CURRENT RESEARCH JOURNAL OF PEDAGOGICS
(ISSN –2767-3278)
VOLUME 04 ISSUE 12 Pages: 16-20
SJIF IMPACT FACTOR (2021: 5. 714) (2022: 6. 013) (2023: 7. 266)
OCLC – 1242041055
Publisher: Master Journals


Journal Website: https://masterjournals.com/index.php/crjp



Research Article

# DEVELOPING STUDENTS' CREATIVE RESEARCH AND PROFESSIONAL SKILLS THROUGH CRITICAL THINKING

**Submission Date:** December 06, 2023, **Accepted Date:** December 11, 2023,
**Published Date:** December 17, 2023
**Crossref doi:** https://doi.org/10.37547/pedagogics-crjp-04-12-04

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## ABSTRACT

This article provides students with creative research and professional skills and the content of developing skills through critical thinking, innovative technologies of education robotics, modeling, constructivism, critical thinking in teaching programming the importance of ability and the process of its formation are discussed.

## KEYWORDS

Research, robotics, professional skills, critical thinking, logical thinking, gathering information, disposition.

## INTRODUCTION

From the achievements of science and innovation activities in the world education system wide use, consistent with all spheres of society and state life sustainable development of the country's decent future is becoming an important factor. USA, Russia, England, South Korea, Japan in countries like, competitive with high technological readiness personnel training is considered as the main direction of development, innovations in education, including robotics, modeling, design, programming, 3D design and virtual theoretical studies are being conducted on teaching engineering.

Continuous education system formed in the Republic of Uzbekistan the process of training a competent person and a qualified specialist is effective serves to ensure its organization. Continuous education system in non-school educational institutions operating within STEAM subjects, critical thinking, and independent information seeking and analysis special emphasis on the development of competences and skills taking into account the requirements of the modern digital economy. Today's tasks are to answer the problems of personnel training is becoming one. Today, he is a well-rounded person in the process of extracurricular

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education, social education outside of school that the order is not aligned with advanced foreign practices and the need to update the educational content; modern information individual children through the wide use of communication technologies programs and methodical materials aimed at development, students the development of vocational training is sufficient lack of security; of knowledge and skills acquired by students to the level of skills and qualifications required in professional activity inconsistency determines the relevance of the researched problem.

STEAM in improving students' vocational training by applying learning to practice, students research and professional skills can be enhanced. Innovative technologies for skill development are widely used the need to teach critical thinking, students as a means of developing research and professional skills is being considered.

What is meant by teaching students to think critically? What is critical thinking? Critical thinking is information refers to the ability to objectively analyze and draw reasonable conclusions. This such as data, facts, observable phenomena, and research findings includes resource evaluation. Critical thinking is the analysis of evidence to draw conclusions. Rational, skeptic, unbiased arguments in complex topics and objects

There are several different types, including analysis and evaluation

are definitions. Critical thinking is the student's self-management, self-discipline, self-control and self-development on thinking. These are strictly perfect conditions and use them wisely implies. It is effective communication and problem solving abilities, as well as local egocentrism and sociocentrism undertakes to overcome.

Taken by students during class and extracurricular activities the training sessions are often research-oriented in this case, the student's independent movement, the assignments given to him and the logical thinking of the student in finding their solution. Developing and guiding critical thinking is always a challenge remains. Today, in the modern world, training for a profession training is carried out on the basis of a one-way approach, several new professions were created, such as IT specialist, robotics, mechatronics and engineering professions. These professions in learning and performing complex technological processes and operations students' programming, assembly, implementation, commissioning and technological sequencing skills alone are not enough; research skills are also gaining importance.

