PROCEEDINGS OF SCIENCE

Everlasting educational reforms on the road to quality and permanent knowledge or…

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Abstract. The Macedonian educational system is under continuous reforms and changes made to the syllabuses and methods of teaching. In the last two decades, almost every aspect of teaching mathematics and physics in primary school has been changed. The last three major changes cover different approaches: coordinated teaching in 2008, curriculum changes towards research methods and problem solving in learning and teaching - according to the Cambridge International Examinations Center in 2016, and the newest concept according to the European Strategy 2020 (based on six dimensions: quality, inclusion and gender equality, green and digital transitions, teachers, higher education, a stronger Europe in the world) and the new Action Plan for Digital Education 2021-2027 (with initiatives for high quality, inclusive and accessible digital education in Europe). Different opinions appeared in public, mostly among teachers and parents, for and against the „new ways" in education. Hereby some of the arguments for and against will be presented, problems and questions will be stressed out and curriculum differences will be shown. Are we losing the chance for laying the foundations of mathematics and physics while walking on the road to digitalization? Are we ready as a country to embrace the new social challenges? Have we done enough research before introducing the new concepts, do we know if we are professionally, materially and mentally ready to let the „digital books" and „interculturalism" on a small door in the classrooms? Finally, yes, the freedom in finding personal creative ways of teaching and using open-source material is great, so is stimulating critical thinking among students. But is the majority of the population ready to trade the classical textbooks for digital ones? Has there been continuing professional education for teacher in the classroom to be ready to grasp the new concept? Are we ready for this kind of transition in education as a way for a complete social transition?

Key words: Educational reform, Macedonian educational system, European strategy, digital competences, critical thinking.

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1. Introduction

Hundreds of reforms are introduced into school systems around the world every year in curriculums, teaching methods, pedagogical approach, competences, governance, technology and so on. The Macedonian educational system is not an exception and unfortunately, most of the reforms fail to achieve the expected substantial improvements in student achievement, even though their advocates strongly hoped for it. In general, the Macedonian educational performance worsens for the past thirty years. Some of the reforms that took part in the last fifteen years included: obligatory nine (instead of eight) years primary education - starting from the year 2007/2008; obligatory high school for each student from 2008/2009; introducing external testing for the high school students from 2013; introducing Cambridge Science and Mathematics Curriculum for the primary school students from 1st to 3rd grade in the year in 2014, students from 4th to 6th grade in 2015, and students from 7th to 9th grade in 2016. In 2017, the external testing for high school students was stopped and the introduction of Cambridge Science and Mathematics Curriculum for high school students was first postponed and then terminated. In 2020, a so-called new concept for primary schools has been approved by the Macedonian Parliament at the proposal of the Ministry of Education and Science and the Macedonian Government. Last but not least, the external high school testing was renewed in 2022. Most of this reforms were introduced over night without public discussion and any logistic preparation in the school's infrastructure and without sutiable training for the teachers. The public's reactions have not been considered as valuable [1,2].

1.1 Reforms in the educational system Mathematics and Science - 2014

In 2014, not only the curricula of Mathematics and Science were reformed, a totally different concept was introduced [2]. Traditionally, in the Macedonian schools, mathematics is an obligatory subject from 1st to 9th grade. This has not been changed, even though the curricula went through a rough shortening. Science started to be taught from 1st to 6th grade as a joint subject. Students study geography from 6th to 9th grade, biology from 7th to 9th grade, chemistry and physics in 8th and 9th grade, each subject with 2 classes per week. Textbooks are a required part of daily classroom instruction, and the Ministry of Education and Science must authorize all used textbooks. Previously, these requirements were not as strict, meaning teachers were allowed to utilize all published textbooks that met the criteria of the curricula. With introducing this, for some "revolutionary" reform, the Ministry of Education decided to use the Cambridge Science Curriculum. The reform began with the introduction of the subject Science in grades 1 through 3 in 2014, 4 through 6 in 2015, and 7 through 9 in 2016 with separate biology, physics, and chemistry syllabi. The Ministry of Education and Science of Republic of Macedonia selected Cambridge Checkpoint Science Coursebooks 7, 8, and 9 for translation and adaptation since physics and chemistry are currently taught in the eighth and ninth grades in that country's educational system. Only the physics-related portions of the initial courses were included in the two textbooks that were produced. Cambridge math curricula were released at the same time as the Cambridge science curricula.

