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UDC 377.01

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**Pedagogical control in modular education**

The article reviews the questions of pedagogical control in modular teaching as one of the methods of improving the quality of education. The author analysed the researches of native and foreign scientists on problems of control and assessment of education quality and described the main methods and forms of control in modular education. The article specifies the general criteria of forming module content.

*Key words*: pedagogical control, modular teaching, modular technologies, assessment of education quality, testing, methods of control, forms of control, module content, modular programs.

The sustainable development of modern society is impossible without advancing development of human life quality, including quality of education which becomes the main geopolitical factor in the world. For this reason this problem took the leading place in pedagogics of Kazakhstan.

Quality of education is determined by accordance of the reached level of teaching and education with goals and expected results, certain standard, educational and social needs of human, state and society requirements. And it is necessary to judge the quality of basic education not only by results of learning, but also by system, model, procedures which guarantee that learners of higher education institution will gain an overall development enabling them to satisfy their requirements in this area. In this regard an important

role in improvement of education quality is played by pedagogical control which is directed on evaluating the degree of accordance of learners' knowledge and abilities with the established educational purpose, and also on control of learners' cognitive activity in general.

*Pedagogical control* serves as an important condition of improvement of education quality. Furthermore the assessment of education quality must be aimed not only at fixing the condition of system, but also at dynamics of its development. Analyzing the peculiarities of the state of control and assessment of education quality, it should be noted that this problem is many-sided and was considered by native and foreign researchers in various aspects. There are a large number of works concerning such approaches to control and assessment of education quality as evaluating the results of teaching according to requirements of educational standards, learners' competence, control of quality of educational process and conditions. Such division of directions doesn't promote the solution of assessment problem.

Considering education as continuous process, there is a need to organize systematic control and complex assessment with account of driving forces of this process — society and learners.

Control and assessment of quality must be based on complex-modular approach which assumes step-by-step layered analysis of all aspects of activity of educational institution.

The traditional system of pedagogical control is quite imperfect. Absence of accurate criteria of assessment, episodic checks of knowledge and waste of much study time on carrying out and processing the results of control negatively affects not only students' mentality, but also all the process of education as a whole. Now for the solution of majority of above-mentioned problems it is offered to make use of world experience of testing which, according to some teachers, allows both to make process of pedagogical control more effective, and to focus it on the use of modern educational technologies.

One of pedagogical technologies which includes knowledge test control is modular education. Choosing testing as the main method of control in modular education is dictated by its correspondence with a number of requirements which are imposed on pedagogical control. Process of control is regulated by a number of certain didactic principles: scientific character, reliability, validity, efficiency, hierarchical organization, objectivity, systematicity, justice and comprehensiveness. Compliance with many of the above-mentioned principles in modern higher education institution within traditional education may be disputed [1, 2].

*Pedagogical framework of modular education.* The emphasis in education system is now carried over to learners' interests. Focus on formation of professional personality means reorganization of educational process from passive assimilation of knowledge into active process of formation of skills to apply them in the course of activity.

In the solution of this task a significant part is played by intensive technologies of teaching focused on optimization, systematization and comprehensiveness of knowledge acquisition. To the fore comes maximal account of specific features of personality as well as personal activity in the course of vocational training.

The modern technologies include the technology of modular education. *The essence of modular education consists in students' consecutive assimilation of modules — complete blocks of information.* In the course of implementation of this technology into educational process teacher, as a rule, keeps such signs of module essence as unity, integrity and independence. S.R. Domanova, for example, defines it as «a certain artificial educational system which reflects substantial, procedural, effective, organizational and administrative aspects of pedagogical means necessary for the solution of objectives» [3].

The technology assumes gradual and sense-making transition from one type of activity (receiving theoretical knowledge) to another (obtaining professional skills and abilities). The implementers of such transition are active methods of teaching (problem lectures, business and role-play games, situational tasks, discussion-lectures, development of workplace passport etc.).

The theory of modular education is based on certain principles closely connected with common didactics and determining general direction of modular education, its purpose, content and organization technique. These are principles of modularity, structuring education content onto separate elements, dynamism, flexibility, awareness of prospect, diversity of methodical consultation, equal share.

