

## Constructivism in Visual Arts Classes

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One of the basic features of the modern educational system is manifested in the reversal of the transmissive (traditional) approach to learning and teaching to the transformational (modern) approach. The transmissive approach to learning and teaching is that one in which students adopt ready-made constructs of organised knowledge through passive acceptance of the facts mediated by the teacher. In contrast, in the transformational approach, the teacher encourages the student's active participation through exploratory, problem-based learning, during which students gain much more of their potential than in traditionally conceived classes. Changing the obsolete pedagogical paradigm began with the development of contemporary (cognitivist and constructivist) pedagogical theories. According to the constructivist theories of learning, individuals develop their knowledge of the world based on their own experiences and reflection of these experiences. Learning is the result of cognitive constructs based on individual experience and (pre)knowledge gained during the social interaction determined by the culture in which individuals live. Interpretative activity in the constructing of understanding is particularly emphasised in visual arts education. In this paper, the main determinants of constructivism and constructivist theories in the context of the educational process are elaborated. The main principles of constructivist-based teaching of visual arts are interpreted related to other contemporary teaching strategies and approaches such as active learning, learning through problem-solving, and interactive approach to learning and teaching of visual arts. The teacher's role is also discussed, whose approach, awareness of the student's pre-knowledge, and capacity for meaningful communication with students, greatly influence the success of the students' adoption, understanding and interpretation of visual arts contents. The present paper aims to highlight certain elements of the constructivist teaching theories because their understanding and application in the teaching process can help achieve better learning outcomes, specifically students' better ability to use visual arts knowledge in everyday life.

**Keywords:** constructivism, constructivist learning theories, learning strategies, learning and teaching, visual arts education

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## Konstruktivizem pri pouku likovne vzgoje

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Ena izmed osnovnih značilnosti sodobnega izobraževalnega sistema se kaže v preobrazbi od transmisivnega (tradicionalnega) pristopa k učenju in poučevanju do transformacijskega (modernega). Transmisivni pristop k učenju in poučevanju je tisti, pri katerem učenci sprejemajo že pripravljene konstrukte organiziranega znanja s pasivnim sprejemanjem dejstev, ki jih posreduje učitelj. Nasprotno pa učitelj pri transformacijskem pristopu spodbuja aktivno udeležbo učenca z raziskovalnim, problemskim učenjem, med katerim učenci pridobijo veliko več svojega potenciala kot v tradicionalno zasnovanih razredih. Spreminjanje zastarele pedagoške paradigme se je začelo z razvojem sodobnih (kognitivističnih in konstruktivističnih) pedagoških teorij. Skladno s konstruktivističnimi teorijami učenja posamezniki razvijajo svoje znanje o svetu na podlagi lastnih izkušenj in refleksije teh izkušenj. Učenje je rezultat kognitivnih konstruktov, ki temeljijo na individualnih izkušnjah in (pred)znanju, pridobljenem med socialno interakcijo, ki jo določa kultura, v kateri posamezniki živijo. Interpretacijska dejavnost pri konstruiranju razumevanja je še posebej poudarjena v izobraževanju o likovni umetnosti. V prispevku so predstavljene glavne determinante konstruktivizma in konstruktivistične teorije v okviru izobraževalnega procesa. Glavna načela konstruktivističnega poučevanja likovne vzgoje se razlagajo v povezavi z drugimi sodobnimi učnimi strategijami in pristopi, kot so: aktivno učenje, učenje z reševanjem problemov ter interaktivni pristop k učenju in poučevanju. Obravnavana je tudi učiteljeva vloga, katere pristop, zavedanje predznanja učenca in sposobnost smiselne komunikacije z učenci močno vplivajo na uspeh učencev pri sprejemanju, razumevanju in pri interpretaciji likovnih vsebin. Namen tega prispevka je poudariti nekatere elemente konstruktivističnih teorij poučevanja, saj lahko njihovo razumevanje in uporaba v učnem procesu pomagata doseči boljše učne izide, zlasti boljšo sposobnost učencev za uporabo likovnega znanja v vsakdanjem življenju.

