

Prospective Scenarios for Mathematics Education Around the Year 2020

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The major aims of this paper are to formulate some possible alternatives for mathematics education around the year 2020 and to raise discussions about the future of teaching the subject.

Keeping in mind that mathematics education is a sub-system of many supra systems and that there is no direct study in the area, some prospective analyses at different levels - whether global, regional or national - were reviewed. Three major scenarios were suggested for mathematics education to take place in the year 2020; the progressive, reformatory and conservative scenarios. A comparison has been carried out among the components of mathematics curriculum in each of these in that year. Although any of these alternative conceptions might not become a reality, it is hoped that the process of prospective analysis itself will contribute to "making the future".

Introduction; The Scope of the Present Paper

The major aims of the present paper are to formulate some possible alternative scenarios for mathematics education around the year 2020 and to raise discussions about the future of teaching the subject. Nevertheless, such discussions embody "making the future of mathematics education" through the involvement of some educators, decision makers, teachers and the public in general in these discussions.

By prospective scenarios for mathematics education, the writer means different major trends in scenarios of mathematics education around the year 2020 in different countries, in which each of these is supposed to be implemented in some different forms according to the particular socio-economic, cultural and educational conditions of each country at that time. The same thing is applicable in the same country with regard to the variety in the quality of education provided in different kinds of schools, with different methods of teaching, facilities, educational activities and the like⁽¹⁾.

Needless to say, mathematics education is a sub-system of the education system in a country, which - in its turn - is a sub-system of the societal as well as the regional and the world (human) systems. But, however, in such general terms, as dealt with in this paper, some kind of high level of abstraction is needed across some prospective analyses at the global, regional or national perspectives, whether they are dealing directly or indirectly with education⁽²⁾.

An Overview of some Recent Prospective Analyses⁽³⁾

Globalization seems to be the most important core resulting from global prospective analyses⁽⁴⁾ (See: 11,7). Concerning human resources development, the OECD report has pointed out that (7: 104- 105): "Reform priorities often include improved access to early childhood education and revitalising schools. They include better linkages between work and learning and creating incentives to invest more in lifelong learning"⁽⁵⁾.

The study of the Arab Thought Forum suggested that mathematics must constitute one group among four integrated groups of subjects, in the framework of the "outbreak" scenario⁽⁶⁾ (2: 66). Although the research project "Egypt 2020" has adopted five scenarios⁽⁷⁾, studies in the area of education in this project have grouped them into three with regard to the degree of their contribution to the development of education in the country⁽⁸⁾. The "best" of the suggested alternative scenarios deal with curricula, in general, in terms of integration, self-learning, developing creativity and "complexity" (See: 3), with an emphasis on some affective aspects⁽⁹⁾.

In concluding this part, it seems appropriate to deal with three major scenarios for mathematics education around the year 2020; The conservative, reformatory and progressive scenarios.

Comparison between Curriculum Components among the Three Suggested Scenarios

The following table sums up the components of mathematics curriculum in each of the suggested scenarios⁽¹⁰⁾.

A Final Word

Having the experience of writing this paper, the author is considering much more solid integrated studies devoted to "alternatives of mathematics education", with consideration to all the supra systems affecting it. Ideally, this must be undertaken in the case of a particular country, keeping in mind the "cross classification of

classes" among the world. Needless to say, we must follow "conditional forecasting" (not just "forecasting"), with the view of many different alternatives, where some may or may not take place into reality. However, the process could highly contribute, as referred above, to "making the future".

Notes

- (1) It seems that the world is approaching an era in which the classification into social classes is "globalized" across the whole globe, with many common characteristics of different classes among different countries.
- (2) To the best of the writer's knowledge, there is no study dealing with prospective analysis in mathematics education in particular, at any level (national, regional or global).
- (3) By recent prospective analyses we mean futuristic studies whose reports were published or which were conducted within the last five years. However, reference may be given to prospective studies published in the nineties.
- (4) From the study of The National Intelligence Council (NIC), major global scenarios are: Inclusive globalization, pernicious globalization, regional competition and post-polar world (11: 55-56). Although the OECD study concentrates on one prospective world scenario as being entitled "The World in 2020; Towards a New Global Age", reference has been made to the fact that "such worse scenarios could be envisaged - for example, a reversal of the process of globalization could lead down the road of global fragmentation, with adverse effects for prosperity and political stability" (7:15).
- (5) Some of these priorities cope with and require the adoption of the new paradigm of teaching mathematics, as being moved from the formal teaching to dealing with "a living body" (See: 4, 8, 9: 611) as well as integrating the subject with life and continuing education.
- (6) These groups are; languages, mathematics, science and technology, and subjects related to "human building and citizenship". The adopted scenarios were: The "decline", the "reformatory" and the "outbreak" scenarios (2: 19-23).
- (7) These scenarios are : the business as usual, the Islamic state, the neo-capitalist, the neo-socialist and social solidarity (popular) (See: 10).
- (8) These groups are (from the worst to the best): (The Islamic state and the business as usual), the popular, and (the neo-socialist and the neo-capitalist) scenarios (see: 5,6).
- (9) Which cope, to a great extent, with the results included in the OECD study and go beyond those of ATF.
- (10) Some clarifications concerning the used terms and the contents of the table are as follows:
 - We concentrate on the major curriculum components; aims, content, teaching / learning processes and evaluation.
 - The author uses "actual aims" instead of aims related to those of teaching mathematics as mentioned in official documents since those may have nothing to do with reality.
 - The term "traditional formal teaching" is used to refer to "formal" teaching where the focus is given to theories and proving the validity of new statements.
 - Theorizing is not necessarily related to some studied former theories. It is rather establishing new theories (See: 1).

References

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