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Tatiana Vorobiova

Questions as a Teaching Strategy to Develop Learning Capacity and Creativity

This study surveyed the perception of questioning techniques by teachers as the key strategy for developing of learning capacity and creativity in the classroom. The article analyzes different approaches to classification of question types used in actual classes. The author focuses on the importance of using the questioning strategies and their effect

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on the academic achievements of students. The study presents a reasoned argument and complex citation and discussion of sources by both foreign and Ukrainian scholars. Various taxonomies of question forms and types, and response dimension of questions have been considered and a conceptual framework of questions has been developed to assess psychological processes underlying questioning strategy. It has been proved in the article that the teacher who incorporates questions effectively by knowing the various purposes, types, and intended outcomes, establishes a classroom climate that promotes active engagement of pupils and thus encourages them to think critically and be creative.

Key words: critical thinking, effective dialogue, questions, questioning technique, teaching strategy, taxonomy.

Introduction. The problem of creativity, creative or critical thinking, giftedness and the ways to develop them has been deeply explored, explained and implemented by a great number of prominent philosophers, educators and psychologists. Among them L. Vygotskyj, V. Molyako, D. Bogoyavlenska, A. Khutorskoj, B. Bloom, J. Gilford, P. Torrance, R. Fisher and others.

Everybody involved in the sphere of education seems to know how to access the level of creativity, how to teach and develop it and how to make the learning process creative. Scientists have created pedagogical techniques and methodology directed at the development of creative personality. Over the last decades research on creative teaching and teaching creativity has increasingly demonstrated that the problem is of great scientific, theoretical and practical importance. But nevertheless the question *What gives rise to creativity and critical thinking?* again and again troubles those, who are enthusiastic about implementing those techniques and strategies into learning. And when it concerns young learners we cannot help feeling upset watching children in the classrooms psychologically unprotected, oppressed, fearful to express their own thoughts not to be laughed at or to look like «white crow» in the class. Overloaded tasks and too high expectations cause fear in children not to cope with all those demands of the environment (teachers, parents, classmates) and, as a result, they paralyze creativity and critical thinking. Faithful dialogue «teacher – pupil» is the only way to overcome this discomfort. It is questioning strategy that will help to construct such a dialogue and create a comfortable environment, where being right does not always matter. This strategy will also help ensure that it is not always the quickest and confident pupils who make a contribution to answer.

Thus the *goal* of the article is to study the theoretical grounding and prove the importance of mastering the questioning skills for both primary school teachers and pupils.

Review and analysis of the recent studies dealing with the research area. Socrates defined teaching as «the art of asking questions» long ago [6]. Socrates was one of the greatest educators who taught by asking questions and thus drawing out answers from his pupils. The overall purpose of Socrates questioning is to challenge accuracy and competence of thinking in a way that acts to move people towards their ultimate goal. Many scholars agree that Socrates system of questions is at the heart of critical thinking – they enhance our critical thinking skills.

Since that time the role of questioning strategy in the development of critical thinking and creativity has always been in the focus of attention of the leading educators and psychologists of the world. The name of Richard Paul, author of «Critical Thinking: What Every Person Needs to Survive in a Rapidly Changing World», is worth mentioning first. The taxonomy of Socrates questions created by him has been recognized and used as the methodological basis by many researchers [9].

Next comes the name of Benjamin Bloom and his widely-known work «Taxonomy of Educational Objectives» (1956), which provides useful way to think about when and how to use questioning teaching [2]. We will consider his theory and its scientific value later on, in the next paragraph of this article.

Analyzing the problem of questioning as a teaching strategy, we referred to the foreign sources and found out that the majority of the scholars consider it to be the basic one. Such outstanding experts in this research area as D. Hassard, R. Fisher, R. Sternberg, Erica Landau, A. Cropley and many others pointed to the importance of this strategy for developing creativity, especially, in primary school.

R. Sternberg considers that «Teachers who use effective questioning strategy break the culture of disengagement in the classroom. Passive students become active. Those who heavily rely on teachers for answer become thinkers themselves» [11]. According to R. Fisher «What promotes creativity is a questioning classroom, where teachers and pupils value diversity, ask unusual and challenging questions, make new connections, represent ideas in different ways, try fresh approaches and solutions to the problems, and critically evaluate new ideas and actions» [4]. Erica Landau and her colleagues initiated and developed exercises to stimulate children to ask questions about their life, what they know of the past, their social involvement and the ideas they have about the future [7]. The set of tasks they developed concerns asking

children to define *general concepts* such as curiosity, openness, flexibility, imagination, surprise, and sense of humor. All the tasks are aimed at teaching how to ask questions but not only memorize the facts of knowledge.