**Ključne besede:** konstruktivizem, konstruktivistične teorije učenja, učne strategije, učenje in poučevanje, likovna vzgoja

## Introduction

With the development of a contemporary transformational approach to learning and teaching, many changes have happened in an outdated pedagogical paradigm of understanding learning as a passive acceptance of facts mediated by teachers. The changes are related to defining learning as a personal creative process, which involves the active modification and transformation of facts of an individual, his/her interpretation, and organisation of knowledge and its use in everyday life. This process is conditioned by the emergence and development of contemporary-cognitive and constructivist-pedagogical theories. Constructivism in the educational context can be defined as a theory of learning according to which individuals construct and reconstruct cognition of the world based on their own experiences and reflections of those experiences. During this process, new insights are compared with previous experiences and ideas, whereby old beliefs may be altered, or new information may be dismissed as irrelevant. It follows from the abovementioned that each individual actively participates in the creation of his/her own knowledge, whereby he/she asks himself/herself questions, explores and questions what he/she knows (Elliot et al., 2000). The reality of this knowledge is determined by the student's experience and knowledge acquired during social interaction, determined by the circumstances or culture in which he/she lives. It means that the constructivism-based pedagogy is directed at the student rather than the teacher and the active construction of knowledge rather than the passive reception of information. Through the learning process, students are encouraged not only to gain new insights but also to create new thinking constructs that should result in the (re)construction of knowledge. In doing so, the teacher has the role of a coordinator of teaching activities, during which he/she indirectly directs and encourages students to research, discover, and make conclusions. Therefore, designing curricula and strategies based on the constructivist learning theory in the educational process and the visual arts classes is recommended. The fact that makes the constructivist theory more complex than the assumptions underlying the usual teaching process is the awareness of each student's individual cognitive structures/mental models. Consequently, the teacher's role in constructivism-based teaching becomes more complex and responsible since it is necessary to take into account the diverse cognitive and visual types of students, their different perspectives and perceptions, depending on their background and personal characteristics. Therefore, teachers are expected to have a high level of expertise, tolerance, and openness to different views of each student's reality.

Constructivism is regarded as one of the most influential contemporary philosophies in education (Krahenbuhl, 2016) even though its principles

are often misunderstood and interpreted differently. However, constructivism's basic ideas are consistent and ingrained in the modern pedagogical paradigm (even though they sometimes appear under other terms when discussing contemporary learning strategies). The present paper presents the basic ideas of constructivist learning theory, outlines the basic features and principles of constructivism-based visual arts education, and discusses the role of teachers as a key factor in the success of learning and teaching. Specifically, students' success in acquiring, understanding, and interpreting the visual arts content depends largely on teachers' approach to them, their familiarity with students' prior knowledge and the quality of that knowledge, as well as meaningful communication with the students. The paper aims to draw attention to certain elements of the constructivist approach to learning and teaching, whose understanding and adoption by teachers can aid in achieving better student learning outcomes.

### **Constructivism in the light of the contemporary pedagogical paradigm**

As a pedagogical learning theory, constructivism is developed on the foundations of cognitive psychology, which addresses how learning and cognition take place (Li, 2017; Marentič Požarnik, 2008). Cognitive and constructivist theories and directions emerged from one another, so we cannot make a strict distinction between these two groups of theories. In addition, some authors, such as Piaget, Vygotsky, Bruner, and Glaser, have influenced the emergence and formation of major conceptual determinants in both groups of theories, and are considered to be the originators of both. With regards to the determination of knowledge as an individual or social process, we distinguish between cognitive and social constructivism-based learning theories (Kalina & Powell, 2009; Plut Pregelj, 2004). Cognitive constructivism, that is, psychological, cognitive learning theories, is based on Piaget's (1951) theory, which, in the context of learning, emphasises the individual's active interaction. Piaget believed that the development of cognitive processes is neither an innate category nor a direct result of experience, but a result of the process of a learner's active cognitive construction. Cognitive psychologists emphasise the role of psychological factors in the learning of concepts, which is realised through the creation of conditions that cause cognitive dissonance.

