Associate professor Jelena Ž. Maksimović[1]
Faculty of Philosphy, University of Nis
MS Aleksandra Milanović[2]
Pedagogical Faculty in Vranje, University of Nis

CONSTRUCTIVIST APPROACH IN THE RESEARCH OF GIFTED-CHARACTERISTICS, SIGNIFICANCE AND BENEFITS[3]

Summary: *Even though the origins of the constructivist theory can be found in Ancient Greece, it was formulated as a separate educational theory relatively later in the future. Constructivism is a way of learning, thinking and discovering new phenomena and processes with the tendency to develop work and technical skills and abilities. Unlike behaviourism and cognitivism, it changes the role and position of teachers and students, enabling the acquisition of fundamental, real and practical knowledge. The primary objective of the constructivist approach to learning is to build knowledge based on actual experience, which means that knowledge is conditioned and predetermined by individual abilities, previous knowledge and by the experience of the learner. Teacher's main focus is the student, and not the learning content, while the goal is to engage students in research tasks in order to gain fundamental, efficient and quality knowledge.*

Key words: *theory of constructivist learning, learning, social constructivism, cognitive constructivism, radical constructivism, gifted.*

Introduction

Constructivism it was only two centuries ago that it was formulated as a new educational theory that changed the former understanding of education, learning and teaching. Behaviourism and cognitivism, as the predecessors of constructivism, provided the foundation while changes to their postulates allowed for the development of the constructivist paradigm, followed by the theory of constructivist learning. In order to be able to implement the principles and rules of constructivism, it is necessary for a certain level of knowledge to exist since it serves as the basis for the new information, facts and knowledge. The emergence and development of constructivism are related to the well-known names in the field of psychology and philosophy, Dewey, Vygotsky and Piaget, each of whom observed personality development, learning and teaching from their own perspective and established the course and direction for these processes by linking

---

them to one another. The development of the above-mentioned educational theory encompasses two perspectives - the cognitive and the socio-cultural, which are further on presented in more detail.

Constructivism is seen as an important concept for the development and progress of the educational process, which is why there are multiple definitions explaining it. The answers to the questions: How to learn?, Which is the most effective way of thinking? How can teachers teach students to learn actively, willingly and in an organized way? – are given by the theory of constructivist learning where the primary goal is to acquire knowledge based on the pre-existing experience of the one who is learning. This approach shifts the role of the teacher from active to the guiding role and he is now there to direct the learning process. The teacher is present and active, but not as in the traditional approach. Therefore, the students' role changes as well, and it is raised to a higher and more responsible level. The change in the roles of these two participants in the learning process is a mitigating circumstance when it comes to thorough, organized and purposeful learning.

Like any theory, this theory too has principles and postulates that must be adhered to for a better and more efficient educational outcome. Piaget's constructivism, socio-cultural and emancipatory or social, radical and cognitive constructivism are the types of constructivism. Based on the same concepts, the aforementioned types of constructivism differ from each other in terms of importance that they attach to learning, to individual development, to social influences, to the development of speech. While the common feature among these types of constructivism is the learning that is gradual, and goes step by step, from simple to complex concepts and processes. The use of the constructivist approach to education means to encourage learning through collaboration, activity, research and deliberation.

The Concept and Definition of Constructivism

Constructivism is considered to be a theory of learning, a theory of knowledge, or even a theory of pedagogy, and is inherent in its definition as a theory subordinate to the process of education, development and learning.It reveals and discovers the facts about education that traditional theories cannot reveal and emphasize (Amineh & Asl 2015; Bada & Olusegun 2015). The constructivist theory refers to the way of learning and thinking, the way in which students can approach certain issues or problems. As such, it helps teachers to consider the pre-existing students' knowledge, to encourage their further learning efforts and to enable students to apply knowledge in real-life situations.

Driscoll (2000) explains the constructivist theory by claiming that knowledge can exist only within the human mind. Thus, students continuously try to create their personal mental model of the real world. By constantly updating their mental models, new information is created based on which one builds his or her own interpretation of the reality. Jonassen (1994) claims that constructivism

triggers and encourages in students the innate curiosity about life and the world around them. They become active and engaged by using prior experience, knowledge and the real world, which allow them to learn to assume, to verify their theories and make conclusions. With the ongoing development and progress of education, constructivism is becoming more and more important and it also forms the theoretical basis that should not be ignored when it comes to the development and implementation of the curriculum. The indicator of constructivism is the new knowledge built on the pre-existing one, assuming that knowledge is not obtained in its final form but is rather being built gradually (Pereira & Sithole 2019). Siebert (1999) outlines three fundamental concepts of the theory of constructivist learning. The first concept claims that learning is a mirror of teaching, thus constructivism does not support the fact that self-achievement can be determined by external factors; the second concept says that learning is the adoption of reality by the activity of the one who learns; and the last concept claims learning is autonomously controlled by the cognitive system in interaction with one's own abilities.

