Affective Objectives of Education Within the Technical Higher Education in the Psycho-Pedagogical Training Program

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ABSTRACT The paper tackles the issue of the affective objectives in general education and particularly within the technical higher education. Among the taxonomies of the affective objectives, D. Krathwohl's pattern is analysed in its pyramidal form: the reception, the response, the valorisation, the organisation and the characterisation. Even if the obstacles met by the students of a technical university during the psychological and pedagogical training are worth to be considered, the work hypothesis is optimistic: the affective objectives set up by the professors of the Department of Teacher Training of the Technical University of Iași (DPPD- UTI) and made by the students of the DPPD are situated at a high level, above the average level, considering the results obtained by the students enrolled in DPPD, which are better than the results obtained by these students at the technical disciplines. The objectives of the research were: - the design of a survey aiming to measure the achievement of the affective objectives of the students of the technical faculties, who chose to follow an elective track of training in the psychological and pedagogical are, - the design of a survey to measure the affective objectives that the professors of DPPD-UTI set up by themselves in order to be applied to these students, - the validation of the two surveys – the implementation of the surveys on a batch of 177 sophomore students from all the 11 technical faculties of the Technical University of Iași and to the all professors of DPPD-UTU. The paper presents the methodological design, the validation of questionnaires, the interpretation of results and conclusions. The difference between the two averages obtained from questionnaires for students and teachers is statistically insignificant. The research confirms the hypothesis of the paper, the affective objectives designed by teachers of DPPD-UTI for DPPD-UTI students are accomplished at a high level. The explanation consists of the active participative methodology used by professors of DPPD-UTI.

INTRODUCTION

Educational objectives are central in the post-modern, curricular pedagogy, where the entire training design starts from the objectives: contents, methods, means and forms of teaching / learning / evaluation (Landshere, 1979). In the traditional pedagogy, the professor chooses from the handbooks the contents that he/she wants to transfer according to didactic experience, pedagogical, and then he/she chooses the methods, means and forms of organisation of the lesson according to the information selected. In the post-modern pedagogy, the order of the stages is changed. The educational design starts from the educational objectives. What the professor aims to do in the educational process, what changes he/she intends to produce in the pupils' personality, all these are starting from pupils' needs. Consequently, according to these changes that the professor anticipates, as objectives of education, he/she shall choose the contents, methods, means and forms of teaching/learning/evaluation of the lessons. The first consequence, extremely important for the conception change concerning the educational design refers to the pupil's situation in the centre of the educational process. The student, with his/her own personality, with his/her own psychological and pedagogical needs, but also with his/her cognitive, affective, behaviourist possibilities becomes the centre of the educational process, replacing the professor in the educational area, who takes step by step other roles. The needs and possibilities of the students must

be well known to the professor, because the professor may generate the necessary changes. But what happens if the pedagogical objectives of a lesson are not achieved by the students? These unachieved objectives by the students are changing, and are re-operationalized by the professor. This is one of the advantages of the student-centred pedagogy (Ionescu, M., 1995). It is not the transmission of the contents themselves, but the active reception of these contents by the students, the understanding of contents and the formation of new competencies by means of these contents. Consequently, not the contents and the professor must be at the basis of the educational process, but the pedagogic objectives.

CLASSIFICATION OF OBJECTIVES OF EDUCATION

The pedagogic objectives, directly and immediately transforming, according to the psychical processes involved, were classified by several researchers in: cognitive objectives (Bloom, 1956), affective objectives (Krathwohl, 1964), psychomotor objectives (Simpson, 1966/1972).

These categories of objectives are meant to achieve specific changes in the students' personality: cognitive, affective and psychomotor or behaviourist plan, their action being efficient especially if they are integrated as presented in Table 1: Integration of areas for the objectives' operationalization (Landsheere, 1979).