In contrast to the so-called *individual constructivism* based on Piaget's ideas, *social constructivism*, based on the work of education theorists Dewey and Vygotsky, highlights the crucial role of social and historical contexts in shaping an individual's knowledge. Representatives of social constructivism

argue that an individual cannot be understood without a social environment and interaction (Wertsch, 1995) nor can an individual create his/her knowledge without being influenced by the socio-historical context. Krapše (1999) cites the third variant of constructivist theory, which is a combination of the first and second ones. It advocates the importance of both factors (social and individual) in the creation of knowledge and emphasises the need of knowing the historical, cultural and political context, which is necessary to understand that knowledge. In line with constructivism, didactically appropriate teaching involves helping students to develop the results based on their own experiences and to form their concepts based on social interaction with other peers and the teacher. The common denominator of all constructivist theories is searching for ways to gain knowledge with understanding and to acknowledge the diversity of approaches in achieving educational goals.

In the constructivist approach to learning and teaching, the importance of students' foreknowledge, worldviews and experiences is particularly emphasised, since the course of the teaching process largely depends on them. Learning is not understood as a linear, but as a complex and non-linear process (Twomey Fosnot & Perry, 2005). It seeks to make students choose and process information as much as possible and make decisions based on their mental models (cognitive structures, schemas) to interpret the data and organise their personal experience. In that manner, the production of reproductive, factual knowledge is reduced in favour of creating meaningful knowledge with understanding. From a constructivist perspective, meaningful learning is inherently creative (Newton, 2000), meaning that teachers can help students to some extent in making mental connections between information; however, students arrive at an understanding of their own, including cognitive but also affective-conative, intuitive, and other aspects of personality.

In constructivist theories, particular importance is placed on the interactive teacher-student and student-student relationship as a key component of learning. The communication between students and teachers involves asking open-ended questions to students, encouraging students to ask questions, and creating a stimulating environment within which students can formulate and express their ideas, attitudes, and views on a particular issue.

### **A constructivist perspective in visual arts education**

The constructivist learning theories are close to the contemporary understanding of the visual arts education since the emphasis on the learning process, the student's self-initiative, and, thus, the acquisition of students' own

experiences are present in both of them (Herzog, 2008; Simpson, 1996; Thompson, 2015; Wiggins, 2015). Even before learning the content of visual arts, students have certain ideas about the visual world around them. Properly designed visual arts problems should provide a cognitive challenge to reach the higher level of students' understanding needed to solve those tasks.

An interpretative activity in constructing understanding is especially pronounced in visual arts education since the appreciation of artworks and the artistic expression of students is a subjective and individual interpretation of the learned and experienced content. When teaching, the teacher must have no preconceived notions about an appropriate way of solving visual art problems, but rather develops a sensibility for the students' various artistic solutions, remains open to new and different ideas, discusses them with the students, and makes an effort to understand their ways of perception. In doing so, the teacher will gain insight into the students' mode and style of cognition, their cognitive abilities, attitudes and beliefs, and the areas that the students need to develop. This knowledge is the basis for further selection and preparation of the teaching process and visual arts tasks.

Constructivism appears in education as a learning (and teaching) theory; however, there are no systematic didactic elements such as »constructivist« strategies or teaching methods that can give precise guidance on how to implement constructivist ideas in the teaching process. Instead of a set of didactic norms, constructivism, as a learning theory, integrates the diverse principles of the contemporary pedagogical paradigm. In pedagogical theory and practice, some distorted interpretations of constructivist principles may be encountered, such as the view that students must be constantly active, or the rejection of the need for a teacher's direct instruction. Radical ways of interpreting constructivist ideas, manifested in the claim that teaching at school should be replaced by learning, are not desirable since the two activities are inextricably linked in the teaching process; therefore, one or the other cannot be said to be of greater importance: quality teaching will result in successful student learning. The student's self-constructing of knowledge needs to be supplemented by mediating new knowledge. Therefore, the role of teaching cannot be ignored, but it can be discussed as changing the role of the teacher and the way of teaching. In constructivism-based visual arts teaching, direct teaching is used in situations in which, for example, new visual terms need to be introduced or clarified to the students, and should be combined with other teaching methods, in order to check the students' understanding of the new teaching content. Finding the right teaching strategies and methods is a matter of professional and methodological training and the teachers' professional experience. Therefore, it is up to

each teacher to find an individual approach to how optimally apply constructivist principles in their own educational practice to modernise and make their work more effective. Below, we outline the principles that can be important to teachers in finding strategies for implementing changes that will result in a more modern and better quality visual arts teaching. Šteh (2004) cites Simons's (1997) classification of characteristic activities that are dynamically altered, intertwined, and complemented in constructivism-based learning and teaching; similar classifications are also mentioned by other relevant authors who have considered the possibility of implementing constructivist theories in school practice (Eastwell, 2002; Fosnot, 1996; Selley, 2013; Yager, 1991). These activities can also be considered integral principles of constructivism-based visual arts classes and are presented below in this context.