The experience of many educators shows that teaching through questions is much more challenging than giving facts. In terms of R. Sternberg (1995), it is more important for students to learn what questions to ask – and how to ask them – than to learn the answers [11]. This strategy leads to creative thinking.

In «The Investment Theory of Creativity» (1995) Sternberg and Lubart assert that creative thinkers are like good investors: they buy low and sell high. «Buying and selling high carries risks. Many ideas are unpopular simply because they are not good. People often think a certain way because that way works better than other ways. But once in a while a great thinker comes along – a Freud, a Chomsky, or an Einstein – and shows us a new way to think. These thinkers made contributions because they allowed themselves to question, to take risks and make mistakes» [11].

Jamie McKenzie (2003) believes that «Questions and questioning are critically important human technologies that might enable young people to solve problems, make smart decisions and score well on their tests of life as well as all the other tests loom in a child's world» [8].

Looking through the bibliography on the problem we have noticed that these ideas have been taken for granted by the majority of scientists, both foreign and Ukrainian. But in Ukrainian pedagogics it is usually considered in the context of interactive methods of teaching, or constructing learning dialogue, or as methodological aspect of developing creativity and critical thinking.

V. Angreyev, A. Korol, A. Khutorskyi, and others use the terms «heuristic learning» and «heuristic dialogue» or «heuristic questions». Their explanation of the notions is rather similar to those described by ancient philosophers Cventilian and Socrates, who recommended their pupils in the course of gathering information about the object they study to ask seven key questions : who?, what?, why?, where?, in what way?, how?, when? and answer them. V. Andreyev suggested his classification of pupils' questions and recommended to use them when constructing the heuristic dialogue, developing in pupils such skills as description and explanation. In the scientist's words, mastering of those skills becomes successful only in the case when it is based on the pupil's questions [1].

V. Bibler, V. Lozova, P. Frire, Yu. Golubyeva considered the questioning strategy as an integral part of the educational dialogue and classified questions according to their functional role (cognitive, service questions). G. Kostyuk, O. Kyrychuk, Yu. Malyovanyi, K. Lazaryeva contributed to the investigation of the problem of questioning and its role in the learning process. K. Lazaryeva was one of the few educationalists who focused her attention on the questioning activities of the young learners and the importance of such activity in constructing effective educational dialogue which would promote the development of critical thinking in primary school.

Although considerable amount of research in Ukraine has been devoted to the problem of creativity of young learners and their critical thinking, few attempts have been made to investigate the questioning techniques as the core basis for the development of such abilities. Asking good questions is the basis for becoming a good learner. The primary school is the most important and decisive stage on the road to creative thinking. «If children are not asking questions, they are being spoon-fed. That might be effective in terms of getting results, but it won't turn out curious, flexible, creative learners suited to the 21st century» [6].

In this article we have made an attempt to answer the question we put at the beginning of it: What gives rise to critical thinking? We tried to formulate the answer, having analyzed both psychological and educational aspects of the matter under investigation, i. e. questioning as a teaching strategy to develop learning capacity and creativity.

Education through questions. Young children do not come to the classroom empty-handed. They bring with them an already established set of instincts, skills and characteristics which will help them to learn. The primary school teacher's responsibility is enormous, because he needs to identify those characteristics and make most of them. Children take great delight in imagination and fantasy. It is more than simply a matter of enjoyment, however. In the primary school children are very busy making sense of the world around them. They are identifying pattern and also deviation from the pattern. They test out their versions of the world through fantasy and confirm what the world actually is by imagining how it might be different. This capacity for fantasy and imagination plays the constructive part in development of creativity. If we accept the role of imagination in children's lives we can see it provides rather powerful stimulus for real learning.

At the age of five – six children ask dozens of questions a day – many of them higher order questions starting with «why». But very often they do not ask questions in school. Effective questioning isn't a one-way process. Only if the teacher asks the kind of questions that stimulate thought and debate, there is a strong chance his pupils will also start to ask more [6].