Constructivism is an generally accepted view of learning, and it gives students the opportunity to engage in and negotiate the meaning of reality and its social construction. It represents fundamental thinking about the nature of knowledge. In order to better understand the constructivist approach, Tam (2000) proposes a comparison with the objectivist epistemology as a well-known model of learning which focuses on the object of learning, in contrast to which constructivism emphasizes the construction of knowledge. The emphasis is on knowledge building from one's own experience. The goal of constructivism is to understand the skills used for critical thinking and collaboration. Knowledge is built based on pre-existing knowledge and on previous learning efforts (Hsu & Huang 2019; Ertmer & Newby 2006). Constructivism is based on observation and a scientific study that explains the learning process. The theory of constructivist learning believes that the mind is the symbol builder, as well as the tool used to present real knowledge, and it claims that experience is crucial for determining and formulating reality. As the dominant pedagogical paradigm, it is very important for the development of pedagogy, mathematics and science in general (Srivastava & Dangwal 2017; Kaufman 2004; Cooper 1993).

For a better understanding of the concept of constructivism, it would be helpful to compare it with behaviourism. Behaviourism was firstly replaced by the cognitive theory that emphasizes the importance of previous knowledge and the metacognitive strategy. As an implicit learning theory which the curriculum was based on, it was then replaced by constructivism because of its characteristics which prepared the students for future work. Constructivism requires the curriculum that not only promotes work skills, but also technical skills and higher-order thinking, as well as the ability to solve problems and cooperative learning skills. According to constructivism, unlike behaviourism, knowledge building is a flexible process, the student is active, the individual and social experience are important, as well as the realization that the knowledge built will vary in terms of its validity as a representation of reality. On the other hand, behavioural learning theory is based on

dividing tasks into smaller segments or sub-tasks and including practical work in order to gain experience with the help of feedback (Steele 2005; Kanselaar 2002).

Constructivist paradigm was developed as a reaction to the objectivist epistemology of behaviourism and the theory of learning on information processing. In addition to behaviourism and cognitivism, constructivism is a theoretical framework equally important for the teaching process design. Within constructivism, student acquires knowledge, creates and gives meaning to phenomena through interaction with the environment, instead of simply taking or receiving meaning in the finished form (Hedden et al. 2017; Kanselaar 2002). It opposes the transfer of knowledge without the students' mental effort, active involvement and research in order to acquire knowledge and develop the intellect.

The Main Postulates and Types of the Theory of Constructivist Learning

Constructivism differs from behaviourism and cognitivism due to its postulates or principles which its aspirations and endeavours are based on. Creating knowledge from personal experience and using that knowledge to support new learning is in fact the main principle of the constructivist learning model (Bada & Olusegun 2015; Cooper 2007). The specific assumptions or principles of the constructivist theory according to the authors (Ertmer & Newby 2006, 50-72; Clements & Battista 1990, 34-35) can be summarized in the following way:

1. Emphasis on being aware of the context within which certain skills will be acquired and subsequently applied (learning should be based on meaningful contexts),
2. Emphasis on learning control and students' ability to manage information (active use of the learned concepts),
3. The need to present the information in different ways (reconsidering learning content at different times, under different contexts, for different purposes and different conceptual perspectives),
4. Support for the use of problem-solving skills that allow students to move on (development of pattern recognition skills),
5. Evaluation of transferred knowledge and skills (presenting new situations that differ from the initial instruction).
6. Knowledge is actively created and belongs to the student; the child builds knowledge based on his/her own activities, does not merely accept the pre-existing knowledge, but rather forms his/her own view of the world.
7. Ideas and knowledge which children acquire become meaningful when integrated into the pre-existing knowledge.
8. There is no universal reality, but rather individual interpretations of the world.
9. In a constructivist classroom, students are involved in discovery and invention through explanation, negotiation and discussion.

