The Role Of Information Technology Training In The Development Of Creative Abilities Of Higher Education

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Summary

The article analyzes the methodological, psychological and pedagogical literature, Internet sources in order to identify features of the use of ICT in the learning process and the development of creative abilities of applicants. The main parts for the development of the methodological apparatus based on the model of information and communication technologies are substantiated and selected. The main directions of further research related to the development of methods of using information and communication technologies in the process of teaching university students are identified.

Keywords:

educational institutions, Innovation, educational processes, information and telecommunication technologies

1. Introduction

Integration of Ukraine into the European educational space sets before the national higher school the task of forming a personality that is able to think creatively, quickly acquire new knowledge and be able to apply them to solving new non-standard situations. A modern university graduate must be competitive in the labor market, for which in the process of learning he must acquire not only highly specialized, but also systemic fundamental knowledge that contributes to the holistic perception of the scientific picture of the world, intellectual development of the individual and its adaptation to rapidly changing socio-economic conditions and technology development. The transition from the knowledge paradigm of training "lifelong learning" to the competency of "lifelong learning" also requires strengthening of fundamental training.

The process of informatization, which today covered all aspects of the life of modern society, has several priority areas, which, of course, include the informatization of education. It is the fundamental basis for the global rationalization of human intellectual activity through the use of information technology (IT).

Recently, the focus of researchers is on the study of the essence of new information technologies of education, their didactic, psychological and pedagogical possibilities of application at school.

Information technology of education is a pedagogical technology that uses special methods, software and hardware (cinema, audio and video, computers, telecommunications networks) to work with information [1].

The disadvantage of the current educational system is, in particular, that one of the main goals here is often only the preparation of a qualified participant in the production process that society needs. All other potential possibilities of the individual, including creative ones, practically remain unclaimed. As a result, a person with insufficiently developed creative thinking later experiences difficulties in perceiving the ever more complex world, in making decisions in non-standard situations, and is not able to grasp the connections between concepts and phenomena that are at least slightly different from the usual ones. As a result, a person with insufficiently developed creative thinking later experiences difficulties in perceiving the ever more complex world, in making decisions in non-standard situations, and is not able to grasp the connections between concepts and phenomena that are at least slightly different from the usual ones [2].

The upbringing of a creative personality is the task of the entire education system from preschool to higher education. And the role of the higher education system is very responsible here, since it is at this stage that there is an

Manuscript received June 5, 2022
Manuscript revised June 20, 2022
https://doi.org/10.22937/IJCSNS.2022.22.6.85

opportunity, often the last one, to make up for those omissions that were made earlier.

2. Theoretical Consideration

The perception of oneself as a creative person is the most important condition for a creative act. At the same time, a critical attitude to the results of one's own activity is quite acceptable, but with one condition - it cannot be done in the process of activity, let the criticality manifest itself only when something new has already been proposed or created, and not at its inception [3-4]. In this sense, faith in one's own originality is a very important condition for the realization of a person's creative abilities.

Taking into account the fact that manifestations of creativity (their weakening or strengthening) are influenced by many external conditions, the correct choice of forms of organization of the educational process can play a decisive role here. Teachers who aim to develop the creative abilities of students are required to pay special attention to divergent thinking. Along with the selection of special tasks that allow developing speed, flexibility, originality and accuracy of thinking, the teacher can apply a number of proven general approaches to stimulating and developing creative activity:

1. Providing a favorable atmosphere. Goodwill on the part of the teacher, the rejection of value judgments and criticism of the student contribute to the free manifestation of divergent thinking. Social reinforcement of manifestations of creativity.
2. Enrichment of the educational environment with a variety of new objects.
3. Stimulating the student's curiosity. Giving him the opportunity to ask questions. Encourage the expression of original ideas.
4. A personal example of a teacher in using a creative approach to problem solving. The presence of other positive examples of creativity. Creation of conditions for imitation of creative behavior.

The level of training of school graduates entering active life does not adequately meet the requirements of rapidly developing science, technology, and economics. Traditional teaching at school is justly criticized for formalism, focus on simple memorization of educational material and the formation of the same type of skills and abilities, for lack of flexibility, insufficient attention to the development of students' intellectual abilities, and a decrease in the quality of education. In this regard, contradictions arise in the teaching of high school students:

- between the needs of the modern information society in qualitatively new members with creative thinking and knowledge of information technology and the limited capabilities of the modern school in this direction;
- between the improvement of the content basis of information technologies of education and the lack of evidence-based research on this issue.

