STATEMENT

by Vladimira Stefanova Angelova, PhD –

Professor at Plovdiv University "Paisii Hilendarski"

of scientific works presented in relation with participation in a contest

for occupying the academic position of "**professor**"

at Plovdiv University "Paisii Hilendarski"

under higher education area: **1. Pedagogical Sciences,**

professional field: **1.3. Pedagogy of Teaching …**

(Methodology of Teaching Informatics and Information Technologies)

Associate professor Todorka Jivkova Terzieva, PhD from Plovdiv University "Paisii Hilendarski" is the only candidate that took part in the contest for occupying the academic position of "professor" announced in state gazette issue № 99 of 20.11.2020 and on the Web site of Plovdiv University "Paisii Hilendarski" for the needs of the Department of *Software Technologies* of the Faculty of Mathematics and Informatics.

1. Summary of the candidate's procedure for the contest

With order № R 33 – 637 of 19.02.2021 of the Rector of Plovdiv University 'Paisii Hilendarski'(PU) I have been appointed as a member of the scientific jury in a contest for occupying the academic position of "**professor**" at PU under higher education area: 1. Pedagogical Sciences, professional field: 1.3. Pedagogy of Teaching… (Methodology of Teaching Informatics and Information Technologies) announced for the needs of the Department of *Software Technologies* of the Faculty of Mathematics and Informatics (FMI).

Only **one candidate** has submitted documents for participation in the contest announced: **associate professor Todorka Jivkova Terzieva, PhD** from PU "Paisii Hilendarski".

The set of materials submitted by associate professor Todorka Jivkova Terzieva, PhD in paper and in electronic form complies with the Regulations on the Academic Staff Development of PU

At the first meeting, held on 26.02.2021, the scientific jury accepted the documents for the contest. At that meeting I was appointed as a reviewer. After reviewing the submitted documents I did not find deviations from the procedure.

The set of materials submitted by associate professor Todorka Jivkova Terzieva, PhD is accurately prepared and organized and allows objective and detailed assessment of the candidate in the contest for acquiring the academic position of "professor".

Associate professor Todorka Jivkova Terzieva, PhD participated in the contest with 44 scientific papers: 1 monograph, 1 book, 1 textbook and 41 scientific papers of which 16 were published abroad. This scientific production was not submitted for acquiring the academic position of "associate professor" or the scientific position of "doctor".

All the scientific papers comply with the profile of the contest, meet the requirements and can be reviewed.

Biographical information about the candidate

In 1984 associate professor Todorka Jivkova Terzieva, PhD received the qualification of EIM programmer as a result of her secondary education at the exemplary Mathematical High School "Acad. Kiril Popov" in Plovdiv. In 1989 she graduated from the Technical University in Sofia with a Master's degree in "Computer Sciences" and qualification *engineer in electronics and automation*. As a result of her postgraduate specialization in FMI at PU she acquired the qualification of teacher of Informatics and Information Technologies in 2001.

Her professional career began in 2001 at the Faculty of Mathematics and Informatics at Plovdiv University, where she still works. He consecutively held the academic positions: assistant, senior assistant, chief assistant and associate professor of *Methodology of Teaching Informatics and Information Technologies*.

In 2012 she obtained the educational and scientific degree "Doctor" in *Methodology of Teaching Mathematics, Informatics and Information Technologies*.

The main activities and responsibilities of associate professor Todorka Jivkova Terzieva, PhD are: teaching, research and administrative duties.

Since 2016 until now he has been the Head of the Department of Software Technologies in FMI, PU. She is a member of the Faculty Commissions for Science, Accreditation and Ethics. She is a member of the Board of the National Research Program "Information and Communication Technologies in Science, Education and Security" (2018 - 2021).

The main scientific interests of the candidate are in the field of Methodology of teaching in informatics and information technologies. Her professional competence and qualification are in accordance with the profile of the announced contest for professor.

2. **Summary characteristic of candidate's activities**

Assessment of the candidate's pedagogical and educational activity

The pedagogical and educational activity of associate professor Todorka Terzieva, PhD is over 20 year long. She has been teaching predominantly in the field of informatics and the methodology of teaching informatics and information technologies. The courses that she developed both in Bachelor's and Master's degree programmes are of different categories: compulsory, elective and optional. 12 lecture courses have been developed by the candidate, 1

textbook and 1 textbook for students have been published, 13 electronic textbooks with materials for students have been published on the Internet.

