

**WUT 2020**  
**10<sup>th</sup> International Conference “Word, Utterance, Text: Cognitive, Pragmatic and Cultural Aspects”**

**4 C's THEORY APPLICATION AT LESSONS OF ENGLISH AT A TECHNICAL UNIVERSITY**

Victoria V. Kozlova (a)\*, Irina Yu. Lavrinenko (b)

\*Corresponding author

(a) Voronezh State Technical University, 84, 20-Letiya Ocyabrya Street, Voronezh, 394006, Russia,  
victoriak\_@mail.ru

(b) Voronezh State Technical University, 84, 20-Letiya Ocyabrya Street, Voronezh, 394006, Russia,  
lavrinirina1@yandex.ru

***Abstract***

The teacher needs to actively apply new methodological solutions in the classroom to form and develop students' skills that meet the requirements of the modern professional environment. One of the approaches to teaching aimed at developing both professional and general cultural competencies among students is the application of methods of the 4C's Theory, namely, implementation of the principles of Creativity, Critical Thinking, Communication and Collaboration. This article is devoted to the description of this technique implementation in the foreign language classes at a Technical University. To achieve this goal, we analyzed the experience of implementing 4C's Theory through the use of Six Thinking Hats technique in English classes at Voronezh State Technical University, Russia. In the process of analysis, an experiment was conducted to assess the effectiveness of this technology use. Application of Six Thinking Hats technique in foreign language practical classes stimulates students' communicative activity, helps develop their communication skills and improve their ability to concentrate. After two months of using this technique, students were asked to describe what changes they noticed in their communication skills as a result of completing tasks. We may mention the following advantages detected by the students: readiness to make faster decisions regarding professional issues (both while doing tasks in the classroom and in everyday communication), ability to maintain one's point of view in public and willingness to work in a team.

2357-1330 © 2020 Published by European Publisher.

**Keywords:** Teaching, creativity, critical thinking, communication, collaboration.



This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 Unported License, permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

## 1. Introduction

Modern tendencies in education are aimed at developing learner's skills and abilities necessary to form appropriate professional competencies. The rapid pace of contemporary world requires modern specialists to constantly self-develop, to improve their competencies and to form new skills and abilities. This obligatory requirement of the world standards inevitably influences the process of education. With every passing year learning is becoming more and more complex and demanding in all its stages. In particular, the process of learning in high school should be improved in consideration with vital skills and abilities to promote professional and creative activity of the specialists in the labour market of the 21<sup>st</sup> century.

## 2. Problem Statement

Today labor market challenges a specialist that needs to have a broad set of skills. The most important is not only the professional skills, but the specialist's ability to think extraordinary, to come to creative solutions and to effectively work in a team. The specialist's ability to successfully accomplish the given task, to demonstrate high quality work within strict deadline is really essential. Taking all this into consideration the process of young specialists' training should be implemented in such a way as to develop the skills to solve the tasks efficiently and within the minimum period of time. According to Sivickaja (2010), for achieving this goal it is crucial to master skills representing three types of competencies – cultural competency, comprising the student's abilities for analytical thinking (critical evaluation, argumentation, communication); professional competency, revealing the learner's knowledge of professional matter; and general competency, determining learner's abilities and skills in any knowledge area.

To achieve this it is critical to develop some additional students' skills besides the professional ones (comprising professional competencies), i.e. creativity, extraordinary thinking (thinking out of the box), initiative, responsibility, reaching mutual understanding with future colleagues. To form and develop the skills to meet the demands of today's professional area, one needs to implement new methodological approaches in teaching. One of the methods of teaching aimed at these collaborative skills development is *the 4 C's Theory*, presenting the principles of Creativity, Critical Thinking, Communication and Collaboration (What are the 4 C's of 21st Century Skills?, 2019). This teaching technique gains popularity among teachers and students of the 21st century as Astuti, Aziz, Sumarni, and Bharati (2019) reported in their study. The current researches of many scholars are devoted to examining these skills and their importance for the process of teaching. The article by Salido and Dasari (2019), for instance, is dedicated to the research of *the 4 C's Theory* application to develop the student's reflective thinking; Suraini, Haliza, Normazla, Norhaili, Noor Saazai, & Simkin, (2018) showed how *the 4 C's Theory* is applied for Problem-Based learning and Language Case Crafting; analysis of *the 4 C's Theory* application for mastering higher-order thinking skills is of special interest in the paper of Cao (2018).