Defined as the philosophy of education, it includes the following theories: theory of situated cognition, activity theory, experiential learning, instructive and

authentic learning that can be considered and perceived as the subtypes of the constructivist approach to learning (Mattar 2018). This author mentioned four types of constructivism: cognitive constructivism, radical constructivism, situated constructivism and co-constructivism. These four types of constructivism were created by considering the main theory of constructivist learning, and by trying to organize them in two dimensions: understanding of reality as objective/subjective, and design of knowledge as a social/individual. These four types of constructivism share common beliefs, such as: learning is active, not passive; language is an important element in the learning process; learning environments should be focused on the learner; the focus of education according to constructivism is not content but process, so educators need to know their learners in order to organize this process. These different approaches and understandings of the constructivist theory have resulted in different concepts and subtypes of this theory.

Vadebanceur (2005: 25-48) describes constructivism from three perspectives: Piaget's constructivism, sociocultural constructivism and emancipatory constructivism. Until then, the prevailing division was into the psychological constructivism of Jean Piaget and the social constructivism of Lev Vygotsky. With regard to the types of constructivism, Kanselaar (2002) believes that there are two segments of constructivism: the constructivist perspective and a socio-constructivist perspective. According to many theoreticians (Pereira & Sithole 2019; McKinley 2015; Milutinović, 2015; Милутиновић, 2011; Creswell & Creswell 2009; Yilmaz 2008; Kanselaar 2002; Dollitle & Camp 1999), in order to better understand and present the constructivist approach to education, the most important division is the division into social, radical and cognitive constructivism. The concept of social constructivism was introduced by Vygotsky, who explained the zone of proximal development which claims that students solve problems that are often beyond their actual ability thanks to collaboration with the peers who are more capable and more skilled than them (Srivastava & Dangwal 2017: 754; Милутиновић, 2011). This type of constructivism emphasizes that human development is socially conditioned and that knowledge is built through interaction with other people. People's ideas coincide with their experiences. As the theoretical starting point for the qualitative analysis and as the tool to identify the way how people communicate with the environment, social constructivism is a form of constructivism where students are seen as active creators of meaning. It is the middle-ground between the known reality of cognitive constructivists, and the construction of the personal and coherent reality of radical constructivists. The disadvantage of social constructivism is that it generally diminishes the mental construction of knowledge, believing that it is relatively trivial, and emphasizes the co-construction of meanings within social activity, thus it is more concerned with meaning than structure. Cognitive constructivism is associated with information processing and it mostly relies on the cognition process. Knowledge is the result of an accurate internalization and reconstruction of an external reality that results in cognitive processes and structures that correspond to the processes and structures existing in the real world. It is often considered an insufficiently robust type of

constructivism as it relates to the learning theory or development theory which suggests that an individual actively constructs meanings, phenomena, and that these constructs are idiosyncratic and partly conditioned by the students' basic knowledge.

Radical constructivism claims that one cannot be aware of the external reality, that students construct their own knowledge - from everyday observations to scientific knowledge. Radical constructivism is actually an unconventional approach to the problems of knowledge acquisition and knowledge as the ultimate outcome, can be understood as a theory of knowledge that abandons the traditional philosophical view of realism according to which knowledge must represent an essential reality, and it rather adopts the relativistic position of knowledge. Radical constructivism is in contrast to cognitive constructivism. This approach actually believes that knowledge building is a process of adaptation that arises from an active insight of the individual, and knowledge is based on experience rather than merely reflecting some external reality. It represents a "robust" type of constructivism that relates to the construction of mental structures, to the position of cognitive constructivists and the construction of personal knowledge (Yilmaz 2008; Kansellar 2002; Dollitle & Camp 1999; von Glaserfeld, 1995). Unlike cognitive constructivism that includes only the structure, radical constructivism includes meaning as well.

Constructivist learning - characteristics and significance

Constructivist theory encourages, motivates and supports learning through work, collaboration, research and deliberation. Student is the partner while the teacher is the motivator. It involves research-based learning, requiring students to actively engage in the knowledge building process, therefore, student is at the centre of the learning process (Pereira & Sithole 2019). Constructivist approach to learning (problem solving, research) highlights the importance of detailed learning in order to develop learning strategies and reliable methods of knowledge implementation. It is based on the assumption that learning is a mental construct. To know means to modify, transform, understand the transformation process and the way it is constructed.New facts are added to the students' prior knowledge and experiences. The student is an active creator of new knowledge, which makes constructivist learning contrary to the passive transfer of information (Hsu & Huang 2019; Bada & Olusegun 2015; Anthony 1996; Piaget 1964). It is necessary to take a serious, detailed approach to learning contents or the issues in general in order for knowledge construction and reconstruction to be significant and beneficial for the learner.

