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Monitoring Physics Education Curricula through the teachers perspective

Edlira Habilaj*, Rudina Osmanaj (Zeqirllari)[2]

[1]*Department of Technical Sciences, Reald Univeristy College, Albania*
[2]*Department of Physics Faculty of Natural Sciences, University of Tirana, Albania*

(edlira.luloj@gmail.com)

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Abstract **–** Physics Education in Albania, during the last years is subject of continuous discussions between educational experts, teachers and professors. The implementation of the new curricula from 2012, caused a lot of problems, that we are faced every day. The scope of this survey based study was to have some quantitative results of the discussions made between colleagues and experts, in order to make based statements for improvements or changes of the actual curricula to the Ministry of Education. The survey was performed in 12 districts of Albania, and 125 teacher of public/private middle and high schools were part of it. In this work we are focused just in one of the parts of the survey: the number of hours per week in physics in middle and high schools. We asked to the teachers that were part of our survey, the number of hours they teach physics in a week in different classes, if these hours were sufficient or no, and if they had suggestions of how many the number of hours per week in different classes should be. As we expected, teachers believe that the number of hours per week should increase in order to enforce the students' abilities, background and prepare them for the future in the university.

Keywords – Physics Education, Middle Schools, High Schools, Curricula, Number of Hours, Albania

I. INTRODUCTION

Physics Education in Albania, is now, more than ever, subject of continuous discussions. During the meetings and discussions with teachers, lecturers and students we understand that teaching/learning physics, in middle school and high school, has faced lots of problems. In 2012 the Ministry of Education and Sports has implemented the new curricula, which is functional actually. The main reason of this change was to create conditions and develop competencies: Communication, Critical Thinking, Life-long learning, Life skills Co-operation, Character, Citizenship and Computational Thinking, in the students [1]. With the changing of the curricula the Ministry created the textbook catalogue where every teacher can choose the best book for the next year. The books for the new academic year could be chosen in the end of previous one [2]. Pre university structure has changed from the system 4+4+4 (elementary + middle school + high school) in 5+4+3 system. Also the teaching hour per week, were changed. Before the new curricula, in high schools that were profiled in natural sciences, physics was taught 3 hour per week in class IX. While in the XII class all the students studying in the natural profile were learning physics 4 hour/week and students in the social profile learned physics 2 hour/week [3]. Now students learn physics 1 hour/week in class VI, 2 hour/week in classes VI-XI. In general high schools in class XII if the student choose physics as an elective subject

it will be taught 4 hour/week in class [8, 9]. If he does not choose physics he will not be attending physics lessons.

In the end of XII year students are tested in State Matura [4]. There are 3 compulsory exams: Albanian language and literature, mathematics and one foreign language and 2 additional exams by individual choice. The students could choose two subject from chemistry, biology, physics, English, history-geography, and sociology-economy-philosophy. What they choose depends on their university preference [11].

But, perhaps something went wrong...From the discussions with colleagues, teachers, students we are faced with a lot of questions: Are enough hours per week dedicated to physics? Are the translated books the most proper ones to teach physics in the Albanian context? How much laboratories are used? Should we have functional laboratories in all schools? What can we improve/change in the actual curricula? We have already conducted two survey based studies, regarding the use of real and virtual laboratories in high schools, before, during and after the pandemic [6, 7]. In this material we are focused in the number of hours per week for physics in pre-university schools. The results of the study are collected from an online survey that was expanded in the 12 districts and participated 125 physics teacher of middle and high schools.

II. Materials and Method

The study was conducted with 125 teachers working in public and private middle and high schools. The participants were from 12 districts of Albania. The majority of questionnaires were filled from teachers that work in Tirana, Vlora, Elbasan, Korçë, Lezhë and Berat. Less responses were collected from teacher working in Fier, Lezhë, Durrës, Gjirokastër, Kukës, Dibër etc. For the survey we prepared a Google form with 3 different parts. In the first part we asked to write the city that they work and the years of teaching physics to have an idea about the qualification category of the teachers [5]. Teachers that have a long experience can give a better feedback. In the second part were questions only for teachers in middle school. In the third part were questions for teacher that teach physics in high schools. The form was shared in Whatsapp Groups of Physics Professional Networks that are created in cities, in LinkedIn, in personal Facebook accounts of teachers and in a public account Facebook group "Platforma: "Mesuesi e Fizikes Online" Albania". Every teacher had the right of only one response. The data was collected from October 2023 to November 2023.

