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EDUCATION IN UNIVERSITIES - TEACHER TRAINING AS A QUALITY FACTOR

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Abstract:
In recent decades, the quality of education has been a matter of priority for educational systems in the European as well as in the wider international environment. It is a common feeling that the vast majority of teachers consider that they were not adequately and properly prepared during their studies in Hellenic Universities to fully perform the work of a teacher. In Hellenic universities, there are no organized training programs at any stage of the teachers' careers, except for the Pedagogical Schools where education is their primary subject. In this work, the identification and investigation of the educational needs of the teachers (scientific and laboratory assistants) of the Department of Mechanical Engineering of Technological Educational Institution of Patras, on a cognitive-academic level, a pedagogical level and a level of use - integration of new technologies in teaching, aiming to provide quality education. Also, the intention and motivations of the teachers of the department for training at all levels with the aim of their professional development are investigated. From the findings of the research, it emerged that there is a high desire for the training of young age mainly teachers with little professional and teaching experience, in a subject mainly cognitive and pedagogical and with training hours up to 50 hours, to acquire new knowledge and skills.

Keywords: quality in education, teacher training in universities

1. Introduction

The quality of education is shaped by a series of parameters, which mutually influence each other and promote the goals and aspirations of each educational system. According to relevant research by the Quality of Education Department of the Pedagogical Institute in Greece which was implemented in 2007 and aimed at forming a framework and monitoring the progress of the educational system and the improvement of its quality, through the parameters that affect quality, the training of teachers is a quality parameter

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of the Education system included in the category of support and feedback mechanisms (Pedagogical Institute, 2008, p. 2).

According to the basic assumption of the research study of the Pedagogical Institute, quality in education can be considered to be determined by a set of parameters that characterize it and that interact to ultimately shape its image. The initial parameters depend on individual factors, which demonstrates the complexity and stochastic nature of the problem.

According to Papanaum (2008, p. 54), school becomes better with the contribution of teacher training. The contribution becomes effective if it fulfills conditions concerning the philosophy, design and its connection with the policy of the teaching profession, emanating from specific principles, subject to an improvement policy and organized-planned based on modern scientific data.

The changes that occur in education during the teacher's service require training. The basic training of teachers in Greece is considered to a certain extent insufficient for the development of teaching skills and thus with training, it is possible to fill its gaps. In some cases, such as for students of technological specialties, training in pedagogical or other educational matters is completely non-existent.

Some form of training is provided for primary and secondary education teachers, while pedagogical and psychological knowledge is not necessary for higher education teachers. Thus, nothing else is necessary for their evaluation other than their professional experience which can be partly replaced by teaching experience, the possession of a PhD or a master's degree, as well as their research activity and publications in reputable journals Greek and foreign magazines.

2. Purpose and Research Questions

The main purpose of the research effort of the present work was to identify and explore the training needs of teachers (scientific and laboratory assistants) of the Department of Mechanical Engineering of Technological Educational Institution of Patras,

The specific objectives of this research were the recording of:

1) the level of studies both at the cognitive level and at the skill level,
2) the training needs,
3) the intention to participate in an educational activity with cognitive content, pedagogical content and with the content integrating new technologies into the educational process,
4) the opinion on the duration and subject of the training,
5) the reason for participation in future training.

The research questions related to the objectives were:

1) Is there training needed from the teachers in the department of Mechanical Engineering of Technological Educational Institution of Patras?
2) Do teachers in the department of Mechanical Engineering of Technological Educational Institution of Patras wish to participate in future training activities?

3) Do teachers in the department of Mechanical Engineering of Technological Educational Institution of Patras interested in participating in programs with issues related to:
   a) pedagogical content;
   b) cognitive - academic subject;
   c) new technologies.
4) What are the reasons for teachers wanting to participate in future training activities?
   a) confidence;
   b) greater efficiency;
   c) renewal of knowledge – skills.

3. Methodology

The research is characterized as descriptive. An overview of data collection was performed over a specific period of time, describing the nature of the existing conditions (Cohen & Manion, 1994). The research aimed to investigate the training needs of teachers in the Department of Mechanical Engineering of Technological Educational Institution of Patras.

3.1 Sample

The population of the research was the teachers in the department of Mechanical Engineering of Technological Educational Institution of Patras. The sample consisted of 77 teachers, and the time period for conducting the survey was the period 1-11 February 2011.

