Evaluation of grade 9 physics curriculum based on teacher’s views

Meryem Görecek Baybarsa*, M.Sabri Kocakülaha

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Abstract

The principle of this research was to examine new grade 9 physics curriculum, which was put in the academic term of 2007-2008, considering the views of teachers who where using the curriculum in their classes. In addition, teachers views were also evaluated by taking into account the teaching experience and whether they attend an in-service course about the application of new curriculum.

Survey model was used in this descriptive study. A scale involving general characteristics, units and subjects, acquisitions, learning-teaching process and assessment and evaluation dimensions of grade 9 physics curriculum was develop to collect data. Experts news were investigated to ensure the construct validity of the scale. In order to find reliability coefficient, the scale was piloted to 81 physics teachers apar from the teachers in the sample and calculated reliability coefficient was found to be 0.86. There are 54 items in the scale. The final form of the scale was administered to 44 physics teachers who were working in the cities or districts that might be reached easily to apply the scale.

SPSS package programme was used to analyse data. According to the findings of the study, teachers thought that activities in the curriculum were not suitable to apply in classroom environment. It is also found that activities were not adopted to the environmental conditions, environmental facilities did not support activities and time required to teach a unit was not sufficient or it was not equally balanced in terms of teachers’ views. The role of teachers should not be disregarded in achieving a success for the application of curriculum. Thus, studies focusing on the curriculum evaluation and examination of teachers’ views should be carried out.

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1. Introduction

In the last decade, increase in the technological developments caused radical changes in teacher, student and learning environment variables of education system. Each country re-organised their curriculum including recent methods and techniques in education to bring up their individuals better and to raise them above the average of international arena in terms of knowledge, skills and aptitudes (Değirmenci, 2007). In our country changing conditions and developing technology also caused to produce a new grade 9 physics programme which was thought

*Meryem Görecek Baybars.
E-mail address: mgorecek@mu.edu.tr

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to be parallel regarding philosophy, content, teaching methods and assessment and evaluation approaches of their countries’ curriculums.

It is important that evaluation and planning studies in education should be participated by everyone of interest. One of the most important factors in this area is that of teachers who are in the position of practitioner. Therefore, views of teachers about new curriculum in practice are important. These views also define the points needed to be paid attention in subsequent curriculum studies.

The main aim of this study was to examine grade 9 physics curriculum, which was put into practice in academic term of 2007-2008, considering the views of teachers who were current practitioners of new curriculum in their classes. In addition, teachers’ views were also evaluated by taking into account the teaching experience and whether they attend an in-service course about the application of new curriculum.

Research Questions
What are the views of teachers about grade 9 physics curriculum which was put into practice in academic term of 2007-2008?
Is there a statistically significant difference between the views of teachers about general characteristics of the curriculum, units and subjects, acquisitions, learning-teaching process and assessment and evaluation concerning teaching experience and the degree of attending an in-service course?

2. Method

2.1. Research model

Since grade 9 physics curriculum was evaluated in the light of teachers’ views in this descriptive study, survey model was used as a research model.

2.2. Sample of the study

In this study, appropriate sampling method was used. Grade 9 physics teachers was selected from the cities and districts, which were easy to reach and administer the scale, as a sample of the study. The scale was administered to 44 secondary school physics teachers in total of which was comprised of 16 teachers from Bursa city, 13 teachers from Alaşehir district of Manisa city and 15 teachers from Muğla city.

2.3. Data collection instruments

A scale was constructed to collect data from teachers in the study. During the construction of the scale, first literature about the curriculum evaluation including theses in different discipline areas (Değirmenci, 2007; Savatyapan, 2007; Şeker, 2007; Yılmaz, 2006) were reviewed and data collection instruments in those theses were examined and scale items were written in the light of literature review performed.

Experts’ views were asked to ensure construct validity of the scale. In order to define reliability coefficient of the scale, it was administered to 81 physics teachers, who were taking part in the survey from different cities of Turkey and separated from the teachers responding to the final form of the scale and the coefficient was found to be 0.86.

The scale consists of two parts. The first part involves two demographic questions while the second part involves 7 items about general characteristics, 13 items about units and subjects, 9 items about acquisitions, 16 items about learning-teaching process and 7 items about assessment and evaluation process of secondary physics curriculum. The scale has 54 items in total.

2.4. Analysis of data

SPSS package programme was used to analyse data. Frequency, percentage, mean and standard deviation values were calculated to summarise teachers’ evaluate views on grade 9 physics curriculum. Furthermore, one way ANOVA was performed to determine whether the relationships between the views of teachers about the curriculum and their teaching experiences were significantly different. T-test statistic was also used to outline the differences
between the views of teachers in terms of the degree of taking an in-service course about the curriculum were statistically significant.