Although universities are where the next generation of teachers are taught and primary school teachers are the ones who directly execute the curricula, none of them had any involvement whatsoever in the planning, execution, or selection of the changes or the textbooks. Teachers in elementary schools, members of the Macedonian scientific community, and members of the general public made contentious comments in response to the introduction of the Cambridge International Examinations curriculum into the country's educational system. The government-funded media occasionally carried positive commentary on the curriculum throughout the previous years, but the majority of teachers and scientists believed that this shift will be a step backward for our educational system, having significantly less of an impact on future generations.

1.1.1 Physics education

Physcis in Macedonia previously was a subject taught in 7th (2 classes per week) and 8th grade (3 classes per week) until 2007, when the nine-grade primary school was introduced and physics became a subject for 8th and 9th graders, with 2 classes per week in both grades [3-4]. Cambridge physics curriculum was introduced in 8th and 9th grade, without taking into account the repetition or lack of certain thematic units in the ninth grade, which of course has consequences for further education in this generation of students. For example, Forces and movement was a unit present in the eighth grade in the old curriculum and now in the ninth grade in the new curriculum. The same situation is with the unit Energy and heat, which was a part in the eighth grade in the old curricula and now it is a part of the curriculum in the ninth grade. On the other hand, units like Light and Astronomy that were traditionally learnt in the ninth grade, now belong to the eight-grade curriculum (Table 1).

Table 1 (simple comparison of the material studied before and after the implementation of the Cambridge curriculum), demonstrates that the content that 8th and 9th graders are currently studying in physics classrooms is less than 20% of what pupils were learning prior to the 2016–2017 school year. Measurements are the foundation of most of the knowledge in physics. The first topic, which is essential to comprehending physics phenomena and teaches students how to detect and measure physical quantities, is absent from the Cambridge curriculum. The lack of encouragement given to students to perform calculations and solve numerical issues is what stands out the most about this curriculum (as well as the textbooks). There are only 4 formulas in the 8th grade physics text book and 3 in the 9th grade physics text book that students can use to calculate physics values. The issues that the implementation of the Cambridge curriculum brought about are not even partially addressed by this perspective.

Curriculum 2009–2016	**Curriculum 2016–2019**
Eight grade	
1. Objects around us **1.1** Subject of physics, physics phenomena, observation and experiment **1.2** Measurements of physical quantities **1.3** Measurement of length **1.4** Measurement of volume **1.5** Measurement of time **1.6** Mass of solid body **1.7** Densities of the substances	**1. Forces and movement** **1.1** Introduction of forces **1.2** Change of the shape of the objects **1.3** How fast? **1.4** Speed and distances **1.5** Speed units **1.6** Distance/time graph **1.7** Calculation of the speed from distance/time graph **1.8** Calculation of traveled distance and time

2 Matter is made of particles **2.1** Particle nature of the substance **2.2** Molecules and Atoms **2.3** Aggregate states	**1.9** Introduction of acceleration **1.10** Measurement of the speed and calculation of acceleration **1.11**Speed/time graph **1.12** Impact of the forces in the process of movement **1.13** Measurement and calculation of the force **1.14** Friction forces – very important forces **1.15** Gravitational force **1.16** Free fall **1.17** Air resistance
3 Movement **3.1** Mechanical movement **3.2** Motion along straight line with constant speed **3.3** Distance/time and speed/time graphs in motion along straight line with constant speed **3.4** Motion with acceleration along the straight line **3.5** Free fall	
4. About the force **4.1.** First and Third Newton laws **4.2** Types of forces, measurement of the force **4.3** Earth gravitational force **4.4** Weight of the objects **4.5** Friction **4.6** Balanced forces, components of the forces **4.7** Centre of mass, different types of equilibrium states **4.8** Second Newton law	**2. Energy** **2.1** Use of energy **2.2** Other sources of energy **2.3** Transfer of the energy **2.4** Energy forms **2.5** Conservation of energy
5 Pressure **5.1** Pressure **5.2** Pascal law **5.3** Hydrostatic pressure **5.4** Archimedes law of buoyancy **5.5** Atmospheric pressure	**3. Light** **3.1** How light travels? **3.2** How shadows are formed? **3.3** Camera obscure **3.4** How reflections form **3.5** Optic illusions **3.6** Refraction **3.7** The Spectrum of white light **3.8** Colored light
6 Mechanical work and energy **6.1.** Mechanical work **6.2** Energy **6.3** Mechanical energy **6.4** Energy conservation law **6.5** Power, Efficiency	
7 Internal energy **7.1** Internal energy **7.2** Internal energy change, heat and temperature **7.3** Measurement of temperature – thermometers **7.4** Heat **7.5** Law of thermal equilibrium **7.6** Thermal expansions of solid bodies **7.7** Thermal expansion of liquids **7.8** Thermal expansion of gasses **7.9** Boyle's law 7.10 Gay-Lussac's law **7.11** Heat conductivity **7.12** Convection **7.13** Melting and solidification	**4. The Earth and beyond** **4.1** Day and night **4.2** Seasons **4.3** The starry night **4.4** The moving of the planets **4.5** Seeing stars and planets **4.6** Grate discoveries in astronomy **4.7** Moon and moon fazes **4.8** Astronomy in the last 4 centuries **4.9** Journey into the space