### *Active learning*

Every form of learning is active to a certain extent, but the result achieved by a particular activity is critical. The internal activity of the student (referring to the cognitive and no-less-important emotional dimension of personality) is much more important than the external, physical activity. Authentic student activity is created in learning situations that elicit cognitive engagement in students through the processing of information in a non-automatic and active way, and at a deeper level and with more productive cognition than in conventional learning. They can be activated by planned teaching strategies, methods, and forms of work that, through unobtrusive but continuous teacher guidance, ensure quality learning, student initiative, and their cognitive activity. According to constructivist principles, teacher's verbal presentation of knowledge is not sufficient unless students are able to gain some relevant experience on a particular topic, or actively engage thinking and other abilities that will lead to new ideas and (re)constructing of their concepts (Bonwell, 2000; Reich, 2006). Visual arts teaching is well conceived if the teaching process emphasises the presentation of students' ideas, attitudes, thoughts, and experiences: in other words, the stimulation of higher-order cognitive abilities (analysis, synthesis, idea generation, conclusion, evaluation). The development of these abilities is encouraged most often through the appreciation and analysis of artworks or student work, but also through the linking of learned visual phenomena with other teaching areas and everyday life. An artistic creation provides the most direct form of active involvement in the teaching process. In visual arts classes, an active attitude towards the environment forms the basis for the development of thinking and imagination. In practical action, students must activate as many senses as possible; based on them, they experience the sensations that

are the basis for the further formation of ideas, opinions, attitudes, and conclusions. With an active attitude towards learning, students go beyond the mechanistic and reproductive level, which can be manifested in visual arts education by acquiring other students' artistic solutions or stereotypes.

### *Constructive knowledge building*

As mentioned above, in constructivism, learning is defined as a constructive process, during which new information is linked to the old, which leads to the understanding and creation of new knowledge. The constructivist concept of visual arts is based on the student's previously acquired experience, which is complemented by new visual knowledge and skills. The acquisition of new experience and knowledge in visual arts education influences the (re) construction of the student's previous experiences and results in new cognitive constructs. In this process, in addition to the environment, the student's ability to experience (i.e., emotional engagement) also plays an important role. When learning, thoughts, emotions, and willing abilities are combined, the results are a new experience and knowledge, as well as an individual artistic work.

### *The cumulative nature of learning*

Each new learning takes place on the basis of the prior knowledge we possess and which influences the formation of new constructs of knowledge. In the Croatian educational system, the visual arts education is based on the so-called spiral model, which is a way of learning in which new knowledge of the visual language and other content builds on what is already existing and adopted in the previous classes, and thus expands with new knowledge and skills. Visual arts tasks that students solve are designed to create a situation in which the students' existing conceptual and technical repertoires are insufficient to deal with what they are confronted with and are, therefore, encouraged to think about how to deal with the problem in new ways. If visual arts tasks are carefully planned and selected with respect to the students' background and developmental levels, they stimulate and motivate learning. Overly demanding tasks will discourage students, as they will be demotivating. Visual arts tasks should be graded from simpler to more complex variants.

### *Goal orientation*

Learning visual arts contents has meaning if students understand the purpose of that learning. Therefore, teaching content should always be linked to the students' daily life, the environment in which they live, other areas of activity and life, as well as their individual interests, desires, and needs. In this

way, knowledge ceases to be abstract and becomes meaningful or applicable in life. The teacher must be well skilled in the purposes and goals of visual arts education, both in the general sense and in the planning of individual teaching units. In this case, through meaningfully asked questions and interactive conversation with students, the teacher can encourage their independent thinking, imagination, idea generation and inference, and linking the lessons learned to new experiences, which results in the creation of functional knowledge.

