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**STUDY ABOUT ON-LINE COURSES EFFICIENCY PERCEPTIONS.
RESEARCH BASED ON THE USE OF QUESTIONNAIRE.**

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***Abstract:** Accelerating the progress of science and technology implies a high dynamic component of the teaching restructuring. Technological maturity, and especially information technology explosion sets in a deep and highly mobile manner the communication possibilities. Research in didactic communication must meet this challenge through flexible, conceptual systems, appropriate programs and rationally planned objectives, which are able to provide effective explanations and intervention means. Although this scientific approach does not provide opportunities for direct action by identifying and analyzing problems, by establishing connections between phenomena and how they influence each other, proves its usefulness, not only for research but also for institutional intervention. The research purpose was to identify the knowledge level and use the modern means of communication in teaching, as well as the opinion on the hierarchy of elements that are assessed as generating efficiency in teaching. The research allowed the identification of certain specific situations where the classical training system proved to be recommended. Of the considerations listed above, we consider that the chosen methodology investigates an important area of efficiency in teaching and the opportunities it offers prove to be appropriate.*

***Keywords:** on-line communication, correlation, questionnaire, estimated efficiency.*

I. THE RESEARCH

Research aimed at identifying the level of knowledge and the use of modern means of communication in teaching and comments on modern means of communication among the National Defense University students enrolled in 2011-2012 academic year.

Another determination which the research has proposed was the link between the forms of training students on-line and the efficient use of existing infrastructure. Quantitative conclusions were obtained from the algorithms for calculating the correlation coefficients of variance and significance.

1.1. The hypotheses

Hypotheses established for this research have a medium level of generality, are directly testable, working hypotheses, variables considered to have not a direct causal interaction and can be processed and interpreted using statistical methods used in social and economic sciences. Research hypotheses were the following:

1. the modern means of communication used in training are appreciated as generator of adding-value in the educational process;
2. modern systems of training and education are appreciated positively compared with the classic training and educational system;
3. there are no significant differences between the analyzed elements in case of the staff working in the education field and the personnel working in other domains in the Ministry of National Defence.

1.2. The research objectives

The research purpose was to identify the knowledge level and use the modern means of communication in teaching, as well as the opinion on the hierarchy of elements that are assessed as generating efficiency in teaching.

The objectives for this research were:

1. *identifying the students attitudes towards programs using modern means of training/education compared to the classical system;*
2. *to identify factors that are likely to increase the effectiveness of the educational process and the comparison between students who work in education and those functions within other areas;*
3. *to identify the objective of preparing students for these types of training and to compare the students who work in education and those functions within other areas;*
4. *to establish the correlation between the level of appreciation of the forms on-line training and the use of existing infrastructure;*
5. *to form the necessary conclusions in order to find new horizons for the research.*

1.3. The instruments and their description

Note that among those tested are people who are preparing to occupy leadership positions in the military institutions of military education. Arguments provided by these officers, together with the justification of choices made for open items, have led experts to conclude such qualitative identification of dysfunction in specific training situation .

In construction the questionnaire alternate open questions closed, imposed by the research objectives and pedagogical criteria of attractiveness and alternation task.

Closing questions increase the number of responses (up to double) and reduce non-responses[1].

The questionnaire is omnibus type, which allow the capture of several phenomena and the links between them. The questionnaire doesn't seek to obtain factual data as they are obtained from the study of the organization documents.

Questionnaires were applied to each group, with a single training on the way of filling it up, all the procedure in no more than 40 minutes [2].

II. DATA COLLECTING AND ANALYSIS

The methodology used in the research allow collecting data which can be organized, transformed and interpreted in order to get to some conclusions regarding the investigated domain. Combining the qualitative and quantitative expression possibilities allow, besides the descriptive level of phenomena, capturing their dynamic manifestation [3].

2.1. Questions' verification and the pretesting

Following this activity, questions were reformulated in view of military terminology and organization was made accessible, both in terms of specific age and difficulties of contents.

2.2. Data analysis, statistical processing and interpretation of results

Depending on objectives, hypotheses made and the possibilities of the instruments, the research revealed the following data:

A. Factual data

The students situation is shown below:

	Enrolled students			Participants in the research		
	Total	Education positions	Functions in other areas	Total	Education positions	Functions in other areas
TOTAL	120	91	29	90	71	19

It is noted that 75.6% of all students is staff positions in education or human resources issues related directly and in planning, organizing and sending staff to various forms of training and personnel are occupying 24.4% functions in other areas.