3. Findings and Discussion

3.1. Findings about demographic questions

Frequency and percentage values were calculated to show teachers teaching experience in years and receiving an in-service course about the new curriculum. 14 teachers have 1-5 years, 13 teachers have 6-10 years, 6 teachers have 11-15 years, 9 teachers have 16-20 years and 2 teachers have more than 21 years teaching experience. Teachers taking part in this study responded that 27.3% of them received an in-service course while 72.7% of them did not. It can be inferred from this situation that most of teachers were not aware of the preparatory and application stages of the curriculum requirements without being informed.

3.2. Physics teachers’ views on the general characteristics of secondary physics curriculum

There are 7 items in the questionnaire to reveal teachers views on the general characteristics of the new curriculum. 48.2% of the grade 9 physics teachers believe that the curriculum is well-articulated in written terms. When asked whether the approach in the application of teaching curricula is clearly defined, 36.4% of teachers were undecided, 40.9% responded that the approaches were clearly defined whereas 18.2% responded that the approaches to be followed were not described. Many teachers believe that the new curriculum is continuity of the primary science and technology curriculum. While none of teachers strongly disagree, 27.3% of teachers disagree with this view and 27.3% of them marked the statement as neutral.

3.3. Physics teachers’ views on learning-teaching processes of secondary physics curriculum

13 items are related to the units and subjects are examined, the statement of ‘the contents of the units are in spiral structure’ agreed by 68.2% of teachers while 6.8% of them did not.

3.4. Physics teachers’ views on acquisitions of secondary physics curriculum

Frequency and percentage values of the choices in 9 items, which were about the student acquisitions in the curriculum, were as follows: 29 out of 44 teachers (65.8%) thought that the acquisitions were consistent with the general objectives of the physics lesson but 13 teachers (29.5%) did not think the same. Once again, 72.7% of teachers thought that the acquisitions were clearly written in the curriculum. Such a response can be interpreted as the articulation of the acquisitions in the curriculum were adequate.

3.5. Physics teachers’ views on learning-teaching processes of secondary physics curriculum

Frequency and percentage values of the choices in 16 items which were about learning-teaching processes in the curriculum were also calculated. The first statement about learning teaching processes is related to the applicability of the methods specified in the curriculum in a classroom environment. While 59.1% of teachers disagreed and 4.5% strongly disagreed with this statement, only 15.9% of them agreed that the methods could be applied in the classes. This finding suggests that majority of teachers have negative views about fulfilling the objectives of the curriculum with classes’ current physical conditions which are thought to be inadequate to achieve the curriculum’s objectives.

When the findings were examined closely, it was interesting that 5 teachers agreed with the statement emphasizing conducting experiments in the curriculum with the current laboratory facilities of school. 29 teachers stated that current laboratories and equipments would be insufficient for the experiments in the curriculum. From this perspective, it can be said that teachers regard the new curriculum as an inadequate product.
3.6. Physics teachers' views on assessment and evaluation process of secondary physics curriculum

Teachers responded to item about the description of the determination and evaluation of barriers to students' learning in the curriculum as follows: 6.8% strongly disagree, 25% agree, 29.5% neutral, 29.5% disagree and 4% strongly agree. Teachers have balanced views on this item. In other words, while some teachers found the assessment and evaluation process of the curriculum satisfactory, some of them did not think the same.

47.7% of teachers responded to item ‘How to make a formative assessment is clearly stated in the curriculum’ as ‘agree’. The percentage of showing disagreement with this item was 15.9%. We can assume that teachers are confident with assessment-evaluation process of the curriculum in terms of formative assessment.

Teachers responded to item ‘How to make a summative assessment is clearly stated in the curriculum’ as follows; 6.8% strongly agree, 34.1% agree, 19.0% neutral and 15.9 disagree. This findings shows that teachers are confident with assessment-evaluation process of the curriculum in terms of summative assessment.

3. Findings About Physics Teachers’ Views On Secondary Physics Curriculum Relating To Teaching Experience Characteristics

Whether teachers’ views about the general characteristics, units and subjects, acquisitions, learning-teaching process, assessment and evaluation dimensions of the curriculum differ significantly were investigated relating to teaching experience characteristics of the teachers. Since the conditions of parametric statistics are secured, independent samples one way ANOVA analysis technique was used. Views of teachers about general characteristics of the curriculum relating to their teaching experiences were compared by performing one way ANOVA to outline whether significant differences exist between those views. It was found that there was no significant difference (p>0.05) between the views of teachers about the curriculum’s general characteristics in terms of their teaching experiences.

A significant differences between the views of teachers about units and subjects of curriculum relating to their teaching experiences was sought by using one-way ANOVA: It was found that there was a significant difference (p<0.05) between the views of teachers about units and subjects of the curriculum relating to their teaching experiences. Additional Tukey test analysis showed that two groups in which teachers have teaching experiences of 1-5 years and 16-20 years and 11-15 years and 16-20 years were the source of such a difference.

Another significant difference between the views of teachers about the acquisitions of the curriculum relating to their teaching experiences was compared by the use of one-way ANOVA. Analysis revealed that there was a significant difference (p<0.05) between the views of teachers regarding teachers’ teaching experiences. The result of Tukey test analysis, which was performed to find out the pairs of teaching experience groups, showed that teachers with teaching experiences of 1-5 years and 16-20 years, 6-10 years and 11-15 years and 16-20 years were the responsible for such a differences.