Taber (2006, 125-184) presents the universal and key ideas that characterize constructivist learning:
1. Student build knowledge actively, do not learn the facts imposed on them,
2. The phenomena are associated with the pre-existing ideas and knowledge,

3. Students' notions about the world are culturally and socially accepted and serve as the basis for understanding many phenomena and processes,
4. Some ideas may be in conflict with the widely accepted scientific ideas, some may be difficult and to change and reconstruct,
5. As a conceptual structure, knowledge is located in the brain and it is possible to describe it in detail,
6. Students' ideas in the classroom must be taken seriously if we want to influence them and cause them to upgrade them,
7. Although knowledge is individual-based, it is nevertheless constructed in interaction with the environment and though collaborating with others.

Constructivist learning starts from the basic concepts and gradually adds more complex ones with the goal to develop students' skills to participate in the learning process and cooperate with others. Learning is an active process where students have with a personal overview of the world. Knowledge is built based on former experience with an emphasis on problem solving and their understanding, and with an emphasis on authentic tasks, experiences, collaboration and assessment of all the factors relevant for the learning process. (Hsu & Huang 2019; Kristi 2005). According to this theory, learning is an individual activity done by students, and not merely receiving and storing information.

In defining the constructivist approach to learning, Hoover (1969) emphasizes two important processes that explain the built and prior knowledge: students understand knowledge and information using the pre-existing knowledge; and learning is an active process where students understand the experiences during the new learning process and where the current understanding and former knowledge are combined.

In this regard, we can name the steps characteristic of constructive learning: knowledge to be acquired is divided between teacher and student as two active participants in the learning process - teacher is the leader, but the authority is still divided between teacher and student; a class should have a small number students with heterogeneous interests and abilities (Tam 2000). The prior student knowledge, learning new information and facts, synthesizing the pre-existing knowledge and new information, and ultimately the product of the learning process, are the steps of the constructivist learning process. This type of learning requires special conditions which would enable students to actively acquire knowledge.

Knowledge building, activity, reflection, collaboration and research-based learning are the most important aspects of constructivist learning. Students should rely on formulated knowledge, ideas and concepts. Knowledge building is based on the prior knowledge that serves as the basis for building new knowledge. Student activity involves participation and engagement during which student thinks about his/her achievements and knowledge. Collaboration is considered one of the main determinants of constructivist learning due to the benefits of group learning where students can exchange learning methods and strategies. The last element of constructivism mentioned is the research during which students ask questions,

explore concepts, use different resources to reach solutions, and to make and redefine conclusions (Hedden et al. 2017; Srivastava & Dangwal 2017).

According to the authors (Dollitle & Camp 1999), the factors that determine the effectiveness of constructivist learning are as follows: an authentic and real-world environment where learning takes place; social negotiations and mediation during the learning process; relevant content adapted to the learner and easily aligned with the pre-existing knowledge; formative student assessment; student self-awareness; teachers as facilitators who are supposed to provide multiple perspectives and representations of the learning content.

Based on the theory of constructivist learning, Matar (2018: 201-217) believes there are situated, active, experiential, instructive learning, and authentic learning. Situated learning emphasizes the importance of context and interaction for knowledge building. Thinking process involves constructive and cognitive interactions between the individual and the objects and situations. Knowledge is the product of student's individual and social activities, and learning is a process of culturalization mixed with social interaction. The second type of learning - active learning emphasizes the importance of learner's activity, believing that learning is the process of active knowledge construction that implies effort, and not passive acquisition of knowledge. Experiential learning focuses on student experience. Instructive learning was the result of the effort to analyse situated learning, the result of which was instructive perception. The last type of learning, authentic learning, claims that the learning context, assignments, activities and assessment should be the most authentic way to support the transfer of knowledge from formal education to its use in real life. Authentic learning refers to student's actual experiences where suggestions and solutions are tested, and where mistakes are made and corrected, and then followed by more attempts (Matar 2018; Pereira & Sithole 2019). Teachers who uses the constructivist approach to education presents students with questions and problems and instructs them how to find and create their own answers and solutions. According to the authors (Srivastava & Dangwal 2017: 755), the effective learning techniques would be:

1. Inquiry - students are ready to formulate questions independently;
2. Multiple intelligences - enables students to construct multiple interpretations and expressions of learning;
3. Collaborative learning - students are taught how to work in groups.