Information technologies of education have almost 50 years of history, and their emergence is associated with the appearance in the middle of the twentieth century of an electronic computer (computer), which changed the process of mastering knowledge that existed before [5]. For the formation of creativity as a personal, and not just a behavioral property, a specially organized environment is required. The so-called "local" methods of developing creativity (for example, solving non-standard problems) are certainly useful. However, as a result of their application, students simply learn some new ways of solving and subsequently reproduce the learned actions (for example, teams are trained in a special way to participate in intellectual olympiads). In such cases, creativity manifests itself in response to external influences, in certain circumstances, and not as a result of the subject's personal needs. That is why the formation of creativity as a personal property requires a special environment that provides a multilateral systemic impact on the student [6].

Non-regulation is ensured by: widespread introduction of elements of distance and open education based on IT; providing students with the opportunity to work according to an individual plan due to the wide support for independent work by electronic resources; free, unregulated, asynchronous communication with teachers through modern communication technologies (e-mail, e-conference).

Potential multivariance is a mandatory characteristic of the information educational environment of a modern educational institution. Multivariance is achieved in terms of content: media libraries, electronic libraries, the Internet provide students with not one or two textbooks, but a lot of materials containing different points of view on the essence of the problem under study. Samples of creative activity and its results are available thanks to the information educational environment of the educational institution and the global Internet [7-8]. These are materials of electronic conferences, virtual seminars and forums, periodical scientific electronic publications, personal Web pages of leading scientists and Web sites of scientific centers. Remote Olympiads, competitions, virtual research laboratories are gaining wide popularity. In many cases, one can get acquainted not so much with the structure of such a laboratory or scientific center, but also trace the dynamics of their work, reflected in periodic reports and descriptions of the results obtained [9]. The practice of creating websites of educational institutions also includes the publication of the best works of students (essays, essays, abstracts, term papers and graduation theses).

Let's consider what information and communication technologies provide for development, stimulation and continuation of creative activity.

1. The use of IT helps to ensure close interaction between the teacher and the student, even in distance education. Description of the creative process, its results can be presented and discussed at an electronic conference, published in an electronic publication, posted on the website of the educational institution. For example, instead of handwritten thematic journals (historical, literary, etc.), not only in universities, but also in many schools, gymnasiums, lyceums, electronic journals appear, for which there are no problems with replication and distribution. Anyone can get acquainted with their materials through the Internet, and if the educational institution does not have its own Web site, through the local network.
2. IT expands the possibilities of the educational environment both with a variety of software tools and methods for developing the creativity of students. Such software includes modeling programs, search, intellectual training, expert systems, programs for conducting business games [11-12]. In fact, in all modern electronic textbooks, the emphasis is on the development of creative thinking. To this end, they offer tasks of a heuristic, creative nature, pose questions that cannot be answered unambiguously, etc. Communication technologies make it possible to implement methods that activate creative activity in a new way. Students can join discussions that are held not only in the classroom or class, but also virtually, for example, on the websites of periodicals, training centers [13].
3. The new content of the educational environment also creates additional opportunities for stimulating the student's curiosity. One of these incentives is the ability to satisfy one's curiosity thanks to the widest possibilities of the global Internet network, access to electronic libraries (scientific and technical, scientific and methodological, reference, etc.), interactive databases of cultural, scientific and information centers, encyclopedias, dictionaries. In addition, there are so-called "mailing lists" that allow you to receive by e-mail collections of materials on a variety of "narrow" topics.
4. The personal Web pages of teachers created on the websites of educational institutions provide additional opportunities for opening the “door” to their creative workshop for students. On such pages, you can show not only educational materials, but also your scientific publications, prospectuses of ongoing research, the best work of "students who have surpassed the teacher".
In addition to creating a special educational environment that promotes the formation of creativity, IT allows you to have a direct and indirect impact on the development of qualities that characterize divergent thinking. Consider what types of IT software most effectively identify, shape, develop, train the speed, flexibility, originality and accuracy of thinking.

Rapidity. The ability to produce a large number of diverse ideas, solutions to any problem can be developed with the help of IT in different aspects. All sorts of programs naturally have a direct impact on the formation of this quality: educational and training, for conducting business games with time control. Of course, it is possible to speak about the development of the speed of divergent thinking only in those cases when these programs are based on non-linear algorithms and, when reused, offer the student more and more new situations, and also use a large bank of multi-level tasks, adapting to a particular student. Brainstorming also has a direct impact on the development of speed of thinking, the very principle of which is to put forward many different ideas in a limited time. Working with systems for information retrieval and hypertext systems (encyclopedias, dictionaries, textbooks) affects the formation of quickness of thinking even indirectly, since the effectiveness of their use is directly related to the development of a multivariate search scheme. Therefore, it is desirable for the teacher to develop not direct tasks for information search (for example, for a certain set of keywords) for a limited time, but to formulate them in a generalized way, leaving it to the trainees to develop various search options.