The tendency of using the core aspects of *the 4 C's Theory* today indicates the humanization of the education, the orientation of the teaching process to the human nature, development of men's abilities and skills. As Fomina, Lavrinenko, and Kozlova (2018) and Lavrinenko (2019) emphasized in their articles,

the paramount importance of human power, greatness of man and his ability to surpass all known powers of nature has been the central idea of the philosophers since the 16-th century, namely, of F. Bacon. Surprisingly, the humanistic approach to science and technology gains popularity at present, in the epoch of the innovation and computerization that highlights the superiority of man, his utmost importance and unlimited power.

According to Silber-Varod, Eshet-Alkalai, and Geri (2019), Communication, Problem solving and Collaboration are considered to be the most prominent digital skills. *The 4 C's Theory* proved to be effective as a part of thematic learning in many countries aimed at improving competencies of the 21st century as Sulisworo, Suwondo, Erviana, and Fitriawanati stated (2019). This is a pioneering didactic approach that has already been applied in English classes not only in Russia, but also in many other countries. The experience of *the 4 C's Theory* practice at Voronezh State University was presented in the workshop at the conference 21st Century Skills, organized by the Cambridge resource center in Voronezh and the Department of the Romance-and-German Philology at Voronezh State University that is described in details in the article by Kozlova and Lavrinenko (2019).

### **3. Research Questions**

The research questions for this study are the following ones:

-could foreign language classes at a Technical University stimulate the future specialists' abilities to correctly and adequately identify professional problems in given circumstances? Are they able to find nonstandard creative solutions, take the initiative and responsibility for the result?

-how can foreign language classes help students to effectively work in a team, to reveal their diplomatic skills, tolerance, to develop initiative, objectivity and insight.

All the above mentioned qualities on the whole contribute to achieving professional goals and also increase future specialist's self-esteem and self-confidence.

### **4. Purpose of the Study**

The purpose of the study is to determine the specific features of the *4 C's Theory* application at English lessons at a Technical University, in particular, to describe the methodical ways of this strategy implementation as well as to detect the most efficient methods of its use.

### **5. Research Methods**

To achieve the goal of the research, a number of theoretical sources describing the bases and contents of *the 4 C's Theory* were analyzed. Also methods and ways of its application at foreign language lessons in high school are presented. We considered and analyzed as well the results of the students' questioning in the groups where *the 4 C's Theory* methodology was applied. Furthermore, the degree of effectiveness of *the 4 C's Theory* application at a Technical University was determined and as a result we revealed the aspects, connected with certain challenges and thus acquiring special methodists' attention.

The task of the research was to determine the degree of *the 4 C's Theory* effectiveness, to reveal possible difficulties and challenges that it implies and the ways to deal with them. In the process of the

research the following methods were used: the method of synthesis, the method of quantitative analysis, descriptive method and the method of experiment.

The object of the research is the complex of practical tasks formulated in accordance with *the 4 C's Theory* implementation given to the students at the English language lessons. The subject of the research is to determine methodical features of *the 4 C's Theory* application, to reveal its advantages and possible challenges of its practicing in the non-linguistic University. The conducted research analyzes the experience of *the 4 C's Theory*, in particular, Six Thinking Hats methodology implementation at English lessons at Voronezh State Technical University. Also, the experiment was conducted to assess the effectiveness of this theory application. In the process of the experiment a group of students of the technical specialties was offered to accomplish some *the 4 C's Theory* tasks in their English classes. The experiment lasted two months. At the end of the experiment the students were questioned to reveal the specific features of *the 4 C's Theory* application and to determine their influence on the students' communication skills.

