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IDENTIFYING THE DIMENSIONS OF THE PEDAGOGIC-TECHNOLOGICAL INNOVATION IN ISRAELI ELEMENTARY SCHOOLS

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ABSTRACT
Pedagogic-Technological Innovation (PTI) relates to different practices reflecting the changes in the role of teachers and class students today. PTI aims at preparing students for lifelong learning in the knowledge community. The new national Information and Communication Technology (ICT)Program, called "Adapting the education system to the 21st century" has been implemented in twenty-one schools in Israel that incorporated ICT, intended to generate a pedagogic-technological change.
The aim of the current study was to identify the underlying dimensions of the PTI in Israeli elementary schools, and expose the internal relationships between the attributes of this innovation, as well as the factors involved in this change in the school. 283 teachers in these twenty-one schools evaluated the level of incorporationof the ICT innovation in their schools. The teachers completed two questionnaires that were based on the analytical tools necessary for examining the integrated ICT innovation.A Smallest Space Analysis yielded a two-dimensional solution with a Coefficient of Alienation of 14. The axial facet relates to the factor domain, a well-known area of content in research on pedagogic innovation and ICT incorporated. The second modulating facet distinguishes between class components vs. school organizational components. Implementing PTI within the classroom signifies the most complex level and may be located at the center of PTI change in school. The findings of the analysis highlight the importance of the class environment as "the heart" of any educational activity, without which none of the organizational changes in the schools would have occurred.
Keywords: Pedagogic-TechnologicalInnovation,change in the school,class environment

Introduction

Various education systems around the world, such as in USA, Australia and UK employ special units that serve as a catalyst for performing innovative changes in the schools. These units encourage initiatives and innovation, in order to implement successful educationalmodels within the education system (Chen, 2006). Similar to this concept, the new national ICT program in Israel "adapting the education system for the 21st century" employ twenty oneschools as ICT demonstrators, withthe role asa technological-pedagogical change generators at their schools, with the support of the Ministry of Education in providing the necessaryinfrastructure, professional development and advanced technological equipment, such as a computer for every teacher, interactive whiteboards and laptops for the students (Ministry of Education, 2011). These schools are considered to be groundbreaking since they are continuously and diligently engaged in educational, pedagogical and organizational innovation,all focused around ICT.
According to Rogers's model "Diffusion of Innovations" (Rogers, 2003), assimilation takes place in several distinct stages. The first is the "Knowledge" phase, in which the school staff is exposed to the concept of innovationand develops awareness toits necessities. As a result, the motivation to experiment with the innovative new tool increases. This enables the transfer intothe second phase in which a positive attitude towards the new tool develops (the "Persuasion" phase). The positive attitude leads to the next phase in which the individual decides to adopt the innovative tool (the "Decision" phase) and work towards its implementation in the organization (the "Implementation" phase). The last is the "Confirmation" phase in which the useof the innovative tool is sustained for a long period of time while its advantages and efficacy are acknowledged.
The ICT demonstrating schools have a rationale that focuses on implementing an optimal pedagogyin innovative learning environments, while using the information and communication

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technologies intelligently and adaptingthem to the needs of the school community (Ministry of Education, 2011).

The concept of optimized pedagogy was developed inrecent decades, following the integration of theories and research from various fields, such as developmental psychology, constructivism, self-directed learning, motivation, learning styles, exploration and identity formation (*e.g.,* Jung, 2005; Karagiorgi&Symeou, 2005; Overbay, Patterson, Vasu, & Grable, 2010; Salmon, 2009; Solvie, &Kloek, 2007; Strommen& Lincoln, 1992; Vansteenkiste, Simons, Lens, Deci& Sheldon, 2004). The interest of thisteaching concept is to improve the skills of the teachers and create the necessary conditions for effective learning, with the vision that the future adult will be able to function effectively and independently ina competitive, dynamic and technology-rich global reality.

The groundbreaking schools provide a colorful and qualitative environment for a systemic organizational-educational enterprise, which include innovative educational processes expressed in the curriculum, the teaching methods, organizationof the learning environment and the implementation of new ideas (Chen, 2006). It is apparent that the demonstrating schools function as a sub-group of the experimental schools, each with his own modelsuch as: excellence in ICT, promoting writing processes in the ICT environment, using the system for managing the teaching and learning – Moodle, and CTC- Children Teaching Children in a technological environment. These innovative education modelsassist the development of the general ICT program,and may transform them into systemic educational models which will contribute to the progressof the entire education system.

The current study is based on previous studiesthat examined, in the framework of the international study of the IEA organization, SITESm2 (Second Information and Technology in Education Study), pedagogic initiatives that incorporated ICT in Israel and around the world,by the level and the domain of innovation in the school and by the involvement of the systemic variables (Mioduser, Nachmias, Tubin&Forkosh, 2006; Forkosh-Baruch, Mioduser&Nachmias, 2011). The current study used the same research tools presented in their study and compared between the findings of both studies. The difference between the studiesis the innovation evaluation method which in the previous studies (Mioduser et al., 2006; Forkosh-Baruch et al., 2011) was performed by external refereeswho were all independent researchers, while in the current study the evaluation was performed by actual teachers in the schools.This procedure was based on the assumption that the teachers are a central and active part of the school, and therefore their views may reflect the PTI change that occurs in the schools (Halverson & Selwyn, 2010;Avidov-Ungar&Magen-Nagar, 2012; Cunningham, 2009; De Freitas& Smith, 2010; Oliver, 2005; Fullan, 2007). Previous studiesthat examined the demonstrating schools found that in comparison to regular schools the teachers'opinions in these schools is significantto the implementationof the ICT in the school, andthey are based on a high pedagogical commitment which leads to optimal pedagogy in the technological environment (Magen-Nagar & Peled, 2013). Therefore, it is apparent that the teachers have the ability to assess the change of the PTIprocesses in their school from the closest point of reference.

Research goals

To examine the PTI in the ICT demonstrating schools and to compare the results to the schools that participated in the SITESm2 study, and in this way to identify the dimensions of the PTI and the internal relationships between the attributes of the PTI and the involved elements inside the school.

The study questions

1. What are the PTI elements in the demonstrating schools as compared to the schools used in the SITESm2 study?

2. What are the variables involved in implementing PTI in the demonstrating schools as compared to the schools used in the SITESm2 study?
3. What are the dimensions of PTI in the ICT demonstrating Schools?
4. What are the internal relationships between the PTI attributes and what are the elements involved?

Method

Participants
21 ICT demonstrating schoolsthat were incorporated in the year 5771 into the national ICT program "Adapting the education system to the 21st century" (100%)participated in the study. On average 13 teachers from each school evaluated the level of the ICT integrated innovation.

Research tools
The study questions were examined using two questionnaires that were based on the analysis tools developed by Mioduser et al., (2006) for examining the innovation that involve ICT. The first questionnaire was based on the analysis tool that examined the innovation level of pedagogical applications that integrate ICT in various areas of the school. The questionnaire contained 33 statements, which were constructed according to four areas (configuration of time and space, the role of the student, the role of the teachers and the curriculum) and three levels of innovation (implementation, transition and transformation). The questionnaire scale ranged from 1 (implementation level) to 5 (transformation level). The higher the average- the higher wasthe innovation level.The reliability of the questionnaire was 0.93 (α=0.93). The second questionnaire was based on the analysis tool that examined the strength of the variables involvement in innovative pedagogical applications that incorporate ICT. The questionnaire contained 14 statements that were built according to four groups of variables (internal functionaries of the school, training and staff development, infrastructure and resources, organizational climate and functionaries external to the school). The questionnaire scale ranged from 1 to 5. The higher the average- the higher was the variable involvement. The reliability of the questionnaire was 0.80 (α=0.80).

Research process
At the end of atraining course for teachers in-service from the demonstrating schools,conducted during the school year2011-12, teachers were asked to fill out an online self-report questionnaire in order to examine their positions about the ICT integrated innovation level in the schools where they teach. The teachers tookabout 20 minutes to complete the questionnaires.

Data analysis
The data were analyzed by using SPSS 18.0 for Windows and by SSA analyzes (Smallest Space Analysis).

Results

PTI innovation in demonstrating schools as compared to schools used in the SITESm2 study.
To examine the PTI components in the demonstrating schools and then to schools used in the SITESm2 study, the averages and standard deviations were calculated for areas and sub-areas of ICT integrated innovation inthe 21 demonstrating schools. Thereafter,the averages of

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thedemonstrating schools were compared tothe averages of the schools thatparticipated in the SITESm2 study (Table 1).

TABLE 1. Averages and standard deviations of the level of PTI in the demonstrating schools as compared to schools in the SITESm2 study

		Demonstrating Schools N=21		SchoolsSITESm 2 Study *N*=174	
		M	***S.D***	***M***	***S.D***
Space format		3.71	0.55	2.88	1.13
	Physical space (Ranges between public space to private space)	3.45	0.69	2.69	1.42
	Digital space (Ranges between desktop to online space)	3.90	0.61	3.16	1.21
Student role	Main roles (Between Structured tasks to personal development tool for creating a learning environment)	3.31	0.63	3.23	1.29
Teacher role		3.46	0.56	3.18	0.92
	Toward the students (Ranges from the teacher as the main source of leadership, information and knowledge to an expert-associate who is partner to the learning and discovery process of the student)	3.62	0.60	3.32	0.96
	Toward the teachers (Ranges from an independent teacher to anexpert whose dependency on his colleagues strengthensas the task becomes more complex)	3.29	0.52	3.02	1.36
Curriculum		3.73	0.67	3.10	0.98
	Contents (Ranges between ICT integration in traditional knowledge disciplines to the construction and development of new areas of knowledge)	4.11	0.77	3.07	1.16
	Didactic solutions (Ranges between implementing existing software applications to developing learning spaces)	3.46	0.61	3.31	1.00
	Evaluation processes (Ranges between traditional exams to creating new evaluation tools, such as: digital portfolio)	3.61	0.62	2.92	1.45
Total		3.58	0.62	3.10	1.08

Table 1indicates that the average level of innovation ishigher in the demonstrating schools (M = 3.58) in comparison to the schools that participated in the SITESm2 study (M = 3.10). Also, in general it can be seen that inall the dimensions of innovation in the demonstrating schools there arehigh levels of pedagogical innovation that incorporate ICT in comparison to the schools that participated in the SITESm2 study,where the highest level of innovation in the demonstrating schools was in the 'curriculum' domain with the sub-domain 'contents' (M = 4.11).

This means that in the demonstrating schools the ICT serves as a measure for expanding the knowledge domains and for creating new domains, and less as a measurefor supporting existing knowledge. In contrast, the highest level of innovation in schools that participated in the SITESm2 study wasin the ‘teachers' role’ domain, and in the sub-domain‘towards the students' (M = 3.32). This means that in the schools that participated in the SITESm2 study the teachers

took the role of experts-associatesand they were partners in the students' learning process andserved lessas a source of knowledge.

The variables that are involved in PTI implementation in the demonstrating schools in comparison to the schools that participated in the SITESm2 study.

In order to examine the variables which are involved in the implementation of PTI in the demonstrating schools as compared to the schools that participated in the SITESm2 study, averages and standard deviations of the variables involved in innovation in the 21 demonstrating schools were calculated. Thereafter, the averages of the demonstrating schools and the averages of the schools that participated in the SITESm2 study were compared (Table 2).

Table 2.Averages and standard deviations of the variables which were involved in the implementation of PTI in the demonstrating schools as compared to schools in the SITESm2 study.

