

## Cause and effect relationship of examinations control forms with acquisition of knowledge by students and objectiveness of knowledge evaluation by teachers

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**Abstract:** Based on research of cause and effect relationship of knowledge acquisition by students and knowledge evaluation by teachers carried out by the author different methods of students' knowledge control have been viewed in the article and graphical dependencies of students' knowledge evaluation objectiveness have been built. Also, works of different scientists in this field have been studied and possibilities of introducing reforms to higher school have been examined.

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### 1. Introduction

Value of academic activity at reproduction level is that it enables to acquire knowledge, reinforce it, and keep it for application on practice. Efficiency of educational process is much based on result achieved at the level of reproductive activity. Personality of student is self-fulfilled in effective independent learning labor: intellectual activity increases, requirements to himself and to results of his labor rise, that, on the whole, facilitates strong acquisition of theoretical knowledge and ability to use it on practice [1].

When aim of educational process is to transfer knowledge and skills to the student means for achieving this aim are regular work of the student within the whole semester and systematic control over knowledge obtained by him. On the basis thereof significance and actuality of studying knowledge evaluation and control methods in academic process at higher school become very obvious.

Main objectives of academic process are to prevent low level of students and graduates knowledge, corruption in the field of education, to increase level of qualification of professors and teachers, and to introduce interactive teaching techniques.

### 2. Material and Methods

Issue of cause and effect relationship of knowledge acquisition by students and knowledge evaluation by teachers has been viewed in works of many scientists: Bepalko V.P., Korolev V.G., Simonov V.P., Peisakhov N.M., Zevin D., Bodalev A.A. and others [1, 2, 3, 4, 5, 6, 7, 8, 9, 10].

Theoretical and methodological basis for research of cause and effect relationship of knowledge acquisition by students and knowledge evaluation by teachers is research on economic theory, theory of social and economic process management, as well as works of foreign and domestic scientists on the issues of improvement of teaching quality at higher educational institutions, knowledge evaluation techniques [11, 12, 13, 14, 15, 16, 17, 18, 19, 20].

Moreover, methodological approach to development of new economic policy and new social model of Kazakhstan society development as set forth in the Strategy «Kazakhstan-2050» has been used as a theoretical basis for research [21, 22, 23, 24, 25].

Deduction method, methods of economic, mathematical and statistical analysis and survey were used as a methodic base of research.

Control over knowledge and skills of students are an important element in academic process and education that predetermines result and efficiency of learning. Students' knowledge control discovers wide possibilities for improvement of academic process because control as an effective tool of struggle for strong and conscious knowledge helps study students as well as their individual features well. Diversity of types and forms of control enables to evaluate students' knowledge more accurately and with higher quality. [2]

Methods of control are techniques used by teacher and students that reveal acquisition of material and required knowledge and skills by students are: oral examination, written examination

and practical test, standardized control, testing and mixed examination.

General meaning of these methods is to secure timely and all-round feedback between teachers and students on the basis of which it is determined how students accept and acquire material studied

Objectives of control include selection of methods and the said methods can be applied at all forms of control that shall be considered. It should be borne in mind that only their complex application enables to reveal on a regular basis and objectively the dynamics of knowledge system formation and students' skills. Each control method has its advantages and disadvantages as well as scope but none of them can be the only able to diagnose all aspects of academic process. Only correct and pedagogically reasonable combination of these methods facilitates improvement of education and bringing up process quality.

Oral examination is the most spread technique of control over students' knowledge. Direct teacher-student contact is established during oral examination when teacher obtains wide possibilities to study individual features of acquisition of new material by students.

Oral examination requires enormous preparation from the teacher: careful selection of content, detailed consideration of issues, tasks and examples to be given, methods of involving all students in the group, establishment of business and favorable environment at the class.

Oral examination can be frontal, individual and combined. Frontal examination is a discussion between the teacher and the group.