### *Diagnosticity of learning*

Diagnosing our learning helps us make sense of whether we are pursuing our learning goals and whether we have achieved the desired results. For example, in this process, it is helpful for a teacher to have a conversation with the students about the success of the completed visual arts task at the end of the class. It is also good to relate previously acquired knowledge to other learning content and diverse life situations through conversation and raise awareness of the purpose and need to possess that knowledge in everyday life or create a »broader picture'. In doing so, the students can hear the thoughts and experiences of their classmates, become aware of the existence of different perspectives, compare others' cognitions with their own, and possibly (re)construct their own cognitions generated during the completed artistic activities. By diagnosing their learning, students become aware of their thought processes and ways of learning (metacognitive knowledge).

### *Reflexivity*

Through reflexivity, the students reflect on their learning experience. Reflection on the past teaching process and learning outcomes helps students to become aware of these learning outcomes, to place them in a wider context, and to connect them with other areas of learning. In this way, students also become aware of the responsibility for their learning. Reflexivity is also related to the role of the teacher. A reflexive way of teaching visual arts involves the teacher's openness to recognising and understanding his/her own strengths and eventual weaknesses in his teaching style. Teacher self-evaluation or reflexive practice involves reflexively synthesising all activities performed and evaluating their performance using appropriate self-evaluation mechanisms and strategies in the visual arts area. It also implies the teacher's knowledge of the purpose and goals of visual arts education and the constant awareness and upgrading of his/her own attitudes and beliefs to prevent the creation of misconceptions and beliefs that may impair the teaching process (Tomljenović, 2014). Le Cornu and Peters (2005) cite four strategies based on a constructivist epistemology that

can encourage involving students in a reflective learning process: developing reflective attitudes in students, explicitly teaching metacognitive skills and processes, creating space for reflection in classrooms, and using and encouraging a responsive interaction style.

### *Contextual learning*

Due to its highly interdisciplinary character, visual arts education offers many opportunities for linking content with other subjects and areas, avoiding the creation of decontextualised learning and formal knowledge. Acquired knowledge of the visual language and visual arts, in general, should be linked to examples and phenomena from the environment and everyday life. The contextualisation of visual arts contents can relate to local and global examples of cultural heritage and their placement in social, historical, geographical, cultural, and political contexts. It is also desirable to teach outside the classroom, in the daily environment of the students, from the schoolyard to walking around the city and visiting museums and galleries. In this way, by interacting with visual content in the real context of everyday life, learning about art contents becomes more interesting, and the experience becomes authentic. Students discover the importance and benefits of culture and arts in the daily life of the individual and the community. In such situations, they can also be encouraged to perceive the interconnectedness and interdependence of various activities, objects, and phenomena in the environment, to observe the direct and indirect connections between the content of visual arts and other learning contents and everyday life. In this way, students become more aware of the role, presence, and importance of visual arts in life and its inseparability from other areas of life.

### *Orientation towards the experiential approach*

The experiential approach to learning and teaching is one of the fundamental principles of the contemporary pedagogical paradigm. Specifically, the best way to foster cognitive and metacognitive development is not one in which content is the focus of interest, but one through which the application of skills and knowledge is emphasised (Kolb et al., 2001). To achieve this goal, a complex, challenging teaching environment should be created, which is similar to situations in everyday life. Therefore, the teacher must be familiar with contemporary, creative teaching methods, the application of which will encourage the students' motivation to experiment and try new ways of work, as well as their openness and willingness to incorporate new ideas and approaches to solving visual arts problems. Through quality conversation or interaction with the teacher and their own cognitive and practical activity, students discover the

principles, relationships, and connections between visual concepts and content, identify aesthetic and visual values in artworks, and discover the specifics of art materials and techniques through learning their characteristics and experimenting with them. The teacher needs to know how to balance giving guidance for thinking and doing and letting students come to their own conclusions. The experiential approach is closely linked to problem-based learning in visual arts since experimentation and discovery are accomplished through open and problem-oriented visual tasks.