B. *The degree of knowledge and the modality of appreciation of how media training/learning resources created by modern means of information and communication;*

On how students consider the situations of teaching/learning resources created by modern means of information and communication (items 1 and 2 of the questionnaire), the following results were obtained:

- 5.6% of students felt that using the modern means of didactic communication is likely to increase the effectiveness of any program of study, 84.4% felt that there is an efficiency only for programs that are appropriate for these systems and 10% that there are no differences in the efficiencies generated by use of the modern means compared to the classical ones;
- Learning situations in which modern communication media was used in teaching are valued compared to classical training situation as much better by 27.8% of students, best of 43.4% and no difference by 28.9%.

Figure.1. Students with functions in the educational domain appreciation on the increasing efficiency of the teaching using modern means

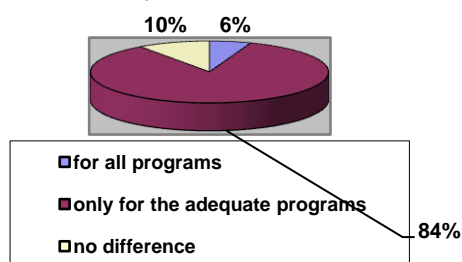
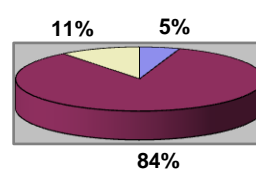


Figure.2. Students with functions in other areas appreciation on the increasing efficiency of the teaching using modern means



To determine whether there are significant differences between how students appreciate the responsibilities in education and students to function in situations other areas of training/learning created with the help of modern information and communication, we conducted an analysis of variance between the two series frequency. We applied the F Test and the T Test, as follows:

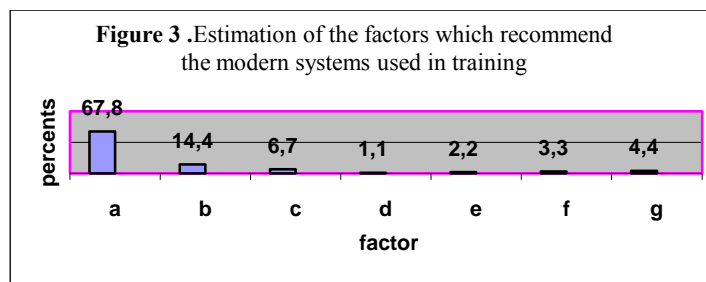
F Test		T Test	
Calculated coefficient	Significance	Calculated coefficient	Significance
0.14	0.906	0.101	0.9

Statistical analysis showed no significant differences between the two groups in terms of how students consider situations teaching / learning resources created by modern information and communication means (0.14 F coeff. is less than the table 1.75). The significance of the F test shows that if we assume that there are significant differences, are likely to mistake in 90.6% of cases. The T test value of 0.101 (smaller than 1.98 the table value), reject the hypothesis that there are significant differences between analyzed groups, and if we adopt hypothesis we would be mistaken in 90% of cases.

C. Factors that recommend the modern teaching/learning systems;

From the questionnaire, the students had to choose from a list of 6 factors, the one which they consider to be the most relevant for the advantages offered by the modern communication means used in teaching, as a last option, they could fill in other situations which weren't precoded. The results are shown below.

Option	requency	Percents	Answer description
A	61	67,8	The student gains time and space, in the meanwhile he can perform other activities without affectin training
B	13	14,4	Updating the contents and the learning materials is very easy for the professors
C	6	6,7	The communication between the tutor and the student is enriched using the e-mail, the forum of disscutions, chat, web conference, messaging
D	1	1,1	The synchronous online communication gives the professor more free time for dealing with the administrative tasks
E	2	2,2	The professor with e-competence needs a shorter period of time for preparing a new study program
F	3	3,3	Infrastructure needed by students is available mostly in military institutions or in their homes
G	4	4,4	Other situations



It can be easily noted that 67.8% of the students appreciated mostly the gain of time and the economy travel, meanwhile could perform other activities without affecting the training, 14.4% appreciated that the communication between the tutor and the student is enriched using the e-mail, the forum of discussions, chat, web conference, messaging, 6.7% appreciated as most important the fact that infrastructure needed by students is available mostly in military institutions or in their homes, the rest of options got 10.1%.