Education on the basis of modules leads to several positive effects. *Firstly*, student equipped with didactic materials and instructions, gains much independence in subject acquisition. *Secondly*, lecturing function of teacher is displaced by consulting one and student's share of passive perception of material decreases and he gets possibility of active discussion with teacher. *Thirdly*, there are periods of midterm control of material acquisition, coinciding with the ending of each module. This control is important both for student, and for teacher. *Fourthly*, there is easier acquisition of the whole subject through step-by-step learning of mod-

ules with complete content. *Fifthly*, the modular technology of education provides management of educational process according to imposed specialization requirements to graduate that allows to reduce and sometimes to exclude adaptation of young specialist to a certain kind of activity.

*System of teacher's actions within transition to modular education.* First of all, it is necessary to develop the modular program which consists of the complex didactic purpose and set of modules providing achievement of this purpose. To make such program teacher needs:

- to determine main scientific ideas of a course;
- to structure education content within these ideas into certain blocks;
- then to state the complex didactic purpose.

This purpose has two levels: the first assumes education content acquisition and its practical use at the initial stage of learning, and the second demands perspective approach to education content.

In the course of creation of modular programs teacher needs to rely on the following basic principles:

1) principle of purpose whereby modules can be divided into 3 types: informative, used when studying fundamentals of sciences; operational — for formation and development of ways of activity; mixed which are most often used in higher education institution;

2) principle of combination of complex, integrating and particular didactic purposes;

3) principle of feedback.

Any management is impossible without control, analysis and correction. And in modular education control exercised by teacher is combined with students' self-management in learning.

Module of any order includes task accomplishment control, learners' knowledge acquisition. Module will be incomplete if there is no instruction on control. In modular technology the following forms of control are used: self-checking; mutual control of learners; control of teacher.

*Self-control is carried out by student.* He compares the received results to a standard and assesses the level of achievement himself.

*Mutual control* is possible when student has already checked the task and corrected errors. Now he can check partner's task and give mark.

*Control of teacher is exercised constantly.* Entrance and final control in module of second order is obligatory. Besides, current control is exercised. Forms of control can be different: testing, individual interview, control or creative work, etc.

For successful application of modular programs it is necessary to follow some rules. Starting working with new module, it is necessary to carry out entrance control of learners' knowledge and abilities to have information about level of their readiness to work. If necessary it is possible to carry out appropriate knowledge correction.

It is also important to carry out current and midterm control after learning each educational element (it can be mutual testing, comparison to a sample, etc.). Final control is exercised after completion of work with module. Current and midterm control reveal the gaps in knowledge acquisition for the purpose of their immediate correction, and final control must show acquisition level of the whole module and assumes appropriate improvements either.

In modular technology completion of each educational element is assessed. Marks are collected in the sheet (mark sheet) on the basis of which final mark for work upon module is determined. Accuracy of control and objectivity of assessment play an important role. Getting high score is one of the main motivations in modular technology. Student acutely knows that his work is assessed at each stage and the mark objectively reflects his efforts and abilities [4].

For learners' successful work with module education content must be represented so that students acquired it effectively. Teacher is desirable to talk to learners, to call everyone on reasoning, search, guess, to encourage, to focus on success by means of module.

*Common criteria of forming module content.* It is important for teacher to know the common criteria of forming module content:

1. Using modules, it is possible to carry out successfully intra-subject and inter-subject connections, to integrate education content, forming it in logic of major subject content.

2. Next criterion is connected with necessity to differentiate education content. The lower level corresponds to an obligatory content minimum, the higher includes additional data besides that.

3. Important criterion of creation of module is structuring student's activity in logic of stages of knowledge acquisition: perception → understanding → apprehension → memorizing → application → generalization → systematization.

Observations and results of work show that the main thing for learners is that everyone works independently, at his own speed; in addition they have opportunity to get teacher's advice, possibility to control themselves all the time. Learners realize education content much deeper.

In modular education student takes part in active and effective educational and cognitive activity, works with program differentiated in content and amount of help. There is an individualization of control, correction, consultation, independence degree. It is important that student has opportunity to realize better his personal potential, which promotes motivation to learn.