Of all the instincts and attributes that children bring to the classroom the instinct for interaction and talk is probably the most important for a teacher. It is one of the most powerful motivators and to our advantage in primary school classroom. The child should know he/she is expected to be creative.

The teacher of the primary school is obliged from the very first day of child's coming to school to create such an atmosphere, that is comfortable for development of creative abilities, to do his/her best not to miss this chance of high motivation. In our opinion, those teachers who neglect their responsibility for successful future of their every pupil are guilty of the child's faults on the road to critical thinking and creativity.

To be creative means to look at the known from different aspects, to find new relationships between things unrelated before, to find in the given frame new alternatives. This includes being open to the environment. Once children start asking questions, the classroom will take on entirely different tone, and learning will focus more on what they want to discover. When children see the things they desire to learn, their productivity increases and, what is more important, their interest in class increases.

The teacher ought to start the lesson with a question like *What do you know on the topic?, What do you think about it?* This approach might challenge or introduce child to new ideas, encourage him to ask questions about the subjects even in the earliest stages of learning, before the subject becomes more complex. «The lesson should never end with full stop but always with a question mark. What would you like to know more on the topic?, Would you like to study it when you become a university student? When the child feels the need for a more profound discussion, he will start asking questions about complex abstract aspects of the subject, about where to find the sources» recommends Erica Landau [7].

Questioning work is a key to open the mind of a learner. When pupils have learnt questioning technique, it means they have learnt how to learn. Neil Postman in his rather popular book «Teaching as a Subversive Activity» speculates: «Once you have learned how to ask relevant and appropriate questions, you have learned how to learn on, no one can keep you from learning whatever you want or need to learn or to know» [10].

The range of questioning strategies. In this section of the article we will consider the questioning strategies, types and levels of questions aimed at aspiring in children the desire to higher-level questioning skills.

The analysis of the publications by Ukrainian and foreign educators devoted to the problem under the discussion brings us to the conclusion, that there exists a wide range of approaches to, strategies and taxonomies of questioning. They have been developed specifically as an aid for teachers wishing to enhance the questioning approach so, that it becomes more «creativity-friendly» [3].

Teachers spend a great deal of classroom time testing pupils through questions. Although questions are widely used and serve many functions, teachers tend to overuse factual questions such as «What is the capital of the USA?», literal or knowledge-based questions. The result is classroom in which there is little creative thinking».

Most questions are answered in less than a second. That is the average time teachers allow between posing a question and accepting answer, throwing it to someone else, or answering it themselves. Research has found, however, that increasing the wait time improves the number and quality of the responses – three seconds for lower-order questions and ten seconds for higher-order questions. But a large proportion of all questions asked in the classroom are procedural rather than learning-based. In other words they tend to be of the «is-your-name-on-it?» or «have-you-finished-yet?» variety.

Many years ago, an educator named Benjamin Bloom developed classification system we now refer to as Bloom's taxonomy [2].

The taxonomy contains six levels, which are arranged in hierarchical form, moving from the lowest level of cognition to the highest:

- Knowledge;
- Comprehension;
- Application;

- Analysis;
- Synthesis;
- Evaluation.

The knowledge, comprehension and application questions are *low-order* questions. Their function is to describe, retell, name, locate, report, demonstrate. E. g. What happened in the story?, Why did X run away?. Analysis, synthesis and evaluation questions belong to *high-order* questions. E. g. Which part did you like best?, Can you think of a different ending?, What do you think of the story?, etc. Their function is to develop in pupils skills of comparing, contrasting, creating, predicting, evaluating, etc.

Arthur J. Cropley suggested his own taxonomy of questions aimed at the development of critical thinking and creativity in school [3].

According to A. Cropley, a teacher using the following types of questions will be able to promote creative environment in the classroom:

1) hypothetical questions: What if.....? , If....., the n.....? (Encourage speculations and allow pupils to make their own suggestions. By validating the pupils' suggestions with frequent praise the teacher develops a climate of risk-taking). When using this type of questions teacher deliberately introduces several variables to a given theme so, that pupils are encouraged to wonder intellectually beyond mere recall. The technique is useful in a wide range of curricula context:

Literacy: if we make the evil characters good or vice versa then how will the plot of the story be affected?

History: if you were time – transformed from present day to a Middle Ages town then what differences would you see?

Sciences: if we add ink to water then what do you think will happen to a flower?

2) broad-based, multiple-possibility questions (the open-endedness of this kind of questions encourages creative thinking – Is the world an exciting place?)

