutsouba, Nikolaki, 2019). The main premise of this concept is that critical thinking is inseparable from argumentation. According to Toulmin (2003), the theory of argumentation analyzes the nature of argumentation and its limits, structure and methods, systematizes possible errors, studies the peculiarities of argumentation in different

fields of activity, as well as changes in the style of argumentation, changes in culture and thinking style (determining propositional assumptions and logical implications, inductive and deductive reasoning). The concept of critical thinking allows us to intervene in complex, heterogeneous, dynamic realities (Bagchi, 2021). In this context, knowledge mapping is not only a passive representation of reality, but also a tool for creating meaning.

Scientists use both quantitative and qualitative methods to study the problem of critical thinking education (Toluitienė, Butėnienė, 2021). Quantitative research aims to assess the critical thinking abilities of university students, reflecting their critical thinking skills (Din, 2020; Giri, Paily, 2020; Chusni, Saputro, Rahardjo, 2021). And with qualitative research (content analysis), one digs deeper into the object and context, interested in similarities and differences between categories or codes (Gaižauskaitė and Valavičienė, 2016), and in order to reveal the diversity and essence of critical thinking concepts. According to authors Suryadi, Fatimah, (2021); Toluitienė, Butėnienė, (2021); Yan (2022), one of the arguments in the study of critical thinking, qualitative research can determine the components of essential thinking assumptions, argument evaluation, deduction, information and conclusion components. Because “critical thinking” and “critical thinking education” are complex constructs that are difficult to precisely operationalize (link to specific variables), qualitative research is seen to be more common.

According to Paplevkinas (2020), the further the need for critical thinking grows in the information society. “Critical thinking should be considered an essential competence that is necessary for citizens



**Figure 2. Scheme for the development of critical thinking**

*(Bakonis et al. 2014)*

to participate in everyday life and society and enables employees to make decisions and take action; it becomes one of the essential features that employers expect from future employees” (Indrašienė et al., 2018, 2021). Each country has different educational strategies for critical thinking. But for most countries such a citizen is an aspiration. Critical thinking is found in various educational strategies of the world’s countries (Jones, Ališauskienė, Miltenienė, 2008). The European Union is one of the most favorable environments for the development of personalities. The European Union promotes civic activity and critical thinking (Prakapas and Čepaitė, 2011, p. 182). A responsible and decisive personality must have autonomy of thought.

As stated by Bakonis et al. (2014), scientists Paulas and Elder (2012), a person cannot be one in one case and different in another. Decisions conditioned by critical thinking must be impartial and acceptable to all (or at least the vast majority). A lawyer can think one way (e. g. the defendant is guilty) and act differently (e.g. look for arguments

to exonerate and defend him), because that is his job and duty, but this is only thinking based on good, but not critical, arguments. Or, in an organization’s meeting, its members declare loyalty to common values and agreements, and behave quite differently outside of it. The mentioned scientists claim that critical thinking is the art of thinking about one’s own thinking, analyzing, evaluating and improving it. In other words, it is not just good thinking based on logical decisions and arguments.

The process of developing critical thinking is never complete, as there is always new information and experiences to reflect on (Figure 2). Two important aspects of this “circle” should be emphasized – personal experience and knowledge as a starting point and reflection – which includes both existing and newly acquired experience and knowledge. When new knowledge is learned by associating it with existing knowledge, new ideas, phenomena, processes become more easily and deeply understood. Then they are accepted as their own, and not imposed from the country, because they learn with interest,



involvement, responsibility and deep thinking (Bakonis et al., 2014).

Irrational inclinations of nature, family, university, social networks, media have a great influence on the formation of beliefs. Beliefs and values determine the decisions and actions of individuals, i. e. affects the lives of the individuals themselves and those around them. Therefore, it is necessary to constantly monitor how beliefs condition the decisions made. This is where the inference ladder strategy developed by Mulder (2018) can help (Figure 3).