## 6. Findings

Having conducted the analysis of the modern requirements to the foreign language teaching, carried out in accordance with students' cultural and professional competencies, as well as analyzing our own experience of the English language teaching at the Technical University, a set of tasks was prepared; it comprises communicative component of the foreign language class and contributes not only to the development of the students' language skills, but also to their creative abilities.

The tasks created by the authors of the article follow the conception of the 4 C's methodology. The application of this theory in the classes of students of the technical profile at Voronezh State Technical University is the innovative one. Foreign language teaching within *the 4 C's Theory* is applied at Voronezh State Technical University in the course of the program of the additional professional education "Translator in the sphere of professional communication". The specific features of the educational process within this program are presented in the article by Fomina and Kozlova (2018).

Below are the types of tasks, representing the variants of the practical use of *the 4 C's Theory* at the English language lessons at a Technical University. It is necessary to note that the tasks offered are being implemented in the technically-oriented discourse and that is why are characterized by certain specific features.

As it has already been mentioned above, the interaction with students in class should be aimed at their ability to find solutions to professional problems that are close to the real conditions of their professional area, the sphere where the specialists will professionally communicate in a foreign language. Following Aleksandrova and Kubryakova (1997), discourse in this article is determined as speech, language, being originated in a certain process that reflects professional and cultural characteristics of its participants as well as the conditions of the communication.

According to Karasik (2016), one of the basic features of the discourse is its communicative character, implying dialogue within a certain social environment.

Among the methodological approaches following *the 4 C's Theory* that is used in the foreign language classes is the method of Six Thinking Hats. Its author is the British psychologist and writer

Edward de Bono. This theory was first introduced to the public in 1985 as a special way of thinking activity aimed at developing people's skills to respond to different challenges and to find the ways out of disputable and nontrivial situations.

According to the Six Thinking Hats technique, there are 6 strategies of thinking in the process of which one can evaluate the situation from six different points of view. This method is implemented by means of psychological role play, attributing six hats of different colors. The hats symbolize 6 different points of view and 6 corresponding ways of thinking, revealing person's attitude and subjective perception of a situation (de Bono, 2007). Therefore according to de Bono (2007) there are six different types of axiological assessment: 1) optimistic evaluation; 2) its pessimistic-and-critical perception; 3) statement of facts; 4) intuitive-and-sensual situation analysis; 5) creative approach and 6) generalized evaluation of a situation as a whole, summarizing all the ideas.

The method of Six Thinking Hats proves to be effective not only in the process of education, but can also be used to solve problems connected with analytical activity. Its application is a powerful trigger, stimulating communicative activity of the students. It helps enhance their communicative skills, develop their creativity and improve ability to concentrate. This technique also contributes to development of students' presentational skills, in particular, to master oratorical skills, helps defend their point of view and teaches how to successfully work in a team.

The students learn how to consistently make decisions and how to evaluate the situation as a whole to be able to consider various points of view, taking into consideration all the nuances. It is necessary to note that the method of Six Thinking Hats can be used in classes in two different ways: the same strategy of thinking may be practiced by both a team of students and by every student individually.

In classes of English at Voronezh State Technical University *the 4 C's Theory* is used in student groups of various technical specialties, for example, "Civil engineering", "Economics", "Architecture", "Design of the architectural environment" and many others. In this case, the professional field of students' training determines the professional environment for presenting a problem. It should be noted that the method of Six Thinking Hats is particularly efficient as a component of the lesson, which is directly related to solving professional problems. In our research, it was practically implemented in a form of a role play, when the students were given a task to react and to present their own opinion and to assess some professionally oriented situation. Below are examples of sample tasks related to the field of professional activity of students, the performing of which involves application of the method of Six Thinking Hats. The goal of accomplishing these tasks is development of students' fluency in English, formation of their communication skills and improvement of their ability to search and synthesize the necessary information. They learn how to find innovative solutions and how to comprehensively perceive the reality and generalize the data received.