	Demonstrating Schools *N*=21		SchoolsSITESm 2 Study *N*=174	
	M	***S.D***	***M***	***S.D***
Internal school functionaries (School headmaster, ICT coordinator, officials and teaching stuff)	4.58	0.45	3.62	0.79
Functionaries external to the school (Parents, interveningexternal body, experts of the knowledge domain, the Ministry of Education, the local municipality	3.38	0.94	2.09	0.83
Training and staff development (The training relevance)	4.42	0.77	3.45	1.10
Infrastructure and resources (Various peripheral equipment, availability and integrity of the infrastructure and the technical support)	4.32	0.54	3.41	0.96
Organizational climate (Formulating the vision and ICT goals and scope forimplementation of the innovation in the school)	4.54	0.56	3.40	0.96

Table 2 indicates that the level of involvement of each of the variables examined in the demonstrating schools was very high in comparison to schools that participated in the SITESm2 study. The range of the level of involvement in the demonstrating schools was higher (3.38 to 4.58) as compared to the schools in the SITESm2 study (2.09 to 3.62). It can be seen that the variable 'internal schools functionaries' is at the highest level of involvement in both the demonstrating schools and the SITESm2 study schools. This means that in both studies the schools'teams including the headmasters, the ICT coordinators, the support staff and the teachersare significantly engaged with the PTI processes that occur in their schools.

The PTI dimensions and the internal relationship between its attributes and the factors involved.

In order to identify the dimensions of the PTI in the ICT demonstrating school and the internal relationships between the PTI attributes and the variables involved in the change process a Smallest Space Analysis was performed. SSA analysis is a part of the Facet Theory which can identify the dynamic relationships between the variables (Guttman, 1982). The facet exposure creates the conceptualdifferentiation between the studied phenomena (Freidman 2012). Figs 1 and 2 display the distribution maps of the questionnaires factors in the two dimensional space (axial and modulation) with the extrinsic factor 0.14, which indicatesto a good agreement. The analysis was performed by axis 1 X axis 3.

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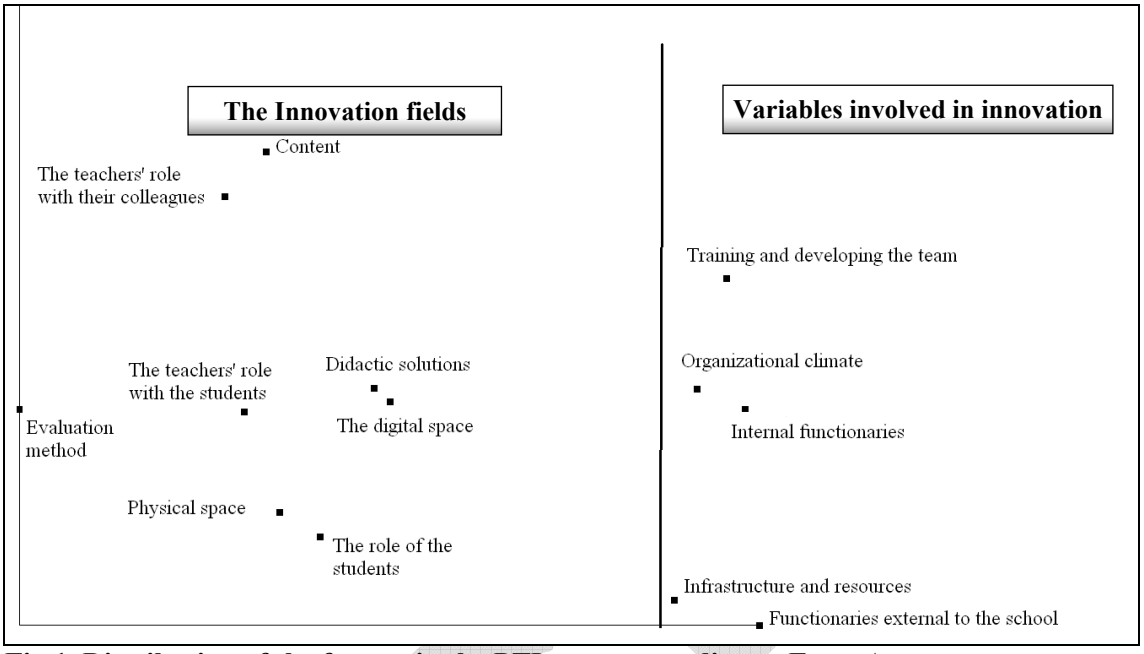


Fig 1. Distribution of the factors in the PTI space according to Facet A

The SSA map in Fig 1 displays the first dimension (Facet A) of the axial aspect, which distributes the space according to the innovation dimensions and the factors involved. This distribution is identical to the one performed by Forkosh–Baruch et al., (2011). On the left, the innovation dimensions are displayed and at an evident distance the factors which are involved in the change process are displayed.

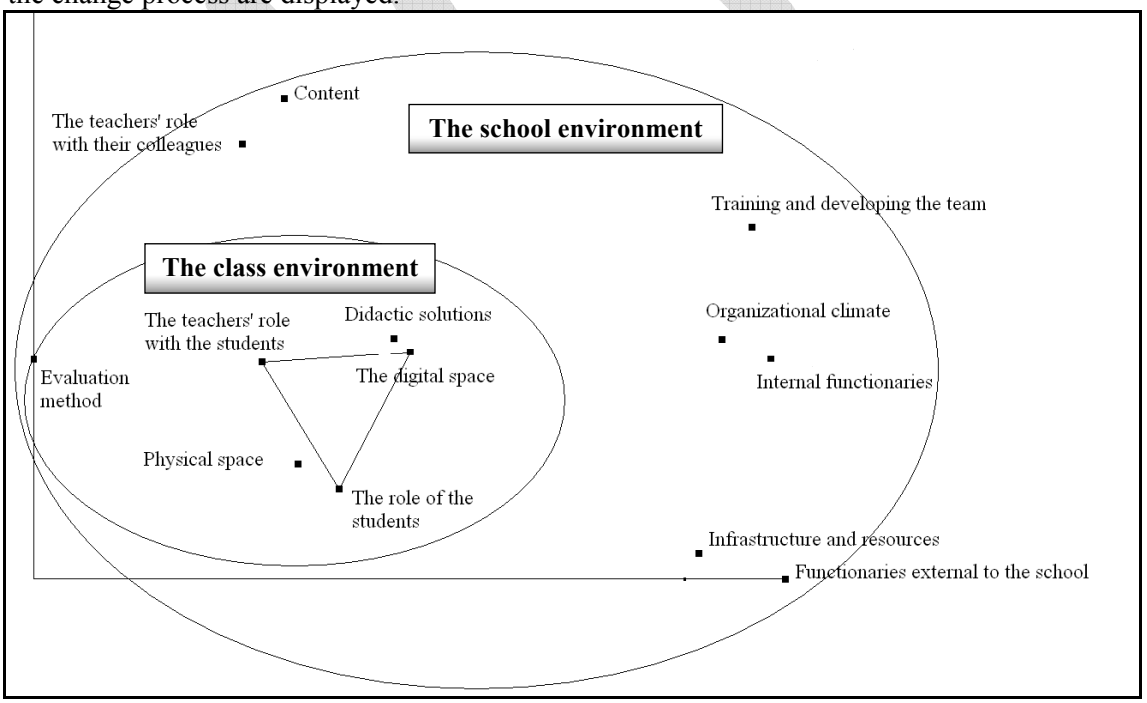


Fig 2. Distribution of the factors in the pedagogical- technological innovation space according to Facet B

The SSA map presented in Fig 2 displays the second dimension (Facet B) in a modulation modewhich divides the space into the components of the class and the school level. The components of teaching and class organization are located in the center circle. These components are complex and significant, and include 'didactic solutions', 'digital space'and 'the role of the teachers toward the students'. The external circle includescomponents each of which have a unique effect that express the involvement of the variable in the PTI, the factors included are involved in the change process together with 'contents' and the 'teachers' role with colleagues'. In addition, the analysis indicates that the internal circle contains a triangulated close link between the factors: 'digital space', 'the role of the teachers and the students' and 'the role of the students'.

Discussion and conclusion

The results of the current study suggest that in the ICT demonstrating schools the parties that are involved in the change process showhigh levels of PTI, as compared to the schools that participated in the SITESm2 study. These findings indicate that significant changes are occurring in the ICT demonstrating schools, and strengthen the argument that these schools are indeed demonstrating, in practice, the incorporation of technologies and updated teaching-learning tools and methods, while utilizing the potential of the information technology to its fullest. Moreover, these schoolsdesignand implement unique and innovative pedagogical models for incorporating ICT intothe schools, which may, in the future, serve as prototypes and templates for other schools (Rimon, 2010).

The results of the SSA empirically demonstrate the extent of the pedagogic-technological innovation. The axial distribution of the map shows the domainsof innovation alongside those which are involved in the change process and thus supports the approach of Forkosh–Baruch et al., (2011)which is based on two separate aspects. The first aspect is the identificationof pedagogical innovation in the school's social environment, and the second is the examinationof the variables that are involved in the performance of the innovative pedagogical initiativesthat incorporate ICT. The SSA map shows a significant spatial separationbetween these two aspects, and thus point to separate content domainsthat are loosely connected. Sometimes loose connections in an organization are advantageous because they allow for each component of the organization to perform functional change, or to adapt to the change, in a rapid and easy mannersince there is no dependencybetween the components.Still, the low coordination is also a disadvantage since it reflects thelow coordination ability between the components of the organization, which render the effective functioning of all stakeholders difficult (Shahar, 2007; Weick, 1976). Therefore, it is likely that these alternative situations may occur during the process of the systemic PTI change that occurs in the school, which on the one handexpose the tremendous complexity involved in the changing school's components (Rogers, 2003; Sarason, 1998), and on the other the need for cooperation between the school and the elements that are active in its environment (Oplatka, 2007). It is therefore recommended for the schools to activelybridge the connections between the innovation domains that incorporate ICT and the elementsinvolved, in order to create a substantial innovative change inthe schoolsthat face pedagogical-technological challenges.

Therefore it can be said thatthe first facet is well-known and recognized in the study of innovative pedagogy that integrates ICT (Forkosh- Baruch et al., 2011). However, the second facet, the Space Facet, is new and expands the perception of the PTI. With this facet the PTI can also be conceptualized as a modular continuum that revolves from classroom factors such as: methods of teaching, the teacher's role, the role of student and the physical and digital learning space, toschool organizational attributes such as: school culture, resources, professional

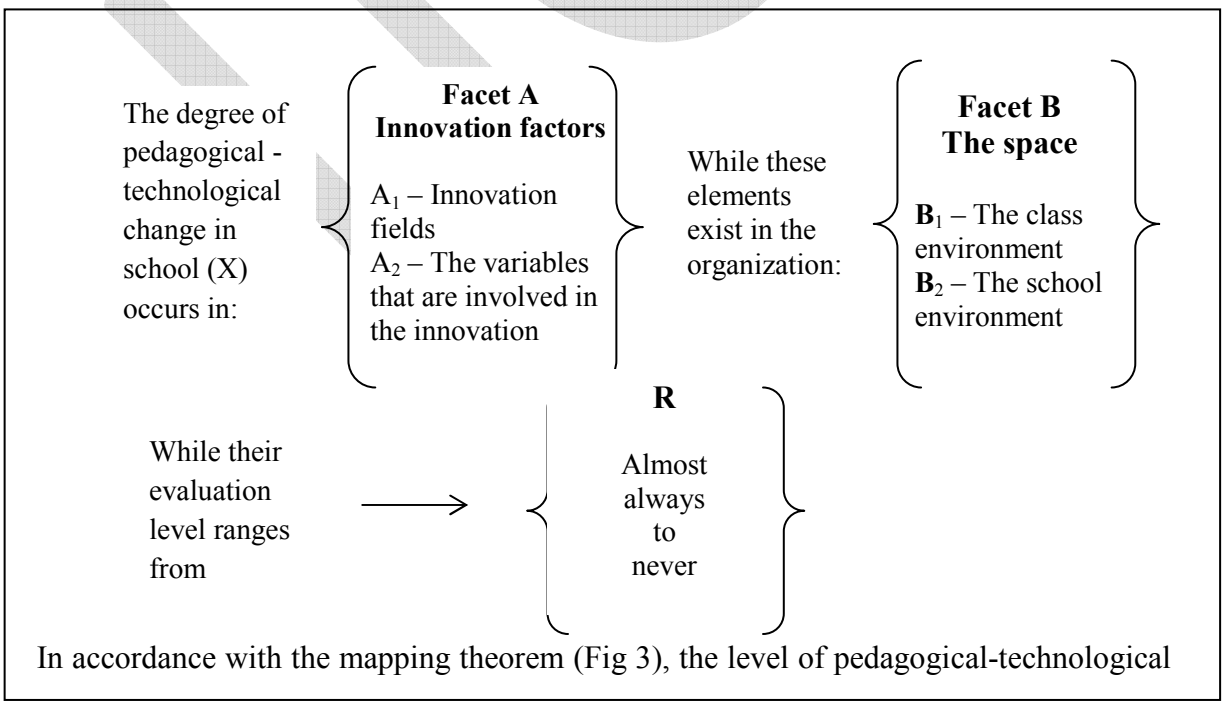
development, professional learning between peers and the learning contentin the school. The ambition to implement PTI in the classroom is the most complex level, and it just may be that this is "the heart" of the PTI changesin the school.

