

REVIEW

by Prof. Veska Ivanova Shivacheva, DSc - University „Prof. Dr. Assen Zlatarov ”- Burgas
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of the materials submitted for participation in the competition
for occupation of the academic position Associate Professor
at the Plovdiv University „Paisii Hilendarski“

in the area of higher education 1. Pedagogical sciences, professional field 1.3. Pedagogy of training
in... (Methodic of training in Chemistry and Environmental Protection)

In the competition for Associate Professor, announced in the State Gazette, issue. 40 /
14.05.2021 and on the website of the Plovdiv University „Paisii Hilendarski” for the needs of the
Department of General and Inorganic Chemistry with Methodic of training in Chemistry of the
Faculty of Chemistry, Ch. Assist. Prof. Antoaneta Atanasova Angelacheva, PhD and Ch. Assist. Prof.
Yordanka Petrova Stefanova, PhD, are candidates.

In this review I present an assessment of the materials of **Ch. Assist. Prof. Yordanka Petrova Stefanova, PhD**

1. General presentation of the procedure and the received materials

By order NP33-3163 of July 13, 2021, from the Rector of the University of Plovdiv „Paisii Hilendarski”, I was appointed as a member of the scientific jury of a competition for the Associate Professor academic position in the Higher Education area 1. Pedagogical sciences, professional field 1.3 Pedagogy of teaching of ... (Methodic of training in Chemistry and Environmental Protection), announced for the needs of the Department of General and Inorganic Chemistry with Methodic of training in Chemistry of the Faculty of Chemistry, The above mentioned two candidates have submitted documents for participation in the announced competition: Ch. Assistant Professor Antoaneta Atanasova Angelacheva, PhD - Paisii Hilendarski University of Plovdiv and Ch. Assistant Professor Yordanka Petrova Stefanova, PhD - Paisii Hilendarski University of Plovdiv.

The set of materials, presented by Ch. Assist. Prof. Yordanka Stefanova, PhD, is in accordance with the Rules for Development of the Academic Staff of Plovdiv University and includes the following documents:

- Autobiography;
- List of scientific papers (22 pcs.);
- Publications;
- Annotation of the materials. self-assessment of contributions;
- Documents and statements for working experience, teaching hours, scientific research, etc.

In order to participate in the competition for the Associate Professor position, Ch. Assist. Prof. Dr. Yordanka Stefanova enclosed a total of 22 scientific works, of which 2 monographs, 6 articles in peer reviewed and indexed publications, 14 articles in non-peer reviewed scientific journals. The submitted papers are different from publications for educational and scientific degree Doctor.

2. Brief biographical information

Ch. Assist. Prof. Dr. Yordanka Stefanova graduated in Plovdiv University „Paisii Hilendarski“, Master's degree, specialty Chemistry and Physics with a professional qualification Teacher of Chemistry and Physics. Since 2008 she has been a PhD in Methodic of training in Chemistry.

She works as a chemistry teacher at the Primary School „St. St. Cyril and Methodius“, Parvomay. From 1989 until now she has been successively assistant and chief assistant at the Faculty of Chemistry of Plovdiv University „Paisii Hilendarski“

The professional-pedagogical, academic and creative development of Ch. Assist. Prof. Dr. Yordanka Stefanova is related to the profile of the competition. She has authority among the specialized pedagogical college.

3. General characteristics of the applicant's activities

3.1. Assessment of educational and pedagogical activity

Ch. Assist. Prof. Dr. Yordanka Stefanova has significant teaching experience in the system of teaching students - future teachers of chemistry. Participates in the development of master's and bachelor's programs for students in the professional field „Pedagogy of teaching ...“. She conducts lectures and exercises with sufficient number of hours in academic disciplines related to the profile of the competition.

Ch. Assist. Prof. Dr. Yordanka Stefanova is scientific supervisor of 1 doctoral student. She is a trainer of pedagogical specialists.