### *Problem-based learning*

In problem-based visual arts education, learning is encouraged through methods and activities that are based on the problem situation and which cause more complex thought processes in students. In this way, by creating their cognitive structures and at their own pace, students come to the solution of visual arts problems and new knowledge. At the heart of the problematic situation is a problem-based visual arts task, which the students need to solve creatively; in other words, they need to find a solution using their creative thinking and expression. In doing so, the success of solving a visual arts problem depends largely on the teacher's ability to design various creative tasks and, at the same time, has control over problem-solving strategies. The process itself involves creating a situation in which students are introduced to a problem, defining a problem, gathering information, and asking questions to analyse and generate ideas for solving a problem, solving a problem and evaluating it, and transferring experience to new situations (Tacol et al., 2007). Through problem-based learning, students acquire new insights, attitudes, and experiences that relate to the context and become functional (i.e., applicable in everyday life situations).

### *Example-based learning*

Example-based learning implies linking theory and practice through recognising what has been learned and observing connections (linking different content) in order to concrete examples from everyday life. By learning through examples, abstract knowledge is transformed into concrete, arising from the consequences of its application. By demonstrating examples, complex connections are identified, and the contents of different areas (different areas of visual arts; visual with non-visual) are linked. The more cognitively challenging activities teachers offer the students during their teaching activity, the more likely the students are to understand and adopt the material. The students should be encouraged to analyse, synthesise, make comparisons, associations, metaphors, look at content from general to individual aspects and vice versa as

often as possible during the teaching process. Using media and multimedia is a very effective way of introducing students to examples in the visual arts area, nature, and environment in which they live, which are related to the learning content. In each lesson, it is also advisable to directly demonstrate examples related to learning content, from original artwork to reproductions and objects from nature and everyday use. With skilfully asked questions, the teacher encourages students to independently perceive, compare, and discover visual-aesthetic features and phenomena, to experience what is seen affectively, and to develop artistic sensibility. Constructivism-based visual arts classes should also take into account the different cognitive types of students; therefore, through a demonstration of numerous examples based on experiences with all available senses, the teacher helps the students to connect new information and experiences to the old more quickly and easily, as well as to gain complete knowledge.

#### *Social conditionality of learning*

As mentioned before, constructivists, especially social constructivists, define learning as a social and cultural process that occurs in the context of human relationships and activity and not solely in the mind of individual learners (Dudley-Marling, 2012). According to the same author, the sociocultural context is not merely the location of learning; it also affects how people learn and what is learned, and is in itself part of what is learned. The contemporary approach to learning and teaching of visual arts is based on both the teacher-student and student-student social interaction; through interaction, students develop interpersonal, cognitive, social, emotional skills, and confidence, which ultimately leads to better learning outcomes (Tomljenović, 2015).

In order to make the interaction as successful as possible, the emphasis is placed on group and individual work, which increase the students' motivation and activity. Collaborative learning or group work is one of the most effective ways of conducting active learning in visual arts classes. Through collaborative learning, the teacher satisfies students' desire to communicate with each other and designs the procedure for students' independent interaction and exchange. In addition to practical art activities, collaborative learning should be realised through conversations about the realised student works (or other artworks) by analysing, imagining, offering opinions and suggestions, with the goal of creating constructive feedback, made together by the teacher and students. While constructing new understanding is a highly individual activity, communicating with others can enhance learning because it allows students to test their ideas and to consider the ideas of others (Li, 2017).

### *Intrinsic motivation in learning*

Intrinsic motivation is one of the basic prerequisites for successful learning. In the visual arts classes, students are activated with appropriate forms and methods of work that stimulate curiosity, interest in the visual arts tasks and activities in the work process. In order to stimulate the students' internal motivational incentives, the teacher should attempt to activate students' independent action and their thinking about what they do as effectively as possible using a combination of different teaching strategies and methods. An important form of stimulating students' intrinsic motivation is to create a comfortable atmosphere in the classroom since the students, especially those of younger age, are most easily motivated by creating an emotionally positive attitude towards the learning content. A very good way of stimulating intrinsic motivation is through play: an activity that raises concentration, stimulates long-term and focused attention and activity of students, and can be applied at all ages; students create a positive emotional attitude to the teaching content presented through play, and it is easier for them to memorise the teaching content (Bognar, 1986). Games also encourage the activation of the imagination and practical intelligence (Isenberg & Jalongo, 1997; Zagorac, 2006) as desirable abilities in realising the tasks and aims of visual arts education.