Individual examination is based on detailed, coherent answers by students to the question relevant to studied material; this is why it is an important tool in development of speech, memory and thinking of students. To make this examination deeper the questions requiring detailed answer must be set to the students.

Very important is teacher's ability to control examination. It includes: ability to listen to the student, to observe process of his activity, to correct this activity. Teacher shall not hurry or interrupt student without any reason. It is permitted only when student makes major errors or answers beside the question.

Together with oral examination written checkup is a strong method of control over knowledge and skills. Homogeneity of works performed by students enables to set equal requirements to everyone. Application of this method gives possibility to check studied material within the shortest time and to determine directions of individual work with every student. Written checkup

is used at for all types of control and both for classroom and out-of-classroom activities (home tasks).

Standardized control involves development of tests. Test consists of 2 parts – task and sample. Task is given to the student to be fulfilled but sample is an example of correct and consequent task fulfillment. On practice, testing is carried out in the form of answers written on special task-cards.

Control over students' knowledge and skills are one of the most important elements of academic process. Efficiency of academic process management and quality of specialist's training much depend on its correct organization. All forms of education cannot be complete without regular and objective information of how material is acquired by students. Control over knowledge and skills has testing, training, developing, educational and methodical functions in academic process and specific function is testing. Control indexes make basis for consideration of reading results, i.e. to solve such issues as transfer to the next year, awarding of diploma. Control data state not only results and evaluation of educational activity of students and teachers but also state of educational and upbringing work of the whole institution and suggest measures for its improvement.

Properly organized control over knowledge and skills serves the purpose of both checkup and training. Therefore, educatory function is another important function of control. In the process of control tasks implementation students revise material, improve and summarize previously acquired knowledge, use the knowledge on practice. Control promotes formation of skills of rational organization of academic activity, independent acquisition of knowledge.

Developing function is in possibility to develop student's personality, to form his cognitive abilities, as mental strain is very characteristic for this activity. Control is exercised under conditions of strained memory, mind and imagination. Every checkup requires from students to reproduce what they have learnt, to process and systemize knowledge they have, to make conclusions, generalizations, to give evidence that promotes student's development.

Control over knowledge and a skill has upbringing function as it touches emotional side of personality very deeply. Results of individual efforts on acquiring new material become the subject of social opinion. Control makes student disciplined, brings up his sense of responsibility for his work, teaches systematic labor, and stimulates active academic activity and serious attitude to it. By proper exercising control teacher can inspire students to improve their knowledge and skills, to develop

objective self-evaluating opinions and need in self-control.

Control over knowledge and a skill has methodical function. Its process and results are very important for improvement of teacher's work. Control enables to evaluate teaching techniques, to see teacher's weak and strong qualities, to choose optimal variants of teaching activity. First, control shall be objective enabling to evaluate progress and flaws of student's academic activity, to determine degree of knowledge or skill acquisition, avoiding subjective judgments based on insufficient study of students. Objectiveness of examination is based on

series of factors: scientific validity and development of objectives and content of education, requirements to knowledge and skills of students, conformity of testing tasks content to the set objectives.

Analysis of statistic data of the survey of graduates from different higher educational institutions from 1990 to 2012, with 5-year step, gives possibility to determine the most effective teaching techniques and methods of knowledge control that can serve a basis for development of specific measures on improvement of higher educational system in Kazakhstan. Survey results are provided in the table 1 below.

Table 1 - Results of interrogation of graduates on the issue of knowledge evaluation objectiveness, %.