7.14 Evaporation **7.15** Condensation	
Ninth grade	
1 Electrical and magnetic phenomena **1.1** Electric charges and their interaction **1.2** Electrons, ions end electric current **1.3** Electric current. Conductors, isolators and semiconductors **1.4** Current circuit end electric elements **1.5** Electric current and its effect **1.6** Electric voltage **1.7** Resistance **1.8** Ohm's law **1.9** Serial and parallel connection of resistors **1.10** Capacitance, Capacitates **1.11** Work and power of the electrical current **1.12** Protection form electrical shock **1.13** Magnets and magnetic field **1.14** Magnetic field generated by the electrical current **1.15** Ampere force **1.16** Electromagnetic induction **1.17** Alternative current. Generators **1.18** Transformers **1.19** Semiconductors **1.20** Semiconductor devices	**1. Forces and movement** **1.1** Introduction of leavers **1.2** Law of the leaver **1.3** Calculating moments of force **1.4** Density **1.5** Measuring density **1.6** Measuring density and Archimedes **1.7** Calculating density **1.8** Pressure **1.9** Calculating pressure **1.10** Pressure in gasses and liquids **2. Energy** **2.1** Heat **2.2** Heat conductivity **2.3** Convection **2.4** Radiation **2.5** Evaporation **2.6** Fossil fuels **2.7** Renewable and un renewable sources of energy **2.8** How we use the energy
2 Oscillation and waves. Sound **2.1** Oscillatory motion **2.2** Wave motion **2.3** Characteristics of wave motion **2.4** Sound waves **2.5** Ultrasound. Application of ultrasound **3. Light phenomena** **3.1** Traveling of the light **3.2** Reflection of the light. Mirrors **3.3** Spherical mirrors **3.4** Refraction of the light **3.5** Total refraction **3.6** Dispersion of the light **3.7** Lenses **3.8** Human eye as optical device **3.9** Mixing of colors	**3. Electricity and magnetisms** **3.1** Static electricity **3.2** Positive and negative charge **3.3** Electrons on the move **3.4** Electrical current **3.5** Conductors and isolators in the electric circuit **3.6** Electrical current in the circuit **3.7** Components in parallel **3.8** Voltage in the circuits **3.9** Resistance in the circuits **3.10** Magnets and magnetic materials **3.11** Magnetic poles **3.12** How we represent magnetic field **3.13** Electromagnet
4. Atomic and nuclear physics **4.1** Structure of the atom. Isotopes **4.2** Radiation from the atom **4.3** Discovery of the ionizing radiation **4.4** Radioactive decay	**4. Sound** **4.1** Different sounds **4.2** How the sound travels **4.3** Explanation of the oscillations **4.4.** Visualization of the sound wave with an oscilloscope **4.5** How we hear?

Table 1. Syllabi in 8th grade and 9th grade physics curricula 2009-2016 and curricula 2016-2019

1.1.2 What kind of physics we teach to primary school students?

This section will analyze some of the errors found in the physics sections of the three Cambridge Checkpoint Science Coursebooks [3-5] written by Mary Jones, Diane Fellowes-Freeman, and David Sang: Cambridge Checkpoint Science Coursebook 7, Cambridge Checkpoint Science Coursebook 8, and Cambridge Checkpoint Science Coursebook 9. These three books were used to create the two distinct physics textbooks for grades 8 and 9. Unfortunately, several of these mistakes found their way into the Macedonian physics textbooks [7-8].