3.2 Means of Data Collection - Procedure

The quantitative approach was chosen in this research. The aim was to investigate with a systematic study of empirical reality, based on data collected directly by the teachers themselves following an exploratory-descriptive statistic, which is appropriate for such research issues (Paraskevopoulos, 1993, p. 132).

Using the quantitative approach by selecting the appropriate sample we have the advantage of generalizing the conclusions. Research data can lead to statistical analyzes (Bird, Hammersley, Gomm, Woods, 1999, p. 337).

During the research, the questionnaire was chosen as a data collection tool. Questionnaire research is a means of detection, which is offered for studies that are easily measurable and comparable over time (Bell, 2001; Kyriazi, 1999).

It took 10 minutes to complete the anonymous questionnaire, which was considered the best option for the implementation of the research and was able to answer all the questions. It was also considered necessary to use a five-point number of determinants (Likert scale) to evaluate a concept, minimizing the effects and thus enhancing the validity and reliability of the assay (Vergidis et al., 1998-99, pp. 270-275).

A properly configured anonymous questionnaire for electronic completion was used as a data collection tool, which was given to the teachers (university scientific and laboratory assistants).

The questionnaire contained 24 questions concerning:

- demographic characteristics,
- existing knowledge - skills of the research population,
- desire for training (cognitive, pedagogic and new technologies),
- reasons for wanting to participate in future training activities.

The SPSS statistical tool was used and the contingency tables were analyzed using the x^2 method. A correlation test was performed in relation to gender, age, management years, additional studies and the number of training programs they have attended on innovation and change.

The research data were collected by a question and followed by determining the relationship or correlation between different variables by presenting them in cross-tabulation tables using the x^2 method. Where the assumptions of the x^2 method were not met, a Fisher Exact Test was performed. When a marginal correlation of variables was found, further analysis was followed by Pearson's correlation index.

4. Results - Analysis and Processing of Research Data

4.1 Demographics

Teachers in the department of Mechanical Engineering of Technological Educational Institution of Patras who participated in the research consisted of 65 (84.42%) men and 12 (15.58%) women.

The age distribution showed that a large number of teachers (61%) are in the 31-40 age group, while a very small percentage (5.2%) are over 51 years old.

Teachers are all holders of a degree or diploma from a third-level institution, as this is required by the relevant announcement for taking up the teaching of a course. The research showed that the vast majority of them are holders of a university diploma (90.91%) and holders of a Bachelor's degree (9.09%). Also, 57.14% hold a master's degree and 59.74% hold a doctorate.

The professional experience of teachers shows a normal distribution with a peak at 5-10 years with a rate of 45.45%, while on the contrary the teaching experience at Technological Educational Institution of Patras an accumulation in the 0-5 years with a rate of 67.53% and the teaching experience in other Institutions an accumulation again in the 0-5 years with a rate of 84.4%.

Teachers of the Department of Mechanical Engineering who participated in the research have (100%) certified knowledge of English as a foreign language, 19.48% knowledge of French language, 33.77% knowledge of German language, 5.19% knowledge of Italian language and finally 5.19% knowledge of Spanish language.

Teachers of the Department of Mechanical Engineering have a great level as 36.40% of certified knowledge and Excellent knowledge of 54.5%. The high level of knowledge of a foreign language is 36.4% and the Excellent level of knowledge of a

foreign language is 54.5%. In the research, the entry for statistical processing was made with the highest level of one of the foreign languages known by the teachers.

The certified knowledge in new technologies with possession of a relevant degree or certification in accordance with the requirements of the Supreme Personnel Selection Council (S.P.S.C.) in Greece is 51.95%.

4.2 Educational Training of Teachers

The participation of teachers in training programs is 46.75%. The distribution of training participation by subject gave a percentage of 37.66% in a cognitive subject, a percentage of 9.09% in a pedagogical subject and a percentage of 33.77% in new technologies. The above percentages were for the entire sample of 77 teachers. It is also clarified that many teachers have participated in more than one course with different duration, which varies with regard to the population sample of 36 teachers who have seminar training for 50 hours 13.89%, for 50-100 hours 22.22% and for more than 100 hours 63.89%.

4.3 Teachers' Cognitive Level (Perception of Adequacy - Interest in Training)

The teachers declare that they are sufficient for a successful response to the educational work in a high percentage of 89.61%. The remaining 10.39% of teachers who declare insufficiently, attribute this by 1.30% to insufficient studies, by 9.09% to the obsolescence of knowledge - new data, by 5.19% to lack of time for training in the subject, by 7.79% to lack of motivation for continuous training and by 6.49% in lack of training seminars.

