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Evaluation of Professors of Informatics in Primary and Secondary Education: A Comparative Study

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Abstract

The recent attempt of the Greek government to implement a teacher evaluation system created a wide-ranging debate in the educational world and caused many discussions and, at times, conflict. This was no exception for Greek teachers of Informatics. This paper reflects their views with respect to certain aspects of the teacher evaluation issue, based on a survey conducted nationwide. It presents and analyzes the results obtained from the comparative study of responses among professors of Informatics serving either the Primary or the Secondary education. Finally, it presents useful conclusions drawn from the study of the results of this survey.

Keywords: *evaluation, educational work, professors of Informatics*

JEL classifications: I280 Education: Government Policy

Introduction

The strategic importance of evaluation for the qualitative development and the operational effectiveness of each type of system, and especially the educational system, cannot be disputed. For the European educational landscape, the broad scientific and political consensus with respect to its necessity is a fact. The need for the evaluation of each product in general and of educational environments in particular, has been recognized worldwide to such an extent, that many talk since the '80s about evaluation as a separate branch of the social sciences with its own theories, methodologies and tools (e.g. Worthen & Sanders, 1987).

If the role of education contributes to the understanding of complex and deeper relations in the world, the assessment is rather the crucial and decisive mechanism for the development and proper functioning of educational systems. Undoubtedly, the primary objective of the teacher evaluation is to improve the quality of the training provided. In recent years, vivid interest is expressed, both in Greece and internationally, for the educational evaluation issues.

The evaluation takes different forms - types with respect to its temporal relationship with the educational process and the purpose for which it is performed (Dimitropoulos, 2002; Scriven, 1994):

- a) When the assessment is made before the start of the training program it is called preliminary and is related to needs identification and the design of the program,
- b) When made during the training program it is called formative and is related to the process of implementing the educational program (e.g. teaching)
- c) When the assessment is made after the end of the educational program it is called final or summative and is related to the assessment of the effect of the conducted program,
- d) When further evaluation is done after the expiry of the overall assessment, it is called meta-evaluation and is related to the usability and the exploitation of the findings of the previous evaluation stages.

The subjects of the educational evaluation may be classified into two categories: a) those relating to living factors and b) those related to non-living factors, i.e. subject of evaluation can be everything living or non-living related to the educational process (person, thing, institution, measure, program or procedure), since the educational system is a cohesive totality, each part of which contributes to the efficiency of the work being performed.

The evaluation of the teacher is the most problematic aspect of educational evaluation. The debate regarding the effectiveness of the teacher at the Greek educational system has occupied researchers rather recently (e.g. Matsagouras, 2000; Trilianos, 2000). According to Andreadakis and Kadianakis (2010), and Pamouktsoglou (2001) the basic characteristics of the effective teacher are (the same characteristics are, more or less, also the results of surveys from the international arena, e.g. Fielding, 1997; Mac Beath, 2001):

- Love for students.
- The will, passion, appetite for work, conscious inclination and the choice for the profession of the teacher.
- The persistence and patience in carrying out his duties as a key element of his personality.
- The self-assessment, in the direction of self-improvement.
- The clarity of instructions.
- Communication.
- Enthusiasm.
- The sense of humor.
- Constructive explanation.
- The planning and design of teaching.
- The involvement of students.
- The proper use of learning time.
- The ambience in the class.
- The use of a variety of methodological approaches and teaching aids.
- The mature, integrated and balanced personality as well as mental health.

However, the specificities of the process of teaching as well as the varying working conditions of the teachers, do not allow us to easily

distinguish the effective teacher from the ineffective (Andreadakis, et al, 2008; Maggopoulos, 2005).

The aims of the evaluation of teachers include the following (Deligianni, 2002; Siarkou, 2003):

- a) to strengthen self-awareness regarding scientific knowledge, pedagogical skills and teaching accuracy,
- b) to provide a solid picture regarding their efficiency in their work,
- c) to motivate improvement of their performance based on the findings and the remarks of the evaluators,
- d) the identification of their weaknesses in the teaching process and the attempt to obliterate them,
- e) the satisfaction out of the recognition of their work and the provision of incentives to those who wish to evolve and serve as education executives
- f) the identification of their training needs as well as the specification of the content of training.