For establish if there are significant differences between the factors appreciated as important between the personnel working in education and the ones working in other fields of activity, we used the F and T test to statistical series resulted from the answers at this item, with the following results:

F Test		T Test	
Calculated coefficient	Significance	Calculated coefficient	Significance
1.294	0.258	0.767	0.445

Comparing the F coefficient obtained (1.294) with the table value (1.75), we can see that the first one is smaller, so the analyzed characteristics variance is the same for the two groups. The significance limit of 0.258 is bigger than 0.05, nule hypothesis being accepted. We compare the t note (0.767), with the table value (1.98) and we can see that the null hypothesis can't be rejected, the obtained significance limit (0.445) shows a probability of 44.5% of taking the right decision when reject the null hypothesis. So there are no significant differences between the two groups regarding the factors considered relevant for the advantages offered by the modern means of communication used in training.

D. Modern means are estimated as generators of adding value during the teaching programmes;

For testing the hypothesis according to the modern means of communication used in teaching programmes add-value to the educational process, we introduced the item 5 which has 9 pre-established options of answers, the answers are structured in two groups: elements which sustain the hypothesis and elements which reject it.

The results of this question are shown below.

Option	Frequency	Percents	The answer
A	12	13,3	On-line courses have a high level of accessibility
b	10	11,1	The online courses content can be continuously enriched
C	27	30,0	On-line courses are efficient as costs on the existing infrastructure
d	7	7,8	Online courses can be accessed any time, any place
E	5	5,6	The same package of data is offered to the students, with a high level of contents standardization
F	7	7,8	Feed-back received from the students is reduced and not direct
G	0	0	Students need teaching and support for learning how to use the platforms
h	19	21,1	Difficulties in transmitting the applicative contents
i	3	3,3	Difficulties generated by the intellectual property rights and copyright

High scores obtained the c) On-line courses are efficient as costs on the existing infrastructure (30%) and h) option there are difficulties in transmitting the applicative contents (21.1%). Adding the

first 5 categories we obtain the pro group for such programmes with a total of 67.8%, while the group of deficiencies scores 32.2%.

For establish if there are significant differences regarding the estimation of the modern means of communication as generators of add-value between the personnel which works in the educational field and the personnel from other domains, we used the F and T test, with the following results:

F Test		T Test	
Calculated coeff.	Sign.	Calculated coeff.	Sign.
1.387	0.69	0.535	0.423

Comparing the obtained F coefficient (1.387) with the table value (1.75), we can see that the first one is smaller, so the analyzed characteristics variance is the same for the two groups. The significance limit of 0.69 is bigger than 0.05, null hypothesis being accepted. We compare the t note (0.535), with the table value (1.98) and we can see that the null hypothesis can't be rejected, the obtained significance limit (0.423) shows a probability of 42.3% of taking the right decision when reject the null hypothesis. So there are no significant differences between the two groups for this item.

E. Estimation on analyzed domain evolution

Estimation on the evolution of the modern means of communication and information in comparison with the classical system is investigated using the item 6. The question *Do you consider that modern means of communication are a viable alternative for the classical system in the teaching and learning field*, was answered as follows:

option	frequency	percents	Answer
A	28	31,1	Could definitively replace it;
B	44	48,9	Represents an alternative but are complementary systems
C	18	20,0	Doesn't represent a viable alternative for the classical system

The comparison between the the personnel which works in the educational field and the personnel from other domains is shown in the graphics below.

Figure 4. Estimation on the domain evolution made by the personnel from the educational system

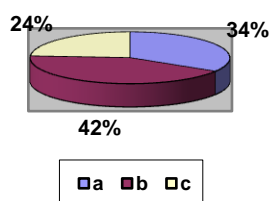
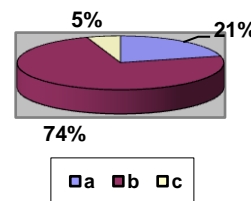


Figure 5. Estimation on the domain evolution made by the personnel from other areas of activity

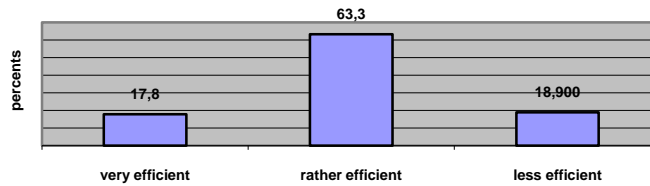


There are big differences between the two categories. Therefore, the estimation that the modern means of information and communication can definitively replace the classic system was expressed by 74% of the persons working in other areas of activity and 42% of the persons working in the educational system.