The above percentages of justification of inadequacy, according to the declaration of the teachers themselves, are based on the entire sample population (77 teachers), as the possibility of a quota for a subset of the population (8 persons with a declaration of their inadequacy) is not given by SPSS. Regarding their interest in attending a seminar in a subject, it is high at 77.92% considering their declaration of proficiency in a subject which was 89.61%.

4.4 Pedagogical Level of Teachers (Adequacy - Interest in Training)

Teachers in the department of Mechanical Engineering of Technological Educational Institution of Patras have pedagogical competence at a low rate of 22.08%. In particular, only 17 teachers in a population sample of 77 teachers were found to have pedagogical competence (10.39% degree in Teaching faculty, 9.09% degree in Pedagogical Studies of the Pedagogical Technical School (P.S.T.S.) of S.E.L.E.T.E., 2.60% postgraduate studies in Pedagogy).

Of the 57 (74.03%) teachers who stated that they would be interested in attending a training seminar with a pedagogical subject, they were asked to specify the content of the seminar that would interest them. Teachers had the right to multiple choice. High interest was observed for a training course on educational teaching techniques 77.19%, adult education 71.93%, medium interest in effective learning, supervisory teaching tools and evaluation of educational work and a small interest in learning theories, unit design and the role of the adult trainer.

4.5 Level of Knowledge in New Technologies of Teachers (Adequacy and Use - Interest in Training)

Certified knowledge in new technologies with possession of a relevant degree or certification in accordance with the requirements of the Supreme Personnel Selection Council (S.P.S.C.) was for teachers at a rate of 51.95%.

Teachers who use new technologies minimum or not at all exclusively identified the lack of a medium (although there was a multiple-choice option) as the main reason for not using the new technology. As teachers' previous opinion is that new technologies are effective both in theory and in the laboratory, the percentage of 66.23% interest in attending a training seminar on the use of computers as a supervisory teaching tool seems reasonable.

4.6 Educational Choices of Teachers (Subject - Duration)

A high interest (75.32%) for training in a pedagogical subject and relatively high interest (59.74%) for training in a cognitive subject and for training in new technologies (68.83%) from teachers was observed. Remarkable is that a very small number (6.49%) of teachers show no interest in training. Regarding the distribution of the desired length of time attending a training seminar, an interest of 45.45% was observed for short seminars of 25 hours, 32.47% for seminars lasting 50 hours and 15.58% for seminars lasting more than 50 hours.

4.7 Reasons for Participating in Future Training

The distribution of the reasons for teachers' interest in training showed a high interest (72.73%) for renewing knowledge and skills and a medium interest (58.44%) for greater attribution.

4.8. Research Questions

1st Research Question (Training need)

Based on the data stated by the teachers, it emerged from the research that 10.39% have declared non-cognitive adequacy, 22.08% have pedagogical adequacy and 51.95% have certified knowledge of new technologies, which means that there is a training need.

2nd Research Question (Interesting in participating in training with issues related to the cognitive subject, pedagogical content and new technologies)

Based on the data obtained from the research, there is an interest in attending training of 77.92% in an academic subject, 74.03% in a pedagogical subject, and 66.23% in new technologies.

3nd Research Question (Reasons for participating in future training)

Based on the data stated by the teachers, it emerged from the research that the reasons for wanting to participate in future training are 72.73% for renewing knowledge and skills, 58.44% for greater attribution and 9.09% for self-confidence.

5. Correlations

Regarding the correlation of the variables which included the correlation of:

- desire for training in a subject in relation to gender, age, professional experience, 3rd/secondary teaching experience, possession of a master's degree, possession of a doctorate, perception of cognitive competence,
- desire for training in a pedagogical subject in relation to gender, age, professional experience, 3rd/second teaching experience, possession of a master's degree, possession of a doctorate, pedagogical competence,
- desire for training in new technologies in relation to gender, age, professional experience, 3/th teaching experience, holding a master's degree, holding a doctorate, proficiency in new technologies),
- desired hours of training in relation to gender, age, professional experience, teaching experience, master's degree, and doctorate.

The statistical processing of the data, regarding the correlations, for most of them, did not give any statistical significance.