The findings of the current study strengthen the argument (Law, 2008) that the ICT learning environment allows for achieving educational and academic goals, and more importantly, it has the potential to causea significant change in teaching and learning processes. This is thepedagogical change that will lead to the required achievements. Our findings also complement other studies which demonstrate that the classroom isa significant social and learningunit in the context of teaching and learning (Salant, 2008; Magen-Nagar, 2010; Archibald, 2005; Delpit, 1995; Rumberger&Palardy, 2005). It is therefore advisable to promote innovation in the classroom framework as the core of the educational activity in the school, without which it will be impossible to perform the systemic change.

In addition, we believe that the basis of the PTI consists of three interdependent classroom elements: 1. A teaching style in which the teacher is an associate, expert and partner inthe learning process of the student; 2. A teaching style in which the student uses the ICT as a tool for creating, learning and information sharing; 3. The virtual-digital learning space is a constructivist learning environment, where the teacher and the student sharemutual responsibilities for structuring the knowledge (Bracewell, Sicilia, Park& Tung, 2007).

It is therefore appropriate that the national ICT plan should continue to nurture the teacher, the student and the virtual learning environment, and mainly act for the participation of all the entities involved in the process of change, both inthe ICT demonstrating schoolsand theregular school. In conclusion, a mapping theoremis suggested for evaluating the pedagogical-technologicalinnovation in a school (Fig 3).

Fig 3. Mapping theorem for evaluating the pedagogical – technological innovation in a school



In accordance with the mapping theorem (Fig 3), the level of pedagogical-technological

innovations in the school can be characterized by the aspects of the innovation domains that incorporate ICT and organizational attributes in association with the classroom and the school environment.

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OUT OF THE CLASSROOM, ONTO THE STREETS: LEARNING SOCIAL RESEARCH BY DOING SOCIAL RESEARCH[1][2]

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ABSTRACT
This paper reports and assesses a semester-long activity-based approach to learning social research methods. Unlike more typical research methods classes which depend on lectures, readings, and tests, this class used a series of projects that moved students out of the classroom into a progressive series of research activities using Istanbul itself as the primary locale for learning. From the first session of the semester, two related research questions, "What makes a successful street beggar?" and "How do people in Istanbul interact with street beggars," guided a collaborative research project involving more than forty students and their instructor. Students used observation, role-taking, interview construction and gathering interviews, survey construction and administration, and data analysis as research tactics to address the research questions. Students report that they learned more through these activities than through usual classroom learning and they endorsed the approach for their other classes. Suggestions for adapting this approach for other classes are listed.
Keywords: classroom, streets, learning, social research

Introduction

A quiet revolution has been spreading through education. Fueled by the arguments, among others, nearly one hundred years ago of the Italian educator Maria Montessori (1995) and the American philosopher of education John Dewey (1997, 2008), a model of education that is learner- rather than teacher-centered has both captured the imagination of educators and has focused teaching efforts on empowering the learner. The earlier model of education imagined teaching and learning as transmittal of information from the knowing teacher to the impoverished learner. The older model at its heart proposed a mimetic model of learning: the learner was an empty vessel waiting to be filled by the knowing teacher so that the teacher's knowledge was re-created in the passive (and often resistant) learner. The older model was authoritarian and 'disciplining', taming recalcitrant learners into model 'subject.' Michel

[1] Presented at the International Conference on Primary Education Kyrenia, North Cyprus September 2013

[2] An earlier two-part report on this project appeared in Turkey's largest circulation English language newspaper. See Allen Scarboro, **'Allah rızası için bir sadaka' (1) and (2)**, *Today's Zaman*, 26 and 27 August 2013. Yasemin Ekici, Aulia Pandamsari, Sevde Uylaş and Mohamed ElGed made significant contributions to that article.

Foucault's analysis of the 'means of correct training' powerfully dissects how this model creates passive dis-empowered citizens who are obedient to an ever more powerful state (1979). One may think of the Turkish Ministry of Education's central control of curriculum and pedagogy in Turkish schools as an example of the mimetic model of education, where schooling has as a primary purpose the 'Turkification' of a diverse student body into good—that is, uniform and 'normalized'—citizens.

The alternative model of education sees learners, not the teacher or the state, as the center of learning. Empowering students, fostering curiosity and problem solving rather than mimesis is the focus of this second model of teaching and learning. Two illustrative examples of the student focused model of teaching can be found in the works of the Brazilian educator Paulo Freire (1990) and the American social activist Myles Horton (1991).

Freire's thinking is described in a book he called *Pedagogy of the Oppressed*. The book, about teaching and empowerment, grew from his work in adult education among poor, disenfranchised adults in northeast Brazil. Freire found that following the government-mandated curriculum was very unsuccessful in promoting learning among his students. Students resisted what they experienced as an alienating education that undermined their self-respect and seemed foreign to their experiences and needs. When Freire moved to a learning strategy founded on the learner's experienced life-world and aimed at developing skills that enhanced the learner's abilities at meeting their own needs and building a clearer consciousness of their involvement in their world, learners enthusiastically and effectively created an education for empowerment. Learners became doers rather than mimics.

Horton's work on education was part of his efforts to promote social change, especially in civil and economic rights in the United States. He founded a school, called the Highlander Center, for training social activists in rural east Tennessee. Like Freire, he and his colleagues saw learning as a way for disempowered people to resist their marginalization by and from social and civic institutions that exploited them and monopolized the social and economic capital of the society. For Horton, education was a means for the 'oppressed' to take charge of their lives and to open opportunities to take charge of their futures (Horton and Freire, 1991).[3]

Inside the Academy

The work of Paulo Freire and Myles Horton drew much of their educational philosophy from forerunners like Maria Montessori and John Dewey. However, their activities took place largely outside institutions of higher education. But the effectiveness of their pedagogy caught the attention of practitioners within the academy, especially within teacher training programs and within the sociology of teaching and learning.

Within sociology, three themes in particular emphasize the shift from a focus on teaching (instructor-focused, mimetic education) to learning (student-focused, empowering education): the writing across the curriculum movement, 'active learning' approaches, and out-of the classroom learning activities. All stress learning from the learner's experiences rather than re-creating in the learner the instructor's 'knowledge.'

The writing across the curriculum movement is a shift from students 'taking notes' in a lecture setting to learners responding, in their own words and in their own constructions, to materials they read or activities they engage in. Composing their own responses and crafting their own understandings is no longer restricted to 'composition' classes or to writing essays that reiterate the texts they are reading. Rather, writing, in all their classes, becomes an avenue into the materials students are engaging. The writing through the curriculum movement stresses learners as constructors or creators of their learning.

[3] Exemplary alumni of Horton's Highlander Center include Martin Luther King, Fannie Lou Hammer, and Rosa Parks.

Among a rich scholarly literature, the Women's Ways of Learning group provides a powerful examination of 'constructed knowing' via writing and other learner-focused approaches (Belenky, Clinchy, Goldberger, and Tarule 1997). Cadwallader and Scarboro provide an early model of applying the writing across the curriculum approach in sociology; they argue that "Better student writing leads the student to a closer, more personal involvement with the discipline through a more active involvement with its ideas, concepts, and information" (1982: 362). Writing across the curriculum has been widely adopted in American higher education but remains rare in Turkish universities.

The active learning model, drawing directly from the work of Montessori and Dewey, can be found throughout primary and early childhood education but is rarer in higher education. Universities continue to be dominated by the lecture (transfer of information) model. The power of active learning, or learning by doing, however, has been shown repeatedly to be associated both with higher student achievement and with higher student engagement in learning [see, for example, Kohl (1994), Angelo (1999), Paul (1999) or Perry (1970), or many others].

Out of classroom activities are particularly powerful in providing an experiential base on which learners construct their own knowing. Out of classroom activities radically de-center the teacher, replacing the teacher as fount of information and expertise with the learner's making sense of her or his actions the crucial activity in experiencing an ambiguous world and employing strategies for bringing organization and sensibility to their observations and experiences. Making sense is the controlling metaphor in this approach: construction rather than mimesis. In out of classroom activities, the teacher becomes more a resource for and less a source of learning. The scholarly literature demonstrating the effectiveness for empowering students as self-teachers and for enhancing student achievement and empowerment is voluminous. For example, Palsson (1994) provides an especially illuminating discussion of the effectiveness of active learning in Icelandic fishing captains gaining expertise through their apprenticeship with experienced, successful captains; Kuh (1995) shows that active learning produces greater student learning than do other approaches; Keith and Moore (1995) as well as McKinney, Saxe and Cobb (1998) offer evidence that active learning leads to higher levels of learner professionalism and attachment to the discipline than do other models; Angelo (1999) summarizes several studies that support the effectiveness of out of classroom learning. Takata and Leiting (1987) and Scarboro (2004) offer illustrative examples of the effectiveness of active learning in the teaching of sociology. Song, Hannafin and Hill summarize several studies that show an inconsistency: while teachers claim a commitment to active learning, they seldom put active learning strategies in practice in their teaching (2007). Ranson *et al.* argue that while active learning fosters the development of self and mind, current educational institutions are not structured in ways that facilitate such strategies (1996).

The scholarly literature is replete with persuasive arguments and compelling evidence demonstrating that the adoption of writing across the curriculum, active learning, and out of the classroom activities benefit students in several ways. They lead to higher academic achievement and promote student success. They shift the power relationship between learner and teacher, leading to learners who take greater responsibility for their learning and thereby increasing their sense of an inner locus of control. They engage students more enthusiastically in their learning. They empower learners not only as learners but as more effective citizens and as activists. They promote a shift from passivity to activity among learners. However, no matter how voluminous the scholarship and no matter how persuasive the evidence of the effectiveness of leaner-centered teaching, higher education has been slow to adopt these methods.

Here, we offer a case study of the adoption of active learning practices in a university in Istanbul. Our case study offers a step by step example of an out of the classroom active learning project.

A Case of Out of the Classroom Active Learning

Active learning best begins by growing out of curiosity, of trying to solve a problem in understanding. This project begins with the problem of understanding street begging in Istanbul and the relationship between beggars and those from whom they beg.