This system of education guarantees to each student acquisition of education standard and promotion to higher level. The system has great opportunities for development of such personal qualities as independence and team spirit.

Thus, it may be concluded that as a result of using modular technology in educational process of higher education institution, student starts possessing the fundamental characteristics distinguishing him as the subject of education, i.e. he is aware of his being more and more independent, self-managing person; he accumulates the increasing reserve of life experience; motivation, readiness to learn is dictated by aspiration to solve vitally important problems and to achieve certain objectives through educational activity; he seeks for urgent realization of the gained knowledge; educational activity is considerably caused by temporal, spatial, mundane, professional, social factors.

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#### Модульдік оқытуда педагогикалық бақылау

Мақалада білім сапасын жетілдіру рөлінің бірі болып саналатын модульдік оқытуда педагогикалық бақылаудың сұрақтары қарастырылған. Авторлармен білім беру сапасының бағасы мен бақылау мәселелері бойынша отандық және шетел ғалымдардың зерттеулері талданған. Модульдік оқыту бақылауының формалары мен әдістері сипатталған. Сонымен қатар мазмұнының жалпы өлшемдерін қалыптастыру сұрақтары белгіленген.

А.М.Затынейко, А.А.Карманова

#### Педагогический контроль в модульном обучении

В статье рассмотрены вопросы педагогического контроля в модульном обучении, способствующего совершенствованию качества образования. Авторами проанализированы исследования отечественных и зарубежных ученых по проблемам контроля и оценки качества образования. Описаны основные методы и формы контроля при модульном обучении. Выделены общие критерии формирования содержания модуля.

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УДК 387.096

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### Об особенностях преподавания математики на английском языке

В статье подняты вопросы специфики преподавания математики на английском языке. Авторами обоснована мысль о том, что двуязычное преподавание математики представляет собой не только простое формальное сложение знаний английского языка и предметной области математики, но и возможности знакомства обучаемых со стилем мышления носителей иноязычной культуры, активизации их творческого мышления и способность к самостоятельной работе. Предложен научно-методический анализ литературы по исследуемой проблеме, на основе чего раскрыты преимущества и недостатки, а также требования к преподаванию математики на английском языке.

*Ключевые слова:* модель двуязычного преподавания, носители языковой культуры, креативное мышление, математические термины и понятия, гуманистические ценности, математическая культура, графическая информация, гуманитаризация занятий.

*Предмет математики настолько серьёзен, что полезно не упускать случая сделать его немного занимательным.*

Б. Пастернак

Открытость казахстанского общества, глобальность образовательных проблем, стоящих перед системой образования страны, требуют не только традиционного изучения иностранных языков, но и компетентностного подхода использования их в различных сферах деятельности, поэтому современный прорыв в развитии технологии изучения иностранных языков обусловлен не только появлением новых методик преподавания, но и новыми целями, которые выдвигаются перед обучаемыми. Изучение общеобразовательных предметов на иностранных языках стало востребованным в обществе. Оно способствует повышению уровня знаний как в области языка, так и в сфере самой дисциплины.

Более того, все чаще наши студенты интересуются возможностью изучать отдельные предметы на английском языке. Это не удивительно. В период усиливающейся глобализации и выхода казахстанских компаний на мировой рынок, когда английский язык приобретает статус официального языка общения в деловом мире, обучение на английском языке приобретает особую значимость. К тому же вакансии в зарубежных компаниях требуют не только владения иностранным языком для ежедневного общения, но и навыков его использования в профессии и сопутствующих сферах деятельности [1].

Математика, как и другие науки, изучает действительный мир и в своих понятиях и законах отражает его закономерности. Специфика математики как особой науки состоит в том, что она специально выделяет количественные отношения и пространственные формы, которые присущи всем без исключения предметам и явлениям действительности, и делает их объектами своего исследования.

Сегодня проблемам преподавания математики стали уделять намного больше внимания. Связано это с развитием наукоемких производств и научно-техническим прогрессом. В последнее время технические науки развиваются достаточно быстро и имеют большое практическое значение. Такие направления, как экономика, электроника и информационные технологии, химия, биология, все технические специальности немыслимы без знаний математики. Актуальность темы также обусловлена по-