1. **Reality and facts.** This level identifies what is directly perceptible. You observe all information and data from the real world and pay attention. Observable data is the most important factor in this step.

2. **Selecting facts.** From this level, we select data and facts based on convictions and prior experiences. The frame of reference plays a role in this.

3. **Interpreting facts.** The facts and data are interpreted and given a personal meaning.

4. **Assumptions.** At this level, assumptions are made based on the meaning you give to your observations. These assumptions are personal and are different for every individual.

5. **Conclusions.** At this level, conclusions are drawn based on prior beliefs. Avoid jumping to conclusions in previous steps.

6. **Beliefs.** At this level, conclusions are drawn based on interpreted facts and prior assumptions, also called existing beliefs.

7. **Actions.** This is the highest level. Finally we take action based on prior beliefs and conclusions. The actions that are taken seem to be the best at that particular moment.

In conclusion, it can be said that the next time you have to climb up again, you need to think about each step, monitor your thinking, and you will probably be able to avoid an unreasonable “jump to the conclusions that were expected”. Breaking out of the vicious circle is realizing that there is always more than one way to think about something, that people with different perspectives and values can legitimately raise objections and provide alternative ways of thinking that need to be considered. When listening to this diversity, it is understood that one’s own beliefs become “too narrow” and this can lead to the disparity of critical thinking. Reflect by asking questions: Have we ever heard of the different steps in an inference model? Do we understand how the ladder works and do we understand the practical explanation or do you have more suggestions? What