Street beggars are ubiquitous in Istanbul. When the teacher who sponsored this project first moved to Istanbul, he paid little attention to beggars in tourist areas—beggars are common in all the world's tourist destinations. However, when moving to Istanbul not as a tourist, but as a resident, the teacher noticed the prevalence of beggars not only in tourist areas but throughout the city. Beggars stood alongside the buildings lining every busy street, they sat on the steps for the overpasses across major highways, they clustered outside every AVM, and they sat in groups outside mosques. The city has beggars of every description: children and old women and men, blind people singly and in pairs, men displaying ghastly wounds and amputations, young women with babies, men in tattered uniforms. All, to the observer's eye, seemed obviously needy and ill-equipped to survive in Istanbul.

As a yabancı, the teacher watched local people interact with the street beggars, curious about the local norms—how much was a typical donation, how frequently did people give, how did passersby respond to beggars' entreaties and to the blessings beggars offered when they accepted money. Most local people seemed to ignore beggars and gave no money.

Over time, that yabancı curiosity shifted into a sociological perspective: what roles do beggars play in Istanbul society, how do beggars and the economically comfortable interact, and how do people think about the beggars all around them?

For a sociologist, two over-riding questions took shape. First, how does begging function as an occupation. Begging is, after all, work. Begging is hard work: one works outside in the scorching sun and in the winter's frigid sea wind, one works in difficult work environments, begging seems to offer little job security, most people do not hold the work of begging in high esteem, and begging's hours are irregular and inconvenient. A host of features makes begging seem to be an undesirable occupation.

So, do beggars earn lots of money, with a high monetary return offsetting the poor work conditions? Do people enter begging because other employment opportunities are blocked or out of reach? Do people enter begging because other sources of income (pensions, employed spouses, unemployment compensation, etc.) are unavailable or insufficient? Are beggars otherwise unable to work? Have beggars been abandoned by their families? Are beggars vulnerable people being exploited by others? And, overall, how does begging fit into Turkey's economic miracle?

Second, how does begging fit into the religious setting of Istanbul. Istanbul and Turkey are home to a large population of pious Muslims. Questions of how Islam in Turkey fits into the civic, the public, and the economic spheres are constantly in the air, with many people in Istanbul seeing Turkey as a model for other predominantly Muslim societies.

Beggars seemed to offer a neat opportunity: one of the Five Pillars of Islam is Zakat (Zekat). According to Wikipedia, zakat "or alms-giving is the practice of charitable giving by Muslims … and is obligatory for all who are able to do so. It is considered to be a personal responsibility for Muslims to ease economic hardship for others and eliminate inequality."

Zakat and begging seemed to go together in two fundamental ways: first, the purpose of zakat is "to ease the economic hardship of others." Second, Zakat is a "personal responsibility" and the benefits of Zakat adhere to the giver as much if not more than to the recipient. That "it is more blessed to give than to receive" was noted centuries ago. Would people here give generously to street beggars both to provide economic support and as acts of piety?

Begging, then, can serve two important functions: to provide economic subsistence to those with few other options and to provide an opportunity for pious Muslims to meet a religious obligation. What a neat coincidence, the sociological mind noted.

Sociological puzzles are, of course, the heart of this teacher's work. Further, the teacher teaches sociological research methods—the art and practice of untangling sociological puzzles. More than forty students were enrolled this spring in the research methods class, eager to learn how to do sociological research. What better way to learn than by doing?

The teacher's curiosity about begging in Istanbul, a sociological question arising from the teacher's lived environment, then provided the setting for active learning: a 'real' question in the life world shared by teacher and students. The teacher then shared the sociological puzzle with students and both agreed to spend the semester investigating street beggars in Istanbul and their interactions with more fortunate İstanbullular. We would apply our growing research skills to learn more about beggars and more about what other people thought about beggars. So our search began, each an exercise in active, learner focused out of classroom activities.

We started by seeing what others had found out. Each student located several articles, half in Turkish and half in English, including both popular media and scholarly sources.

The popular media consistently painted one of three images: first, many accounts focused on stories of unscrupulous persons, sometimes parents, sometimes unrelated adults, who force children into begging, exploiting the children to the benefits of the nefarious adults. Second, reporters and other interested people highlighted beggars who 'made fortunes' through their begging. Third, and less frequently, stories focused on the dangers of begging, especially to children. A typical story tells of a young beggar being beaten up by others or dying in traffic accidents.

Almost all the popular accounts paint very negative pictures: none praise the ingenuity or perseverance of beggars and none focus on the economic deprivation that could lead one to begging. Beggars are seen as a nuisance or a menace, preying on the solicitude of others. The scholarly reports tend to look at the dangers (disease, malnutrition, physical risks) of begging, on the economic forces that make begging a reasonable option, or on efforts to police or control beggars.

Neither of these two sources confirmed what I saw on my daily travel through Istanbul. The puzzle deepened.

As the next step in our active learning, each student each spent an hour observing beggars on the streets of various neighborhoods of Istanbul. The students paid special attention to the interactions between beggars and passersby. Their reports confirmed that beggars frequent certain locations (outside mosques, near shopping centers, near Metrobüs, Metro, and tram stations, on busy streets, near street markets); most beggars were alone rather than in groups; most beggars were adults, or were babies or children accompanied by someone who appeared to be their mother; beggars were both male and female; nearly all women beggars were covered.

Observation is a tricky strategy: one must learn to be observant, one must make careful records, one must be careful to keep one's own feelings out of the way of careful watching, and one must look and look again. The following week, the students returned to the same locale for another hour of observation.

From the two hours of observation of more than forty students, some themes began to emerge. Begging was hard work. Successful beggars wore clothing that signaled their poverty and need. Istanbul beggars presented themselves as pious people. Most passersby ignored beggars. Some passersby made rude comments or used rude gestures to beggars—beggars were not esteemed. Some passersby gave money or food to beggars. But most often, passersby treated beggars like smelly pieces of furniture.

This process of developing themes or sociological regularities grew from student activities and demonstrate students drawing conclusions from their disciplined activities: this was not a re-creation of what the teacher already knew ('mimesis) but a knowing constructed by the students.

A sociological technique for understanding a social situation is 'to take the role of the other'—to attempt to experience the situation from the perspective of the people we are trying to understand. We learn about others from walking a mile in their shoes.

When told that for their next assignment students would beg for an hour on the street, they responded with howls of disbelief. They said would be embarrassed and ashamed, that they did not want anyone to think they were dirty or poor. What would their families think? In fact, in the next class period, several students said a member of their family asked if all sociologists were crazy or just American ones. But these were budding sociologists so they set themselves to the task. They begged near the same place they had observed. They took a partner when they begged, to keep a watch over them and to watch the interactions between the novice beggars and the passersby. In addition, the partner took a series of photographs which were later used to review the project.

The students began to prepare: they rummaged for old clothes, they posed in front of mirrors, they rehearsed what they would say, and they asked their families for advice. They were nervous but they were troopers—the closer their date with begging came, the more they began to think about the begging role and the people who filled that role.

Begging was an eye-opening experience for the students and our understanding of beggars was suddenly much richer. These beggars noted first how very hard it was to beg—not just physically, but also psychologically, emotionally and in terms of self-esteem.

To adopt a posture announcing one's needfulness and dependency was a shock to the students' self-image. Laying aside garb from Vakko, LTB and Hotiç in favor of old worn clothing, finding a headscarf that looked shabby, leaving ones iPhone at home—putting on the image of a beggar conflicted with self conceptions of comfortable, fashionable university students.

Second, the students noticed how few people were willing to give them money (maybe they did not try hard enough). Many of the student beggars collected no money in an hour of begging in busy locations. Most who did receive money earned less than 3 TL for an hour's work. Our most successful beggar collected a grand total of 5 TL. At that rate, a forty hour work week of begging would earn 200 TL. While that approaches minimum wage in Turkey, it is not a windfall. Clearly these students would have to work very much harder to make a fortune through begging. None of the students changed their career plans.

Their observations and begging episodes led the students to a greater appreciation of the difficulties of begging but they also shifted our attention to how passersby thought about beggars: what were the images of beggars among everyday İstanbullular? What was going through their minds as they encountered beggars?

Our research efforts turned then to the passersby. We developed a set of interview questions and each student interviewed ten passersby. Our goal was to collect roughly equal numbers of male and female respondents ranging in age from young adults to elderly. We did not interview anyone under the age of 18 and we tried to find equal numbers of respondents over the age of 50 and under the age of 50. Our researchers identified themselves as sociology students from our university and asked for a few minutes of time. Many pedestrians declined to be interviewed, but a hundred and ten were willing to answer our questions.

Two of the students' questions in particular were telling. First, respondents were asked to state the first four words that came to their minds when they thought of beggars. Then from that list, they were asked to pick the one word that the respondent thought was most characteristic of street beggars. (The interviews were in Turkish; the students translated the terms into English.)

The most frequent terms described beggars in very unfavorable words, with 'Liar' as the single most frequent word followed by 'Dishonest.' More than half the people interviewed did not believe beggars were truly in need and deserving of help.

Another set of respondents chose 'Shameless' to describe beggars and others chose 'Lazy.' Clearly, most passersby my students interviewed feel no moral claim from beggars and thus feel no obligation to provide assistance to them.

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A much smaller number of respondents chose words that do not carry moral condemnation. Among the interviewees, the most frequent non-moral term described beggars as 'Miserable,' followed by 'Neglected' and a smaller number described beggars as 'Disabled' or 'Elderly.' These terms suggest some degree of empathy or concern for street beggars. These are morally neutral words and perhaps even denote that beggars are deserving of help.

On the whole, though, the İstanbullular we interviewed hold negative, even disparaging, images of street beggars. They do not see street beggars as people down on their luck and deserving of help, but rather as swindlers who seek to manipulate people's feelings of sympathy and care.

Second, in our interviews, we asked if respondents saw giving alms to street beggars as a form of Zakat. Two thirds of the respondents replied that alms-giving to street beggars was not a form of Zakat, while one third thought giving to street beggars was Zakat.

When we analyzed attitudes about Zakat, we found that people with only a primary school education were very unlikely to see giving to street beggars as Zakat (82%), while respondents with a university education were about equally divided in their opinion.

Gender differences in opinion about giving to street beggars and Zakat also emerged in our analysis: men overwhelmingly (about 80%) said that giving to beggars was not a form of Zakat while women were more equally divided (about 60% of the women said giving to street beggars was not Zakat). About half of the university graduates and half of the women interviewed see alms-giving to street beggars as Zakat, while about half do not.

To confirm our interviews and to see further relationships among beggars and passersby, we then developed a survey. Students each gathered data from thirty respondents, gathered throughout the city. At the time of writing this paper, those surveys have not been analyzed.

Conclusions I

What have we learned so far about begging?

Beggars are a part of the Istanbul scene, pursuing their work throughout the city. The beggars we observed do not fit the media images. While some rich beggars may frequent the streets of Istanbul and some beggars may be the exploited victims of schemers, most beggars we saw appeared to work alone or in small groups. Many of the beggars we saw were not fit for the formal workforce—they were too old, too ill, too young, too disabled.

We did not interview beggars, so we do not have information on their levels of education, work experience, family situation, or work skills. Of those we observed, few seemed free from impediments to work. Begging is hard work undertaken under often unpleasant or dangerous conditions. Beggars are not respected, and begging corrodes self-esteem.

People in Istanbul have strong attitudes about beggars. More than two thirds of the people we interviewed used very negative, very disparaging terms to describe beggars and their character and their moral worth. Few people see begging as an occupation, few see it as an acceptable way to meet life's necessities.

Few people in Istanbul see street begging as an opportunity to gain merit through Zakat and rather choose other venues for opportunities to meet their obligation to give to the poor.