The above-mentioned steps can be used as the constructivist teaching scheme by teachers, where both the teacher and the student will be equally active in the learning process, with different amount of tasks and responsibilities, but with significant progress and achievement.

Comparison between the constructivist and traditional classroom

According to the theory of constructivist learning, learning is more effective when students are informed and when learning with understanding. If we add to this

the possibility of incorporating practical, experiential learning into the teaching process, this would result in a successful and effective teaching process.

The constructivist approach differs from the traditional one with regard to the fact that teachers promote student involvement in the learning process and strive for it, and they encourage knowledge building rather than the transfer of knowledge. According to constructivists, anyone with knowledge must actively participate in its construction (Pereira & Sithole 2019; von Glaserfeld, 1982).

Chung (1991) claims that the features of the constructivist approach beneficial for the learning process are: knowledge sharing between teachers and students, the shared authority and responsibility of teachers and students, the teacher is a guide, and it is preferable that groups of students are small and heterogeneous. Teacher is focused on students, encourages them to ask questions, to construct new knowledge - their own knowledge, concepts, ideas and conclusions. Constructivist epistemology explains the nature of knowledge through the learning process. The constructivist environment produces an active, reflective and collaborative learning process and has one very difficult task – to translate the theory of learning into the teaching theory. People are active creators of their own knowledge. The role of teachers changes, research competences, high engagement, active and honest involvement, willingness and openness of teachers to change are sought (Milutinović, 2015; Милутиновић, 2011). Since we can often hear criticism about "rejecting" the active role of teachers, the constructivism turns teachers into guides who motivate students to create and construct knowledge, and who encourage them to actively experiment with learning techniques. The students' inquiries, questions and curiosity are valued, the learning materials used can be the primary sources of knowledge, interactive learning is used, the conversation between the teacher and students enables the construction of knowledge, knowledge is dynamic and variable, while students mostly work in groups. Constructivism can help teachers to prompt students to think about how active learning could help them and facilitate their acquisition of knowledge and understanding of what they learn (Srivastava & Dangwal 2017; Bada & Olusegun 2015). The constructivist classroom is organized in such a way that the focus is shifted from the teacher to the students, the classes are interactive, the students are actively involved, the teacher mediates and helps the students, the curriculum covers broader concepts and it firstly talks about the general concepts and then moves on to the more detailed concepts.

Bada & Olusegun (2015: 66-70) emphasize the benefits of constructivist learning, claiming that:
1. Children learn more and enjoy learning when they are active participants, rather than passive recipients and listeners;
2. The most effective learning is learning with understanding;
3. Constructivist learning, its postulates and principles can be applied to various types of learning;
4. There is a greater chance to use such knowledge in real-life situations;
5. Students are encouraged to use their curiosity;

6. This approach encourages and promotes social and communication skills. Students learn how to formulate their ideas clearly, how to collaborate and take part in projects.

As the authors Srivastava & Dangwal (2017) have emphasized, the learning process can lead to anticipated or unforeseen situations in terms of "fitting in" what is being learned into the template of what had already been learned. New facts learnt might match the pre-existing knowledge, so in this case new knowledge only deepens the learner's level of understanding. Another possible scenario is that the new knowledge does not match the pre-existing knowledge, and this is when the student must re-evaluate the prior knowledge in order to build the foundation for new information. And the third potential situation is that the new knowledge does not correspond to the pre-existing knowledge, so the student discards the new information because of the inability to absorb and retain them. Such information can float around until the moment comes when the student is ready to understand them. Progress in learning depends on knowledge construction and reconstruction. Chung (1991, 15-22) identifies the features of the constructivist learning environment:

1. Knowledge sharing between teachers and students;
2. The shared authority and responsibility of teachers and students;
3. The teacher is a guide;
4. Student groups are small and heterogeneous.

The constructivist paradigm as the alternative to and the improvement of the traditional approach to learning promotes the collaborative environment that enables reflexive and experiential learning. It encourages students to construct knowledge independently rather than taking over others' knowledge; knowledge building process is linked with real-life situations, as opposed to the traditional approach that links the learning process with formal, decontextualized situations. Constructivism opposes passive knowledge transfer, and it focuses on active knowledge construction (Crotty 1995; Kanselaar 2002). In contrast to the constructivist classroom, the traditional classroom relies on the curriculum which focuses on details and on basic skills, it promotes strict adherence to the curriculum, the main learning materials are textbooks and workbooks, learning is based on repetition, the teacher transfers knowledge in the finished form, teaching is directive (teacher's authority is respected), there are written and oral assessments, students work and learn independently (Bada & Olusegun 2015).