Introducing play into visual arts classes can make organising the teaching process more demanding since the preparation of the creative play often requires certain additional resources and aids, as well as various materials and accessories, especially since there are few relevant didactic games available on the market. Therefore, planning this type of activity requires not only extra time but also resourcefulness and creativity in their design and realisation. However, better student activity and interest during creative play will reduce the time needed to acquire knowledge and achieve quality learning. Students will also take a positive attitude towards such teaching since it is most suited to their natural way of learning in which they feel most comfortable and secure. Short creative games that involve solving visual art problems in an interesting and entertaining way can create a link between understanding the visual language and its expression through artistic activities, and, at the same time, verify if the students understand the artistic content. Although commonly used as part of motivation or introduction to a visual problem, play can be used in all stages of the teaching process. The aim of creative play in visual arts classes is to encourage solving visual arts problems through motivation, which at the same time becomes, consciously or unconsciously, motivation to learn.

## **Constructivist approaches in designing visual arts classes**

In visual arts classes, students should solve visual arts tasks that trigger cognitive conflict and offer an activity that can be used to resolve the conflict. Every part of the teaching process can be used as an opportunity for authentic learning. Short creative exercises, which are intended to be a playing activity, represent a very convenient way for learning, encouraging the students' intrinsic motivation, thinking and curiosity. They usually take part before making students' artworks.

A visual arts problem can, for example, be related to the acquisition of basic knowledge of primary, secondary and tertiary colours (Ostwald's colour circle), and its understanding can be stimulated by the playing, using transparent coloured film sheets. They can have primary and secondary colours as well as their tones; students in groups experiment by overlapping the two selected sheets and make conclusions based on the overlapping of different combinations. The tasks may, for example, relate to finding secondary colours (students need to discover that green is obtained by overlapping blue and yellow sheets, etc.), finding colour tones according to the suggested example (students have a reproduction pattern and, by overlapping the sheets, they seek to guess combinations that are most similar to the tones/colours in the picture), and similar. Another example is supplementing a selected reproduction of an image with missing cut pieces to their corresponding pieces or by painting/drawing the missing pieces, depending on the visual arts problem.

If the new knowledge is not appropriate for the students' developmental level, the students may solve the art problem in an undesirable direction, or, in the case of the task being too simple or too difficult, lose their motivation to work. Therefore, the teacher needs to know the student's prior knowledge to adapt the tasks and teaching methods to the developmental stage of the group, as well as individual students, in order to ensure the conditions in which the cognitive conflict, so that the attachment of new content to old constructs can occur. In exploring the students' developmental levels and abilities, the conversation between the teacher and the student is greatly assisted, through which the students discover their thoughts, ideas, and associations about a particular visual content and problem. The most effective conversation is based on pictorial examples, using open-ended questions (What do you think...?; What happens when...?; What do you notice...?; How do you imagine...?; What will happen if you change/add/highlight...?). Therefore, the teacher must seek and encourage the reflection and expression of the student's personal perception.

Teaching activities should challenge the students' assumptions by questioning and reaffirming them or replacing them with new knowledge (Brooks & Brooks, 1999). It is also important to encourage the consideration of visual arts problems in multiple perspectives. In this way, questions initially presented as irrefutable facts (e.g., What is a colour?) can become open and liable to numerous interpretative possibilities (Prater, 2001).

We can offer another example related to project-based learning, which is very suitable for constructivist-oriented visual classes. The project topic can be anything from visual arts area that is proposed by a national curriculum. The chosen theme must be connected with other areas of life, selected through students' and teacher's interaction. If the topic is, for example, »Music and visual arts«, the teacher might begin a lesson by listening to music or showing a video clip on YouTube about Kandinsky, who made the first abstract painting, motivated by listening to the music. The teacher might ask the students what kinds of paintings they would make to express their feelings and associations created by the music, what kind of shapes and colours are created in their imagination by listening of particular music tones. He/she might also ask if they could be connected to some other senses, for example, do they have a certain smell or taste or texture? In that way, different approaches to the issue can be presented and discussed. The emergence of abstract art can be placed in a broader social context, by talking about the Industrial Revolution and scientific achievements in the early 20<sup>th</sup> century, about the emergence of the microscope, which allowed insight into the world hitherto invisible to the human eye (the microscopic world as a new possible artistic stimulus), and similar. In that way, students can see phenomena from multiple perspectives, make connections between hitherto unrelated data, and understand that there is no one answer for complex issues. The breadth and depth of processing the topic depend on its complexity, time provided, and students' age or interests. Students can work in groups in the classroom to begin individual projects, and explore some parts of a potential topic, first theoretically, and after that through practical, creative work. They can read and make concepts in groups, demonstrating them later through various kinds of interaction. Students might also be asked to give their own opinions about artists or artwork seen, to find connections between the life at the time and the artistic styles, to talk about the artworks they prefer by elaborating why, in order to develop their ideas and to create associative and creative thinking. By verbalising their thoughts and feelings, they became aware of their opinions and the variability of their opinions. By transforming their thoughts and feelings into visual communication, they become capable of demonstrating the understanding and elaboration of the visual problem and of expressing their unique artistic experience.