Mavrogiorgos (1993, p. 146) spots the following important questions about the purpose of evaluating the teaching process: "Is it to serve the teacher's needs? Or the feedback for shaping professional training policies or reforming basic professional education? Or create conditions for self-development, self-education and self-determination? Or serving the needs of the educational system? Or the tenure or promotion of the teacher? Or exercising control on the compliance of teachers with respect to the official educational policy?"

The P.D. 152/2013 is the recent attempt of the state to implement an evaluation system for the educational work (the evaluation of non-living factors was not alluded). The P.D. justified as purpose of the evaluation its contribution to improving the quality of educational work for the benefit of teachers, students and society. It provided five categories of evaluation criteria of teacher:

- A) Category I - Educational environment.
- B) Category II - Design, planning and preparation of teaching.
- C) Category III - Conduct of teaching and evaluation of students.
- D) Category IV - Consistency and adequacy.
- E) Category V - Scientific and professional development of the teacher.

The evaluation utilized a descriptive scale of four grades ("inadequate", "adequate", "very good" or "excellent"). Firstly, the teacher was ranked in one of the four grades. Secondly, the evaluator was grading the teacher for each of the five categories of criteria using a centigrade numerical scale.

The P.D. was implemented up to some extent: education executives (Regional Educational Managers, School Advisors, Educational Directors and School Directors) were trained to become evaluators and they were all evaluated except from the school directors, the evaluation of which started but never completed.

The very short period that the evaluation has been on, did not allow the conduct of scientific surveys for the assessment of its results and implementation process. However, the time was enough to raise a variety of concerns in the educational community regarding the objectives of the evaluation, the feasibility of accurate measurement

of the educational outcome and the ways meritocracy can be preserved. This paper presents a survey aiming at capturing some of these concerns in a specific specialization of teachers, the Teachers of Informatics, serving either in Primary or in Secondary Education.

Exploring the views of teachers regarding the evaluation of their work has been made in the past through various surveys (e.g. Maggopoulos, 2005); it is useful because it sheds light on many aspects such as, the degree of acceptance of the evaluation system by teachers, the points in which teachers differentiate with respect to the elements of the evaluation system, and the emergence of a mindset where evaluation constitutes a shared responsibility of all the people involved in the educational system.

Description of the survey

Purpose and Objectives

This survey concerned and was designed to investigate and study the views of IT teachers not only in general but also more specifically, in relation to their assessment by P.D. 152/2013. Survey objectives are:

- a) Study the degree of agreement among IT teachers regarding the involvement of certain bodies in teacher evaluation.
- b) Study the views of IT teachers with respect to the eligibility of specific methods-techniques for evaluating the work of teachers.
- c) Study the views of IT teachers regarding the ways of utilizing the results of teacher evaluation.
- d) Study the views of IT teachers regarding the need of 'bottom-up' evaluation, i.e. teachers to evaluate their evaluators.

Sample

The population of the survey was 141 IT teachers, serving either as permanent or temporary teachers, of Primary and Secondary Education, working in various schools around the country (pilot sample of 33 in Primary Education and 108 in Secondary Education). The IT teachers have some special features within the educational area: they are usually young, sometimes with technocratic perception of the educational process and, in many cases, with postgraduate studies. The survey was conducted in June 2014. It should be noted that the present survey did not follow any particular form of sampling. Therefore, the sample is not necessarily a representative one and the results of the survey will relate only to teachers of this sample.

Procedure - Survey tools

Due to the nature of the problem and the purpose of the survey, an online questionnaire was used as a data collection tool. It has all the characteristics of a printed questionnaire, given that it is usually designed on paper and then transferred to the computer through a web application. The sample of IT teachers received a link to the questionnaire (URL) by email.

