Fen Bilimleri Öğretmenlerinin Yenilenen Fen Bilimleri Öğretim Programına Yönelik Görüşleri*

Opinions of Science Teachers about the Revised Science Education Program

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Extended Summary

Purpose

The latest developments in science and technology influence our lives deeply in many different ways. Without having a sound education, individuals struggle more in adapting to the emerging new innovations. Thus, countries willing to play a leading role in the years to come are in a constant search for better ways of educating their citizens. Constructivism as one of the most promising approaches in student learning has recently become an underpinning structure of the education systems of many western countries. Unlike the behaviorism, the knowledge in constructivism is considered not as an external entity free from its knower but as an internal construct nonexistent without its learner. This implies that learning in constructivist approach takes place as a result of creating a personal account of one's experiences in his/her life as opposed to acquiring the knowledge directly from a knower (Maharg, 2000; Yager, 1991). Similar to other western countries, education policy makers in Turkey have recently been promoting the constructivist approach as a core element of the education system. Since 2005, some revisions have been made on Turkish science education program in parallel to the central tenets of the constructivist approach. That is primarily because relatively lower scores of Turkish students in international exams (e.g. PISA and TIMMS) in comparison to their peers in other developed countries alarmed Turkish officials to take action in making some regulations on science education curriculum (MEB, 2005a). After the Turkish Ministry of National Education's declaration to increase the compulsory education from 8 years to 12 years in 2012, the renewal of K-12 science education program started to be discussed again by the Turkish policy makers. In 2013, K-12 science education cur-

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riculum was renewed in order to better serve the specific needs of students. The science course was decided to be offered three hours in a week to third grade students and four hours in a week to students from fourth to eighth grade (MEB, 2005b).

Equipping all students with the qualifications of scientific literacy constitute the overarching objective of the renewed science education program. The program encourages teachers to use inquiry-based teaching and learning approach more frequently in their science lessons in order to accomplish the specific objectives of educating scientifically literate individuals (MEB, 2004). The use of alternative assessment strategies is recommended in the new program in order to ensure an effective assessment of the student learning from inquiry-based activities. The successful implementation of any new curriculum at schools is ultimately dependent on the degree of which teachers approve and support the core elements of the curriculum. For that reason, investigating the thoughts of practicing teachers is crucially important for determining the stronger and weaker aspects of the new curriculum and for assisting other teachers to implement the curriculum successfully with their students. In this research study, the thoughts of middle school science teachers was sought about the science education program renewed in 2013.

Method

This qualitative research study was conducted with 280 middle school science teachers. The teachers applying to a summer science camp were asked to complete the electronic version of a structured open ended instrument. The questions in the instrument were posed to the participant teachers to elicit their opinions about the renewed science education program. While the structured nature of the instrument allowed the researchers to be able to compare the responses of the participant teachers, open-ended nature of the questions allowed the participant teachers to provide their sincere opinions freely without any boundaries (Patton, 2002; Yildirim & Simsek, 2005). Content analysis approach was utilized in the study to analyze the available data. The various opinions of the participant teachers expressed in their positive and negative responses were assigned different codes to distinguish one from another. At the end of the coding process, several themes were formed via bringing the similar codes together. Each theme and sample teacher responses supporting each one of the themes were displayed in tables.

Results, Discussion and Conclusion

Many teachers participated in the study agreed that the reduced number of learning benchmarks was one of the most positive aspects of the new science education curriculum. Similar finding was also expressed in the literature by some of the other research studies (Çıray, Küçükyılmaz & Güven, 2015; Özcan & Küçükoğlu, 2014). In the literature, the reduced number of learning benchmarks expected from teachers to meet in a school year was considered to be more compatible with the weekly hours of science courses offered in the schools. However, several teachers in this study thought that the number of learning benchmarks in the new program needed to be reduced further to make it more balanced with the amount of science cour-

ses given to the students. The incompatibility between the number of benchmarks and the weekly hours of science lessons might be interpreted as a sign of the ongoing struggle of teachers in implementing the new science education curriculum. The spiral design of the content was supported by the participant teachers due to its repetitive nature in presenting the relevant content and its proper structure in connecting the prior learning experiences of the students to the subsequent ones. However, some of the teachers were critical about the content that they thought to be omitted to be structured in a way consistent with the spiral design of the new curriculum. Similar comments regarding the lack of spiral design in some content were also made in the literature (Arsal, 2011; Işık, 2014). Majority of the teachers expressed their satisfaction with the promotion of inquiry-based teaching of science as the mainstream teaching approach in the new science education program. However, considering the extra effort needed to be spent on planning activites for students, some expressed their concerns about any potential increase in the work load of the teachers as a result of the activity oriented nature of the inquiry-based teaching. Finally, the participant teachers indicated their endorsement to new curriclum's adoption of the process-oriented approach in the assessment of students. On the other hand, some felt uncomfortable about achieving an objective assessment of student learning with process-oriented approach. Failure to inform all stakeholders (e.g. teachers, students, parents and administrators) properly and the insuffient professional development activities for teachers were identifed by the participant teachers as the potential obstacles keeping the new program from gaining a wider support in the education system.

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