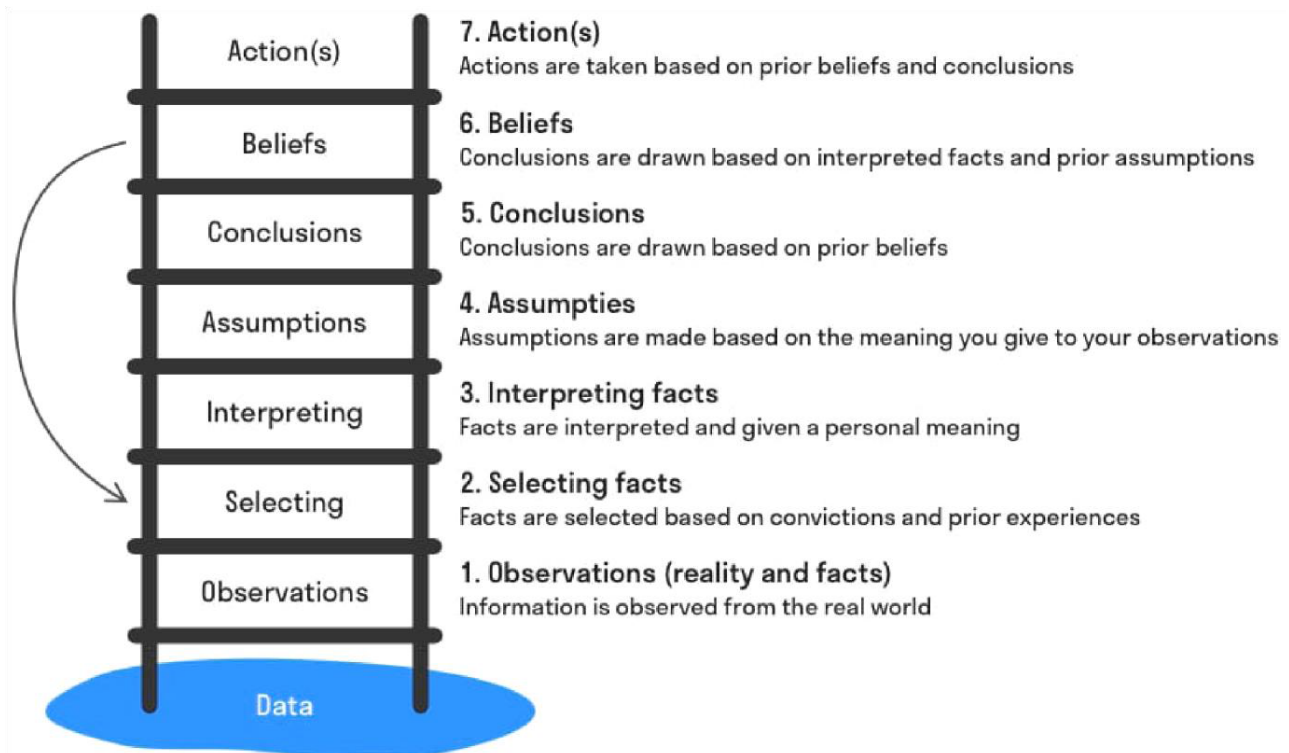


Figure 3. Ladder of Inference Strategy

(Mulder, 2018)

are your success factors in making good decisions? All answers will contribute to the critical thinking development of university students.

### Conclusions

1. Critical thinking is rational thinking that improves itself. Critical thinking is a dualistic phenomenon, two dimensions emerge in its definitions: emotional and cognitive. Critical thinking is characterized by a person who can freely dispose of his attitudes and improve. Critical thinking is characterized by 5 characteristics: rational thinking; the search for truth; freedom of thought; skepticism;

reflection. The greatest benefit that critical thinking can provide is the power to solve problems.

2. When analyzing the methods of developing critical thinking, it is necessary to reflect on the expression of such important values as freedom and responsibility in the life of an individual and an organization, assessing mutual relationships, making sure how critical thinking methods can contribute to the general development of critical thinking literacy of university students, especially when considering information about important societal issues life problems

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## ВИХОВАННЯ КРИТИЧНОГО МИСЛЕННЯ СТУДЕНТІВ ВНЗ

### Анотація

Для повного розуміння навколишнього середовища і процесів, що в ньому відбуваються, необхідно вміти критично мислити. Важливість розвитку критичного мислення проявляється в тому, що молода людина буде готова цілеспрямовано обирати та застосовувати пізнавальні методи, безпечно досліджувати, послідовно, логічно, критично мислити, аналізувати та вирішувати проблеми, роблячи обґрунтовані висновки (Осипович, 2019). Роботодавці очікують спеціалістів, які після закінчення університетів мають здатність приймати рішення, аналітично мислити, вміють працювати в команді. Досліджень, які розкривають особливості критичного мислення студентів спортивного менеджменту, недостатньо, тому необхідно оцінити можливості розвитку критичного мислення студентів спортивного менеджменту, що дозволяє стверджувати про актуальність даної теми як у теоретичному, так і в практичному плані. аспекти. Наукова проблема: Наскільки методика візуалізації інформації (аргументаційна діаграма) дозволяє розвивати критичне мислення студентів ВНЗ? Об'єктом статті є розвиток критичного мислення студентів ВНЗ. Мета статті – розкрити аспекти виховання критичного мислення студентів ВНЗ, відобразивши досвід, набутий у процесі навчання. Завдання дослідження: 1. Розкрити теоретичне обґрунтування критичного мислення та його розвиток у процесі навчання у ВНЗ. 2. Обговорити можливості розвитку критичного мислення студентів університету, емпіричних рефлексій, припущень. Методи дослідження. Метод теоретичного аналізу вивчає психологічну, андрагогічну та ін. наукову дидактичну літературу, визначаючи та науково обґрунтовуючи поняття та значення критичного мислення, умови, стратегії, методи тощо виховання критичного мислення у процесі навчання в університеті.

**Ключові слова:** критичне мислення, освіта, системне навчання.

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Received date 09.04.2023  
Accepted date 01.05.2023  
Published date 09.05.2023

**How to cite:** Pupkis, Algirdas, & Saulius, Tomas. Education of critical thinking of university students. Humanities studies : Collection of Scientific Papers / Ed. V. Voronkova. Zaporizhzhia : Publishing house "Helvetica", 2023. 15 (92). P. 112–119.  
doi: <https://doi.org/10.32782/hst-2023-15-92-13>