The teaching activity of the candidate corresponds to the requirements of the Law for development of the academic staff of the Republic of Bulgaria, the Regulations for application of this law, the respective Regulations of the University of Plovdiv "Paisii Hilendarski"

3.2. Evaluation of scientific and applied science activities

The works, which ch. assistant Dr Stefanova presents for the competition, are in the field of the Methodic of training in Chemistry. Scientific production meets the criteria of the University. The scientific papers for the competition are 22 pcs.: 2 monographs and 20 articles, 6 of which are in scientific journals included in the world system of abstracting, indexing and evaluation.

Published papers in 9 scientific conferences (international and national) are in full text in reviewed journals, scientific publications, identification number and name of publisher.

The requirements of the Law for development of the academic staff of the Republic of Bulgaria, the Regulations for application of this law, the respective Regulations of the PU, the regulations for its are satisfied. The comparison of the scientometric data of Ch. Assist. Prof. Dr. Yordanka Stefanova with the national minimum requirements for area of higher education 1. Pedagogical sciences show a total of 497 points.

I consider that the submitted scientific publications are on the profile of the announced competition. The analysis of their content justifies the grouping in the following relatively different directions to be:

– **The explanation in chemistry training**

Based on the defended dissertation for educational and scientific degree Doctor in published in 2021. monographic work “The Explanation in Chemistry Education” and in some of the publications (№ 2, 4, 6, 10, 13) Ch. Assist. Prof. Dr. Yordanka Stefanova analyzes the nature, role and importance of this method of teaching and the specifics of its implementation in teaching topics from the curriculum. Trends, ideas and methodological solutions stand out. The author presents models for inductive and deductive explanation of facts and for solving different types of chemistry problems.

The theoretical and methodological justification is largely based on the theses of constructivism. The researcher points out that the proposed methodical ideas are experimented in a real learning environment, but does not present sufficient empirical evidence from a pedagogical experiment.

– **Technologies in training in Chemistry and Environmental Protection**

Ch. Assist. Prof. Dr. Yordanka Stefanova focuses on the technological aspects of teaching Chemistry and Environmental Protection. In the monograph “Modern educational technologies in chemistry and environmental protection” published in 2020, the author aims to reveal some characteristic features of the studied phenomenon.

The first chapter of the paper is devoted to the current problems of teaching chemistry and environmental protection in school and it would be good for the author to connect them with the technological paradigm. She analyzes and summarizes the scientific and practical experience of educational technologies in the context of personality-oriented learning.

The author highlights technological aspects of project-based learning, collaborative learning and the flipped/inverted classroom, which as models are consistently established in the second half of the 20th century, but in the early third decade of the 21st century continue to be relevant and significant for school practice. The researcher presents interesting methodological solutions, but could

support them to a greater extent with empirical data from a pedagogical experiment. The approbation of the flipped/inverted classroom model in the pandemic situation of blended schooling during the past two school years is a challenge for a methodical interpretation of its technological implementation.

– **Formation of scientific literacy and key competencies**

Ch. Assist. Prof. Dr. Yordanka Stefanova pays special attention to the formation of natural science literacy in some of the works (№ 1, 2, 6, 7, 14, 16) and to certain key competencies of the students (5, 8, 9). The author analyzes the state of the problems, examining the opinion of the main subjects.

Developed and tested a model for applying the research approach to the formation of scientific literacy of students. Of interest are the chemistry tasks for establishing literacy.

Regarding the formation of key competencies of students, I believe that the author could, through a pedagogical experiment, to a greater extent substantiate the proposed methodological interpretation of the problem.

– **The constructivism in training in Chemistry and Environmental Protection**

Ch. Assist. Prof. Dr. Yordanka Stefanova directs her research on constructivism in the teaching of Chemistry and Environmental Protection. On the basis of the constructivist methodological guideline the author presents tested methodical solutions for different aspects of the cognitive activity of the students, purposefully in works under № 4, 13, 15, 18.