Conclusions II

And, what do we learn from this project about out of classroom active learning?

Sociological puzzles are intriguing. As my students moved into deeper involvement with the practice of sociological research, their excitement for sociology grew richer. They became more active as students and they bragged to their friends about their chance to beg, to observe beggars and to come better to know people they had previously largely taken for granted.

Students learned that they too can ask real questions. Sociological questions are not only found in books and lectures, but more importantly that emerge from the 'real lived' world around us and in which we are immersed. Questions emerge from our experiences.

In addition, students learned that they themselves can take on the responsibility for delving into those questions. Not only are their questions important but they are developing the skills to address those questions. Further, the answers that they develop are worthwhile. Students learned to be more autonomous and self-directed, to see themselves as authors of their own understanding. Knowing became more internalized and less dependent on 'authorities' and 'experts.' Thus their education became less alienating and more empowering. The students became more confident in their own expertise and more willing—nay, more eager—to speak their minds. In the Women's Ways of Knowing group's phrase, active learning gave students a greater security and confidence in their own self, voice and mind.

Portability

One concern among teachers and other scholars is the 'portability' of a method or exercise or practice. Is a set of practices limited to one situation or one context? Or can others fruitfully adopt or adapt a method and use it effectively in another setting. Specifically, is the active out of classroom practice we describe useful only in sociology courses at a single university in Istanbul? Or can they be useful as a model in other disciplines in other school settings (other universities, high schools, elementary schools, or outside school settings altogether)?

First, it is important to note that the project described would seem familiar to Paulo Freire's adult students in Brazil or to Maria Montessori's child learners in the slums of Rome or to John Dewey's university students in Chicago or to Myles Horton's social activists in the mountains of Tennessee. Learning and learning practices are widely adaptable and portable.

Second, one can find similar out of the classroom active learning practices in a wide variety of disciplines. The use of 'clinical education' in medicine or internships in teacher training are perhaps the most obvious examples. Clearly these practices can be effective across the disciplinary variety of universities or other schools.

Third, the literature is clear that such practices are very effective in promoting learner agency and are highly effective in propelling student success and achievement.

The project described, we believe, is clearly 'portable.'

We leave it to the reader to infer why this revolution in education, the movement from mimetic to empowering learning moves so slowly.

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SCHOOL-PARENT PARTNERSHIP AS PART OF SCHOOL GOVERNANCE STRUCTURE

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ABSTRACT
School- parent partnership plays an important role in student development by providing a stronger school-parent relationship leading to student achievement with the cooperation of teachers, parents and school administrators (Aslanargun, 2007). Also, the partnership is generally a part of school governance structure and should be involved in the learning and teaching process to increase the quality of learning and students' achievement through parental involvement.In this context, the purpose of this study was to evaluate how the current school-parent partnership policy was functioning in Turkey and explore its different dimensions from the perspectives of its different stakeholders to better understand the current interactions and roles its stakeholders have in this process. Qualitative research design was employed to obtain rich and in-depth information and the sample school was purposefully selected due to its distinct success in a disadvantaged area and its recent reputation in the media. Michael Patton's Utilization-Focused Evaluation Model was taken as the basis and the data were collected via semi-structured interviews from parents, teachers, school administrators and the partnership members in this public school and analyzed through content analysis. The results revealed that the partnership was functioning well in terms of its formation and daily duties related to the school's short-term needs, but that it was having some difficulties in providing constant financial support for the school, organizing and taking part in extra-curricular educational activities for the students and involving the parents in their children's school education.
Keywords: school-parent partnership, parent involvement in education, school governance

1. INTRODUCTION

1.1. Theoretical Background and Origin of the Program

Recent global developments in technology, communication and transportation have brought about economic globalization and democratization in numerous service sectors including education, and primary education seems to be getting its own share in the unescapable process. Specifically, with the General Agreement on Trade in Services (GATS), the governments are, in a way, expected or forced to eliminate any barriers to trade in services, one of which is education, and to promote the policies of liberalization, privatization and market expansion in education and this seems to change the purpose and the function of the state together with its agencies and policies regarding education. This whole process requires a less interventionist state in public services like primary education causing it to pass the buck to schools and makes way for the private sector in the short term and maybe the global corporate power in the long run in what is now called a "free, open and state/community-sponsored endeavor". This new system also brings changes to the roles and responsibilities of schools and the parents, who are the real and direct providers

and the receivers of this service. With the democratization process in the education sector, parental involvement in education has gained even more importance and parents have become an essential part of school governance especially in parimary education level. Today, more than ever, do schools and families need to cooperate to be able to help the education system in general and the schools in specific to realize their goals (Steketee, A. M., 2004).

School and family are the two core social structures in the society, with the child at the centre, working together for a common goal to nurture social individuals along with academic success. Therefore, these two parties are expected to take their own responsibilities and to fully cooperate to reach their ultimate goal, which is ensuring student development. School- parent partnership (SPP)enters into discussin here as it plays an important role in this by providing a stronger school-parent relationship, which subsequently leads to effective student achievement by the efforts and contributions of teachers, parents and school administrators. Also, the partnership is generally a part of school governance structure and is involved in the learning and teaching process to increase the quality of learning and students' achievement through parental involvement (Clase et al., (2007).

In the literature, it is assumed that parent is one of the most important voluntary contributors of schools and managerial processes, and may take on different roles in the abovementioned parental involvement. As stated by William&Chovkin(1989), there are six types of parental roles as audience, home tutor, programme supporter, co learner, advocate and decision maker while there are four types of parental involvement according to Cervone&Oleary (1982) as reporting progress, attending special events, becoming educated and teaching. Greenwood& Hickman(1991) talks about five types of parental involvement as acting as audience, volunteering, teaching their own children, learning and decision making. As for parental involvement, according to Epstein (1995), Voorhis and Sheldon(2004), there are basically six types of involvement and these can be listed as parenting, communicating, volunteering, learning at home, decision making, collaborating with the community (as cited in Sabancı, 2010). Today, however, parental involvement seems to mean more than those above.

In addition to the different roles parents can take on, studies also focus on different stakeholders' opinions about factors related to functioning and effectiveness of teacher- parent associations and their suggestions. In general, parents' opinions focus on the necessity of forming a foundation to provide school- parent partnershipwhile those of teachers emphasize the execution of school –parent cooperation in a systematic way and determining the subjects of meetingsto improve this cooperation process. It is also mentioned that teachers and parents should be provided with activities on serving common values and ideas about collaboration (Balkar, 2009).

The related literature also sheds light on the different expectations of schools and parents in this process. Gökçe (2000) states that school administrators and teachers expect parents to ease their job by attending school meetings and sharing their responsibilities while parents want to take active roles, express their choice and voice, and see improvements in the quality of education and social activities. On the whole, teachers' suggestions are clustered around providing school- parent cooperation and participation of parents to work in the school parent partnership and giving importanceto the opinions of parents. On the other hand, parents' suggestions are about their active involvement in school administration and forming effective communication, arrangement of regular meetings and providing a functional school- parent partnership. Overall, both groups agree on the need of continuous cooperation.

The literature also reveals the problems of school-parent partnership in general. As stated by Porsuk&Kunt (2012), socioeconomic status of the school region might produce problems between schools

and parents. Furthermore, problems might arise due to financial problems of administration, educational problems of parents, or dysfunctional school parent meetings. Another study by Aslanargun (2007) mentions the restrictions of active participation of parents in school processes as dysfunctional school-parent partnership in schools, lack of communication between school administration and parents, unfertile and ineffective meetings of school- parent partnership. According to these studies, parents complain about the ineffectiveness of the partnership whereas schools tend to attribute the failure of school- parent cooperation mostly to parental factors.

There are many factors which play a crucial role in the quality of relationship between schools and parents. School- parent partnership is mentioned as one of these factors. An ineffective school- parent partnership might have adverse effects on building school- parent cooperation while the opposite may yield very positive results in schools. There are examples of this in different countries.

Studies show that school board politics operate differently in the world. For instance, the literature on school boards for the USA mostly relies on the board's relationship with superintendent, superintendents' viewpoints and management of the board while there is also some information on school boards' management of community relationships in order to help a school district for enactment of a particular policy. Generally, local school boards play an important role for the continuity of democratic society because they have power of hiring, firing and approving school curriculum as an example. Hence, school boards play prominent roles in policy making or shaping and micromanagement (Ehrensal& First, 2008).

On the other hand, the term "school board" gains a different name as school council involving elected members of the school community for Victorian State School in Australia as a different example. These councils are responsible for school accountability, improvement processes with particular responsibilities for economic issues, strategic planning, policy development and review (as cited in Gurr, Drysdale&Walkley, 2012). Importantly, parents play major roles for the welfare of school councils consisting of approximately 6 to 15 members in government schools. Actually, they take active roles in representing all children and promoting the quality of the school. The partnership focuses on some issues like understanding the roles of each partner, home and school learning connection, participation in school programs, activities and decision making processes, collaboration beyond the school and so on. It should be noted that principals are viewed as vital for the establishment of effective school- parent partnership. Nevertheless, parental involvement remains at a managed level in which school- parent partnership is supervised by the school and is classified as a passive school- parent partnership having restricted capacity to help teachers in Catholic and independent schools for Victorian schools (Gurr, Drysdale&Walkley, 2012).

Another study conducted in Kenyashows the existence of school governing bodies as Parents Teachers Association (PTA) and Board of Governors (BOG) both based on voluntary activities with the latter having a legal structure. This formal structure helps parents participate in their children's education process. Although the people working for these structures are unpaid and non-professional, it is accepted that with the help of these structures educational provision is enhanced and quality of education is improved. (Onderi, Makori, 2012). The role of BOG in schools include mainly arranging physical facilities for improving teaching and learning in the school, finding monetary sources (fees, grants, donations and other types of income) and their management. This board is also responsible for recruitment, appointment, discipline of non-teaching staff and management in the school (Wanderi, 2008). The other board, PTA, has emerged from the school Board of Governors' failures and their need for additional financial support from the local community (Hurt, 1985). They have many roles including

bringing school staff and parents together, creating discussion environment for exchanging ideas, organizing social activities, and raising funds. Both PTA and BOG aim to increase the school's academic standards (Onderi, Makori, 2012). These two boards work on different issues but complement each other.

Shortly, most of the studies about school-parent partnership included in the international literature support the involvement of parents, which is effective on academic achievement, school attendance, students' behaviors, and discipline, and the quality of school programs. Moreover, the partnerships seem to have some roles regarding raising financial support and management of monetary issues. Actually, thesecorrespond with the results of many studies in Turkey, where this study was performed, about parental involvement and school parent-partnership.

In Turkey, School- parent partnership is defined as a school board involving managers, teachers, and parents as members who are responsible for school development (ResmiGazete, 1961; ResmiGazete, 2005a). It was discussed in National Education Council in 1946 for the first time and several suggestions were made to strengthen this relationship. Later, school-parent partnership and school preservation societies were established by the Ministry of National Education, but these could not accomplish their intended goals sufficiently.Schools started developing new systems to enrich their relationships with parents in the 1980s (Demirbulak, 200).Then, school-parent partnership was changed in 2005. According to the new regulation, each parent was a member of the partnership and the chair was selected from among the members. The new regulation differed from the old one in that parents were forced to build cooperation instead of voluntary work (as cited in Ereş, 2009).

According to the regulation, the school parent partnership aimed at providing communication between school and parents, supporting teaching and learning activities, meeting the needs of poor children and supporting schools financially. Overall, this partnership tried to integrate school and parent factors on a common dimension (Anon, 2005).