TABLE 1 . INTEGRATION OF AREAS FOR THE OBJECTIVES' OPERATIONALISATION

Cognitive area	Affective area	Psychomotor area
1. Knowledge	1 Reception	1 Perception
To define, to recognize, to identify, to enumerate, to formulate etc.	To differentiate, to separate, to choose, to combine etc.	To notice, to recognize, to analyze, to compare etc.

2. Comprehension To explain, to provide examples, to interpret, to distinguish, to estimate, to transform etc.	2. Reaction, response To discuss, to play, to conform to etc.	2 Availability To wish, to insist etc.
3 Application To apply, to establish relationships, to demonstrate, to organise, to discover etc.	3. Valorization To accept, to renounce, to deny, to debate, to argue, to help etc.	3 Guided reaction To apply, to answer etc.
4 Analysis To notice, to clarify, to choose, to illustrate etc.	4 Organization To discuss, to compare, to formulate, to organize, to harmonize, to make a plan of ideas etc.	4. Automatism To correctly execute.
5 Synthesis To compose, to tell, to formulate, to resume etc.	5 Characterization To change, to review, to complete, to critically appreciate, to solve etc.	5 Complex reaction To correctly execute, without effort etc.
6. Evaluation To analyze, to compare, to appreciate, to decide, to argue etc.		

THE PATTERN OF AFFECTIVE TAXONOMY-ACCORDING TO THE D. KRATHWOLL

Among the affective taxonomies, the one proposed by D. Krathwohl seems to be more simple, but it also needs a decoding effort and an equally elaborate application attempt. The taxonomy synthesis is presented as follows:

Reception (presence)
Making the student to become sensitive to the existence of certain phenomena and of certain stimulus, that is to incite him/her to receive those stimuli and to pay attention to them. *1.1 Conscience.* In an adequate circumstance, the pupil must be aware of a fact, must become aware of a situation, of a phenomenon or of a juncture. It may be about the simple conscience without discrimination or about the specific recognition of the objective characteristics of the object. *1.2 The will of receiving.* The behaviour of an individual disposed to accept a given stimulus and not to skive. *1.3 Guided or preferential attention – Difference –* from the point of view of form and content – of a given stimulus, the action taking place consciously or semi-consciously or, more precisely, the difference of the aspects of a clearly perceived stimulus as very different of the neighbouring impressions. The reception may be operationalized by verbs as: to differentiate, to separate, to divide, to accept, to combine and to choose.

The response
Responses which appear following a simple attention paid to phenomena. We wish for a student to be sufficiently attracted by a subject, a phenomenon, or an activity to try to discover them and to enjoy studying them thoroughly. *2.1 Assent.* The student provides a response, but he did not accept completely the need to do it. *2.2 The will to answer.* The student is looking forward and is keen to provide an answer.

Valorisation
Valorisation is the behaviour enough durable and stable to take the characteristics of a conviction or of an attitude. The student manifests this behaviour with enough coherence, in adequate circumstances, because he/she appreciates that he/she has a value. The behaviour is motivated not by the wish to like or to submit, but by the personal adhesion to the fundamental value determining the behaviour. *3.1 The accepta-*

tion of a value. The assignment of several values to a phenomenon, behaviour, object etc. *3.2 The preference for a value.* The introspection level situated between the simple acceptation of a value and involvement or conviction. There is enough profound involvement for a value, so the individual is searching for it and wants it. *3.3 Involvement.* At this level, the conviction involves a high degree of certitude. There is *conviction, certitude with no shade of doubt, sincerity, and faith for a point of view, group or cause.* The valorisation may be operationalized by verbs as: to specify, to encourage, guiding, to debate.

Organisation
The organisation refers to coordination of values within the system, the determination of relationships existing between them, the establishment of the dominant and more profound values. *4.1 The conceptualisation of a value.* Abstraction or conceptualisation allowing the individual to see how a value is relating to those already owned or to those values he/she shall own.

Example: trying to define the characteristics of an art object that one admires. *4.2 The organisation of a system of values –* The student is collecting an assembly of values, probably disparate and establishes an order between them.

