THE INFLUENCE OF MULTIMEDIA
ON THE CREATION OF TEACHING STRATEGIES

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Abstract

The social efforts during the last few decades to make thorough the changes within instructional processes (internal, pedagogical, that is methodical reforms), have resulted, indeed, in substantial positive progresses, but not to the extent previously expected and desired. While the science of didactic teaching should be complimented on its continuous work and theoretical contribution, it is generally felt that methodology has not applied these findings quite sufficiently. This is precisely the reason why the affirmation of methodology and methodological training of teachers is nowadays seen as a major step forward in reformation of upbringing and educating future generations.

The main goal of this paper is to make a wider professional and scientific community aware of the latest findings and achievements of a relatively young scientific study (didactic approach to multimedia) and to point out, through good examples from everyday life, a growing trend of abandoning single methodic approaches and to show the need for adopting new teaching strategies, as a necessary precondition for 'awakening' our education process. The basic feature of any transition, even those found in education, includes substantial and fundamental changes with the aim of modernizing and improving the complete education process.

Key words: methods, multi/media, computer teaching, educational software, teaching strategies.

УТИЦАЈ МУЛТИМЕДИЈА НА КРЕИРАЊЕ
НАСТАВНИХ СТРАТЕГИЈА

Апстракт

Напори друштва да се последњих деценија начине корените промене у наставном процесу на плану тзв. унутрашње, педагошке, тачније методичке реформе резултирали су свакако позитивним помацима, али не и у жељеном и очекиваном обиму. И док се, с једне стране, дидактичкој науци могу упутити све похвале на рачун континуираног рада и теоријског доприноса за унапређивање наставног процеса, с друге стране, за методику не можемо рећи да је та сазнања у довољној мери искористила. Зато се данас на афирмацију методике и методичког образовања

наставника све више гледа као на ново поглавље у преображају васпитања и обра-
зовања будућих генерација.

Основна намера и циљ овог рада је да широј стручној и научној јавности скрене
пажњу на најсавременија сазнања и достигнућа релативно младе научне дисциплине
(дидактике мулти/медија) и кроз позитивне примере из праксе укаже на свеопшти
светски тренд напуштања појединачних методских приступа и неопходност увођења
наставних стратегија као нужног предуслова за бржу и успешнију реформу ва-
спитно-образовног процеса.

Кључне речи: методика, мулти/медиј, компјутерска настава, образовни
софтвер, наставне стратегије.

INTRODUCTION

The basic characteristics of the contemporary society are changes
and information. The transfer of information and knowledge dates back to
the origination of the mankind and it has always been present through
media and specific methods. If a piece of information is seen as the
personification of something new, then it is an aspect of notification of a
certain change. Computer, as a central component of the system, is
absolutely necessary within the process of information transfer (educational
material) and it is currently an irreplaceable instrument of the contemporary
educational technology.

Due to the work space limitation, this time we will focus on certain
categories that have caused the transition within methods, caused the
transformation of methods and formation and application of contemporary
strategies within the teaching processes. In that sense, we shall try to
answer the following questions, using a practical example: How can one
appropriately use multimedia and technologies for the improvement of
teaching processes? How can one make an adequate choice of the teaching
strategy and put it to functional use for the individualization of the
teaching?

THEORETICAL ORIENTATION

Computer Teaching and Multimedia

When educational methods are concerned, certain teacher/student
activities manifest as a way of complex teacher behavior during leading
and teaching. In that sense, Djukić asserts (1995, pg 89):

> "there have been substantial significance changes when the
> teaching method is concerned, which come from the theoretic base
> system of the programmed and computer-assisted teaching,
> problem teaching and teaching via disclosure. Teaching strategies,
> a series of instructions, algorithm descriptions and regulations are
> seen as models of differentiation structuring of methodical

elements which used to be present traditional teaching methods and general methods of educational work, which in practice is manifested through the psychologically and didactically based individualization of the educational process in general."

The successful realization of the intended goals will, among other things, depend on the appropriate identification and analysis of the four constants – *intention, theme (content), methods and device* (Kapur, 2011). Based on these constants, the teacher must know what and how he wants to achieve something, so that he can proceed to the process of making decisions. The methods and models must follow innovations and adjust to every one of them. The aim of each model is the highest possible knowledge quality of the student. This process is today almost inconceivable without the employment of computer teaching. Considering the use of teaching strategies with the help of computers, Šoljan (1976, pg.100) treats them as "interaction models which are based on certain pedagogical-psychological and didactic-methodical requests contained in programs which determine the interaction nature between users and the program (computers) during teaching with the help of computers." They are a basic content and the most important part of computer teaching. The practical use of computers started in more developed countries as much as 40 years ago. However, the mentioned taxonomy, though perfect and very constructive at that time, unfortunately had a positive influence only in the theoretic domain because it was not given a chance to prove itself practically (except for certain individual segments). The reason for this can be found in the fact that almost for decades the first and primary prerequisite has not been accomplished, a comprehensive, adequate and continuous use of computers in teaching and education in general.