Unlike traditional learning, constructivism provides the opportunity for communication, participation, for the use of research-based approach in solving problems and tasks. The constructivist ideology fits all the students, taking them away from conventional education, and strengthening the collaborative aspect of learning according to which students should collaborate, think critically, and come to a solution and make conclusions together. The teacher also abandons the traditional teaching process (Rudd, 2019). Conversation and agreement among students in working on the assignments is what makes the constructivist lessons so

different from the traditional lessons since the students independently solve the tasks and answer the questions.

Conclusion

The benefits of the constructivist approach to education are undeniable. In order for constructivism to be applied effectively in the classroom, it must be used and adhered to during the teacher education process. Constructivism requires a thorough approach to learning. Learning that enables understanding, preservation and application of the facts learned, when one's own models of meaning are developed – is the best kind of learning. Constructivism does not support learning which relies on adopting the pre-existing, formulated and specific knowledge. According to the constructivists, knowledge exists only in the mind of the learner and is conditioned by previous experience, motivation, desire and ability for active participation. Teachers who use constructivism in the classroom must be able to prepare tasks that would lead students to a conceptual reorganization of the learning process (Clements & Battista 1990). Although criticized as too generalized, insufficiently defined, resembling more a philosophical framework and inefficient for beginner teachers and younger students (Rudd 2019), constructivism still offers many benefits that we could use to make positive changes to learning and teaching.

Traditional teaching, which is often criticized, could in certain segments and where the learning content allows, be replaced by the constructivist approach in order to bring some novelty into the teaching process. In addition to student activity, constructivist learning also emphasizes the practical use of knowledge, that is, the meaningful connection between the facts learned and the needs of the individual and the entire society.

References

- Amineh R. Jafari & Asl D. Hanieh. *"*Review of constructivism and social constructivism.*" Journal of Social Sciences, Literature and Languages 1*, 1, (2015): 9-16. Retrieved February 15, 2019, from: https://pdfs.semanticscholar.org/3890/3f4a7255496f75124d639e14e9b810c17370.pdf
- Anthony Glenda. *"*Active learning in a constructivist framework.*" Educational studies in mathematics 31,* 4, (1996): 349-369. Retrieved February 15, 2019, from: https://s3.amazonaws.com/academia.edu.documents/32843069/Active_Learning_in_a_Constructivist_Framework.pdf?response-content-disposition=inline%3B%20filename%3DActive_Learning_in_a_Constructivist_Fram.pdf&X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIAIWOWYYGZ2Y53UL3A%2F20190821%2Fus-east-1%2Fs3%2Faws4_request&X-Amz-Date=20190821T210640Z&X-Amz-Expires=3600&X-Amz-SignedHeaders=host&X-Amz-Signature=8bbcbd2707e448d2357e32c7b869cdfd261b8c688d78316d360bca665b347117