However, the partnership has not proved very effective as the school-parent relationship has not been considered at a sufficient and qualified level in Turkey (Gökçe, 2000). This might be because of the different expectations or perceptions of parents and schools towards the partnership. According to Kıncal (1991), parents mostly expect an increase in their kids' academic achievement, while the schools may have other priorities. Thus, each side should take their own responsibilities and cooperate, which is only possible by revealing the expectations and suggestions of each side clearly to solve the problems and improve the cooperation (Gökçe, 2000), which is one purpose of this study.

There are ample studies in Turkey evaluating the partnership in state schools in accordance with the 2005 regulation. To illustrate, Ereş (2009) tried to determine teachers' opinions toward the duties of school parent partnership in practice. Results show that parents occasionally carry out the duties of improving the physical conditions of schools, socialization of individuals, and duties related to students who need special education. On the other hand, parents don't make adequate effort to help students gain habits for their individual development. Generally, parents succeed in carrying out school responsibilities and obey the rules whereas they fail to support students' socialization and contribute to improvement of activities related to teaching and learning, which might result from the educational, sociocultural and financial levels of families. Different opinions and perceptions of stakeholders may also result in failure on the part of the partnership.

There are other studies in the related literature investigating school-parent relationships from the perspectives of the different stakeholders. For instance, in their study conducted with 25 teachers and 287 parents in a secondary school, Ceylan and Akar (2010) revealed the barriers in front of forming healthy

school-parent relationship as being mainly parents' financial problems, mobility, inconvenience of work hours, students' negligence of transmitting necessary information between their school and parents, unplanned parental visits, and parents' lack of knowledge on the functions of schools and on how to assist them. The study also revealed the agreement of the both sides on a need for development in school-parent cooperation. Another study investigated the opinions of teachers and parents towards school-parent relationship at primary education level in Erzurum and found gaps between the perceptions of parents and teachers in terms of the function of school-parent partnership meetings. The opinions of both teachers and the parents towardsschool- parent partnership show that school- parent meetings are generally based on the urgent needs of the school, provision of financial aid, students' achievement profiles and discipline problems (Genç, 2005). Indeed, active and healthy school- parent cooperation might help schools accomplish their goals, influence students' behaviours positively and affect students' future lives in a prosperous way. For example Çelenk (2003) states that students whose parents are in a close relationship with the school and have a common understanding are more successful than the others. Besides school achievement, increase in the motivation of students and decrease in behaviour problems might be observed thanks to this cooperation. This is well supported by Sabancı's study (2010) on the views of primary school administrators, teachers and parents to determine the level of parental involvement in Turkey. Results showed that both groups agreed on participation of parents in decision making processes. In addition, a need for the encouragement of participation of families was identified to provide them with more experience in school situations. Parents' attitude was also positive for the effective parental involvement in Turkey. Shortly, systematized knowledge about parental involvement in pre-service and in-service teacher training programmes was suggested.

All of the studies above provide information as to the functioning and effectiveness of the School-Parent Partnership in line with the 2005 and even earlier versions of the Regulation in Turkey. However, with the possible impact of the global policies in primary education and as in many other countries, Turkey also changed its SPP Regulation in 2012 laying the burden on schools and parents via the partnership and leaving schools and families with a big educational and financial responsibility to maintain the schools and to finance the related expenses. Considering the related literature, it appears that it is essential for parents to have a voice in decision making processes in educational issues occurring in schools as much as in management and monetary issues, but burdening the schools, the parents and the partnerships with the whole responsibility may cause serious problems given the various socio-economic conditions of different school contexts.There is an urgent need to investigate this new regulation in practice. Thus, the purpose of this preliminary study is to describe the current school-parent partnership functioning and explore its different dimensions from the perspectives of its different stakeholders to better understand the current interactions and roles its stakeholders have in this process.

1.2. Goals of the Program

According to act 5 in the current School-Parent Partnership Regulation (2012) by the Ministry of National Education, the main goals of the partnership are as follows:

1) to provide the integration between the school and the family
2) to enable communication and cooperation between the school and the family
3) to support the activities that improve the education and instruction at schools
4) to meet the vital educational and instructional needs of the school and the financially-deprived students

Apart from these main goals, the partnership aims at supporting schools for strategic planning and its implementation, contributing to the organization of courses, exams, seminars, library and lab work, arts

and sports events and trips in schools, providing financial support for schools through donations, campaigns, kermesses and the use of school facilities for public purposes, keeping records of the school expenses, cooperating with all kinds of education-related institutions and non-governmental organizations and participating in national and international projects.

1.3. Characteristics of the Program

As described in the regulation, the school-parent partnership is a required body in all ministerial schools and educational institutions that serve in Turkey. The partnership has three distinct organs within its main body: a General Assembly, an Administrative Bodyand a Supervisory Board. The General Assembly is made up of all the members of the partnership and mainly responsible for electing the members of the Administrative Body, which includes five permanent and five substitute members from amongst the parents and any philanthropists, and the Supervisory Board, which contains three permanent members (two teachers and a parent) and three substitute members (two teachers and a parent). The Administrative Body represents the whole partnership and is supposed to gather monthly to carry out its duties and discuss any emerging issues. Overall, the partnership is expected to provide financial support for the school and facilitate the education and instruction at school, but to what extent they can do this is related to many factors such as the school district and the context, the school climate, the parent profile and expectations from the partnership.

1.4. School Context and the Stakeholders

The school that we worked with started providing education during the 1974-1975 academic year as a two-storey building with only 5 classrooms, upon the needs of the emerging MamakDistrict in Ankara. Later, as the population of the district increased, restorations and additions were made to the building. Finally, an extension was added to the school building in 2002 and today education is carried out in 12 classrooms, with 20 classes, one computer lab and one library. The school went through a general modification during the March-September period of 2012 and was completely renewed with the roof, the toilets, the windows, the doors, and the electrical wiring reconstructed and the inner-outer paint of the walls redone. In addition, projection devices and computers were installed in all classrooms to serve the students during the lessons.

After the advent of the new 4+4+4 system in education, the school became a primary school serving only the first four grades, but at the moment, it is functioning as a middle school as well until it graduates all its middle school students in a gradual fashion till 2015. Now, it serves as a middle school in the mornings and a primary school in the afternoons. There are 24 teachers in total. The school administration is composed of one school principal and one assistant principal. There is also a janitor helping with physical errands in the building.

There are totally 467 students attending this school and most of them come from low-income families living nearby. Most parents work as physical workers in different parts of Ankara while some work as civil servants for the state. There are also immigrant families among the parents. The parents are disadvantaged not only income-wise, but also in terms of their educational and cultural status. They are mostly primary school graduates, and the fathers provide for the family while the mothers are usually at home caring for the kids. That's why most of the parents interested in their child's education and school work are the mothers as the responsibility seems to fall to them. The profile of the parents is reflected on the students negatively because they have difficulty providing their children with suitable conditions to study effectively and helping them with their school work and homework. The students cannot go to private courses or take private lessons to support their school work due to financial constraints. The school

is trying to support some of these students financially, but the school itself seems to have a tight budget, which is not enough even for the basic expenses in the school.

Despite all those disadvantaged conditions mentioned above, the school has gained public and media attention (see Appendix F for the media coverage) during this academic-year after the modifications and renovations carried out within its body. It is now renowned with its changing face, sports achievements and academic success. There is also general satisfaction with the administrative and the teaching staff. There seems to be an actively functioning school-parent partnership in the school although the school context seems to limit its operations because of economic constraints.

2. DESCRIPTION OF THE EVALUATION STUDY

2.1. Purpose of the evaluation

As indicated in the introduction and literature review parts in detail, the relationship between families and the school is of vital importance in school education. In this context, an appropriate relationship basically comprises meaningful communication and prolific interaction between two sides, the school staff and the parents, with the ultimate aim of "the betterment of the educational process". In today's schooling system, this is an indispensible need for contemporary education.

In order to achieve this aim, School-Parent Partnership (SPP) systems are assigned by ministries of education (by MoNE in Turkey) as the official authoritative mediating organ. What this organization must do is defined in the regulations as documents; however, what the actual function of the SPP is, how it is working in real conditions, to what extend it can fulfill the assignments written in the regulations, to what extent it can attain the objectives planned/expected, etc. are all crucial points to be evaluated in order to draw inferences to correct the failing parts and to improve the well-working units. Therefore, the purpose of this study is to evaluate the genuine conditions and deeds of the SPP with the ultimate aim of improvement of the system while finding out positive aspects that will lead other schools to the extent the findings can be transferable.

2.2. Evaluation model

Since the crucial points presented above are directly related to the actual processes rather than the bureaucracy, it is proper that a model which is focused on the stakeholders should be preferred for analysis. On the other hand, the evaluation should also emphasize the significance of "the utility" of the whole study since the evaluation of the actual conditions and authentic environment will be conducted. Accordingly, the inferences obtained from the findings will be directed to actual use by actual users. Thus, Patton's "Utilization-focused Evaluation Model" was regarded as the best-fitting design for the study. Specifically, Patton himself indicates this viewpoint through these words defining evaluation: "A decision-making framework for enhancing the utility and actual use of evaluations." "A process for making decisions about and focusing an evaluation on intended use by intended users" (Patton, 2008).

The most important aspect of the model concerning this study is that it addresses the primary/intended users, stakeholders rather than general/possible audiences. In this context, we studied on the members of the SPP, the teachers, the parents and the administrators of the school.

Concerning the roles of the (external) evaluator, both during the planning and implementing stages, we considered the following points about the model:

- to facilitate the evaluation process and design any evaluation with careful consideration of how everything that will be done, from beginning to end, will affect use.

- to help intended users clarify their purpose and objectives.
- to make implications for "use" part of every decision throughout the evaluation (the driving force of the evaluation process).
- to focus and manage tensions among different purposes of different intended users.
- to offer conceptual and methodological options.
- to help by questioning assumptions.
- to facilitate evaluative thinking and capacity-building.

During the study, we also considered the evaluation process as an opportunity for learning (both through outcomes and the process) in terms of both the evaluators and the participants.

Again on the side of the participants, during every phase, we appreciated and utilized the principle of the model about the use of the process as in: "It refers to and is indicated by individual changes in thinking and behavior, and program or organizational changes in procedures and culture, that occur among those involved in evaluation as a result of the learning that occurs during the evaluation process." Moreover, we paid special care to the fact that the participants should internalize the evaluation process and develop a possessive attitude towards it as Patton signifies "Intended users are more likely to use evaluations if they understand and feel ownership of the evaluation process and findings" (Patton, 2008).

As for utilizing the outcomes, we mainly focused on "program improvement, organizational change and individual development" as the model requires.

While Patton's Utilization-focused Evaluation Model wastaken as the major model, we also utilized some aspects of Stake's Responsive Evaluation Model (2005), and Fetterman's Empowerment Evaluation Model (2001) in an eclectic manner, especially in terms of participant involvement and using evaluation as a process of learning for the improvement of the stakeholders.

2.3. Methodology

Since the model is available for both quantitative and qualitative data analysis and we wanted to obtain as rich information related to our research question as possible by exploring the subject in depth, we preferred working with qualitative data. The evaluator's role was of external nature to be able to collect more objective and richer data. We did a comprehensive study on the context (regarding the environment) since it is always essential in the model. For the proper optimization of the use, we tried to match the evaluation design to the evaluation's purpose, resources, and timeline. In this context, we visited the school within the instruction time periods in order to see and observe the actual environment. We made the interviews again in this time period. We informed the related parties and took appointments beforehand; however, we indicated and comforted the participants that we wouldn't need or demand anything special but the authentic conditions.