Associate professor Todorka Terzieva, PhD actively participated in the creation of the Bachelor's degree programme "Software Technologies and Design" and the Master's degree programme "Technology for Software Production and Implementation". She developed new curricula for some of the courses in these programmes. In addition, she has organized and administered the periodic updating of curricula of these courses the responsibility of which belongs to the department headed by her.

She rendered methodological assistance to 20 graduates from Bachelor's and Master's degree programmes

She provided methodological guidance to 14 PhD students who investigate modern educational problems. Two of them successfully defended their thesis papers.

The assessment of the pedagogical and educational activity of associate professor Todorka Terzieva, PhD is high. She applies the most modern achievements of information technologies in her educational activities and uses contemporary instructional methods and technical means.

Assessment of the candidate's scientific-research activity

The presented scientific production of Assoc. Prof. Dr. Todorka Terzieva, PhD complies with the topic of the contest. The scientific works deal with current problems of the methodology of teaching informatics and information technologies.

The scientific production in the academic development of Assoc. Prof. T. Terzieva, PhD are 98. In the current contest for the academic position "Professor" are included 44 scientific works, which were published after receiving the scientific degree "Doctor" and after the acquisition of the academic position "Associate Professor".

The content and the developed ideas in the proposed scientific papers can be classified, according to the author's proposal, in the following thematic areas:

- Modern educational tools for teaching in an electronic environment - development and implementation

The scientific contributions in this field can be assessed from the presented monograph [1] and the scientific works [2; 4; 5; 18; 21; 23; 25; 28; 40; 42]. The relevance and significance of the papers dedicated on modern education are indisputable.

The presented monograph [1], whose structure is professionally constructed, has a high theoretical and applied value. It presents pedagogical strategies for activating the cognitive activity of students through the application of innovative digital technologies.

The publications in this thematic area presented research in the development of: modern methodological and technological models of education; technological and didactic aspects of game-based learning; innovative approaches for educating children with special

educational needs; approaches to increase the effectiveness of training through the application of modern ICT.

- Development of a methodology for application of adaptive e-learning and a technological model for creating e-learning content

The scientific and applied contributions here are determined according to the presented publications [1; 6; 7; 8; 9; 10; 12; 14; 16; 17; 19; 20; 22; 24; 25; 31; 36].

The innovative didactic technology focused on the stages of development and implementation of adaptive e-learning is competently presented. A technological model and methodology for the implementation of this training with students from different programmes has been created and tested. Original and accurately developed teaching resources for adaptive testing and assessment are offered.

- Creation and implementation of a didactic model for the implementation of developmental training in informatics and IT

The scientific contributions in this area are reported on the basis of the analysis of the book [2] and the publications [15; 41; 44].

Book [2] presents a didactic model for the formation of algorithmic thinking and the implementation of developmental training of computer science students.

The main elements of the model are precisely presented, and the author's attention is focused on the study of activities related to the formation and development of skills for understanding and applying algorithms, skills for developing and modeling algorithms and skills for analyzing algorithms.

The main characteristics of the non-standard tasks in the teaching of informatics and information technologies in the secondary school are studied. An example of a non-standard problem with several different solutions is correctly described.

The formation of reflexive skills in students and the mastery of models for reflexive analysis and self-assessment have been studied.

The results of a study on the possibilities of computer educational games for the development of different cognitive skills of learners are presented.

- Didactic tools to increase students' motivation in training in informatics and information technology

The scientific and applied contributions in this field are evaluated according to the development of the second part of the monograph [1] and the scientific articles [11; 13; 26].

This part of the monograph presents an in-depth analysis of pedagogical strategies for increasing motivation through modern teaching methods.

The articles reflect pedagogical strategies for implementing an interdisciplinary approach in education. A prototype of an educational game has been developed and scenarios have been implemented to increase the interest of students.