As an example of the practical implementation of the Six Thinking Hats method we display herein the content of the tasks in simulated professional communication situations that were offered to the students of different professional areas. Each of the presented tasks has the following structure:

1. Introduction to the professional field of problem (situation);
2. Explanation of the problem situation;
3. Specification of the problem, justification of its situational importance;

4. Prediction of the consequences that the current situation may lead to (expressed implicitly in the task).

Let's consider specific practical wording of the tasks for students of different technically-oriented specializations:

For the specialization "Civil Engineering": *"Your company is engaged in the construction of a block of flats. The batch of cement brand, with which concrete hardens very slowly in the weather conditions of your region, was mistakenly delivered to your construction site. The construction period is ending, and due to the fact that you have to wait for another batch of cement, you will have no chance to deliver the project on time. What is your attitude?"*

For the specialization "Architecture": *"During the reconstruction of a building, the architects of your company discovered a unique 12th-century mural, for the restoration of which a group of restorers with a specific profile of preparation is needed. Their work will inevitably hinder accomplishing your project. If you accomplish the project on time you will have a real opportunity to win a tender for a government contract. You can also become a participant of an international competition, which is supposed to bring income for the further development of your business. What is your attitude?"*

For the specialization "Design of the architectural environment": *"You are an employee of an architectural bureau, and it is your responsibility to create the interior refurbishment of some living space meeting the requirements of the customer. You have been working on the project for four weeks, and the customer continues introducing the new corrections, and you have to offer the new interior solutions and repeatedly refurbish the same space. The head of the bureau said that you will be paid for this project only after its approval by the customer. What is your attitude?"*

For the specialization "Economics": *"Your company operates in a highly competitive environment. In order to save money, you will have to increase the length of the working day by 1 hour, while the salaries of employees will not change. What is your attitude?"*

Students in English classes were asked to accomplish the above mentioned tasks as a warming-up type of activity (at the initial step of the lesson). About 15 minutes were given for the implementation of the task, while each student had approximately equal time period for the presentation of their own statement (about 2 or 3 minutes). Tasks with different situational variations were accomplished by the students at each English lesson during two months. After that, to get feedback from students, they were asked to fill in a questionnaire in which they had to assess the effectiveness of the applied methodology in relation to the results they received. In particular, the students were asked to describe what changes in their communication skills were detected by them during accomplishing these tasks, as well as possible difficulties that arose.

## 7. Conclusion

As the analysis showed, most students noted the following positive impact of the Six Thinking Hats technique: enhanced vocabulary; more effective teamwork; gaining more confidence during public speaking; faster achievement of communicative goals when communicating their position to the interlocutor; effective application of a creative approach to solving professional issues; reduction of time required to make decisions in a stressful situation.

At the same time, a certain number of answers demonstrated the absence of a pronounced effect of the performed tasks on communication skills and students' behavior. This fact can be explained by the need to apply this technique for a longer time, so that the students' reaction could be more intensely expressed and could have a more tangible impact on their educational and professional activities, which, accordingly, would allow us to reveal more verified results and the degree of their effectiveness.

The positive assessment of the applied method is also worth noting, which consists of the students' feeling effect of immersion in a positive emotional atmosphere that stimulates them to learn the language, breaking the ice and creating a favorable authentic learning environment.

Thus, as the results of the study demonstrated, during the experiment a high degree of effectiveness of Six Thinking Hats technique was revealed, which in particular had an effect on stimulating students' oral speech activity, developing their creative abilities, as well as communicative skills. On completion the tasks most students also noted an increased ability for collaborative decision-making, mutual understanding that implement *the 4 C's Theory*, which is one of the most important components for achieving the required level of linguistic, professional, and general cultural competence in foreign language classes. One of the obvious advantages of *the 4 C's Theory* application is the stimulation of students' ability to make faster decisions regarding professional issues not only in the process of communicating in English, but also in everyday life.

A future promising direction of the study is monitoring and assessment of the effectiveness of the *4 C's Theory* in foreign language classes when performing tasks of another type, in particular, by the introduction of design methods, business games, as well as its application in the process of creating theater shows in a foreign language with participation of students of technical specializations.