At the beginning of the process, a research plan was made and the activities to be conducted were listed and scheduled chronologically in a monthly work flow table chart (see Appendix B). In terms of data, we utilized interviews, observations and archival data such as the minutes of the meetings, the documents of the accounting -incomes and expenses- etc. (see Appendix E for samples) for triangulation purposes. The semi-structured interview questions were prepared by a team of eight, whose members would conduct similar studies in some other schools. The items were prepared in four groups, having certain differences / modifications among them: 1. Administrators, 2. Teachers, 3. Non-Member Parents 4. SPP Members. The questions were revised many times and finally, after the expert opinion (by our leader) the questions were printed under these headings (in the original order): a. Personal, b. school profile, c. general operations of SPP, d. Ideals of SPP (based on regulations) e. interactions among the stakeholders, f. the management of the financial sources of SBB (see Appendix A for interview questions).

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The interviews were recorded with the consent of the interviewees and transcribed later (see Appendix C for the transcription). Then, from the derived codes, the data was processed into categories of themes, listed in tables of frequencies to be analyzed through content analysis and discussed. Participants were given pseudo names and coded using abbreviations (see Table 1) and their real names were not used for the purpose of propriety.

As for sampling, we used purposive sampling while selecting the school to maximize the range of information which is collected. Through informal communication with schools and analysis of media coverage, we chose the school we worked with as it promised to provide us with rich and in-depth data both related to the context and the school-parent partnership. During the interviews, we also used snowball sampling with the administrators referring us to some teachers and parents who might provide us with related information. Information related to the participants is as follows.

Table 1
Demographic Information related to the Interviewees

Name	*Gender*	*Educational status*	*Job*	*Work experience*	*Membership to SPP*
M1	male	Primary school	Retired driver	-	yes
M2	female	Primary school	housewife	-	yes
A1	male	university	Assistant principal	11 years	no
T1	female	university	teacher	7years	no
T2	female	university	teacher	16 years	no
P1	female	Primary school	housewife	-	no
P2	female	Primary school	housewife	-	no
P3	female	Primary school	housewife	-	no
P4	female	Primary school	housewife	-	no
P5	female	Primary school	housewife	-	no
P6	female	Primary school	housewife	-	no

In the table, M stands for member of SPP, A for administration, T for teacher, and P for parent.

Trustworthiness of the findings was provided through credibility as the results reflect the participants' genuine opinions as their authentic answers were used to formulate the results, transferability as use of thick description as much as possible made it transferable to similar contexts, dependability as any replication may provide stable results excluding the conscious and unpredictable changes in the emergent design and confirmability as objectivity and confirmability of the data, not the evaluators themselves, were focused on by two different evaluators.

3. RESULTS

The results of the interviews are discussed in relation to the emerging themes from the data from the perspective of different stakeholders. A summary table for the whole data is provided at the end.

1. School Context

Context of the school is perhaps the most important factor in the functioning of the SPP. Concerning the school context in our case, participants mostly focused on the regional features of the school district and stated that it was in the process of urbanization and mostly inhabited families from low-socio economic background (M2, T1, P1, P2, P5, P6, T2, A1). It was understood that most of the fathers work in seasonal jobs such as construction work while the mothers are mostly housewives (M2, T1, P1, P2, P5, P6, T2, A1, M1). They stated that this disadvantageous situation is reflected on the student profile

negatively as they cannot afford all the needs of their children due to their economic constraints. One of the parents expostulated about this saying "*We are all primary school graduates and we don't have a job. Because of our financial problems, we cannot send our kids to good schools, courses or private tutors. In fact, our kids are highly successful but money problems are hindering us"*. This low socio-economic status also seems to result in lack of participation in SPP since they do not have the necessary qualifications and self-confidence to carry out the duties required by the partnership (M2, T1, P1, P2, P5, P6, T2, A1). Despite the disadvantages of the district and the low profiles of parents and students, all the participants seemed glad with their school and agreed that the school staff are qualified and high-profile. Overall, the participants' views related to the context were consistent with each other and also with on-cite observations carried out by the evaluators.

2. Extra-Curricular Activities

As far as the extra-curricular activities, which are expected to be carried out with the support of the SPP, are concerned, it seems that the school encourages arts and sports activities and school trips despite the lack of educational materials and insufficiency of the physical conditions (M1, M2, T1, P1, P2, P3, T2, A1). According to the interviewees' views, the SPP tries to help with all these activities through both financial support like free cinema tickets for poor students and service such as provision of free bus transport for school trips from the municipality (M2, T1, P1, P2, P3, T2, M1), but that is all. It appears that in spite of the unfavorable financial and physical conditions, both the school staff and the parents are interested in the students' social and cultural development and the partnership proudly does its part in facilitating this although they can only manage small-scale activities. The SPP member in charge of the accounts expressed this pride by saying "Lots of wonderful activities are undertaken in this school..For example, the students are going to the cinema together and seeing the most recent movies. These are very nice activities". However, it seems that the SPP cannot afford bigger educational and financial expenses.

3. Management and Leadership

All of the participants attributed the well-working of the current school system including the SPP to the appropriate management and the successful leadership in the school. The new principal seems to have led all the positive changes, which is quite clear from all the interviewees' comments. One example for this was the SPP member's final comment that she wanted to add herself :" Like I said, the school has become this beautiful from a terrible state and this has happended thanks to our principal. We really owe her a lot. She has done everything for us, and we always support her". While the parents mostly emphasized the transparency of the school administration in operating the school affairs, managing the financial matters and informing the stakeholders about the school expenses, which lead the parents to develop trust in the school and the SPP (A1,M2, P1, P2, P4, P5, P6, T2, A1, M1), teachers focused on the managerial and entrepreneurial competency of the school principal especially in providing the school with external financial support by using her leadership skills (T1, P1, P2, P3, P5, P6, T2), experience and apparent but not-mentioned connections. All the participants seemed to appreciate the school in terms of the decision-making process and the communication between the school and the parents.It is clear that the school could finance most of its expenses with the help of the principal, not the partnership itself.

4. Positive Aspects of the School

The leading aspect of this category includes the improvements in physical conditions, on which all the stakeholders agreed. They were all content with the renewal of the whole school from the changes in the physical setting like construction of sensory tabs and faucets in the toilets to the improvements in the instructional environment such as the installation of projection devices to the classrooms (M2, T1, P1, P2, P3, P4, P5, T2, A1, M1). These improvements also seem to have increased safety in the school and the parents apparently feel more comfortable sending their kids to the school everyday. One of the mothers expressed this comfort very clearly in saying "My son started primary school two years ago and the classroom windows were so bad that I was afraid something bad would happen or he would fall down. I would warn him every single day and I was really worried. But now, after all these changes, the school feels like home and I feel relieved while sending him to school". The school owes these improvements to the external financial support independent form the SPP, but the SPP provided support by informing the parents about these improvements on time so that they could see the concrete progress in school and thus gaining their trust both in the school and the SPP (M2, T1, P1, P2, P3, P4, P5, T2, A1, M1). The partnership seems to have helped the school build trust and bound with the society. Also, all the parents seem to appraise the teaching staff unquestionably (P1, P2, P3, P4, P5, P6). All this appreciation of the improvements and the teaching staff seems to have brought about trust in the school, which enabled success both in terms of academic achievement and the relationships between the school and the parents (M2, T1, P1, P2, P3, P4, P5, T2, A1, M1). The parents are especially happy about the fact that their children can now go to Anatolian high schools after they finish this primary school (P1, P2, P3, P4, P5, P6).

5. School Needs

While talking about the positive aspects of the school, some needs also came out. The interviewees generally mentioned physical needs that hinder the students' academic performance as well as their personal and social development. To illustrate, they all stated that the school urgently needs a canteen, a sports hall, a music room, a science and language lab, and a new library (M2, T1, P5, P6, T2, A1, M1). Moreover, the members and one parent (who was also a classroom mother) especially emphasized the importance of the maintenance of the services such as paying the school bills and provision of cleaning substances, and they claimed that this responsibility falls into the SPP even though it cannot realize this duty at a desired level at the moment (M2,P6, M1). It seems that the SPP cannot fully realize its duty of maintaining the school financialy as expected by the state. In addition to the financial support, moral support for the school in general and the SPP was emphasized as it was considered necessary for a healthy relationship between the school and the parents (M2, T1, P5). The parents were well aware of the fact that the school needed more than just money to be able to fulfill its goals, indicating care, and provide a successful education. This was apparent in the parents' comments such as "Moral support is also needed. You cannot do everything with money. When you come to school and help with something, it also counts" (M2) and "We cannot really provide financial support for the school but I am always in touch with the principal and the teachers and ask them if there is anything I can do to help, not money-wise maybe, but moral support" (P1).

6. Functioning of the School-Parent Partnership

Although the SPP seemed to fail in fulfilling the school needs at a desired level, the participants' views in general showed that it was functioning well in other aspects such as its formation and activities. For example, they all expressed that the partnership members were selected through voting in a democratic way and that they tried to support the school by organizing school activities and providing financial support as much as possible (M2, T1, P1, P2, P3, P5, P6, T2, A1, M1). It was also obvious that they spent the money properly for school expenses and recorded everything in the account book and the decision log, which were open to all the stakeholders (M2, P1, P2, P3, P5, P6, A1, M1). That transparency policy seems to have attracted more parents to the school and gained their trust. One member parent confirmed this by saying "Before the SPP, we really wondered and did not know what the school spent the collected money on, but now, especially with our new principal, we are at ease as we know how the money collected from the parents is spent".

7. Positive Aspects of the School-Parent Partnership

The interviewees listed a number of positive aspects related to the SPP, but the most prominent one is that it enables parents to be more involved in the school and thus their children's education compared to the past. The SPP seems to have given the parents formal and active roles both within the body of the SPP and outside it like in the case of "classroom mothers" who voluntarily help the SPP and the school administration carry out their duties (M2, T1, P1, P2, P5, P6, T2, A1). They all stated that the partnership brought about better communication between the school and the parents thanks to the transparency of its affairs and the resulting trust in what the school and the SPP try to do together (M2, T1, P1, P2, P3, P5, P6, T2, A1, M1). This bonding between two parties was expressed by one of the parents like the following: "We can communicate with the principal easily and without stress..with the principal, the assistant principal and the teachers…Even other teachers who are not teaching my kid help me whenever I need it. Sometimes, I ask them questions about the homework that my kid's teacher gave and they never scold us. They sit down with us and explain the material or the assignment. This is very nice. You can ask any teacher anything and they never say "No". They help as much as they can". The parents partially attribute this successful communication to the SPP. Theyalso made it very clear that they now donate money easily to the school as they can see what their money is spent for and how it is directly reflected on their children's education. A well-functioning and transparent SPP encourages the parents to force their limits to be able to support the school financially as much as they can (M2, P1, P2, P3, P5, P6, T2, A1, M1). This was also strengthened by the flexible approach to parents related to both financial matters (different amounts of money asked for from familes with varying incomes) and any other concerns about their children (M2, P1, P2, P3, P5). Parents expressed their gratitude in relation to the fact that they felt valued because their children were valued and well cared at school and they put forward that they want to cooperate with the school more as a result of it (M2, T1, P1, P2, P3, P5, P6, A1, M1). The teachers and the administrators confirmed this by stating that the parents were far more cooperative than they were in the past and that they were ready to help with anything whenever the school needed their support. The partnership seems to be doing its job in bridging the school and the families.