- Bada Steve Olusegun, & Olusegun Steve. *"*Constructivism learning theory: A paradigm for teaching and learning.*" Journal of Research & Method in Education 5*, 6, (2015): 66-70, doi: 10.9790/7388-05616670.
- Christie A.. *Constructivism and its implications for educators*, 2005. Rerieved April 5, 2019, from: http://alicechristie.com/edtech/learning/constructivism/index.htm
- Chung Jaesam. "Collaborative learning strategies: The design ofinstructional environments for the emerging new school." *Educational Technology,* (1991): 15-22. Retrieved April 5, 2019, from: https://ci.nii.ac.jp/naid/10000059743/
- Clements D. H. & Battista, M. T. *"*Constructivist learning and teaching.*" Arithmetic Teacher 38*, 1, (1990): 34-35. Rerieved April 10, 2019, from: https://www.researchgate.net/profile/Douglas_Clements/publication/258933053_TEAM-Tools_for_early_assessment_in_mathematics/links/56f712b508ae38d710a1c177/TEAM-Tools-for-early-assessment-in-mathematics.pdf
- Cooper A. Petter. *"*Paradigm shifts in designed instruction: From behaviorism to cognitivism to constructivism.*" Educational technology*, (1993): 12-19. Rerieved April 10, 2019, from: http://www.unhas.ac.id/hasbi/LKPP/Hasbi-KBK-SOFTSKILL-UNISTAFF-SCL/Mental%20Model/Shift%20paradigm%20Behaviorism.pdf
- Cooper Richard. *"*An investigation into constructivism within an outcomes based curriculum.*" Issues in educational research 17*, 1, (2007): 1- 25. Rerieved April 10, 2019, from: https://core.ac.uk/download/pdf/143885065.pdf
- Creswell John W. & David Creswell. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches.* Sage Publications, 2009.
- Crotty Terri. *Constructivist theory unites distance learning and teacher education*, 2000. Rerieved April 10, 2019, from: https://learningdesign.psu.edu/assets/uploads/deos/deosnews5_6.pdf
- Doolittle, Peter E., & William G. Camp. *"*Constructivism: The career and technical education perspective.*" Journal of vocational and technical education 16*, 1, (1999): 23-46. Rerieved February 8, 2019, from: https://files.eric.ed.gov/fulltext/EJ598590.pdf
- Driscoll M. *Psychology of Learning for Instruction.* Boston: Allyn& Bacon. 2000.
- Ertmer, Peggy A. & Timothy J. Newby. *"*Behaviorism, cognitivism, constructivism: Comparing critical features from an instructional design perspective.*" Performance improvement quarterly 6*, 4, (1993): 50-72. Rerieved February 8, 2019, from: http://www.csiss.org/SPACE/workshops/2007/UCSB/docs/ertmer_newby1993.pdf
- Hedden Kalamas Maria, Roneisha Worthy, Edwin Akins, Vanessa Slinger-Friedman & R. C. Paul. *"*Teaching sustainability using an active learning constructivist approach: Discipline-specific case studies in higher education.*" Sustainability 9*, 8, (2017): 1-18. doi:10.3390/su9081320
- Hoover Wesley A.. *"*The practice implications of constructivism.*" SEDL Letter 9*, 3, (1996): 1-2, Rerieved February 8, 2019, from: https://scholar.google.com/scholar?hl=sr&as_sdt=0%2C5&q=15.%09Hoover+W.+A.+%281996%29.+The+practice+implications+of+constructivism.+SEDL+Letter&btnG=
- Hsieh Suh-Ing Li-Ling Hsu & Tzu-Hsin Huang. *"*The effect of integrating constructivist and evidence-based practice on baccalaureate nursing student's cognitive load and learning performance in a research course.*" Nurse education today 42*, (2016): 1-8. Rerieved February 8, 2019, from: https://www.researchgate.net/profile/Suh_Ing_Hsieh/publication/300425711_The_Effect_of_Integrating_Constructivist_and_Evidence-

Based_Practice_on_Baccalaureate_Nursing_Student%27s_Cognitive_Load_and_Learni
ng_Performance_in_a_Research_Course/links/5a2cbf7045851552ae7ca30f/The-Effect-
of-Integrating-Constructivist-and-Evidence-Based-Practice-on-Baccalaureate-Nursing-
Students-Cognitive-Load-and-Learning-Performance-in-a-Research-Course.pdf