Flexibility. A lot of teaching and modeling programs are built on the principle of a constructor, offering the trainee a special environment in which one can develop the flexibility of thinking, building from a given set of process model elements - technological, economic, political, physical, chemical, etc. But, in fact, in any productive work at the computer there are potential opportunities for developing the flexibility of thinking - all tools and the principle of their operation are very clearly defined in advance. And the development of creative thinking here depends on what tasks are set for the student. The main rule is formulated very simply: with a clear specification of the execution tools, the requirements for the final product of the student's activity should be of the most general nature, leaving room for self-expression, respectively, open tasks that fix only the structure of their solution or individual elements [14]. The additional use of such tasks in combination with software creates a competitive moment: how to get the most interesting result with limited opportunities. Students can be offered tasks from the simplest, of an educational nature, to research projects:
- text, graphic editors - creation of design options for logos, advertising booklets, Web pages, etc., which use predefined elements;
- Spreadsheets - a reasonable choice of a chart that best illustrates the solution of a certain problem among the many possible charts; study of problems with parameters that determine, on the basis of a single model, a variety of different solutions;
- database management systems - designing a structure within which initial data can be presented; using the database query language to develop structures that

optimally provide information retrieval for reference information systems, electronic catalogs of libraries, Internet search engines, educational databases.
Originality. The formation of abilities that allow the student to capture non-obvious associations, to produce non-standard ideas and solutions to problems, in all likelihood, is one of the most urgent and at the same time the most difficult pedagogical tasks. Objectively, such emancipation of thinking can become possible due to the complex properties of the information educational environment, which allows the student, together with teachers, to design an individual educational trajectory, choosing the most appropriate training schedule, information resources, and finally, teaching methods. Subjectively, a very important role here is played by the possibility of self-expression for everyone, when the teacher and other students do not make hasty conclusions and unreasonable judgments, providing the possibility of showing initiative.

Accuracy. Relegated to the category of characteristics of divergent thinking, this quality can be considered quite universal, since it is also inherent in people who are not distinguished by creative abilities. At the same time, creative cognitive activity without striving for completeness of the result should rather be considered an imitation of creativity. The most effective means of stimulating students to improve the product of creativity are various forms of collective cooperation and, of course, the publication of the results achieved. The information educational environment of an educational institution allows you to combine efforts to implement joint telecommunications projects in which each participant is responsible for the quality of the final result.
Creativity is the destiny of man. Modern technologies can help develop the relevant abilities and make many stages of the creative process more efficient, allowing you to achieve more and more perfect results.

In artistic creation, the use of computer graphics editors has become quite common as an addition to traditional tools. Students who have a natural ability to draw, get new tools at their disposal and can already prove themselves in computer graphics and animation. For those who found this area of creativity difficult, working with a graphic editor helps to become bolder and believe in their abilities. It is known that most children, even those who do not have artistic abilities, love to color, draw pictures they like, but they do not always succeed, and they get cold to draw. If, however, they are given the opportunity to try their hand at a graphic editor, offering at first only coloring, supplementing the finished drawing, the same ease of correcting unsuccessful "strokes" will help to believe in themselves, liberate them when drawing on paper.

Thus, we can say that in the modern information environment there are some catalysts for the creative process, but they manifest themselves if the teacher also sets creative tasks for the student.

Conclusions

In the process of learning with the help of IT, the student learns to work with text, create graphic objects and databases, and use spreadsheets. The activity of developing a database and further research of the information placed in it creates the conditions for independent creative comprehensive assimilation of educational material in a certain subject area and contributes to the development of thinking.
Expansion of the variety of software tools (simulators, search engines, etc.) with an emphasis on the development of creative thinking: tasks of a heuristic nature, creative tasks, questions that do not require an unambiguous answer, etc.

The student learns new ways of collecting information and learns to use them, his horizons expand, cognitive activity develops.

Enormous opportunities open up before the student in the creative use of each individual environment that has its own language. The integration of all these environments into a single complex product turns learning into a creative learning design process.
Information technologies provide students with access to non-traditional sources of information, make it possible to implement fundamentally new forms and methods of teaching using the means of conceptual and mathematical modeling of phenomena and processes that can improve the effectiveness of learning.

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