- Computer and mathematical modeling applicable in solving problems from different fields

The scientific contributions in this field are determined according to the presented scientific articles [27; 29; 30; 32; 33; 34; 35; 37].

Dynamic models have been presented that are used for research in various fields - the spread of computer viruses, "debugging and test theory" and the application which they use especially for the recognition of "already known viruses". Epidemiological models have been studied that in some situations can be applied to the theory of the spread of computer viruses.

- Development and creation of a textbook for students. Developments related to the publication of electronic resources

The practical and applicable contributions in this group are evaluated on the basis of the presented university textbook [3] and the publications [8; 9; 19].

The textbook *Introduction to Web Programming* was developed professionally by the author. It is designed to train students from various programmes.

The possibilities for realization of e-learning of students are investigated.

I will note that the joint scientific publications of Assoc. Prof. Todorka Terzieva, PhD with accomplished scientists show that she is a sought-after partner for the development of joint research. The analysis of the research activity shows that it is extremely valuable.

The participation of Assoc. Prof. Todorka Terzieva, PhD in 16 research projects has been documented, 2 of which she was the head of. Her participation with over 30 reports in forums at national and international level is impressive.

Contributions and Citations

The presented analysis and my positive assessment of the quality of the materials submitted by Assoc. Prof. Todorka Terzieva, PhD for participation in this competition shows that there are indisputable indications for serious ***scientific and applied contribution*** in the field of teaching methodology in informatics and information technology.

The submitted scientific papers are ***personal achievement of the author***, and the co-authored papers have a clearly distinguished contribution. Based on the analysis of these works, I conclude that there is ***no plagiarism***.

The importance of the scientific production of Assoc. Prof. Todorka Terzieva, PhD can be judged by the numerous documented ***citations***, which means that her works are known among the scientific community. The candidate submitted a reference for 110 citations. Of these, 30 are in scientific journals, referenced and indexed in world-famous databases, 50 - in

monographs and collective volumes with scientific review, 30 - in non-refereed journals with scientific review.

The Regulations for implementation of the Law on the Development of the Academic Staff in the Republic of Bulgaria define the minimum national requirements related to the scientific activity of the candidates for acquiring the academic position "professor". Assoc. Prof. Todorka Terzieva, PhD not only fulfilled, but tripled these requirements. She also fulfilled all additional requirements of FMI at 'Paisii Hilendarski' University of Plovdiv.

3. Critical remarks and recommendations

I have no critical remarks and recommendations.

CONCLUSION

The documents and materials presented by associate professor Todorka Terzieva, PhD comply with all the requirements of the *Law on* the *Development of the Academic Staff* in the *Republic of Bulgaria*, the Regulations on its implementation, and the respective PU 'Paisii Hilendarski' Regulations for acquiring the academic position of 'professor'.

The candidate in the contest has presented a significant number of high-quality scientific papers published after the materials used for the acquisition of the scientific degree "Doctor" and those with which she participated in the contest for the academic position of "Associate Professor". The candidate's publications contain original scientific and applied contributions. The theoretical developments have practical applicability, as some of them are directly oriented to the instructional activity. The scientific and teaching qualification of Assoc. Prof. Todorka Terzieva, PhD is undeniable.

The high results achieved by the candidate in the teaching and research activities fully comply with the requirements for acquiring the academic position of "professor".

I will explicitly note that the candidate in the contest fulfills the minimum national requirements as well as the additional requirements of FMI at PU for acquiring the academic position "professor" in the professional field 1.3. Pedagogy of teaching ... I have no doubt about plagiarism in the publications submitted for review.

After reviewing the materials and scientific works presented in the contest, and after analyzing their significance and the scientific and applied contributions contained in them, I find it reasonable to give a well-deserved high evaluation and my **positive assessment** and recommend the Scientific Jury to prepare a report-proposal to the Faculty Council of the Faculty of Mathematics and Informatics to appoint associate professor Todorka Zhivkova Terzieva, PhD for the academic position "professor" at the University of Plovdiv "Paisii Hilendarski" in the professional field 1.3. Pedagogy of teaching in ... (Methodology of Teaching Informatics and Information Technologies).

22.03. 2021   Statement, prepared by:

                                                  Prof. Vladimira Angelova, PhD