## References

- Aleksandrova, O. V., & Kubryakova, E. S. (1997). Vidy prostranstv teksta i diskursa [Types of areas of text and discourse]. *Categorization of the world: space and time. Materials of scientific conference*, 15-25.
- Astuti, A. P., Aziz, A., Sumarni, S. S., & Bharati, D. A. L. (2019). Preparing 21st Century Teachers: Implementation of 4C Character's Pre-Service Teacher through Teaching Practice. *Journal of Physics: Conference Series* 1233(012109), 1-8. Retrieved from <https://iopscience.iop.org/article/10.1088/1742-6596/1233/1/012109/pdf>
- Cao, T. H. (2018). Teachers' capacity of instruction for developing higher – order thinking skills for upper secondary students – a case study in teaching mathematics in Vietnam. *Revista Romaneasca pentru Educatie Multidimensionala*, 10(1-Special Issue 1), 8-19. <https://doi.org/10.18662/rrem/33>
- de Bono, E. (2007). *Six Thinking Hats: An Essential Approach to Business Management*. New York, United States: Little, Brown, & Company.
- Fomina, Z. E., & Kozlova, V. V. (2018). Language education at a technical university (using the example of an additional specialization "Translator in the field of professional communication"): experience and prospects. «*Modern linguistic and methodical-and-didactic researches*», 1(37), 88-105.
- Fomina, Z., Lavrinenko, I., & Kozlova, V. (2018). Philosophical maxims of F. Bacon in the modern education of the 21-st century. *Edulearn18 Proceedings. Paper presented at the 10th International Conference on Education and New Learning Technologies. Palma. Spain. 2-4 July, 1935-1940.*, Retrieved from: <https://library.iated.org/view/FOMINA2018PHI>
- Karasik, V. I. (2016). Дискурсивное проявление личности. [Discourse Manifestation of Personality]. *Russian Journal of Linguistics*, 20(4), 56-77. <http://dx.doi.org/10.22363/2312-9182-2016-20-4-56-77>

- Kozlova, V. V., & Lavrinenko, I. Yu. (2019). Scientific Information on participation in the Conference 21st Century Skills, held by Cambridge Resource Center in Voronezh and the faculty of the Romance-and-German Philology of Voronezh State University on 17, June, 2019. *Scientific Journal «Modern linguistic and methodical-and-didactic researches»*, 3(43), 162-166.
- Lavrinenko, I. Yu. (2019). Linguistic representation of the concept «man» in the philosophical texts of F. Bacon. *Scientific Journal “Modern linguistic and methodical-and-didactic researches”*, 4(27), 43-52.
- Salido, A., & Dasari, D. (2019). The analysis of students' reflective thinking ability viewed by students' mathematical ability at senior high school. *Journal of Physics: Conference Series*, 1157(2). <https://iopscience.iop.org/article/10.1088/1742-6596/1157/2/022121>
- Silber-Varod, V., Eshet-Alkalai, Y., & Geri, N. (2019). Tracing research trends of 21st-century learning skills. *British Journal of Education Technology*, 50(6), 3099-3118. <https://doi.org/10.1111/bjet.12753>
- Sivickaja, L. A. (2010). Realizatsiya kompetentnostnogo podkhoda v vysshey shkole: defitsity metodicheskoy gotovnosti prepodavateley [Realization of competence approach in high school: deficiency of methodic preparation of teachers]. *Tomsk State Pedagogical University Bulletin*, 12(102), 52-55.
- Sulisworo, D., Suwondo, N., Erviana, V. Yu., & Fitriawanati, M. (2019). The collaborative environment using the internet of things in the thematic based learning at the primary school in Indonesia, information technologies and learning tools. *Information Technologies and Learning Tools*, 72(4), 55-66. <https://doi.org/10.33407/itlt.v72i4.3165>
- Suraini, M.-A., Haliza, H., Normazla, A. M., Norhaili, M., Noor Saazai, M. S., & Simkin, K. (2018). Meeting the demands of the 21st century English language learning through PBL-LcCRAFT. *GEMA Online® Journal of Language Studies*, 18(2), 255-266. <http://doi.org/10.17576/gema-2018-1802-17>
- What are the 4 C's of 21st Century Skills? (2019, October 10) Retrieved from <https://www.aeseducation.com/career-readiness/what-are-the-4-cs-of-21st-century-skills>