Views of teachers about learning-teaching process of the curriculum relating to their teaching experiences were examined using one-way ANOVA to detect any significant differences between those views. It was found that there was a statistically significant difference (p<0.05) between teachers’ views about learning-teaching process of the curriculum in terms of their teaching experiences. When the origin of the difference was investigated using the analysis of Tukey test, teacher groups with teaching experiences of 1-5 years and 16-20 years, 6-10 years and 11-15 years and 16-20 years were the responsible for such a differences.

With regard to teaching experiences of teachers, their views about assessment and evaluation process of the curriculum were also compared by using one-way ANOVA technique. There was no statistically significant difference (p>0.05) found between those views.

4. A Comparison Of Physics Teachers’ Views About The Curriculum With The Level Of Taking An In-Service Course About Its Implementation

A significant difference between the level of taking an in-service course about the implementation of physics curriculum and teachers’ views about the general characteristics, units and subjects, learning-teaching process and assessment and evaluation dimensions of the curriculum was sought. Differences between teachers’ level of taking an in-service course and their views about the curriculum were also examined by means of t-tests. Analysis results show that there were no significant differences (p>0.05) between the level of taking an in-service course and the views about the general characteristics, units and subjects, acquisitions, learning and teaching process and assessment and evaluation process of the curriculum. It might be concluded from this finding that in-service course given about the curriculum did not meet entirely its objectives.
4. Conclusions and Implication

4.1. Conclusions

Teachers’ views imply that the curriculum is written clearly and the explanations about which teaching approaches will be used are clear and understandable, the role of teachers are certain but assessment and evaluation part of the curriculum is not clear and understandable. Similar findings were reported on those studies which were conducted to evaluate primary science curriculum in our country (Subaşı, 2006; Özdemir, 2006; Bulut, 2006; Gündoğar, 2006; Ateş ve Akdağ, 2006; Şeker, 2007).

It has been outlined that teachers think about the units of grade 9 physics curriculum as in a spiral structure; connected other lesson units and suitable to the level of students’ cognitive and psychomotor development. Units of the curriculum are thought to include non-complicated content, to improve individual skills and to deal with approaches based on everyday life. Time left for the implementation of the curriculum is also found enough by the teachers. Özdemir (2006) and Ateş and Akdağ(2006) found that acquisitions of the new curriculum are suitable to the cognitive, emotional, psycho-motor and readiness developmental levels and be able to realize in current situation in their studies. It is evident that data obtained in this study are in accordance with the findings of the studies reported in the literature.

While teachers responded that the acquisitions in the curriculum are consistent with the general objectives of the physics lesson, they also emphasised that it was difficult to understand the acquisition statements. Teachers viewed the activities in the curriculum as in convenient to perform in classroom environment.

Teachers believe that activities in units are not adapted easily to the environmental conditions, environmental facilities do not support the activities and time devoted to the units is both inadequate and not well-balanced. With regard to teachers’ views, it can be said that the lack of physical facilities has a great importance and not having a desired implementation of the curriculum in our schools. However, teachers find the assessment approaches in the curriculum as clear and practical ones to use in classroom situations.

Another result which can be drawn form this research is related to the participation level of an in-service course about the new curriculum. According to t-test results between two groups of teachers who participated and not participated an in-service course, there was no significant difference between the groups in terms of teachers’ views on characteristics, units and subjects, acquisitions, learning-teaching and assessment and evaluation processes of the curriculum. The causes of such a result might be completion of in-service trainings in a short time and with tutors who had not enough qualification in the area.

Implications

It is important that teachers should be participated an in-service course about the implementation of the curriculum to arrive at the aims of curriculum. Teachers shoult be provided with strategies, methods and techniques in effective learning, learning approaches in behaviorist and cognitive field theories, constructivist approaches, assessment and evaluation approach of the new curriculum through out an effective and systematic in-service course. In addition, problems of teachers encountered during the application of the curriculum should be investigated during those courses. Necessary improvements for those problems should be made as soon as possible. It will be appropriate to appoint experts who will give an in-service course which will have influence on meeting the requirements of the curriculum and spreaded an a large time span. The collaboration with education facilities of universities should be established in taht respect.

The essential role of teachers should never be disregarded in achieving the success for effective implementation of the curriculum. Thus, studies about curriculum evaluation and revealing teachers’ views about this subject should be continued. Moreover, studies concentrating on the evaluation of each element of the curriculum and research examining the curriculum in dept should be carried on. In the light of the results of evaluate studies, experts should put necessary improvements into practice immediately.

So as to secure the effectiveness of the curriculum disseminated recently, everybody who is concerned with the curriculum should be sought advice, obstacles or situation in practise should be defined and the level of curriculum’s practicality should be increased concerning the developments in science and technology which are convenient to the conditions of the country.
References