The candidate's research activity is linked to her participation in one national and three university research projects.

3.3. Contributions and citations

The content analysis of the scientific production of Ch. Assist. Prof. Dr. Yordanka Stefanova allows to highlight scientific and applied contributions. It is noteworthy that the issues in the two monographs, which are the main works in the author's publishing activity, are not reflected in the self-assessment of contributions. In my opinion, the scientifically applied contributions refer to:

- Models for the modern design of the explanation in the conditions of the school education in chemistry and environmental protection are constructed and methodical solutions for achieving efficiency in its application are proposed.
- The technological aspects of models for project training, collaborative learning and “inverted classroom” are analyzed with appropriate methodological solutions for their implementation in Chemistry and Environmental Protection.

- The application of the research approach for formation of scientific literacy of the students with methodical substantiation of tested educational tasks for its establishment is scientifically substantiated.
- The possibilities for application of constructivism in the teaching of Chemistry and Environmental Protection are proved with appropriate methodical interpretation for different aspects of the cognitive activity of the students.

The 13 citations noted so far by the candidate refer to 6 of the co-authored publications. In terms of number and content, they meet the criteria requirements. Of the citations, 2 are in referenced and indexed editions. It makes a good impression that most of the citations are made by foreign authors.

4. Assessment of the candidate's personal contribution

I consider that the formulated contributions and obtained results are a personal merit of the candidate. The basis for this assessment is the performed analysis of the scientific production, its professional-pedagogical and creative development, the attached documents for the competition. In the monographs and part of the presented articles (5 pcs.) Ch. Assist. Prof. Dr. Yordanka Stefanova is an independent author.

5. Critical remarks and recommendations

I propose to Dr. Yordanka Stefanova in a future publication to present the necessary empirical evidence in deriving the methodological prerequisites for achieving results in the training in Chemistry and Environmental Protection. It is good for the author to publish results in specialized foreign periodicals.

I recommend the candidate to pay more attention to correcting technical errors in the documentation for participation in competitions.

I suggest to the author to connect to a greater extent the issues she researches with the emerging trends for the application of digital technologies in the conditions of hybrid training in Chemistry.

6. Personal impressions

I know Dr. Yordanka Stefanova from her publications and participation in national forums on the theory and methodology of teaching chemistry. The materials on the procedure confirm my impressions about the usefulness of her research.

CONCLUSION

The documents and materials presented by Ch. Assist. Prof. Yordanka Stefanova, PhD, meet the requirements of the Academic Staff Development Regulation of the Republic of Bulgaria, the Regulations for the implementation of this law, the corresponding Regulations of the University of Plovdiv „Paisii Hilendarski” and the specific requirements of the Faculty of Chemistry. The candidate submitted a sufficient number of scientific papers, published after the materials used in the competition for educational and scientific degree „Doctor". The papers are with scientific and applied contributions, as some of the articles have been published in scientific journals included in the world system of abstracting, indexing and evaluation. Two monographs have been published. Theoretical and methodological developments have practical applicability and relate to the teaching of chemistry to students. The scientific and teaching qualification and experience of Ch. Assist. Prof. Yordanka Stefanova, is in the profile of the competition

After getting acquainted with the materials and scientific works presented in the competition, analysis of their importance and the scientific, applied and applied contributions contained therein, I find it justifiable to give my **positive assessment and to propose to the Scientific Jury to prepare a report proposal to the Faculty Board of the Faculty of Chemistry. for the selection of Chief Assistant Professor Yordanka Petrova Stefanova, PhD, at the Academic Position „Associate professor" at the Plovdiv University „Paisii Hilendarski” in professional field 1.3. Pedagogy of education in... (Methodic of training in Chemistry and Environmental Protection)**

10.09.2021 г.

Reviewer:

/ Prof. Veska Ivanova Shivacheva, DSc/