Characterisation
The characterisation of a value, or of a system of values . Each value takes place in the hierarchy of the values of an individual; they are organised in a coherent kind of system. They regulated for enough time the behaviour of the individual, so he/she adapted to them. *5.1 Generalised availability –* The assembly is to provide an internal logic to the system of attitudes and values in any circumstance. *5.2 Characterisation* The characterisation may be operationalized by terms as: to review, to change, to complete, and to solve.

D. Krathwohl depicts in a schematic way the relationship between these affective objectives as a pyramid that we reproduce below (Figure1):

FIGURE 1: PYRAMID OF CLASSIFICATION OF AFFECTIVE OBJECTIVES-ACCORDING TO THE KRATHWOLL (1964)

DIFFICULTIES TO ACHIEVE AFFECTIVE OBJECTIVES

The students meet achievement difficulties at the level of high level cognitive objectives: analysis, synthesis, evaluation and of those complex behaviour objectives. But the affective objectives are more difficult to operationalize by the professor and more difficult to achieve by the student. In order to be more receptive, to learn to organise, to value the knowledge, the students must be active, conscious, to have an appreciating personality. There are especially these qualities which are created by means of the affective objectives, on the way of active-participating methods implemented by the professor. The circularity of affective objectives – methods of teaching-learning-evaluation poses additional difficulties. The affective area is impregnated by the concept of value, and it is formed later in the psychological and pedagogical evolution of the child, it is a sensitive area, fluid and difficult to operationalize, to surprise and to depict. The affective area includes attitudes, values, faiths, opinions, interests and motivations (Koballa, Th., 1995). This complex structure of the affective area poses another difficulty in the operationalization and achievement of affective objectives. The psychological and pedagogical disciplines that the students of a technical university learn for the psychological and pedagogical preparation are by themselves forming opinions, faiths, values, attitudes. This is a good start for our research. Starting from here, the research questions are: 1. How the professor succeeds in implementing the coefficient value of the psychological and pedagogical disciplines taught by him? 2. Which are the most efficient methods for the formation of psychological and pedagogical attitudes, faiths, opinions, and motivation? 3. Are the affective objectives achieved by students? 4. If the professors set up affective objectives, how much are those achieved by the students?

The students of a technical university have a personality coordinated by technical values, they are more sensitive to such values, understand better the technical values, appreciate more the technical values, implement more efficiently the technical values**.** This is the premise we start from.

Consequently – we consider – that the humanist valuing coefficient of the psychological and pedagogical disciplines causes more obstacles for the students of a Technical University: - it is more difficult to perceive and to conceptualise, being abstract, and the students of a technical university have predominantly a concrete, practical thinking: - therefore, the professors of psychological and pedagogical disciplines must make an effort of concretisation, particularisation, **facilitation of learning** for students.

WORK HYPOTHESIS

A method to facilitate the learning is by means of the concrete affective objectives, by increasing the degree of activation of students' teaching, of the level of acknowledging the learning, by increasing the learning satisfaction of the students.

The affective objectives formulated by the Teaching Staff of the Department of Teacher Training of Technical University of Iași (DPPD – UTI) and made by the students of the DPPD-UTI are situated at a high level, above the average level, taking into account the results obtained by the DPPD- UTI students, which are higher than the results obtained by the same students at the technical disciplines**.** This is the hypothesis that we propose to demonstrate in our research.

The specialised literature brings arguments for the premise we started from. The students of a technical university may be situated from the point of view of the professional personality according to Holland's classification (vocational choices, 1997) in the realist type of personality, oriented to the work with any kind of equipments and machines. The professors – according to the same classification (Figure 2) – are situated in the category of social personality, inclined to the work with people, avoiding the activities including the work with equipments and machines. At the interaction between the two types of personality, the realistic and the social ones, there are – according to Holland – the activities with the public, the hand made activities, personnel departments.
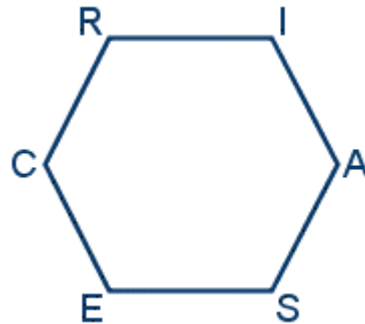