However, the following are worth mentioning as:

1) A high interest in the desire to train in a pedagogical subject was observed, and especially for teachers in the age group of 21-30 years, it was found to be 100% universal. There was a statistically significant correlation between "age" and interest in attending a seminar on a pedagogical subject (x^2= 8.42, df=3, p=0.038). By testing using the Pearson correlation coefficient, the correlation between the two variables is +0.261, and the two-tailed significance level is greater than 0.001 so the correlation is insignificant (r=0.61, df=75, p =0.022>0.001).
2) A medium desire for training in new technologies was observed by teachers with teaching experience in other Universities up to 10 years and zero desire 0% by teachers with teaching experience in other Universities over 10 years. According to the results, there was a marginal correlation between "teaching experience at T.E.I. Patras" and interest in attending a seminar on new technologies (x^2=5.699, df=2, p=0.058). By testing using the Pearson correlation coefficient, the correlation between the two variables is +0.148, and the two-tailed significance level is greater than 0.001 so the correlation is insignificant (r=0.14, df= 75, p=0.199>0.001).
3) It was observed for teachers with 0-5 years of experience, a balanced - around 30% - desire for a seminar regardless of hours. For the other two seniority classes 5-10 years and 10 years and over, a relationship was observed inversely proportional to the desired hours of training (increase in seniority - decrease in desired hours of training). It is recalled that 72 (93.5%) teachers out of 77, expressed their opinion about the duration. However, there was a strong significant correlation between "professional experience" and desired training hours (x^2= 10.743, df=4, p=0.030).
4) A very high desire of 88.6% of teachers with a doctorate, for training up to 50 hours, was observed, while a high desire of 75% of teachers without a doctorate, for the training of up to 50 hours was observed. It is recalled that 72 (93.5%) teachers out of 77, expressed their opinion about the duration. In the attempt to

correlate to what extent "teaching experience in other Universities affects the desired hours of training, a borderline significant correlation was observed (x^2= 5.339, df=2, p=0.069). By testing using the Pearson correlation coefficient, the correlation between the two variables is -0.267, and the two-tailed significance level is greater than 0.001 so the correlation is insignificant (r=0.14, df=75, p=0.019>0.001).

6. Recommendations

The present study can be the basis for further research as educational training is a field that has an educational interest and can give through the research useful conclusions for education in Greece. In addition, the promotion of educational training is a real necessity not only in the operation of the Universities but in education as well.

7. Discussion

Improving teacher training is a key priority for improving the quality and effectiveness of education. The dimensions of teachers' professional development are linked to lifelong training, the necessity of which is constantly reinforced by the continuous changes in the environment of learning societies. The response to knowledge and learning societies throughout and in every area of life forms a new role of the teacher that includes active participation and cultivating skills for autonomous - self-directed learning.

Improving the teacher's training can upgrade his new role for him and he is seen as a lifelong learner and reflective professional (Schoen, 1983), who enters the profession with certain initial basic knowledge and subsequently acquires new knowledge (Cochran-Smyth & Lytle, 2001; Lieberman, 1994). These form a framework where the investigation of the quality of training passes indicatively through the investigation of needs, the profile of university teachers, the system of communication and diffusion of educational activities, the organization of networks for training, the utilization of new technologies and distance learning education.

From the findings of the research, it appears that the teachers of the Mechanical Engineering Department of Technological Educational Institution of Patras know their training needs and wish to prioritize them for more effective training. From the cross-examination of the questions, it emerged that:

- there is no differentiation of educational needs between men and women,
- there is a high desire for training mainly young teachers with little professional and teaching experience, with a mainly cognitive and pedagogical subject and training hours up to 50 hours, to acquire new knowledge and skills.

The desire to participate of teachers in future educational activities is thus perceived. Of particular note are:

- the universal interest of the age group (21-30 years) for training in both cognitive and pedagogical subjects,

- the apparent receptivity of around (90%) to the training of teachers with little professional experience in all subjects,
- receptivity (74-80%) to teacher training with up to 10 years of teaching experience,
- the receptivity (74-77.9%) to the training of teachers with a master's degree or doctorate in a cognitive and pedagogical subject and (66.23%) to new technologies,
- the high desire for training (78.3%) of teachers who do not have pedagogical competence.