For this case, students are required to regularly develop critical thinking is being done. World experience shows that during education most in the development of students' skills and abilities. In addition to skills and abilities, researchers also consider critical thinking are admitting. This includes dispositions of this concept. The origin is critical in research conducted in 1985. The ability to think is different from the ability to "do and accomplish". The concept of critical thinking ability is recognized corroborating empirical evidence also emerges, and the deductions are in fact characteristic of individual objects has been proven. These opinions are different. Attitudes are cast as habits. The scientist Facione defines critical thinking situations as follows: "To persons, events and conditions attitude towards è is constant to react to them are internal motives that arise. Researchers are similar develop critical thinking by trying to identify sets based on several reasons and factors. For example, most often an ability that

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involves repetitive critical thinking situations types are as follows:

- open thinking ability;
- the ability to think fairly;
- the ability to tend to look for reasons;
- the ability to be curious;
- the ability to want to be informed;
- adaptability;

Today, several western scholars Facione, Ennis, Baylin and many in identifying critical thinking on the part of others although studies have been carried out by most researchers that critical thinking involves "skills and judgments." are agreeing. His perspective on critical thinking. In 1990, they are coming to the conclusion that it is necessary to consider. The American Philosophical Association (APA) is critical of a compromise future research by forming a group of like-minded researchers the task of identifying critical thinking that supports their actions. Although most experts believe that dispositions are an important component. Agreeing that it is a part, they oppose certain actions believed to be dispositions within the definition of critical thinking, some simply play a praiseworthy role based on these considerations and that others who support these views also have a normative role counts. Students can develop their research and professional skills in the right ways.

There are several ways to teach critical thinking engineering circles can teach the following:

**1. Gathering information:**

Many of our readers are completely wrong they make decisions because they believe their opinion is right. Such a reason they make mistakes is that they have little information on the contrary, it does not seek to further strengthen knowledge. Therefore, considering how fast our times have progressed collect all available information and analyze them.

**2. Follow up:**

Here's how curious the readers are. Always not paying attention to what is under our eyes and it's because we take them for granted. Besides that, not only objects, but our behavior and others, are different having ironic situations and unusual structures of mechanisms possible. When we observe, our inner feeling is unconscious for a while and that our eyes do not react to what we see.

**3. Working with literature:**

We use logic to make the right conclusion you have to learn. It has its own laws, exceptions, and controversies. There are objections, but nevertheless, our opinion in any discussion. It is a great way to prove that other students learn to notice inconsistencies in their statements and if the situation allows react to them.

**4. Rationalization:**

This means applying the laws of consciousness: induction, deduction and analogy. Using these tools, we can argue we can evaluate it and find its strengths and weaknesses.

**5. To remember:**

Regularly one step away from the details of the problem to go back and remember the whole process and what we learned and paying attention to how we experience it.

**6. Creativity:**

It helps us not only to understand the essence of creativity, but also

helps to be more creative through exercises. Using methods such as TRIZ and STEAM, they help us approach problems systematically.

**7. Sorting and sequencing:**

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Analyzing information, the elements and ideas for learning according to their characteristics and sort out. Usage of mental capabilities.

**8. Compare and contrast:**

Two or more objects, situations, learning to identify how problems are similar and different. Make a list of advantages and disadvantages and then choose one.

**9. Cause and Effect Analysis:**

Interestingly, many students they cannot distinguish cause and effect. Therefore, our first our step will be the ability to determine cause and effect. Sometimes the reason and the effect may not be related to each other, so we have something we may not have considered.

**10. Synthesis:**

Different to achieve an unexpected result collect data and integrate them.

**11. Assessment:**

Learning to find two or more solutions to a problem and evaluating which one is better.

**12. Prediction: This is a complex process that does not bother students.**

They spend a few seconds "analyzing" and into the future based on which they make decisions. Do not do this, pay attention to the data gather scientific solutions by collecting and analyzing with. There are thousands of factors that we can take into account.

**13. Priority:**

Learning to manage time, why our time understanding what we spend and what it is spent on. Don't forget that time spent on useless things can lead to loss of work efficiency.

In conclusion, this skill is usually summative and final consideration. We should know that everything is clear what we understood, what experience we gained, what conclusions to know what we have released and to summarize it all learning to do. Most likely, students will learn these skills at the same time cannot master. However, we use these to make better decisions and we can generalize them to act boldly. A mastered skill significantly affects the students' way of thinking can change the level.

There are different ways of thinking, but none of them not as effective in problem solving as critical thinking. With the help of critical thinking which we raise emotional awareness and emotional level, as well as our prevention of cognitive distortions and egocentrism possible.

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