Most closed-type questions used the five-grade Likert scale so that the IT teachers could indicate their level of agreement for each of the statements under question. Typically, the Likert scale was expressed as follows: a) strongly agree, very important, yes, very =

5, b) agree quite, quite important, yes, quite = 4, c) neither agree nor disagree, moderate importance, yes, moderate = 3 d) I disagree quite a lot, little important, not a little = 2, e) strongly disagree, not at all important, no, at all = 1.

The IT teachers were given a 15-day period to respond to the questionnaire. After that period has elapsed, the data, that were gathered and stored in the Internet using Google Docs, were downloaded in spreadsheet format (Excel) and stored on the local computer. At this point, content analysis and categorization of responses to each of the open questions of the methodological tool of the survey was conducted. The next step was the coding of all the responses in all questions - open and closed - before the survey data were finally entered in a PC using the SPSS software so that they can undergo the appropriate statistical processing.

Results

For sake of readability of the tables, note that avg = 4.44 means that the sample of teachers agreed enough (to very) to the interrogated element or felt that it was enough (to very) important. Similarly, an average value of 2.12 denotes that the teachers of the sample disagreed enough with the test item or considered it as of little importance. In terms of inferential statistics, in order to test the existence of relevance between the categorical variable "level in which the teacher serves" (with categories 1 = Primary Education/ 2 = Secondary Education) and another categorical variable, like e.g. "Can he object" (with categories 1 = yes and 2 = no), the statistical criterion X² was applied.

To test the relationship between a categorical variable with two categories such as: "level in which the teacher serves" (with categories 1 = Primary Education / 2 = Secondary Education) and a qualitative variable the t-test for independent samples was applied. Whenever testing of the homogeneity of dispersions of the qualitative variable (held by Levene's test) showed heterogeneity of standard deviations, we resorted to an adjusted value of t-test for unequal dispersions.

Finally, it should be noted that in all cases of statistical checking, we adopted the $p = .05$ as a minimum level of statistical significance. In case that a statistically significant difference was spotted, we indicate the exact value in bold fonts in the relevant table (cf. tables below.)

The following table summarizes, in descending order of the total average value, the results obtained from the statistical analysis of the responses with respect to the question on the bodies that should undertake the teacher evaluation

Table 1: Averages and standard deviations of the responses of IT teachers of Primary and Secondary Education with respect to the bodies that should assess the work of teachers and statistical significance check of differences of averages

STATEMENTS	PRIMARY EDUCATION		SECONDARY EDUCATION		TOTAL		STATISTICAL SIGNIFICANCE TESTING	
	avg.	s.d.	avg.	s.d.	avg.	s.d.	t	p
The teacher himself	4,33	,802	4,27	1,029	4,28	,982	,319	.750
The School Advisor	4,03	1,048	3,72	1,053	3,79	1,056	1,436	.153
The students	3,13	1,432	3,58	1,216	3,48	1,276	-1,761	.081
The School Director	3,45	1,338	3,24	1,261	3,29	1,277	,819	.414
The teachers' association	2,47	1,196	3,01	1,337	2,89	1,323	-2,011	.046
The parents	2,19	1,223	2,34	1,285	2,31	1,269	-,564	.574

The results obtained from the statistical analysis of the responses of the teachers to the question regarding methods-techniques for the evaluation of the work of teachers, in descending order on the total average value, are summarized in Table 2.

Table 2: Averages and standard deviations of the responses of IT teachers of Primary and Secondary Education about methods-techniques that they think as appropriate to evaluate the work of teachers and statistical significance check of differences of averages