FIGURE 2: THE HEXAGON OF VOCATIONAL INTERESTS-ACCORDING TO THE HOLLAND MODEL

The closeness between the two types of personality, opposed from the theoretical point of view may be made – as we consider it – by means of the concept of professor – engineer. The psychological and pedagogical disciplines at DPPD-UTI are taught to develop interests of working with people for the students of a technical track who choose to prepare for the didactic career.

The didactic methods by which the DPPD-UTI professors may achieve this closeness between the two types of personality are the active, participating and creative methods which contribute to the personal development of students, to the training of their social competencies, in order to become professors – engineers. The modern and post-modern education estimates a methodology axed on action, operation, oriented towards the promotion of interactive methods demanding the mechanisms of thought, intelligence, imagination and creativity. "Active" is the student "taking the trouble of personal, interior and abstract reflection, enterprising a mental action of search, research and rediscovery of truths, of elabo-

ration of the new pieces of knowledge. So the external "activism" comes to serve as material support to the "internal activism", to the psychological, mental activism, to become its "bearer." (Ioan Cerghit, 1997, p. 73). The facilitation of learning of psychological and pedagogical disciplines may be achieved by: experiential learning, opening of the relationship between emotional, cognitive, and behaviourist, learning opened to self-reflection, to interpretation, to debate, to non-directive teaching, to ego type messages, to the transformational paradigm. (Pinar, 1995)

OBJECTIVES OF RESEARCH

1. The elaboration of a survey in order to measure the achievement of the affective objectives for the students of technical departments, who chose to prepare from the psychological and pedagogical point of view. 2. The elaboration of a survey in order to measure the affective objectives that the DPPD-UTI professors propose to apply to these students. 3. The validation of the two surveys. 4. Their application on a batch of 177 sophomore students of all the 11 faculties of the Technical University of Iaşi. The discussion and interpretation of the results obtained.

The questions were elaborated in order to measure the intensity of achieving the proposed objective on an increasing Likert type scale of 1 to 5.

THE METHODOLOGICAL RESEARCH DESIGN

N	Valid	172
	Missing	5
Mean		102,8953
Median		105,0000
Mode		114,00
Std. Deviation		14,15249
Skewness		-,925
Std. Error of Skewness		,185
Kurtosis		1,531
Std. Error of Kurtosis		,368

The two surveys designed to measure the achievement of affective objectives by students and the design of affective objectives by teachers of pedagogical disciplines in technical higher education (at DPPD-UTI) were made from D. Krathwohl's classification.

Each of the two questionnaires has 25 questions, that meet the five affective objectives specified by D. Krathwohl. In total 13 items are distributed as follows: 3 for reception, 3 for answer, 3 for valorisation, 2 for organization, and 2 for characterization. The remaining 12 questions are filter type, checking the degree of sincerity and the understanding of the test. The questions are designed in such a manner to measure the intensity of achievement of objectives using a Likert scale from 1 to 5. The questionnaire for students was applied to a total of 177 sophomore students and the one for teachers on a number of 8 teachers, representing the entire team/population of DPPD. The minimum value that can be obtained for the questions is 25, the average is 75 and the maximum is 125.

After applying the frequency test, the statistical values obtained are shown in the histogram below (Fig. 1, Table 2).

FIGURE 3: VALUES OF THE FREQUENCY TEST FOR STUDENTS QUESTIONNAIRE
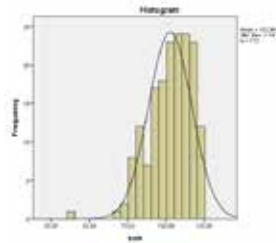
TABEL 2: FREQUENCY TEST FOR STUDENTS

The mean of students' responses to the questionnaire was 102, 8953 much higher than average of 75, which proves that the largest number of responses obtained the highest values (4 and 5).