1. Macedonian 8th grade physcs textbook starts with the introduction of the concept of force. This part of the text book is taken from Cambridge Checkpoint Science Coursebook 7. There, chapter 9.1 (page 128), is named “Seeing forces”, which is quite confusing. Usually in the physics textbooks the question about “seeing forces” is not even mentioned. It is known that forces can not be seen and that we just observe how forces act on the objects. These title of the chapter in the Macedonian text books is changed into “About the concept of force”. In the text, the authors are stating that “We say that a force \`acts\` on an object”, which in Macedonian textbooks is translated as “Usually we say that a force “acts” on an object” (English translation of the Macedonian version). The problem with this statement is that we always say that the force is acting on an object and that the word “acts” should not be in quotes.

2. On page 128, the authors state “A force arrow is a good way to represent a force because it shows the direction in which the force is acting. A force arrow shows us the direction of the force. We label the arrow to show two things: The object that the force is acting on and the object that is producing the force”. The Macedonian translation is quite identical to the original using term “force vector” instead force arrow and translating the word “direction” with shortened meaning as “насока” (In English direction can be used for pointing direction (Macedonian: „правец“) e.g. South – North and pointing direction (Macedonian “насока”) e.g towards North. Here we think that the authors have problems in understanding the essence of the force vector. Force vector is used to show more then two things, direction, the object that the force is acting on, the object that is producing the force and the magnitude of the produced force.

3. Many other proofs for inproper understanding of the essence of the force vector by the authors can be find on page 130, where the authors propose the following activity: “Find some forces and label them with force arrows: 1. Make three force arrows out of the card paper. They should be about 20 cm long. 2. Find somewhere where a force is acting. Decide which direction the force is acting in…”. A figure on the same page shows an example of these activity, giving incorrect representation of the force vector acting outside of the object and the acting point which is of essence in presenting the forces is not properly chosen. Same incorrect use of force vector can be seen on the next page, where force that acts on a swich is marked by force vector. It is interesting to mention that on the same figure where a man pushing a car is shown, the force vector is drawn correctly but it is incorrect in the case where the men is lifting books or pressing the button. In the rest of the book, most of the figures show correct representation of the force vector, like figures on page 136.

4. On page 132, the authors are introducing the forcemeter as a device which allows students to measure the force. They propose an activity “… how you use it (the forcemeter) to measure the force needed to pull a block of wood along the bench”. Here we consider the previous not to be the best example for using the forcemeter. Namely, the forcemeter will show one value for the force needed to pull a block of wood along the bench just before the block starts to move, other value if the student move the block with the constant speed and third value if the student decide to move the block with acceleration. Same type of error can be found on 132 where it is written “Finding the force needed to lift the laboratory stool”.

5. On page 132, the authors are introducing the unit of force in this way: “How much is a Newton? If you hold an apple on the palm of your hand, it presses down with a force of about 1N. If you hold 5 apples, that’s about 5 N.” Additionally this claim is graphically shown with a figure. But this is very week and not precise definition of a Newton and it can be rather confusing for the students. First of all, it is not mentioned that the reason why this force is acting on the hand is because the existence of the Earth gravity (Gravity is introduced latter in the textbook), and second

it is impossible for any child to hold 5 apples in one hand.
6. On page 138, the authors are introducing the concept of balanced forces. The authors' state: There are two forces acting on the parachutist. They are equal in size but point in opposite directions, so they cancel out. The parachutist falls at a safe speed.”. Next to the text is figure where the authors fail to represents force vectors properly. It is well known that if a body is in balance, then the sum of the forces that act on it is zero. Here we see that the force of air resistance is acting somewhere on the parachute and the gravity is acting somewhere bellow the legs of the man.
7. The situation in the Macedonian 9th grade physics is not much better. The material in this textbook is taken from Cambridge Checkpoint Science Coursebook 8 and Cambridge Checkpoint Science Coursebook 9. Macedonian 9th grade physics textbook also starts with introduction of the concept of force. In comparison with the use of the force vector in the Cambridge Checkpoint Science Coursebook 7, the authors here represent the force vector correctly. Although the drawings in the original are correct, instead of the original figure, in the Macedonian textbook [7], adapters used different figure on page 8, to show the seesaw where the force vector is not correctly shown. According to the knowledge of the authors, it is clear that many other people, apart of the official translators and reviewers, were included in translation and adaptation of the Cambridge text books which contributed for even lower quality of the Macedonian textbooks.
8. On page 138 in the Cambridge Checkpoint Science Coursebook 8, the authors are explaining what a complete oscillation is. One complete oscillation is explained as: “A complete vibration – the object moves up from its rest position, then down, and then back to its rest position” and this movement is graphically shown on a figure. We find this figure can be very misleading, since apart of the oscillatory movement students can get idea that there is translatory movement as well.
9. On page 151 in the Cambridge Checkpoint Science Coursebook 7, as well as in the Macedonian textbook [8], on page 29, there is an advice for the students which actually every 3 years old child is familiar with, and it sound quite ridicules when you recommend it to someone who is 14 years old. Without further comments we are quote the sentence from the book: “If the food is too hot to eat, just wait – its energy will soon spread out into the surroundings”.