III. Results

In the first part of the survey the responses for the question "How many year you have in teaching field?" are presented in percentage in Fig. 1. The question was added to create a better idea about the qualification of the teachers that filled the questionnaire.

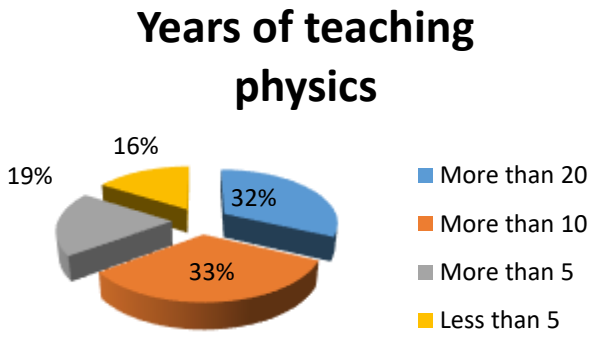

Fig. 1 Experience in teaching physics

Figures from 2 to 8 present result regarding teacher recommendation of weekly hours in class VI-XII.

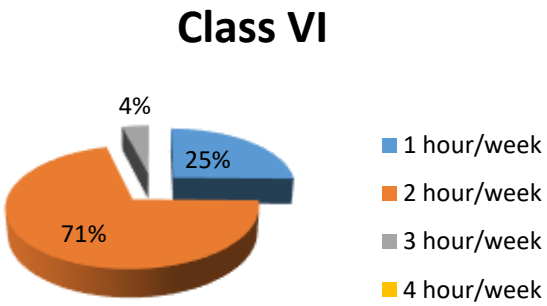

Fig. 2 Responses for question "How many hour/week should be taught in class VI?"

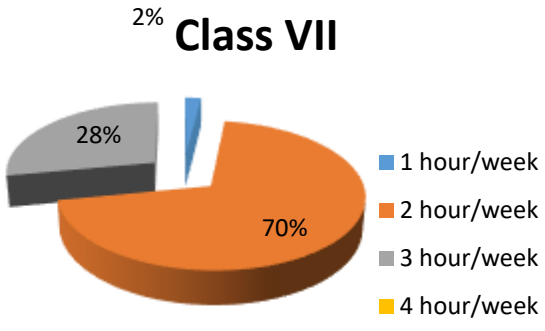

Fig. 3 Responses for question "How many hour/week should be taught in class VII?"

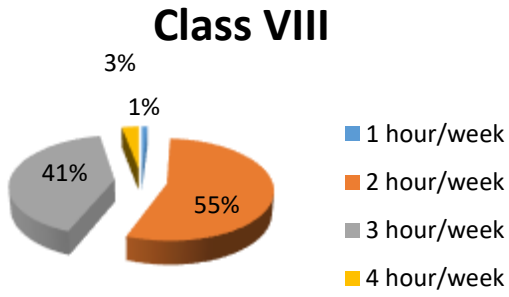

Fig. 4 Responses for question "How many hour/week should be taught in class VIII?"

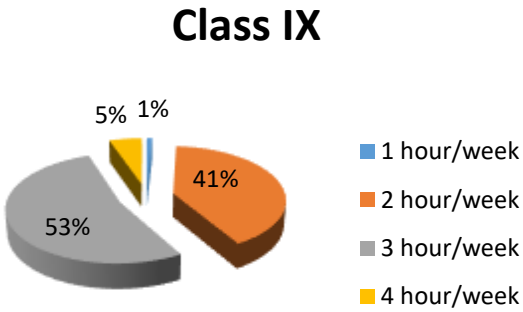

Fig. 5 Responses for question "How many hour/week should be taught in class IX?"

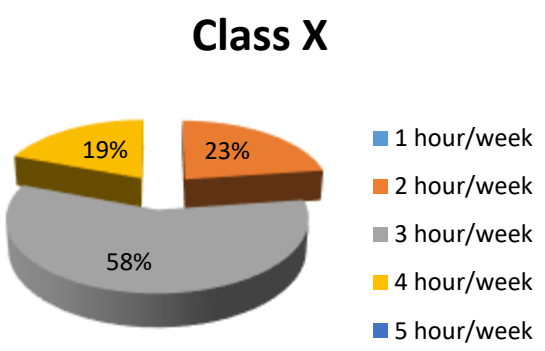

Fig. 6 Responses for question "How many hour/week should be taught in class X?"