The mediator during a conversation is called the medium. In teaching it is called a teaching medium. However, every bearer and transferor of information does not carry this attribute all alone (didactic). He becomes it when the didactic function starts to be realized, meaning, when he takes over the function of teaching and learning in a planned and systematically organized process. The fact about the existence of the separate didactic discipline is called medium didactics tells us of the importance of this aspect for a successful realization of the teaching process.

Didacticians usually divide media, according to the way of perception into: auditive, visual and audio-visual. To be even more precise, according to dominant senses, they can be divided into:

- *auditive* – the knowledge sources which give information by listening;
- *visual* – the knowledge sources which give information by watching;
- *tactile* – the knowledge sources which give information by touching;

- *olfactory* – the knowledge sources which give information by smelling;
- *gustatory* – the knowledge sources which give information by taste;
- *kinesthetic* – the knowledge sources which give information by movement, and
- *multimedia* – the knowledge sources which simultaneously give two or more pieces of information from the same or different sense area.
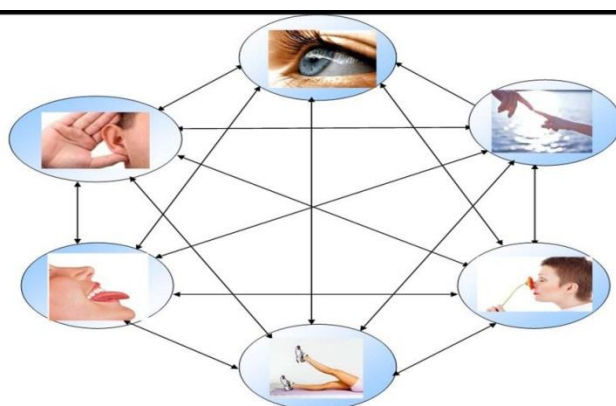

Figure 1. Multimedia combinations of sensory areas

Methodically speaking, audio-visual media are usually the most frequent in teaching. *Intermedia* emphasize the mutual permeation of information coming from all the media in the process of synthesis. There is no ready-made advice for the synthesis, so the multimedia which are necessary for the quality realization of educational achievements of students are taken or modified for the purpose of teaching. Of course, one should pay attention to the segments and principles of the adequate choice and use of multimedia for the purpose of teaching, where neither of them would be suppressed. They are supposed to complement each other and have the function of accomplishing the goals and assignments in teaching.

If one takes into consideration today`s pedagogical theory, there are two global attitudes towards pedagogical functions of multimedia (Stanković, 2005, pg.27):
- "the first is based on the traditional use of teaching material. According to this, the main role of multimedia is to address the senses, sensors – their role is limited to the first phase of the cognition process (learning) – and sense perception. Much less attention is paid to the fact that they have to be the support during thought activities;

- the second starts from the position of gnoseology theory about the cognition process. According to it, teaching materials have to be the source of cognition and material support for the processing of sense data and thoughts development, as well as the practical possibility for the thought experience. More simply put, the role of teaching materials is seen through a dialectical connection *observation- thoughts-practice* and vice versa."

Comparing these two, one can immediately see that the second one is more complex, more comprehensive, and more valuable both when theory and practice are concerned. However, the first one has its own value and significance and it is even considered necessary and desired at a certain point during education (1st and 2nd grade). From the 3rd grade onwards, it is advised to use those teaching materials which would allow for a greater inclusion of the students` thought activities and noticing the important, essential characteristics of subjects, phenomena and processes.

The individualization function of media. Individualization is an emphasized form of differentiation. The transformation of heterogeneous groups into more homogeneous groups (differentiation) is concerned here (grade, class), taking into consideration the capabilities of certain students (individualization). Individual differences among the students are recognized using media in multiple ways (Blazič et al, 2003, pg. 311):

- "teaching goals and contents have to be balanced with the level of intellectual development and students` interest;
- the range of learning material should be adjusted to every student according to individual capabilities;
- prepared materials should be adjusted to the students` capabilities for understanding;
- the pace of learning should be adjusted to individual capabilities for the speed of learning;
- the level of the assignments that students solve should be adjusted to the individual improvement of learning for every student."

