Effectiveness of a Professional Support Program Related to Project Based Instruction (PBI) on Science and Technology Teachers' Needs

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SYNOPSIS

INTRODUCTION

Despite the benefits of Project-Based Instruction (PBI) provided to students and teachers, it is stated that it isn’t used effectively in Science and Technology classrooms (EARGED, 2005, 2006; Akınoğlu, 2008; Artun, Aydın & Ürey, 2010). Among the reasons, it is stressed that enough application hasn’t been made in the in-service training courses for Science and Technology teachers in the use of the method, and teachers cannot be monitored at work after the training courses (Arı, 2010). In this context, various models to support teachers effectively has been developed and tested. One of them is Teachers’ Continuous Professional Development (CPD) model. This model is based on the idea that Science and Technology Teachers should receive training about Project-Based Instruction (PBI) from the academics and they should encourage using these knowledge, skills and experiences in their classrooms. The model consists of two stages. In the first stage teachers are learners (The teacher as learner) and in the second stage they are teachers (The teacher as teacher). In addition to this, teachers completing these stages successfully can be Leading Teachers with the academics (Fallik, Eylon & Rosenfeld, 2008).

Despite various studies on the effects of CPD elsewhere in the world, no study on this...
issue was found in our country. In this study, a new program containing CPD Model was prepared to support Science and Technology teachers in using the Project-Based Instruction (PBI) and its effects on meeting the needs of teachers were investigated. Within the framework of these issues, answers were sought for the following questions:

- What are the needs of Science and Technology Teachers related to PBI?
- To what extent did support program developed for the enacting of PBI according to the CPD meet the need of Science and Technology Teachers?

PURPOSE OF THE STUDY

In this study, it is aimed to uncover the effects of a support program, which was developed according to the CPD in order to contribute Science and Technology Teachers in the enacting of PBI, on the meeting the needs of the teachers.

METHODOLOGY

In the scope of the study, it was tried to reveal the needs of Science and Technology Teachers related to PBI and the rate of support program prepared according to CPD meeting these needs by using qualitative approach. In this context, the needs of the teacher candidates before the support program, after the first and second stages of the support program were identified and the differences between them were examined.

The study was carried out with 14 Science and Technology Teachers in the in-service training course in the first stage of the support program. 5 voluntary teachers selected from these teachers and 5 voluntary students took part in the second stage. Teachers were symbolized by the letters A, B, C, D, E, F, G, H, I, J, K, L, M and N.

In this study, semi-structured interviews were done to determine the needs of 14 teachers about PBI before the support program. Similarly, to determine to what extent the needs about PBI were met, semi-structured interviews which took 30 minutes in average were done with the 14 teachers after the first stage and 5 teachers after the second stage of the support program.

Data analysis was carried out in accordance with stages of qualitative data analysis (Miles & Huberman, 1994).

FINDINGS

Twelve codes have been identified in the analysis carried out according to the needs of 14 Science and Technology Teachers about using PBI in project preparation and their classes and these needs have been shown by using these codes. Six of them (a, b, c, d, i and k needs) have been listed as detailed and practical information need related to project, the need for knowledge of the subject area, the need of finding enjoyable activities making students enjoy preparing project, the need of getting feedback on the project method from academics and the need for finding exemplary project. The other needs (j, g, e, f, h andı needs) have been listed as changing the negative perspective of the social environment towards education, financial support, extra time in curriculum for preparing project, awarding of the teacher making the project, improving laboratory conditions and reducing teacher workload. The first six needs have been grouped as needs removing with courses and similar support programs; the second six needs have been grouped as needs requiring administrative regulations.

Fourteen Science and Technology Teachers have stated that they need detailed and practical information related to project preparation, the expansion of subject area, knowledge and activities making students enjoy preparing project. After that, the most expressed need has
been the need of getting feedback about PBI from academics. In the study, 13 science and technology teachers except N expressed this. Ten teachers (A, B, D, F, H, I, J, L, M and N) expressed the need of finding project examples.

According to teachers’ frequency of re-expression of the six needs that have been investigated before support program, after the first and second stage of the support program, teachers’ needs decreased. Additionally, the needs about project preparation (k, c and d needs) decreased in the first stage and the needs about making students prepare project (a and i needs) decreased in the second stage.

DISCUSSION

Findings revealed that most of the needs of teachers have been met through the courses, and the participating teachers demanded similar support programs related to PBI comparing with the other needs. This situation can be explained with the fact that the teachers have attended to the support program voluntarily. In the studies conducted about PBI, some needs are determined similar to the ones revealed in this study. For example, Science and Technology teachers asked for more information about PBI (a) (k) and especially exemplary projects in the guide books (d) (EARGED, 2005; EARGED 2006; Önen et al., 2010). Moreover, it is also uttered that the teachers need to cooperate with academics and to get feedback while applying PBI (c) (Krajcik, Blumenfeld, Marx & Soloway, 1994; Marx, Blumenfeld Krajcik, Blunk, Crawford, Kelly & Meyer, 1994; Marx, Blumenfeld, Krajcik & Soloway, 1997; Fallik et al., 2008).

The fact that six needs determined within the study extent have lessened with the help of support program can be commented in the way that the support program meets the needs related to the teachers’ knowledge on preparing and leading preparation of a project, reaching the project samples, expanding their information about the subject area, getting feedback of the academics and motivating the students for making projects.

Overcoming the needs related to project preparation (k, c and d) in the first step and related to leading project preparation (a and i) in the second step show that professional development method stated by Day (1999) and based on teaching the things learnt is effective to meet the needs determined within this study extent.

RESULTS and RECOMMENDATIONS

In this part the results reached from the findings and discussions are presented below.

1. Different from the needs of project preparation, leading project preparation, finding project samples, motivating students and getting feedbacks from the academics stated in literature, Science and Technology teachers attended voluntarily to the support program related to PBI also need to expand their subject matter knowledge.

2. It is found out that the supporting program is effective for meeting the needs of Science and Technology teachers related to PBI (project preparation, leading project preparation, finding project samples, motivating students, getting feedbacks from the academics and expanding subject field knowledge).

3. The first step which includes doing applications about project preparation of the support program is seen to be more effective when compared to the second step that includes meeting the teachers’ needs of detailed applications for project preparation, getting information, reaching project samples and getting feedback from the academics during the project preparation process.
4. The second step of Support Program including doing application about leading project preparation is resulted to be more effective than the first step while meeting the teachers’ needs for reaching detailed and applied information about leading project preparation and motivating students for doing projects.

With the discussions and results found within the research extent, the suggestions below are presented.

1. Teachers’ needs about PBI should be determined not only for developing the content of courses and similar support programs but also for educating teachers and students. These needs should be evaluated according to demographic features of the teachers. The support program is shaped according to teachers’ needs. Teachers’ needs can be different according to their demographic features. For that reason the teachers with similar demographic features should be placed together while choosing the participants for the course.

2. The support program about PBI prepared within the CPD should be applied not only to the volunteer teachers but also to the other ones. During the application process, firstly the needs of the teachers should be decided and then a program should be prepared accordingly.

3. The need of subject matter knowledge appeared within this study extent should be met to prepare effective projects.
REFERENCES