Many other misleading or incorrect statements can be found in these three books. Here we will present few more of them without explanation.
10. On page 120 in Cambridge Checkpoint Science Coursebook 9, one can find: “A heavier” material is denser than “a lighter” material. It has a greater density”.
11. On page 122 in the same book, there is a statement: “Density is a measure of how light or heavy a material is”.
12. On page 140 - “Lightning is another example of the static electricity on much larger scale”.
13. On page 146 - “Metals are described as **conductors** because they allow electricity to pass through them. Plastic and non-metals are described as **insulators** – they do not allow electricity to pass through them”.
Additionally, we find that many of the questions are not suitable from didactical point of view. For example:
1. In Cambridge Checkpoint Science Coursebook 8 page 139, one can find the question: “If a guitar string vibrates 250 times each second, what is its frequency?”
2. In Cambridge Checkpoint Science Coursebook 9, page 158 there is a task: “Two plastic balls **A** and **B** are hung by side on threads, as shown (on the figure). The balls are given electrical charge. Table 2 shows the charges given to each ball in two separate experiments.
Copy the table and complete the last column….”

	Charge of ball A	Charge of ball B	Attract/Repel?
Experiment 1	positive	negative	
Experiment 2	negative	negative	

Table 2. Identical table can be found in Cambridge Checkpoint Science Coursebook 9 by M. Jones, D. F. Freeman, S. Sang.

Some of the activities in the textbooks are also not suitable to be conducted because of the need of special equipment, which most probably is not present in Macedonian schools. Here we give an example of this kind of proposed activity. In Cambridge Checkpoint Science Coursebook 7, the authors encourage students to investigate free fall. One of the students should drop various objects to fall and the other should measure the falling time. The student who is dropping the object should be on the top of the chair. It is more than obvious that the falling time in this case is very short and the error in the time measurement with regular stopwatch will be very large. The obtained results will be non-relevant and confusing.

It might seem the comments are a bit too strict, but we have to have in mind that the students we talk about are old enough to rightfully be introduced to precise definitions, notions and physics laws.

1.1.3 What kind of mathematics we teach to primary school students?

Even though, formally, the curricula were expected to strengthen the links between mathematics and physics, we have to emphasize that the basic mathematical knowledge students adopt is far from applicative. It was expected to work more on problem solving and modelling in everyday problem situations, to be more precise, the correlation between the two subjects was on the top level of requirements of the curricula. But there is, at some points, especially when we consider basic algebraic and geometry tools, a total absence of connection between mathematics and physics in present curricula. As a result of this approach, mathematics, instead of serving as the foundation of physics, became a restraint, a barrier to the expansion of physics knowledge. To be more specific, the mathematics curriculum for some units prevents the physics professors from explaining concrete physical processes. How can we teach physics effectively, for instance, if vectors are completely eliminated from the mathematics curriculum? There is not enough time to discuss vectors, vector operations, or vector attributes. Not only vectors. Most of the geometrical concepts, characteristics and properties have been treated the same, including similar triangles or area and volume of geometrical bodies. There are algebraic concepts missing as well, such as linear equation systems, which are covered at the end of the ninth grade, but in physics we need to use them earlier. The physics teacher cannot use some of the units because they have been completely removed or because the introduction has been postponed for later years. A mathematician would likely agree with us that the level of introduced information, concepts, and assertions has been more than lowered as a result of the new curricula. Furthermore, it is totally inappropriate when we consider the adopted knowledge requirement for entering high school education. Besides all, the correlation concept stills receive a lot of attention, but unfortunately the effects cannot be seen, nor the goals can be achieved.