Item	Frequency val.4	Frequency val.5	Item	Frequency val.4	Frequency val.5
I1	71	81	I14	63	83
I2	61	92	I15	66	79
I3	67	56	I16	48	82
I4	65	61	I17	69	66
I5	70	68	I18	65	62
I6	66	77	I19	53	66
I7	56	106	I20	64	76
I8	36	97	I21	57	69
I9	66	55	I22	71	63
I10	79	63	I23	87	43
I11	79	51	I24	61	68
I12	65	63	I25	63	66
I13	64	59			

Analysing the frequency of the data obtained for every item we observe that the most frequent values are 4 and 5

TABEL 3: THE MOST FRECVENT VALUES

Item	Frequency val.4	Frequency val.5	Item	Frequency val.4	Frequency val.5
I1	71	81	I14	63	83
I2	61	92	I15	66	79
I3	67	56	I16	48	82
I4	65	61	I17	69	66
I5	70	68	I18	65	62
I6	66	77	I19	53	66
I7	56	106	I20	64	76
I8	36	97	I21	57	69
I9	66	55	I22	71	63
I10	79	63	I23	87	43
I11	79	51	I24	61	68
I12	65	63	I25	63	66
I13	64	59			

The mean obtained from the questionnaire for teachers was 94, 75 which proves that professors gave somewhat lower values but very close to the values of students.

TABEL 4: VALUES QUESTIONNAIRE FOR TEACHERS		
N	Valid	8
	Missing	0
Mean		94,7500
Median		97,5000
Mode		74,00[a]

We present in the following table (table 5) the difference between students' mean and professors' mean.

TABEL 5 DIFFERENCE BETWEEN MEANS

	function	N	Mean	Std. Deviation	Std. Error Mean
sum	student	172	102,8953	14,15249	1,07912
	profesor	8	94,7500	13,28533	4,69707

The difference between the two averages of 8, 1453 is not statistically significant at a significance threshold of 0.05.

INTERPRETATION OF RESULTS AND CONCLUSIONS

The results obtained through questionnaires on the two target groups students, and professors of DPPD-UTI confirm the hypothesis of the paper. Although the scientific literature shows that affective objectives are difficult to be operationalized and to be applied, the psycho-pedagogical training program proved to be stronger, helping to overcome these difficulties. All disciplines of psycho-pedagogical training program: educational psychology, pedagogy, classroom management, educational communication, have a crucial component: motivating students, active learning, participatory learning, awareness of the role of teacher. Therefore the contents, the participative methodology used, and the teacher-model offered to students during courses and seminars directly led to the results obtained by students and teachers.

1. The results are very encouraging and significant due to the possibility of applying affective objectives at technical subjects where students have the greatest problems with regard to: Understanding courses; teacher-student relationship; the autocratic leadership style of teaching activity; applicability of knowledge; motivation of students by teachers, etc.

2. As the classification of affective objectives by Krathwohl is situated in a pyramidal shape, the "reception" is located at the bottom and the "characterization" at the top of pyramid we expected students' values to be inversely proportionate to these objectives. Objectives such as "reception" should have higher values, being more easily achieved while, objectives such "characterization" should have lower values being more complex. But to our surprise, the research found out no significant differences between these values that students have given to these objectives. This is explained by the fact that either the students gave random values without understanding the deep significance of affective objectives or the active-participative methods used by teachers contributed greatly to these high values. Because the complex affective objectives achieved high values at the questionnaire applied to teachers we tend to be in favor of the second explanation. This explanation confirms the hypothesis of the research.

3. The two questionnaires measurements are not as much for the affective objectives designed by teachers and put in practice by students, as they are for the perception about achieving these affective objectives. The difference between the average results of students and average results of teachers is not statistically significant means that the research hypothesis was confirmed.

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