Description	Years of respondents graduation					Total
	Until 1990	1991-1995	1996-2000	2001-2005	2006-2012	
Form of entering educational institution:						<b>100</b>
Testing			20	20	20	60
Oral (written) examination	20	20				40
Form of session examination:						<b>100</b>
Testing			10	11	15	36
Oral (written) examination	20	20	10	9	5	64
Objectiveness of knowledge evaluation upon oral (written) examination	80	87	90	88	90	<b>87</b>
Objectiveness of knowledge evaluation upon mixed examination	40	35	35	33	28	<b>34,2</b>
Objectiveness of knowledge evaluation upon testing	20	14	10	12	10	<b>13,2</b>

As it can be concluded from the table principal share of students' knowledge evaluation objectiveness (87) refers to oral (written) examination, i.e. 87 percent of knowledge are obtained by student while preparing for the exams as well as during student-teacher dialogue. Studied material was acquired by 62% worse at mixed examinations (34,2%) and level of knowledge after testing is 85 percent lower (13,2%). This can be explained as follows: in the process of dialogue between the student and the teacher examinee studies the theme deeper in specific questions, thus, teacher can give more objective mark; some testing questions and answers are incorrectly made; students of some higher educational institutions can find answers or codes without overloading themselves by preparation to examination.

Mathematical processing of data in the tables enables to obtain graphical dependences of knowledge evaluation objectiveness in several years [5].

Figures 1, 2, 3 give graphical dependences of knowledge evaluation objectiveness: upon oral (written) examinations, testing and mixed examinations.

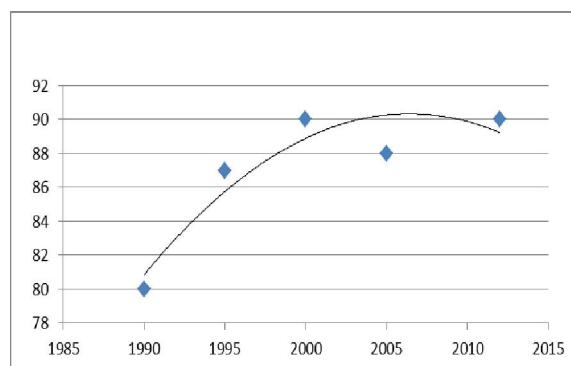


Figure 1 - Objectiveness of knowledge evaluation upon oral (written) examination

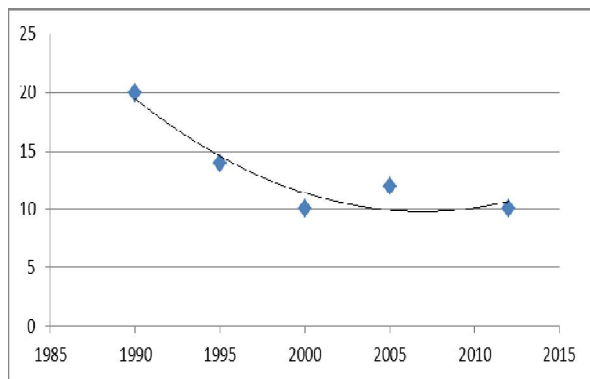


Figure 2 - Objectiveness of knowledge evaluation upon testing.

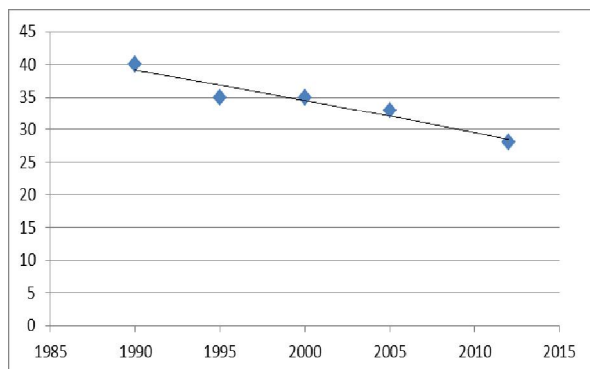


Figure 3 - Objectiveness of knowledge evaluation upon mixed examination.

### 3. Results

Mathematical processing of data on 5-year change of knowledge evaluation objectiveness resulted in the following empirical dependence:

For oral (written) examinations:  
 $O_y = -0,035t^2 + 141,6t - 14203$  (1)

For testing:  
 $O_T = 0,033t^2 - 134,9t + 13544$  (2)

For mixed examinations:  
 $O_c = -0,002t^2 + 7,365t - 6849$  (3)

where:  $O_y$  – objectiveness of knowledge evaluation for oral (written) examination, %;

$O_T$  – objectiveness of knowledge evaluation for testing, %;

$O_c$  – objectiveness of knowledge evaluation for mixed examination, %;

$t$  – terms of graduation of interviewed respondents.