3) comparison conceits (the technique is particularly successful as it is a cognitive strategy which mobilizes both sides of brain – through the comparison of the dissimilar: How is the sea like a mirror? Imaginative «comparison conceits» which employ the unusual are more effective than everyday examples).

4) similarity contrasting (this involves the selection of two broadly similar items. These are then contrasted and ways in which they are dissimilar are listed. This type appeals to more capable pupils).

5) multiple answers to a question (How many uses can you think of for a?).

6) requested divergence (Can you think of unusual ways to?). If one accepts Cropley's definition of creativity (Creativity ... involves departing from facts, finding new ways, making unusual associations or seeing unexpected solutions [3]), then questions which actively request divergence obviously enhance creativity.

7) Why? Questions (these will be used on a regular basis by the teacher and pupils. Curiosity is a further component of creativity. The importance of this type of questions also lies in the fact that it allows to find out cause-effect relationships).

Erica Landau considers the following levels of question asking connecting them with the present, the past and the future. The *first level*, she states, should be descriptive questions, such as: «Who does what, how, when, and where». Through these questions the child learns to notice and describe things, and gains self-confidence in understanding the situation or a problem. Only after the situation or a problem is thoroughly described, we can proceed to the *second level* of question asking: the causal «why?» questions, which provide an insight into information given to the child by parents, teachers, or school. These two levels of questions when teaching children to perceive, describe, link as objectively as possible.

Only then we may ask the subjective questions: «What do I know about it?, How do I feel about it?, When did I see or experience anything like this?» These questions often demand an emotional commitment for which children are prepared after gaining strength through the two previous levels of «objective» examination. The children will then approach the problem from different angles, in the form of associations and analogies that encourage flexibility and stimulate them to be involved, because they invest in it part of their associations, knowledge and feelings.

Imaginary questions represent the *third level* of question asking strategy: «What will happen if we link A to B?»

Judgmental questions such as: What is more important?, What is better? represent the *fourth level* of the thinking process [7].

E. Landau called her questioning strategy «Spiral of Creative Questioning» and it looks like the following:

DESCRIPTIVE (Who, what, where, when, how?) → CAUSAL (Why?) → SUBJECTIVE (How do I feel about it?) → IMAGINATION (What happens if.....?) → JUDGEMENT (What is more important/better?) → FUTURE (What else can I do?) [7].

E. Landau's creative questioning technique brings us to the conclusion, that through this system of questions we can stimulate children to take actions, first on the intellectual level, which becomes motivation, and then on a practical level.

«Although, we can not teach children the facts of future, we can bridge the gap between facts of today and the challenges of tomorrow through creative questions. Rather than teaching them what to think, we should teach them how to ask questions that can lead the way to finding answers ... By teaching children how to ask questions, we teach them to «fish» knowledge and experience» [7].

Drawing on the study of E. Landau, we may conclude, that by encouraging children to ask questions we can preserve their natural curiosity, stimulate their imagination and their sense of adventurism, while ensuring an enjoyable learning process. When children enjoy learning, they get more involved and dare ask more questions. This contributes to their continuing joy of learning and to making progress. We can therefore help them to acquire mental tools for better dealing with the future.

The analysis of the recent studies of questioning strategies shows that only if the learning process relies on pupils' questions, it may be considered effective.

V. Andreyev in his studies proves that when pupils ask questions they participate in creating problem situations and stimulate their critical thinking and creativity competence. In terms of P. Freire, asking questions is for pupils a chance to enter the scope of independent creative activity, as questioning is the first stage of cognitive-creative activity [5].

V. Andreyev generalized various approaches of scientists to classification of pupils' questions and grouped them according to:

- 1) content – simple and complex questions (A. Korol);
- 2) level of cognitive activity – reproductive, rese arch, problem questions (V. Berkov, V. Lozova);
- 3) functional application – cognitive and procedura l (Yu. Golubyeva, Yu. Kondratyuk, I. Rodak);
- 4) vector of addressing – external (addressed to ot her communicants) and internal (addressed to one's «self»).

It is important that there should be an appropriate balance of literal (concerned with the recall of facts or simple comprehension, where answer is clearly stated in the text) and higher order (making progressive cognitive demand on pupils and encouraging children to think beyond the literal) questions for children in all age groups.