STATEMENTS	PRIMARY EDUCATION		SECONDARY EDUCATION		TOTAL		STATISTICAL SIGNIFICANCE TESTING	
	avg.	s.d.	avg.	s.d.	avg.	s.d.	t	p
Talk with the School Advisor	4,03	1,080	4,01	1,093	4,01	1,086	,104	.917
Descriptive report by the teacher himself*	3,80	,961	3,61	1,227	3,65	1,173	,909	.367
CV and personal documentation of educational activities	3,10	1,269	3,30	1,287	3,26	1,282	-,766	.445
Descriptive report by the School Advisor	3,47	1,164	3,14	1,128	3,22	1,141	1,435	.154
Questionnaire for the students	2,81	1,203	3,33	1,155	3,21	1,182	-2,209	.029
Interview by the School Advisor	3,37	1,159	3,14	1,205	3,19	1,195	,929	.354
Classroom observation by the School Advisor	3,48	1,299	3,08	1,311	3,17	1,314	1,473	.143
Official folder of the teacher	3,10	1,205	3,14	1,251	3,13	1,237	-,132	.895
Learning outcomes (e.g.	2,58	1,385	2,76	1,239	2,72	1,270	-,698	.486

tests of students)								
Descriptive report by the Director	2,84	1,344	2,63	1,352	2,68	1,348	,748	.455
Descriptive report by colleagues	2,22	1,431	2,68	1,367	2,57	1,390	-1,657	.100
Classroom observation by colleague	2,32	1,400	2,60	1,355	2,54	1,365	-,985	.326
Questionnaire for parents	1,97	,983	2,28	1,198	2,21	1,158	-1,471	.147
Classroom observation by the Director	2,59	1,188	2,03	1,156	2,16	1,183	2,418	.017

The results obtained from the statistical analysis of the responses of the sampled teachers to the question about the ways we should utilize the results of teacher evaluation, in descending order on the total average value, are summarized in the following table:

Table 3: Averages and standard deviations of the responses of IT teachers in Primary and Secondary Schools concerning the ways we should utilize the results of teacher evaluation and statistical significance testing of differences of averages

STATEMENTS	PRIMARY EDUCATION		SECONDARY EDUCATION		TOTAL		STATISTICAL SIGNIFICANCE TESTING	
	avg.	s.d.	avg.	s.d.	avg.	s.d.	t	p
Direct link of assessment with educational activities, focused on specific needs of teachers	4,65	,551	4,50	,705	4,53	,675	1,089	.278
Direct feedback from experienced teacher trainers	4,48	,724	4,36	,770	4,39	,759	,770	.442
Self-improvement of teachers	4,29	,902	4,28	,892	4,28	,891	,040	.968
Institutional ethical recognition of outstanding teachers	3,84	1,098	4,06	1,031	4,01	1,046	-1,018	.311
Promotion in a higher grade of the teachers	3,50	1,408	3,13	1,577	3,21	1,545	1,163	.247
Permanent appointment of the teachers	3,17	1,560	3,20	1,515	3,19	1,519	-,080	.936
Economic	3,16	1,530	2,99	1,638	3,03	1,610	,518	.605

development of teachers								
Occupation of a higher position as an executive	2,86	1,356	3,03	1,334	2,99	1,335	-,593	.555
Transfer of teachers in management positions	2,93	1,412	2,76	1,274	2,80	1,301	,630	.530
Availability-redundancy of inadequate education	1,73	1,112	1,74	1,124	1,74	1,117	-,011	.991

Also, all (100%) of the IT teachers in our sample, agree that the teacher should reserve the right to object if the outcome of the assessment does not satisfy them.

Finally, the results obtained from the statistical analysis of the responses of the sampled teachers on the question about the need of "bottom-up" evaluation, are summarized in the following table:

Table 4: Frequencies and percentages of the answers of IT teachers of Primary and Secondary Education, regarding 'bottom-up' evaluation

		Should there be a 'bottom-up' evaluation?		Total
		Yes	No	
Primary Education	Frequency	32	1	33
	Percentage	97,0%	3,0%	100,0%
Secondary Education	Frequency	103	5	108
	Percentage	95,4%	4,6%	100,0%
Total	Frequency	135	6	141
	Percentage	95,7%	4,3%	100,0%

Considering the significance of the Pearson Chi-Square (χ^2) we see that is equal to .690, which is greater than .05. Therefore, the difference between the answers of teachers of Primary Education, compared to those of Secondary Education are not statistically significant.