When the implementation of individualization is concerned, the teacher has additional requests during the organization of teaching processes. Individualization requires the best possible media equipment in schools and classes, including devices as well as appropriate program equipment. In order for the teacher to respect, more easily, the student`s individual characteristics, he must organize the teaching process in that fashion that his activities (the distribution of individual assignments, programs, semi-programmed material, the use of teaching media for individual work) do not discriminate students.

Multimedia taxonomy. The evolutionary course of teaching, with the use of a variety of changing media, has encouraged a lot of practitioners and theoreticians to form a media classification in order to define their

basic specificities. In order for the general understanding to be improved, the didactic taxonomy approves to be of great help, which includes normative definition, formulation, classification, differentiation and precise operationalization of the goals and assignments during teaching in general, especially in certain teaching disciplines, instead of some general, unclear, fuzzy and blurred definition (Pedagoški leksikon, 1996, pg. 112).

For pointing out multiple realities to students, the ideal materials are of multimedia nature. In different media combinations, the students are given the possibility to individually experience multiple realities. The multimedia supportive environment, in which students work, encourages the individual experience of the world and the freedom of choice of the media they can learn in the most productive way. The significance of the multimedia support and the semantically rich information transfer is in the ensuring of the possibility for self-realization, that is, the affirmation of the needs of all the students in the class, by which they acquire new knowledge, develop capabilities, and acquire skills, habits as well as form attitudes.

Multimedia Teaching Strategies

The teaching strategy is defined as a skill to prepare, organize, lead and evaluate teaching activities with the help of which we educate students to accomplish teaching goals. The structure of the multimedia strategy answers the following questions: Who? What? When? Where? How? Why? What with? How much further? This is why we perceive the teaching strategy as consisting of multiple factors because every structural element gives answers to some of the questions. When every structural element is put to use (action, activity) in order to be educationally successful, then we actually create the teaching strategy. "A strategy is generally a global skill, a science about the realization of a certain complex activity (the organizing of educational process). In didactics, strategies include methods and procedures, that is, the ways for the activation of the participants in the educational process in order to accomplish assignments" (Bognar and Matijević, 2005, pg. 408).

Based on the research by Reece and Walker (Reece & Walkera, 1999, pg. 147) there are some strategies listed: *the strategies appropriate for the work in bigger groups; the strategies appropriate for the work in smaller groups; the strategies appropriate for the individual work*. This kind of division of teaching strategies is based on sociological work forms.

Hendricks (2000) sublimates the following computer strategies, when usable forms of multimedia software are concerned:

- *The strategy of intervention during the learning of the content (the tutorship strategy)*, which introduces the students to the subject, it allows clear defining, deepening, broadening of the subject and allows individual learning by the means of linear diversified and cultivated programs;

- *The strategy of repetition, exercise and knowledge applying*, which includes different programs, ranging from some simple – "drill & practice" training program to the completely perfectly led tutorship systems which improve the acquiring of certain student skills and capabilities (Christman, 1997);
- *Hyper-media strategy*, by which students reveal, explore and control information points, so it is not appropriate for the students who learn slowly and have little advantage from the use of hyper-media programs (Dillon & Gabbard, 1998);
- *The strategy of simulation*, which allows the students to understand the interdependence of different system parameters during the experiments. It is appropriate for general education in the area of professional training;
- *The Microworld strategy* where research stirs up all the problematic spots, in the context of a complex situation.

The very nature and essence of certain strategies show, from the viewpoint of individualization, that the most appropriate are the exercise programs and intelligent tutorship system, because they are convenient for younger generations especially during the phase of self-study, for individual exercises with homework and internal differentiation. Hypermedia teaching programs, simulation and microworld are very convenient in the application of cooperative learning during group work, where students help each other, cooperate and they can easily get the appropriate answer from the teacher. The most desired and appreciated strategy from the didactic viewpoint is certainly the dialogue teaching strategy in which the students have the best active participation.

In practice, multimedia teaching strategies are mutually independent and unrepeatable, which means that there are no two identical strategies, about which many domestic and foreign authors have written (Arthur et al. 2007; Bitter & Pierson 2002; Blažič & Rončević, 2009; Marzano et al., 2006; Vlahović, 2004). One can use multimedia during teaching activities and workdays successively, simultaneously or in a combined manner. The successive use of multimedia is based on the use of multimedia one by one. Multimedia are used simultaneously when two or more of them are used at the same time, and the combined use gives the possibility for various multimedia combinations during the teaching processes.