1.2. Reforms in the educational system for Mathematics and Science - 2020

By the time everyone expected the first analysis of the impact of the Cambridge curricula, just as the first students (even though not during whole primary school education) went through the reforms and enrolled universities, a new revolutionary reform was announced and things became more chaotic than ever. No one answered if we had any results of the previous reform, isn't it too early to jump into a new reform, has someone asked the education system participants on their opinion. The newest concept was just to enter Macedonian primary schools. According to the European Strategy 2020 (based on six dimensions: quality, inclusion and gender equality, green and digital transitions, teachers, higher education, a stronger Europe in the world), and the new Action Plan for Digital Education 2021-2027 (with initiatives for high quality, inclusive and accessible digital education in Europe), new changes were made [8]. Different opinions appeared in public, mostly among teachers and parents, for and against the „new ways" in education. Are we losing the chance for laying the foundations of mathematics and physics while walking on the road to digitalization? Are we ready as a country to embrace the new social challenges? Have we done enough research before introducing the new concepts, do we know if we are professionally, materially and mentally ready to let the digital books and interculturalism on a small door in the classrooms? Why isn't anyone asking the teachers? The proposed and now introduced reform, is mostly influencing students on adopting the new concepts of gender equality and digitalization. First of all, the reform is planned to be performed on two grades in a year: 1st and 4th in 2021, 2nd and 5th in 2022, and now we are expecting the following parts. Only the basic concept is known, no details have been worked out considering the curricula from 6th to 9th grade. Last year, the first and fourth graders had no textbooks, they were only allowed to use tablets with installed interactive textbooks and materials on each subject. Is this the right way towards digitalization? This year opinions were changed, but quite late, just at the beginning of the school year. Students are supposed to get regular textbooks, but unfortunately at the end of the first term, fifth graders still don't have them. Is it the right way to proceed with the praised new reform? Not to comment how difficult is for teachers and parents to embrace some of the new concepts of gender equality in the way they have been introduced. It is nice to follow the world trends but blindly following the recommended directions without being completely ready to meet the requirements only increases the danger of getting into a deeper gap. The second thing considering especially the Science curricula, is the forced joining of the natural sciences. Our country produces teachers for each of the sciences separately, we have physics teachers, biology teachers and chemistry teachers, with an education background of 4 years of university qualification. It was hard enough to train the teachers up to 5th grade to cope with the new material introduced with the Cambridge reform. All of a sudden, Science is introduced from 1st up to 9th. Who should teach Science now? Physicists, biologists or chemists? The public had much to say, professionals were skeptic how we can deal with the new performance on Science as a subject if we don't have qualified teachers for a complex material covering the whole curricula. Faculties that produce teachers for primary and high schools are still not ready to go through accredited university programs of this kind, the universities were simply surprised with the government decision. Is there a point of jumping into reforms without setting down the necessary logistics and infrastructure? Then a change was made. The subject is going to be Science, but students will have three teachers and only one grade. Did anyone think that in this way we suppress the talents to continue developing their personal interests in a specific science? What if a student enjoys physics and has not so great interest in biology? How will the grade one gets illustrate the personal interest and knowledge in physics? There many more questions to be asked, for which we have no idea what the answer would be. No plan, no expectations and worst no questions allowed to be asked.

When trying to justify the rushed and reckless reform, one of the most summoned answers given by the relevant institutions was that the reforms are a necessity since the TIMSS testing results are below every expectation [9]. As a part of the educational community, the authors ask if we need generations with only good testing results, or maybe we need to teach students how to study, how to embrace science, how to achieve greater goals. Do we need students who think or we need robots capable to answer schematic questions? The graduation testing results are also bad, and those tests do not measure the quality of application in everyday problems, they check if the basic competences have been achieved. Do we need to correct the basis, or we are going to let the final goals determine the educational process. Teaching and learning are long-term processes, it is not only important to get to the final goal, but also to help students choose their way and learn walking the road to their final destination.

We have to admit, there are several changes that made teachers happy. The freedom in finding personal creative ways of teaching and using open-source material is great, also is stimulating critical thinking among students. Opposite of the previous textbooks policy, this a relief and a real benefit. Teachers can completely express their creativity and have the freedom to widen the students' perspectives.

1.3. Conclusion

There are many questions remaining, mostly on the things no one has defined yet. Is the majority of the population ready to trade the classical textbooks for digital ones? Has there been continuing professional education for teachers in the classroom to be ready to grasp the new concept? Are we ready for this kind of transition in education as a way for a complete social transition?

It is always dangerous to play on an unknown ground. Maybe it is finally the time to stop for a moment, to consider the situation, to analyze the real reasons for the lack of knowledge, for the low level of permanent knowledge and for the bad results. But analyze our own system, not using systems from countries that have completely different mentality, historical and social background, and different needs. Here, we need young people able to think, we need professionals, we need educated people with wider interests, successful people, not average ones, we need people who are resourceful and able to get the best of what we have as a country. It is high time to proceed with educating students to be able to help the country, the economy, to improve the system, to share their knowledge and become role models for next generations.

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