As can be seen in Table 4, almost all teachers of the sample believe that there should be a 'bottom-up' evaluation, i.e. the "evaluated" should assess their hierarchically superior.

Conclusions

In line with its objectives, the survey presented in this paper tried to answer research questions that are dealing with the differentiation among the views of IT teachers of Primary and Secondary Education regarding:

- a) the involvement of certain bodies in the evaluation of teachers,
- b) the degree of suitability of certain methods-techniques for evaluating the work of teachers,
- c) the way to utilize the results of teacher evaluation,
- d) the need for a 'bottom-up' assessment.

It should be noted that this is a pilot recording of the views of IT teachers therefore, any conclusions drawn from these results cannot be generalized.

More specifically, with respect to work assessment bodies, the IT teachers value themselves as the most important evaluator (self-assessment), which is fully in line with similar surveys of the past (Maggopoulos, 2005). Out of the external evaluators, they value the School Advisor as the most important, followed by their students and the School Director. Many previous studies in Greece and Cyprus confirm that these external evaluators are accepted by teachers (Pasiardis 1994, Psacharopoulos, 2003 and Maggopoulos, 2005), but on an equal footing, whereas in the present investigation the School Advisor seems to be more acceptable than the Director of the school. In general, for all the questions that posed a comparison between the institutions of the School Advisor and the School Director, teachers seemed to be more favorable towards the School Advisor. Furthermore, according to the teachers of the sample, the evaluation techniques that involved the participation of the School Advisor were more acceptable than those in which the Director of the school was involved. Out of these evaluation methods-techniques, teachers prefer the discussion and the narrative report to the interview or the observation, a result which is in accordance to the small percentage of acceptance regarding the use of the numerical rating scale (being either centigrade scale or twenty-grade scale or ten-grade scale).

With respect to the ways of exploiting the results of teacher evaluation, positive activities towards to teacher are more favored, such as "Direct feedback to teachers by experienced trainers", "Self-improvement of teachers" and "Established moral recognition of the excellent teachers" with a fairly high degree of agreement by the teachers of the sample. Instead, teachers are hesitant to any exploitation of the results in ways that can change their employment status (such as, "Promotion in a higher grade of the teachers", "Permanent appointment of the teachers", "Increase of salary", "Occupation of a higher position as an executive" and "Transfer of teachers in management positions".) Similar results were obtained in studies of Charakopoulos (1998) and Pamouktsoglou (2001). Also, as expected, they explicitly reject availability/redundancy as a way of exploiting the evaluation.

Most teachers, based on the proposals they submitted through a relevant open question, consider that the evaluation should not have a punitive character but it should rather be directly linked to supporting the teacher in his work, aiming at performance improvement and increased teacher motivation. So, it is important for teachers not only to feel but also to be convinced that the evaluation is aiming at their personal development and, furthermore, at improving the quality of the educational system instead of their economic degradation or even the dismissal of some teachers.

Finally, it should be noted that there were not so many statistically significant deviations in responses between IT teachers of Primary and IT teachers of Secondary Education, except for some points in two of the survey questions. More specifically, in the question regarding teacher assessment bodies, a statistically significant deviation appeared only for the case of using the Board of Teachers of the school as an assessment body. IT teachers of Secondary Education agree more with the participation of the Board of Teachers in the evaluation

process, compared to the teachers of the Primary Education, which probably indicates that the Boards of Teachers in Secondary Education schools enjoy higher esteem from their members than the Primary Education ones.

Additionally, statistically significant differences appeared in two cases of methods - technics of teacher evaluation. The first is the student questionnaire, which teachers of Primary Education do not value as appropriate as their colleagues of Secondary Education, possibly because they assume that students in the Primary Education are not quite mature to respond to such a questionnaire. The second is the classroom observations by the School Director, which teachers of Primary Education consider more appropriate as a method than their colleagues of Secondary Education, possibly because the Director in a Primary Education school knows better the teachers of the school he is in charge of, because of the smaller number of teachers compared to Secondary Education schools.

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