Taking into account the correlations, although statistical significance did not emerge in most of them, we have regarding:

a. Desire for training in a *cognitive-academic subject*

- 100% universal interest of the age group (21-30 years),
- 90% desire of teachers with little professional experience (0-5 years),
- 80% desire teachers with up to 10 years of teaching experience,
- 77.9% wish to be trained regardless of holding a master's or doctorate,
- 77.9% desire to be trained regardless of perceived competence in a subject.

b. Desire for training in a *pedagogical subject*

- 100% universal interest of the age group (21-30 years),
- Declining desire from (90.5%) with increasing years of professional experience,
- 74.0% wish for training regardless of previous teaching experience,
- 74.0% wish to be trained regardless of having a master's or doctorate,
- 78.3% wish to be trained by teachers who do not have pedagogical competence.

c. Desire for training in *new technologies*

- 81.0% desire of teachers with short professional experience and a decreasing desire depending on the increase of professional experience,
- 0.0% desire of teachers with teaching experience in other Universities of more than 10 years,
- 66.23% wish to be trained regardless of holding a master's or doctorate,
- 59.5% desire teachers with insufficient knowledge-use of new technologies and
- 72.5% desire teachers with proficiency in knowledge-use of new technologies.

Regarding the desired hours of training, all correlations converge in a desire to train for up to 50 hours.

Referring to the working group European Commission (2003b) and European Commission (2004b), the new profile of the teacher is proposed according to which teachers are invited to contribute to the promotion of new forms and products of learning, reforming the teaching and learning process, integrating new technologies but also acting as scientific professionals. The development of this profile is approached by promoting lifelong education, and professional development policies for teachers, but also institutionalizing quality assurance and certification systems. The development of forms of cooperation as well as the participation of the wider educational community in the formulation of policies for the planning and evaluation of teacher training are considered particularly important.

Conflict of Interest Statement
The author declares no conflicts of interest.

About the Author
Gerasimos Antypas holds a diploma in Chemical Engineering and Bachelor's Degree in Environment Technology. He also has a Master's degree in educational studies, a Master's degree in education management and a specialization in counseling and vocational guidance. He serves as a Secondary school educator of Technology. He has also served in the position of principal at the Second Chance School of Patras and at the 2nd Second Chance School of Prison St. Stefan in the region of West Greece. He is interested in teacher training and especially in adult education, as he holds a certification for adult training in new technologies, quality management, safety and hygiene and environmental issues. His research work refers to environment research, in school administration, and mainly to teacher training in innovation practices in education. He has participated in Summer Schools in the area of the environment. He also has published articles in conference proceedings (30) and international & Greek journals (14) on the above topics.

References

Bell, J. (2001). Methodological Design of Pedagogical and Social Research: A Guide for Students and PhD Candidates, Athens: Gutenberg.

Bird, M., Hammersley, M., Gomm, R. & Woods, P. (1999). Educational research in practice (translated by Frank E.). Patras: Hellenic Open University.

Cochran-Smyt, M., Lytle, S.L. (2001). Beyond certainly: taking an inquiry stance on practice. New York: Teachers College Press.

Cohen, L. & Manion, L. (1994). *Educational Research Methodology*. (Translation: Ch. Mitsopoulou, M. Filopoulou). Athens: Metaichmio.

European Commission (2003b). *Improving the Education of Teachers and Trainers*. Progress Report, Working Group A, November 2003.

European Commission (2004b). *Improving the Education of Teachers and Trainers*. Progress Report, Working Group A, September 2004.

Kyriazi, N. (1999). Sociological Research: A Critical Review of Methods and Techniques, Athens, Ellinika Grammata.

Lieberman, A. (1994). Teacher development: commitment and challenge. In Grimmett, P.P. Neufeld, j. (Eds), Teacher development and the struggle of authenticity: Professional growth and restructuring in the context of change. New York: Teachers College Press.

Paraskevopoulos, I. (1993). Scientific research methodology, vol. 2. Athens Ed. - Self-publishing, p. 132.

Papanaum, Z. (2008). For a better school: The role of teacher training. Education and quality in the Greek school. Athens p. 54

Pedagogical Institute (2008). Education and quality in the Greek school: General research data and first findings. Edition of the Quality of Education section. Athens p. 2.

Schoen, D. (1983). The reflective practitioner: how professionals think in action. New York: Basic Books.

Vergidis, D., Lionarakis, A., Lykourgiotis, A., Makrakis, V. & Matralis, Ch. (1998 - 1999). Open and distance education. Institutions and functions, (volume A). Patras: Hellenic Open University, pp. 270-275.