The students estimation on teaching process efficiency as a result of using the modern means of teaching/learning can be observed below:

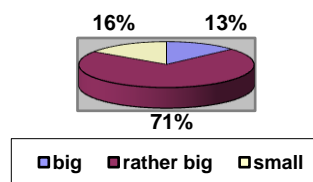
- 17.8% of students consider that this mean of teaching is very efficient;
- 63.3% of students consider that this mean of teaching is efficient;
- 18.9% of students find those courses less efficient.

Figure 6. Estimation on on-line courses efficiency



The estimation on the efficiency level on which the infrastructure possibilities are explored led to the following graphic.

Figure 7. Estimation on the efficiency level on which the existing infrastructure possibilities are explored



To reveal the connection between the estimation on the teaching efficiency and the level of existing infrastructure exploitation, using SPSS, we found the correlation for the series obtained for the answers at 10 and 12 items. We used the Spearman and also the Pearson correlation coefficient. The results are shown below.

According to both methods $r = 0.340$ for a significance coefficient $p = 0.001$, and a significance limit of 0.01. Comparing the correlation coefficient with the table value for 90 degrees of liberty, the value equals 0.21, we can see that the obtained value of the correlation coefficient is bigger, which means that there is a connection between the analyzed aspects and that the students who consider that teaching on-line is an efficient method, also consider that the existing infrastructure is efficiently. The correlation coefficient positive sign shows that both variables have the same effect of growth. The significance coefficient value of 0.001 indicates that in a case of 1000 we could be wrong when we consider that the affirmation stated above is true.

For establishing the calculated correlation coefficient significance we used the Epsilon test for $N > 30$. Calculated value for ϵ is : $\epsilon = 3.216$

Comparing with the table value of 1.96 we can observe that the obtained significance coefficient is bigger, which means that the connection between the two studied aspects is significant.

III. CONCLUSIONS

Increased efficiency of staff training programs through use of modern training and communication is appreciated significantly only for programs that are appropriate for these systems and compared with classical training is assessing the situation as more advanced about half of the subjects. Remember that no statistical difference value between the two categories established by hypothesis is confirmed and significant.

To analyze the factors that are considered strengths of the on-line training forms was included in the questionnaire an item with 6 preset choices and a last resort response where students could express their views freely. Most appreciated the gain of travel time savings, with the possibility of conducting current activities without affecting the educational process. Personnel involved in education scores not significantly different in terms of factors recommending modern training/education systems.

Assessment of generating added value in the training situations using modern communication systems was done by grouping out in two situations: the first group to support the hypothesis, the second group of items for rejecting the hypothesis. Efficiency in terms of financial costs by using existing infrastructure met the highest score of the group elements to support the hypothesis.

Summing the scores for variants in the first group (about 70%), showed that most students appreciate the use of modern means of communication in teaching act as generators of added value. Summing scores for variants of the arguments in rejecting the hypothesis group met a total of about 30% options. According to this indicator functions employing staff in education do not differ significantly according to other students.

Estimating how the analyzed domain will grow reveals that modern information and communication environments are appreciated as a viable alternative to the conventional, but are complementary systems. This comparative analysis highlights the differences between staff in the education and staff employed in other areas. Staff in the first group expressed more reservations about the option and shows an increase in extreme variants (variant 1 - can replace definitively the classical system and variant 3 - is not a viable alternative). This polarization options of the employing staff positions with responsibility for education is due to specific areas in which they have tasks.

It is estimated that the efficiency of training is widely associated with the use of modern training / education means. In this case, no significant differences between the two analyzed groups is observed.

Assessment of the level of efficiency of use of existing infrastructure shows that a significant proportion (71%) of students greatly appreciate that infrastructure is used efficiently. Calculating the correlation coefficient indicates that staff appreciate that the infrastructure level of exploitation is correct and consider that the on-line teaching forms are effective.

I mention that this research opens new horizons of study for the purpose of using a similar methodology to exploit all data provided by ILIAS platform. A longitudinal study to analyze the results of the initiation of these courses until now illustrates the evolution of forms of training, and finding the correlations between the students appreciation on the contents, organisation and the exams results can generate the necessary conclusions for improving the instructive / educational process.

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