Graphical and empirical dependences above demonstrate that for the whole period of various forms of knowledge evaluation oral (written) examination shows positive indexes whereas testing and mixed examination have negative ones. Moreover, the lowest indexes are observed during testing.

The obtained dependencies permitted to determine relation between dynamics of knowledge

evaluation objectiveness upon oral (written) examination with changing objectiveness of knowledge evaluation upon testing and mixed examination through building graphic dependence between them (Figure 4).

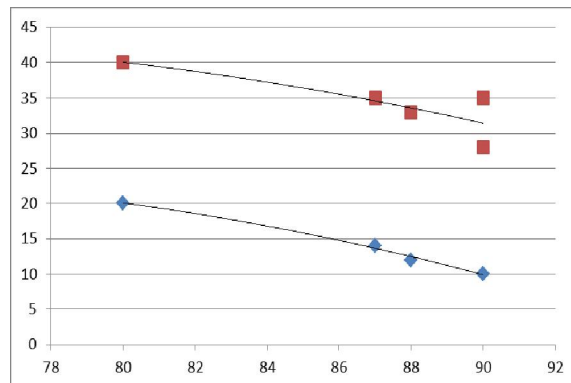


Figure 4 - Relation of dynamics of knowledge evaluation on oral (written) examination with changing objectiveness of knowledge evaluation upon testing and mixed examination.

Objectiveness of knowledge evaluation upon testing and mixed examination

Mathematical processing of data in connection with dynamics of objectiveness of knowledge evaluation in oral (written) examination with changing objectiveness of knowledge evaluation in testing and mixed examinations resulted in empirical dependence such as:

$$O_c = 0,18 \cdot (O_y)^2 - 31,67 \cdot (O_y) + 1419 \quad (4)$$

$$O_T = -0,032(O_y)^2 + 4,504O_y - 132,8 \quad (5)$$

From the obtained relation of dynamics of knowledge evaluation objectiveness it can be concluded that reduction of control over examinees in the form of testing leads correspondingly to increase of control in oral (written) form. Consequently, this enables to reinforce the studied material more deeply. Statistical analysis performed is a basis of studying cause-effect relationship in obtaining knowledge by students, objectiveness of knowledge evaluation by the teacher on proper form of examination control.

### 4. Discussions

Research data prove the hypothesis of necessity of various control forms in the learning process. Reasonable and proper combination of control forms enables to significantly improve knowledge of students. Learning can be effective only when leaning process is regularly checked and deeply controlled and when students see the results of their work. Upon lack of control students cannot see the true level of their knowledge and cannot imagine their weaknesses.

Regular control over knowledge and skills of students is one of fundamental conditions for improvement of education quality. Teacher must use not only traditional forms of control (independent and control works, oral examination at the board and etc.) but also systematically invent and introduce control techniques. Knowledge of various control techniques facilitates increase of students interest, provides active work of each student. Control shall be educational for students.

Non-traditional forms of control over knowledge and skills applied result in disclosure of individual capabilities of students, in increasing level of readiness to the class that enables to timely remove weaknesses and gaps in the knowledge of students.

Forms, techniques, methods and means of control shall be flexible and varieties. In this case control is the only that can secure individualization of academic process underlying in the terms of it: each group, new material, level of preparation.

Control over knowledge and skills of students shall be carried out on a regular basis at all stages of academic process. Only well-adjusted control and timely evaluation can provide effective education. Teacher's responsibility at every lesson is, independently from subject, means and time, to stimulate, control and encourage cognitive activity of students and maintain feedback with them for the whole class. During oral (written) examinations teacher can see: whether student knows the material or he cheats, this is why this form of control has more advantages against other forms of control.

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