Visual arts classes should also be performed outside the classroom, in order to respect contextual learning about phenomena from the environment and everyday life. Architecture in the local community can be a good incentive for exploring shapes, volumes, space, colours, light and shadow, and materials. Students can compare traditional and modern architecture, their function, aesthetics, materials, sizes, and integration into the environment by engaging in real-world contexts. They can debate the ways of everyday life in different spaces, and learn how the environment could define the shape, size and visual definition of the house, by exploring places for human living in different countries/continents, connecting the content with ecological issues and sustainability. They can also discuss the ideal house for living or learning, and make their own version of it in various materials.

This type of work, however, requires skilful and creative teachers. The role of the contemporary teacher in today's educational context is becoming increasingly demanding and complex, dictated, on the one hand, by modern pedagogical concepts and the complexity of the school conditions in which teachers work, on the other. In addition to possessing knowledge and skills in the visual arts area and methodology, teachers are also required to have a mentoring approach to the students, to develop creativity among students, to be able to involve students in independent and active work, to include new technologies in the teaching process, to be open and ready to new ideas and approaches, to have a desire to experiment and attempt new ways of teaching, and to possess the ability to use contemporary interactive and art-specific teaching methods and procedures. A constructivist-oriented teacher in visual arts classes also plans and encourages student participation in such a way that they help one another in solving visual arts tasks and develop a sense of teamwork. To be able to express new ideas in their own way, students also need to be given sufficient time and appropriate working conditions, which is another major challenge in current Croatian school practice, in which only one hour a week is intended for teaching visual arts in elementary school.

## **Conclusion**

Constructivism-based visual classes offer students many forms and ways of acquiring knowledge: from a specified and structured learning situation to a completely unstructured environment; from a rigorous system of navigation through teaching content to a mode of free exploration, in which students independently change topics by increasing active participation in learning through the process of constructing knowledge (Spiro et al., 1987). As

the constructivism-based visual education encourages the development of all of the students' potentials in learning and teaching, it can also be called a holistic approach to learning and teaching, which not only refers to the cognitive activity in the narrow sense but necessarily involves emotional, motivational, social and psychomotor aspects of personality. Specifically, it is important to engage students emotionally in learning and teaching since, in this way, the transformation of earlier cognitive constructs will be more effective and easier. Difficulties in applying the constructivist perspective of learning and teaching may be linked to a more complex process of teachers' preparation for teaching since it is simpler and easier to maintain teaching in an outdated, transferable manner, without an individual approach to the students. Therefore, today, teaching is still often reduced to solving simple problems instead of more complex ones through student collaboration. Student-initiated questions and student-to-student interactions are neglected, conventional knowledge and ways of thinking are preferred, or the curriculum is interpreted in a rigid and inflexible manner.

In contrast, it is necessary to raise awareness of the necessity of changing the educational process in order to keep up with the needs of modern society, so we could follow contemporary scientific trends related to education and, accordingly, change obsolete attitudes and beliefs about learning and teaching, which can only lead to meaningful changes inside schools as a condition for effective learning outcomes. Difficulties in accepting contemporary and, therefore, also constructivist, approaches to learning and teaching are also the result of the entrenched teachers' beliefs, their upbringing, prior education, and personal perspectives. Therefore, teachers should constantly question their thinking patterns and reconstruct the acquired knowledge into new concepts and meanings through continuous professional and personal development.

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