

A POSSIBILITY TO USE ELECTRONIC TABLES TO ENHANCE STUDENTS’ INTEREST IN BROADENING THEIR KNOWLEDGE AND SKILLS IN DIFFERENT AREAS

Asen Velchev

Abstract

In this article are presented ideas for concrete interdisciplinary computeraided activities for school students. Here are considered some aspects and expected benefits from the practical implementation of these ideas.

1. History and description of the main ideas

In brief, the core of our methods is the following: there are placed on the time axis quantities of some historical or archaeological items with respect to their official dating. What we derive is a presentation of the distribution of the quantity of the respective items over the time line. This obtained distribution is a function we call Chronological Distribution of coins, manuscripts, fossils, etc (let denote it CD-function). A. Fomenko introduced the concept “volume function” in [1] and we apply and slightly modify his ideas to obtain our CD-function. Its graph is a very convenient visualisation of the true distribution. The main benefit that such graph provides is visual information about which periods are of intensive or insignificant coins minting, manuscript writing, etc. Using Microsoft Excel and the built-in tools of it we carried out every data storing and manipulating, mathematical operations over them and each graph constructing.

2. Possible use of some research results on chronological distribution and ready MS Excel tools in computer classrooms

In order to discuss our results from historical point of view, the students can use some MS Excel worksheets, created by us. Such discussions will expectedly be useful to enhance students' interest and abilities to rise different hypotheses, to investigate them via learning historical facts and reasoning on them, to argue for and against different hypotheses, to change one's point of view, convince others, etc. The classrooms in this case with the students and their teachers may become something like scientific laboratories with young scientific workers. The use of chronological distribution is still not implemented enough in history and archaeology and there will appear on the graphs peaks and falls, which could be still not explained by the scientists. The teachers will be challenged to broaden their own knowledge and to enhance their own abilities for carrying out the suggested mini-explorations being tolerant to hypotheses diverse toward theirs and also to be ready to change their own point of view. The teachers should be ready to learn in the process of discussions. They should learn with students and guide them rather than teach them. The benefit for the students will be to learn from their teachers the cognitive strategies they use rather than to acquire the knowledge they have. An important strength of the suggested method of work in class is the opportunity students to realize that the sciences are living and evolving structures. They will eventually realize the difficulties, which the scientists are facing in their work. The students will feel the probabilistic character of every conclusion drawn if the teacher do his job wisely and selfsacrificially. If a teacher decides to introduce his students with such studies, he must remember that the most important is not to find out the whole and pure truth, which is very hard even for the scientists. He should rather let

the students "taste" the research area, thus to enhance their interest in school subjects and provoke them to learn facts from our history, literacy, numismatics, etc.

The work [2] is a research on chronological distribution of Bulgarian manuscripts, catalogued in [3]. See the obtained function's graph in Fig. 1:

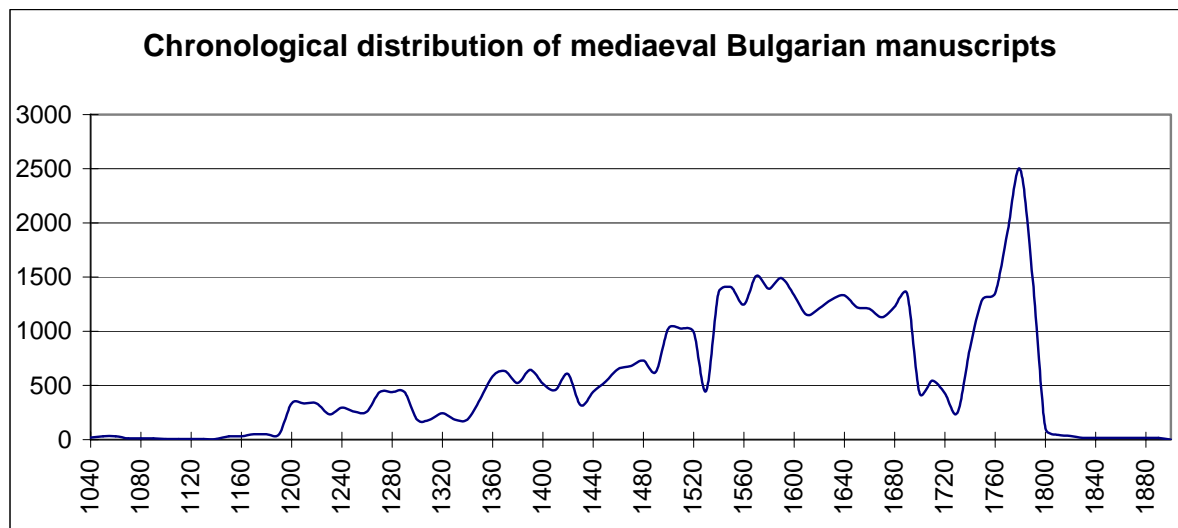


Fig. 1: Chronological Distribution of Bulgarian manuscripts

Where the graph is "higher", the quantity of manuscripts is larger. Periods of intensive manuscripts writing are 1540-1680 and 1740-1780. The first peak coincides with the existence of the Sofia literary school. The second one coincides with Bulgarian Revival. This research result may be used for history and literature classes. The students can see the "whole history" of manuscripts' writing on a single graph. They can discuss with their history and literature teachers and with each other what they know about Bulgarian history and literacy during the periods of graph's "ups" and "downs" in order to try to explain the reasons for each growth and decay of manuscripts' writing. Since the Excel's table contains the full catalogue data about the manuscripts, in the search for some answers students may have a look if the manuscripts coming from a certain decade or century are predominantly civil writings, poems, state's documents or church items. We still cannot properly explain the "down" around 1720, so the students and teachers will probably also meet difficulties to explain the reasons for what caused this sudden and significant decay. This open question may motivate them to search on the Internet for possible information for the needed explanations. The students may learn with teachers' support how to search for information on the Internet purposefully and how to select the web sites and included information they could trust. These activities are very important, because Internet undoubtedly becomes the most important source for lifelong learning. In the same time there are usually millions or at least thousands Internet sites, related to a given topic or key words. Students may also visit foreign sites to compare the facts from history of Bulgaria and Balkans given in Bulgarian and foreign sites. This is useful for learning and exercising foreign languages. It means that some of these activities theoretically may be done during language lessons. For example history teacher and students may choose trustful sites to be studied during language classes.

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