After the selection of media, a series of procedures ensue during which teaching the students is explained, and after which there is a phase of the students` independence, that is, their training to discover new learning algorithms. An algorithm for the media use in teaching shows certain procedures by which teaching goals can be realized in the most rational ways. The operationalization of the teaching goals moves at the direction of preparation which consists of the choice of software materials and technical preparation.

Didactic evaluation criteria of the multimedia are represented thorough the areas where we analyze, choose, use, shape and evaluate multimedia. They also serve to evaluate the suitability and contribution of multimedia in teaching strategies. They are firstly directed at students, teachers, multimedia and multimedia teaching strategies. Every direction possesses its own criteria and elements which we can see in the following table:

Table 1. Review of didactic assessment criteria for multimedia directions

Didactic criteria for multimedia assessment				
Directed at students	Directed at teacher	Directed at multimedia	Directed at MM teaching strategies	Directed at other factors
-age of students; -motivation; -previous knowledge and students experience; -development of sense-communication competence; -learning styles; -learning activity.	-competence of multimedia use; -competence of multimedia use in teaching strategies; -educational teachers policy; -epistemological attitudes of teachers towards multimedia.	-qualitative structure of multimedia information; -quantitative structure of multimedia information; -shape of multimedia; -sense-communication structure of multimedia; -technical possibilities of multimedia.	-didactic communication; -phases of learning; -teaching contents; -suitability of the space for multimedia presentation; -form of mediation; -suitability of learning; -evaluation.	-organizatinal; -geographic; -economic.

By respecting the enlisted didactic criteria we allow for the appropriate use of multimedia in teaching. The adequate use of multimedia in teaching realizes its purpose, that is, it has an influence on the developmental achievements and changes with the students. If we do not respect the didactic criteria, there may be prerequisites for hindering factors, where the use of multimedia does not give the expected educational results while, also, being counterproductive.

The multimedia in teaching are used within strategies. Every traditional teaching in elementary schools is of the multimedia nature by itself because the main multimedia pillars are the teacher and the students. In order for multimedia to be a stimulative factor in learning, it is important to design the role for every individual medium in a certain multimedia combination (Matijević, 2000, pg. 72).

Blažič (2007) emphasizes the tendency towards an objective learning in which the aim is to facilitate work during the process. It implies that multimedia are shaped in that manner to possess didactic functions such as motivation, the possession of information, work instructions, giving the feedback. Some important questions that should be taken care of by the teacher when choosing the teaching media are: What is the goal that should be achieved with a certain activity? What is the previous students`

experience? What characterizes the psycho-physical maturity of students? Which are the important characteristics of the content learning? Which are the media characteristics that a school possesses? What does the teacher know and what can he use from various means and equipment?

PRACTICAL EXAMPLE

Methodical Teaching Models Strategy with the Use of Educational Software

Training teachers/students for the use of multimedia is a continuous process. In that sense D. Mandić (2003, pg. 18), clearly points out that:

> "without the use of contemporary didactic media the teacher would not be able to adjust his teaching style in a satisfying way to the student`s learning styles; he would hardly satisfy their various needs and encourage curiosity and motivation towards learning; he would not be able to ensure that every student expresses himself individually and that teaching content is covered with his pace; he would not be able to enable gifted students to progress faster during teaching and to those less gifted to accomplish what their capabilities allow."

According to P. Mandić (1988, pg. 118), the educational technology should allow "the recognition of previous knowledge, capabilities, work pace, the introduction of individual and individually planned teaching, flexible, programmed, semi-programmed, problem and computer teaching, the complementation of classical teaching methods with the methods of revealing, detecting and solving the problem, the enhancement of a technical teaching base by the introduction of learning machines and microcomputers."

It is vital and necessary to redefine teaching contents too, bearing in mind their current status, but, also, the conception of the already existing books (adjusted to an "average" student and only for one grade) regardless of the evident individual differences among the students.

Electronic books (educational software) attract our attention, activate senses, break down monotony and contribute to an active knowledge acquiring. Applications, objects and events, which are visually experienced, are realistic if they can easily fit into the already existing experience. The very visualization is enough for us to understand that they are real, clear and easily decoded and assimilated (man trusts his eyes). Hypertext with hypermedia gives a new line to contemporary teaching, because it absolutely fulfils every condition for individual teaching, and this reason represents and marks the right direction towards the school of the future. In that sense, teachers should acquire and assemble new program solutions which can be adequately applied and the teaching process should be updated.