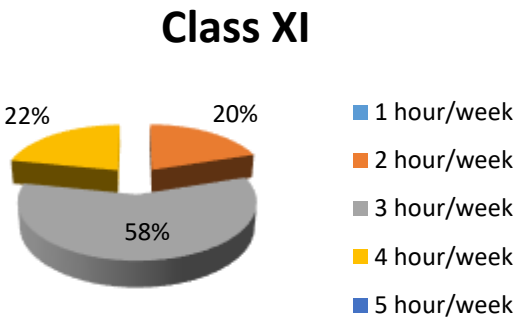

Fig. 7 Responses for question "How many hour/week should be taught in class XI?"

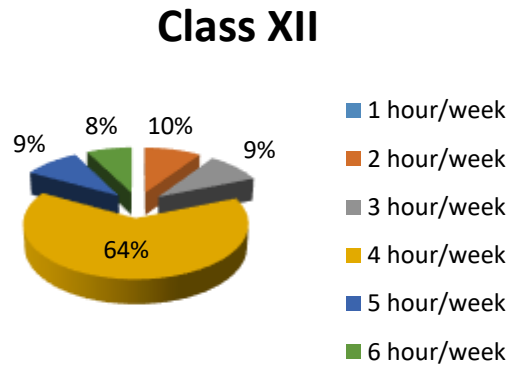

Fig. 8 Responses for question "How many hour/week should be taught in class XII?"

IV. DISCUSSION

Seeing the percentage that was calculated from the survey the middle school teachers strongly recommend to increase the hour/week in class VI

from 1 hour/week to 2 hour/week. In the question where we asked to write a comment they explained that 1 hour/week is insufficient for students to understand all the information including the fact that physics is new subject when they pass in middle school. In the class VIII they slightly think that actual 2 hour/week are sufficient. In class IX, X and XI they recommend to taught physics 3 hour/week. The main reason they recommend 3 hour/week is that can have more time understanding the subject and discussing more situation/exercises. Regarding the students performance when they analyse for longer hours a learning topic they understand better the topic, can remember better in the next classes when in needed to recall the previous information and can connect easily that information with other subjects like chemistry, mathematics, informatics, biology etc. In class XII physics in selected as elective subject by students. It is preferred from student that will apply in field like Medicine, Engineering, Natural Sciences etc. The students are loaded with other 4 subjects that will be tested in State Matura and most teacher think that 4 hour/week in enough for learning physics as a subject that will be tested. Although if a student doesn't choose physics he/she will not study that subject in class XII. [8]

CONCLUSION

The aim of this survey based study was to have a quantitative measurement of the discussions between physics teachers and professors, about the problematic that Physics Education in Albania actually has. The first step was to see if the number of hours per week was suitable and sufficient to explain and understand the subject. As was seen by this survey,73% of the responses think that in class VI physics should be learned 2 hour/week. In class VII 70% think that 2 hour/week are enough to teach physics. In class VIII 55% think that 2 hour/week are enough and 41% think that should be taught 3 hour/week. In class IX 53% think that the learning hours should be 3 hour/week and 41% are satisfied with 2 hour/week. In class X (when students begin high school) 58% think that the learning hours should be 3 hour/week. Same percentage surprisingly is for the class XI, 58% think that physics should be taught 3 hour/week. In class XII in general high schools 9% think that should be learned 1 hour/week, 10% think for 2 hour/week, 9% think for 3 hour/week, 64% think for 4 hour/week, 9% think that should be learned 5 hour/week and 8% think for 6 hour/week. Especially for the middle school and the first year of the high school, most of the teachers, as can be seen by the percentages mention above, what we should recommend is to increase the number of hours per week in class VI, IX, X and XI. In the XII class, where physics is elective, most teachers agree that the hours per week are enough.

ACKNOWLEDGMENT

The results would have not been collected without the help of pre university teachers who found time to answer the questions and to share in their personal online profiles the survey.

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