- Jonassen, David H. "Thinking technology: Toward a constructivist design model." *Educational technology 34*, 4, (1994): 34-37. Rerieved March 8, 2019, from: https://www.learntechlib.org/p/171050/.
- Kanselaar Gellof. ″Constructivism and socio-constructivism.″ *Constructivism and socio-constructivism*, (2002): 1-7. Rerieved March 8, 2019, from: http://edu. fss. uu. nl/medewerkers/gk/files/Constructivism-gk
- Kaufman Dorit. ″14. Constructivist issues in language learning and teaching.″ *Annual review of applied linguistics 24*, (2004): 303-319. doi: 10.1017/S0267190504000121
- Mattar Joao. ″Constructivism and connectivism in education technology: Active, situated, authentic, experiential, and anchored learning.″ *RIED. Revista Iberoamericana de Educación a Distanci 21,* 2, (2018): 201-217. Rerieved March 8, 2019, from:: http://dx.doi.org/10.5944/ried.21.2.20055
- McKinley Jim. ″Critical argument and writer identity: Social constructivism as a theoretical framework for EFL academic writing.″ *Critical Inquiry in Language Studies 12*, 3, (2015): 184-207. Rerieved March 8, 2019, from: http://discovery.ucl.ac.uk/10058047/1/McKinley_Social%20Constructivism%20McKinley%202015.pdf
- Milutinović, J. (2015). Kritički konstruktivizam-koncepcija i mogućnosti u oblasti obrazovanja. *Nastava i vaspitanje*, *64*(3), 437-451.
- Милутиновић, J. (2011). Социјални конструктивизам у области образовања и учења. *Зборник Института за педагошка истраживања*, *43*(2), 177-194.
- Pereira Liphie & Burman Musa Sithole. ″Towards constructivist learning and teaching in Accounting education.″ *Journal of Emerging Trends in Educational Research and Policy Studies 10*, 1, (2019): 1-9. Rerieved Juny 30, 2019, fromt: http://jeteraps.scholarlinkresearch.com/articles/Towards%20Constructivist%20Learning%20NEW.pdf
- Piaget, J. (1964). Cognitive development in children: Piaget development and learning. *JOURNAL, OF RESEARCH IN SCIENCE TEACHING*, *2*, 176-186. Rerieved Juny 30, 2019, from: https://micpp.org/files/psychoanalysis/warren-on-development/Piaget-Cognitive-Development-in-Children.pdf
- Rudd Matthew. ″Introducing Constructivism to Young Learners: Analysing the Impact on English Language Performance.″ *Journal of Culture, Society and Development , 46*, (2019): 51-58. doi: 10.7176/JCSD
- Siebert H. *Pedagogie constructivistă*, Iaşi: Institutul *European*, 1999.
- Srivastava Shipra & Kiran Lata Dangwal. ″Constructivism: A paradigm to revitalize teacher education.″ *International Journal of Applied Research 3*, 5, (2017): 753-756. Rerieved Juny 30, 2019, from: https://pdfs.semanticscholar.org/a81c/b0a4158a570f359b508423ae16a0fd0c16e4.pdf
- Taber Keith S. ″Beyond Constructivism: the Progressive Research Programme into Learning Science.″ *Studies in Science Education* 42, (2006): 125-184. Rerieved April 30, 2019, from: https://doi.org/10.1080/03057260608560222
- Tam Maureen. ″Constructivism, instructional design, and technology: Implications for transforming distance learning.″ *Journal of Educational Technology & Society 3*, 2,

(2000): 50-60. Rerieved April 30, 2019, from: https://pdfs.semanticscholar.org/af9e/d1ff56437894a478b80d1b350982a65a8caf.pdf

- Vadeboncoeur Jennifer A. ″Child development and the purpose of education: A historical context for constructivism in teacher education.″ In *Constructivist Teacher Education: Building New Understandings* edited by V. Richardson, 25-48. Washington DC: Falmer Press, (2005).
- von Glasersfeld, E. (1900). Radical Constructivism: A Way of Knowing and Learning, Falmer Press, Taylor & Francis Inc., Bristol. Rerieved April 30, 2019, from: https://pdfs.semanticscholar.org/0eff/e0aa985838dc1b1d2c5eb250aa8d79f1889a.pdf
- von Glasersfeld, E. (1982). An interpretation of Piaget's constructivism. *Revue internationale de philosophie*, 612-635.
- Yilmaz Kaya. ″Constructivism: Its theoretical underpinnings, variations, and implications for classroom instruction.″ *Educational horizons 86*, 3, (2008): 161-172. Rerieved April 30, 2019, from: https://files.eric.ed.gov/fulltext/EJ798521.pdf

Prof. dr Jelena Ž. Maksimović
Filozofski fakultet Niš
Msr Aleksandra Milanović
Pedagoški fakultet Vranje

KONSTRUKTIVISTIČKI PRISTUP U ISTRAŽIVANjU DAROVITIH - ODLIKE, ZNAČAJ I DOPRINOS

Rezime: Koreni kontuktivitičke teorije mogu se pronaći u antičko grčkoj, iako je, prema tome relativno kasno formulisana kao zasebna obrazovna teorija. Konstruktivizam predstavlja način učenja, promišljanja i uviđanja novih pojava i procesa sa težnjom da razvije radne i tehničke veštine i sposobnosti. Za razliku od biheviorizma i kognitivizma menja ulogu i položaj nastavnika i učenika doprinoseći sticanju temeljnog, realnog i praktičnog znanja. Primarni cilj konstruktivističog pristupa učenju je konstrukcija znanja na osnovu postojećeg iskustva, što znači da je znanje uslovljeno i predodređeno individualnim sposobnostima, dotadašnjim znanjem i iskustvom onoga ko uči. Nastavnik je usmeren ka učeniku, ne ka sadržaju sa zadatkom da učenika aktivno uključi i angažuje u istraživačkim zadacima zarad sticanja temeljnog, efikasnog i kvalitetnog znanja.

Ključne reči: konstruktivistička teorija, učenje, socijalni konstruktivizam, kognitivni kontruktivizam, radikalni konstruktivizam, daroviti