Figure 2. Insert from educational software "Man – part of the nature"

The positive results of the two experimental researches about the classroom teaching (Stanković, 2005; Stanković & Blažič, 2015) proves the efficiency of the *methodical teaching models strategy with the use of educational software*, in which the experimental group participants had much better results in the quantity and range of the acquired objects, quality, quantity and acceleration of knowledge. The essence of the applied model is the integration of teaching systems (differentiation – teaching processes with different complexity levels) into educational software and putting the teaching individualization to use (Figure 2).

This conceived individualization represents a methodical model which, instead of transferring the already existent knowledge (multimedia approach), offers a necessary information fund, which further allows for the gathering of new information by an organized and manageable process, individual work and thought activation. This is the strategy that suppresses reproduction in favor of creativity because the current teaching system has played its role, exploited all the possibilities and, as such, it is clearly not sustainable anymore.

Pedagogical Implications

A computer system is a universal and the most perfect system functioning in teaching processes. Its configuration (the number and elements size) and relatively low prices in comparison to the teaching effects it allows, allow for it to be used in educational purposes from preschools to universities. However, unlike many countries, where computers have been used in teaching and learning, their use in our country is still new. For

instance, according to the Institute of Political, Economic and Social Studies (*EURISPES)*, every second student in elementary schools (from 1,500,000) is accustomed to the use of computers and every sixth uses the Internet. In most cases, the computer serves for playing (56.4%), and every third student uses it for learning (Laniado & Pietra, 2005).

Unfortunately, we cannot talk about constructive manners of computer use in educational purposes in our country. Except for certain forms of use at universities, lower levels of education almost do not possess anything from that, beside a basic computer knowledge for students. The reasons for this are the following: bad economic situation, lack of equipment, non-professional staff. Our opinion is that more and more already known subjective reasons have come to the surface - the responsible services, individuals and even teachers are lethargic and slow. This is based on the fact that there is no educational institution in which at least several computers are present, the majority has a fully equipped classroom, even multimedia classrooms, but their use is mainly focused on the administration computer use, the teaching of computing and IT, and the work of certain ambitious teachers who are, unfortunately, called "enthusiasts" by their colleagues.

When the use of contemporary didactic-methodical achievements and the achievements of contemporary educational technology in our country are concerned, there is a need for an unbiased reevaluation and a radical reorganization of the overall educational system. Teachers, in general, possess basic but not necessarily enough knowledge for a functional computer use in teaching. The mentioned researches point out that even where a computer is used, it is more used for class preparation than for the teaching itself while the use of educational software is negligible. In addition, a very small number of teachers follow the innovations in the area of educational technology and use the Internet very rarely for the purpose of improving teaching quality. In all cases, the condition without which there is no improvement is the professional teacher training throughout the whole life, and simultaneously with that, defining standards for all the teaching levels. The introduction and use of a new educational technology is not just the question of resources, but, also, the attitude towards it.

Serbia is far behind Slovenia and Croatia and other countries from the region, when the proportional number of inhabitants is taken into consideration. IF all the recently obtained resources from the EU funds (over 100 million euro) would be invested into IT training of the citizens, it would not be enough even to reach half of the current standard in Hungary or Greece. Even though the government of Serbia has given good recommendations in the *IT Society Development Strategy* (2009), which is well appreciated, there is a question – to what extent is the country ready to realize its plans in practice? If we take into consideration the most recent data from the budget, 0,9% GDP is intended for education (90% of the resources go to the payments) and 0,23% GDP for science, which is not optimistic at

all. First of all, we have to comprehend the significance and role of education and science in the society. That can be seen in Germany, where there are resources from 7% GDP for education and 3% GDP for science. Even though Japan is a poor country considering natural resources are taken into consideration, it has become a world economic power with large and continuous investments into both education and science, thanks to the professional staff as well as knowledge.

CONCLUSION

Modern teaching organization is unthinkable without the introduction of innovations. Didactic-methodical reforms and modernization require the use of new didactic materials and strategies in teaching. With the multimedia approach to the teaching process not only do the style and way of work change to a great extent, but, also, the quality of knowledge. There are prerequisites for acquiring a more versatile, dynamic and complex knowledge. If we know that knowledge expands on a daily basis that means that there is a need for continuous learning and training. A new concept of electronic learning (e-learning), with the use of the most recent multimedia teaching strategies, gives a new line and facilitates the process substantially.