But any level of questioning skills can not be developed without strategies for developing effective learning dialogue. The Wiltshire LA Literacy Team (2008) published a document «Assessing and Developing Children's Understanding and Thinking in Literacy through Effective Questioning» [12]. The document includes some rather useful advice for the teachers wishing to enhance the questioning strategy so, that it becomes really effective for development of children's thinking:

- 1) Invite children to elaborate (e. g. Say a little more about it).
- 2) Echo-strategy helps pupils clarify their own thinking and shows they have been listened to (e. g. So you think that).
- 3) Non-verbal invitation (e. g. eye contact, tilt of head, nod, etc.).
- 4) Make a personal contribution from your own experience (e. g. I remember).
- 5) «Clarify ideas» strategy makes the key points easier to gasp and encourages to consider viewpoints (e. g. I can tell that is the case because.....).
- 6) «Make a suggestion» strategy encourages pupils to offer their own suggestions or build on teacher's ones (e. g. Yes, I sometimes think that.....).
- 7) «Offer information» strategy encourages pupils to offer their own information and discuss it (e. g. It might be useful to know that).
- 8) «Speculate on a given subject» strategy encourages pupils to explore ideas, understand that uncertainty is a normal stage in thinking process [12].

Conclusions. The theoretical considerations and reliable sources and data presented in this study allows us to draw conclusions that productive, reasoning and problem-posing questions offer children opportunities

to develop their learning capacity and obtain creative competence by discovering multiple answers to the questions posed by the teacher. Children ascertain that there is often more than one answer. The questioning strategies encourage children to apply attention, comparison, action, problem solving, or reasoning before responding. The article helps teachers to comprehend that teaching through questions is more challenging than giving facts, especially in primary school. This technique encourages children to ask questions, because it stimulates their curiosity.

The analysis shows that the use of questioning as a teaching and learning strategy in Ukrainian schools is not as popular as it ought to be. Even if any questions are used by a teacher, unfortunately, most of them are lower-order in nature and thus fail to contribute to the pupils' creativity. Such questions are usually taken from the textbooks, which are crammed, memorized and retold by the learners and usually forgotten afterwards.

We suppose the study will convince teachers to make questioning strategy the key one in their dialogue with young learners.

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Воробйова Тетяна. Запитальна діяльність як навчальна стратегія розвитку здібностей та креативності молодших школярів. У статті досліджено одну з ключових стратегій розвитку критичного мислення та креативності в молодших школярів – запитальна діяльність. Проналізовано різні підходи до класифікації типів запитань, які використовуються для активізації навчального процесу. У центрі уваги дослідження – вплив цих технологій на академічний прогрес учнів. Всебічний аналіз джерельної бази, представленої і зарубіжними, і вітчизняними авторами, формує методологічну базу дослідження. У статті наведено різноманітні таксономії запитань, концептуальні підходи щодо методики «питання– відповіді»; розглянуто системи запитань, їх послідовність. Доведено, що лише той вчитель, який використовує запитальну технологію професійно, створює позитивний, комфортний клімат в аудиторії і, отже, підбадьорює і заохочує учнів ставити запитання, створюючи проблемні ситуації і завдяки цьому вони набувають первинний пізнавально-творчий досвід.

Ключові слова: запитання, запитальна стратегія/технологія, таксономія, ефективний діалог, критичне мислення.

Воробйова Татьяна. Вопросительная деятельность как учебная стратегия развития способностей и креативности младших школьников. В статье исследуется одна из ключевых стратегий развития критического мышления и креативности младших школьников – вопросительная деятельность. Анализируются различные подходы к классификации типов вопросов, используемых для активизации учебного процесса. В центре внимания исследования – влияние этих технологий на академический прогресс учащихся. Всесторонний анализ источниковой базы, представленной как зарубежными, так и отечественными авторами, формирует

методологічну базу дослідження. В статті представлені різноманітні таксономії питань, концептуальні підходи к методикі «питання– відповіді»; розглядаються системи питань, їх послідовність. Доведено, що тільки той вчитель, який використовує запитальну технологію професійно, створює позитивний, комфортний клімат в аудиторії і, таким чином, заохочує і поощряє учасників задавати питання, створюючи проблемні ситуації і, завдяки цьому, вони набувають первинний пізнавально-творчий досвід.

Ключові слова: питання, запитальна стратегія/технологія, таксономія, ефективний діалог, критичне мислення.

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