One of the valid solutions is certainly the *multimedia approach to teaching* with the use of adequate teaching strategies and educational software, which gives an "unlimited source of information" to students thanks to its non-linearity. Every individual will find him/herself in it ("underachievers", "average", and "overachievers") and have an opportunity for advancing to his or her maximum. Teaching contents, which are interpreted with the help of computers (educational application software, hypertext, and hypermedia...), modernize teaching and raise its level to a much higher one than the traditional.

Educational software represents explicitly various strategies and teaching techniques which are defined by the author and allows a controlled use for the purpose of a more efficient content acquiring, which students should learn using the system. Their primary role as a contemporary interactive multimedia is to give the students the most recent approaches and an interpretations of the teaching materials (which raises efficiency and suitability of the teaching process), but, also, to create prerequisites and quicken the understanding, as well as cover all the content levels and the levels of the learning process.

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УТИЦАЈ МУЛТИМЕДИЈА НА КРЕИРАЊЕ НАСТАВНИХ СТРАТЕГИЈА

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Резиме

Један од круцијалних позитивних заокрета на методичком пољу свакако је прелазак са примене појединачних метода рада на креирање и имплементацију наставних стратегија. У том смислу, рад је и конципиран у два дела. Први део посвећен је релевантним научним дисциплинама и теоријским правцима који су допринели развоју кључних елемената за креирање савремених стратегија, док је други део рада посвећен позитивним емпиријским методичким искуствима, са аналитичким освртом на постојећи статус образовања у Србији и импликацијама за његово побољшање.

Модерна организација наставе незамислива је без увођења иновација. Дидактичко-методичка реформа и модернизација подразумева коришћење нових дидактичких материјала и стратегија наставног рада. Мултимедијалним приступом наставном процесу не мењају се само стил и начин рада већ у великој мери и квалитет знања. Тиме се стварају услови за стицање разноврснијих, динамичнијих и комплекснијих знања. Будући да се укупни квантум знања свакодневно увећава, то имплицира потребу за непрестаним учењем и усавршавањем. Нови концепт електронског учења (e-learning) даје нови печат и умногоме олакшава овај процес.

Савремени електронски уређаји, посебно рачунар употребом електронских уџбеника и интернета, постали су незаобилазни сегмент у наставном раду. Основна улога образовног софтвера као савременог интерактивног медија је да омогући, створи предуслове и убрза процес учења ученика, разумевање наставних садржаја, активност ученика у процесу учења, савладавање свих нивоа процеса учења (почев од знања основних чињеница о процесима, појавама и догађајима, преко њиховог разумевања путем мисаоне прераде, па до практичне примене знања). Хипертекстуални и хипермедијални системи у организационом смислу представљају мрежно решење за структурирање мултимедијалних елемената. Ученику се омогућава да се креће по дефинисаним путевима унутар наставних садржаја, који се могу интерпретирати путем текста, слика, видео-секвенци, анимација итд. То упућује на чињеницу да правилно дидактичко-методички обликован и израђен образовни рачунарски софтвер представља централни сегмент наставног процеса, који је истовремено мулти/медиј и наставно средство које помоћу рачунара представља најсавременије достигнуће дидактике мулти/медија и образовне технологије и које се путем компјутерске реализације различитих методичких модела веома лако инкорпорира у функцију индивидуализације наставе и учења.

Једно од валидних решења свакако је мултимедијални приступ настави применом адекватног образовног софтвера који својом нелинеарношћу и обиљем ин-

формација представља „неисцрпну храну" за сваког ученика. У њему ће свака индивидуа пронаћи себе („исподпросечни", „просечни", „изнадпросечни" ученици) и створити могућност за напредовање до сопственог максимума. Наставни садржаји који се интерпретирају уз употребу рачунара (образовних апликативних софтвера, хипертекста, хипермедије...) осавремењују наставу и подижу је на знатно виши ниво у односу на традиционалну. Надаље, привлаче пажњу, активирају чула, разбијају монотонију, доприносе активном стицању знања. Апликације, предмети и збивања који су визуелно доживљени реални су уколико се лако уклопе у постојеће искуство. Самим виђењем довољно су јасни, стварни и лако се декодирају и асимилирају (човек највише верује ономе што види). Хипертекст са хипермедијом даје нови печат савременој настави јер апсолутно испуњава све услове за индивидуализацију наставе, а управо овај захтев представља и трасира пут ка школи будућности. У том смислу, наставници треба сами да набаве и саставе нова програмска решења која се могу адекватно применити и осавременити наставни процес.