8. Weaknesses of the SPP

In spite of the general content with the way the SPP works and its benefits both for the school and the students, the interviewees touched upon some issues that need to be addressed so that the SPP can fully realize its mission. To begin with, both the school staff and the parents complained about lack of participation in the meetings and the activities led by the SPP and the school. This shows that the level of participation, or parental involvement, is still not at the desired level although things are better compared to the previous years (M2, P1, P2, P3, P5, T2, A1, M1). Another weakness of the partnership is the insufficient amount of financial support both from donations from the parents and from external bodies such as independent institutions, NGOs, companies or philanthropists (M2, T1, P1, P2, P3, p6, T2, A1, M1). Not surprisingly, this was a common concern for all stakeholders, which is again probably related to the low socio-economic status of the families. Especially the school administration and the SPP members were worried about the sustainability of the school maintenance and continuous support for poor students (A1, M1, M2). They insistently expressed the need for a system in which the school community and outside organizations support the school financially as they know they cannot ask for too much from the parents and they all expressed that the SPP may help with this. Another interesting point is that the parents and the school staff considered the SPP members as lacking in competency in providing financial support for the school although they were all glad with the honest and transparent way they performed their duties (A1,P1, P2, P3, P6). This was probably related to the parent profile mentioned earlier as the members seem to lack self-confidence and the required skills to carry out some duties because of their low educational and cultural background. Also, considering that some members in the partnership were mothers, thus women, it might be more difficult for them to go out, ask for support from different bodies and be assertive as they are mostly housewives without a proper education and the necessary skills. The same disadvantage seems to hinder more parental involvement in education and instruction-related issues at school. This point was clear in one of the members' comment as "We do not get involved in educational issues much. It is beyond us, because education and instruction are things that we do not have knowledge about. In this respect, we rely on our teachers".

9. Expectations and Suggestions related to the SPP

The participants also expressed their expectations from the partnership and came up with some suggestions so that it can benefit all parties more. All the parties stated that there should be more involvement and participation on the part of the parents, but they seemed to have different reasons for that (A1, M2, T1, P1, P2, P3, P5, P6). While the administration wants the parents to form closer relationships with the school and share the financial and non-financial responsibilities with them (A1), the parents want to be more involved in what is done for their children's education (P1, P2, P3, P5, P6). The SPP wants parents to participate more in their work and support them financially as they believe this will contribute to their children's education in all aspects and help the school maintain its good status (M1, M2). The teachers want more cooperation on the part of the parents because they believe it might motivate the students academically and help with attendance problems (T1). Another suggestion from the parents is that the SPP can help the poor students prepare better for the SBS exams by providing them with practice books and extra courses at the weekend. One last suggestion is related to training for parents in order to minimize the negative effects of the low parent profile and equip them at least with basic knowledge and skills that they can use to help their children while dealing with school work (T1, P1, P2).

For triangulation purposes, apart from the interviews carried out, documents provided by the school administration and the SPP werereviewed. The samples from the meeting minutes and income and

expense reports (see Appendix E) were examined and it was understood thatthe SPP gathered every month to discuss issues mostly related to the school needs and expenses, and the decisions taken were recorded in detail in the minute book. This was consistent with what the assistant principal told us about the functioning of the SPP, but it was inconsistent with what the parents and the teachers stated about the frequency of the SPP meetings as they had expressed that the partnership came together only 3 or 4 times a year. This may be because the parents and the teachers were not informed enough about the meetings held by the SPP. It seems that partnership works in close cooperation with the administration, but not the non-member parents and the teachers. The transparency policy mentioned during the interviews, on the other hand, was well reflected on the income and expenses book as every little detail was recorded there and any parent who wishes can easily see how much donation is received by the school and what it is spent for.

As the third part of the triangulation process, observations were carried out in the school by the evaluators. During these, it was seen that the school walls were all covered with student work, successful projects from different lessons, photos showing the activities of different school clubs, pictures from students' art lessons, especially form the first graders, and some certificates and medal received from sports competitions. These were all consistent with the interview data as the partcipants repeatedly mentioned that the school was now more interested in the students' both academic and extra-curricular work, which was reflected on the walls everywell. Also, the observations enabled us to see for ourselves the physical needs such as a canteen and a new library expressed by the interviewees. All in all, the data from the observations, document review and the interviews were to a great extent consistent with each other.

4. CONCLUSIONS AND SUGGESTIONS

Depending upon the findings of the study, the following conclusions have been obtained and the gist of each item is listed below:

1. School Parent Partnership is a significant and integral organ in the school educational system, and it should function by both representing the parent side and school side through coherent interaction.
2. SPP has certain concerns both in its formation and functioning in the underdeveloped regions/districts; two fundamental ones are:
   a. The members are mostly uncultivated housewives, who do not have self-confidence and education to work effectively in such organizations.
   b. Since the region comprises mostly poor people, the SPP has difficulty in collecting sufficient donations.
3. Strong communication, transparency and mutual trust are the basic aspects of a well-working SPP, which in turn leads to community building in and around the school.
4. The benefits of appropriate SPP activities are influential not only on the physical needs of the school environment but also on the instructional strategies and emotional conditions of learning; therefore, more SPP involvement is needed on the latter points.
5. Financial support from the state is needed for the provision of the basic requirements of the schools so as to facilitate SPP activities to be directed to other dimensions useful for education.

In the light of these findings, in order to maintain a healthy SPP, the following suggestions can be presented:

1. Parents should be encouraged more to participate in the activities of SPP, to be candidates for SPP membership and at least to attend the meetings. To do this, they should be assured that no obligatory payment (as donation) will be demanded.

2. Teachers should also be elected as board members in order to represent the school side among the board members (as it was before). Otherwise, the board functions as a one-sided organ, and the principal or the vice principal is forced to spare extra time for the settlement of concerns/discrepancies after a certain time while those can be handled by the teacher member(s) of the board as soon as they appear. This may also help teachers keep informed about the SPP activities.
3. Every activity concerning the students and the parents in the school should be shared with the parents, their suggestions and criticism should be evaluated in a democratic manner. This attitude both helps to improve the trust in the administration and encourage parent involvement/assistance, and accordingly, it contributes to the empowerment of the SPP as well.
4. All activities of the SPP should be transparently transmitted and messages should be clearly conveyed to the parents so that:
    a. they will develop more trustful attitude towards both the school and the SPP,
    b. parent involvement will increase to lead more progress through plurality
    c. the SPP will get more financial support.
5. Informing the parents, evaluating their suggestions and criticism, and encouraging their participation in both SPP activities and other school functions should be regarded as part of empowerment of the stakeholders (parents, teachers, administrators) and their feeling of ownership for school concerns (Patton, 2008; Stake, 2005, Fetterman, 2001).
6. The government should consider varying contexts of different schools and school districts and review its current policy forcing schools to maintain their own financial and educational activities.

5. SELF-EVALUATION IN RELATION TOTHE PROGRAM EVALUATION STANDARDS

We paid meticulous care to the accomplishment of the evaluation standards. For “Utility”, we mainly ensured relevance and use, trying to address the stakeholders’ needs and to prove trustworthy and competent for maximum credibility and acceptance before, during and after the study at the school, either verbal or in action. We designed information scope and selection to be responsive to the needs and interests of the participants by also evaluating the information we had from the vice principal. The perspectives, procedures and rationale were carefully defined to provide bases for the clarity of the value judgment through empathy and feeling like one of the participants. We paid special care to the report clarity by revising any information many times, especially about proper word selection, before finalizing. We tried to be timely in sharing and disseminating information with the related people before the data got old by starting with the vice principal and the SPP members, and finally with teachers and the school principal lastly. We believe and hope that the evaluation impact will be influential positively in the following times because all the participants appreciated and supported our study.

For “Feasibility”, basically we were careful about designing realistic, practical and attainable procedures. In this context, the procedures were carried out smoothly mostly with the unending assistance and transparency of the vice principal, as he prepared anything we needed on time and without any shortcomings. We didn’t pay much attention to the political viability issues since such an attempt was not needed, nor any threats were seemingly probable. Our evaluation was cost-effective in terms of the materials we used and the time we spent.

For “Propriety”, our processes were ethical, legal, respectful (consent forms, ethical committee requirements, proper negotiations and communication etc.). We served for the needs of the school we worked on; formal agreements were fulfilled; we were extremely attentive about the rights of human subjects and human interactions since the participants were from a poor region with low SES, who might have been vulnerable and tender for many points about their conditions and who might easily get resented.

Our assessments (judgments and inferences) have been complete and fair, and we disclosed the results which might be useful to the related participants at every phase of the study. We didn't meet any conflicts of interest luckily, and in terms of fiscal responsibility we didn't cause any financial cost to any person or institution.

For "Accuracy", we were careful with our study results to be technically adequate, true and correct to determine the merit/worth of the program appropriately. At the outset, the program was documented clearly in detail, including the national and international literature. The context of the school was analyzed; purposes and procedures together with information sources were depicted clearly; the information/data collected and inferences made were tested and revised several times evaluating, cross-checking the information/data and the interpretations obtained from other possible sources (triangulation) for ensuring that the information was valid, reliable and systematic. We utilized qualitative information obtained through interviews, observation and archival documents properly in order to answer our evaluation questions. We strived to draw explicitly justified conclusions so that the stakeholders can assess and utilize them. We were careful to be impartial and unbiased while writing our reports to reflect the evaluation findings. With the feedback of expert leader we completed meta-evaluation formatively and summatively against evaluation standards and from now on the stakeholders will be able to examine the strengths and weaknesses of our evaluation.

6. LIMITATIONS OF THE STUDY

It would have been ideal if we could have gone back to the interviewees with our data and results so that they could check them and confirm what we understood from what they said to be ture to ensure validity, but as there was no sufficient time, member checks could not be done. We could only share the results with the interviewees.Two evaluators had to chech each other's data to confirm the inferences. Also, data were collected from one school only. A range of data from different school contexts could have yielded even richer results.

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Appendix A - Themes Derived from the Interviews

Themes	
Codes	*frequency*
School Context	
Regional features	M2,T1, P1, P2, P5, P6, T2, A1
Parent profile	M2, T1, P1, P2, P5, P6, T2, A1, M1
Student profile	M2, T1, P1, P2, P5, P6, T2, A1
School staff	M2, P1 , P5, P6, T2, A1
Extracurricular activities	
arts	M2, T1, P1, P2, P3, M1
sports	M2, T1, P1, P2, P3, T2, A1
School trips	M2, T1, P1, P2, P3, T2, M1
Management and leadership	
Decision making	M2, T1, P1, P2, P5, P6, A1, M1
Communication	M2, P1, P2, P5, T2, A1, M1
transparency	M2, P1, P2, P5, P6, T2, A1, M1
Trust in the administration	M2, P1, P2, P4, P5, P6, T2, A1, M1
Managerial and entrepreneurial competency	T1, P1, P2, P3, P5, P6, T2
Positive aspects of the School	
Improvements in physical conditions	M2, T1, P1, P2, P3, P4, P5, T2, A1, M1
Teaching staff	M2, P1, P2, P3, P5, M1
Relationships with parents	M2, T1, P1, P2, P3, P4, T2, A1, M1
School success	M2, T1, P1, P2, P3, P4, P5, T2, A1, M1
School needs	
Physical needs	M2, T1, P5, P6, T2, A1, M1
Maintenance-related needs	M2,P6, M1
Moral support	M2, T1, P5
Functioning of SPP	
formation	M2, P5, P6, T2, A1
activities	M2, T1, P1, P2, P3, P5, P6, T2, A1, M1
Financial support	M2, T1, P1, P2, P3, P5, P6, T2, A1, M1
expenditures	M2, P1, P2, P3, P5, P6, A1, M1
Positive aspects of SPP	
Parent involvement	M2, T1, P1, P2, P5, P6, T2, A1

Communication	M2, T1, P1, P2, P3, P5, P6, T2, A1, M1
transparency	M2, P1, P2, P3, p6, T2, A1, M1
trust	M2, P1, P2, P3, P4, P5, P6, T2, A1, M1
Financial support	M2, P1, P2, P3, P5, P6, T2, A1, M1
Valuing / caring for students	M2, P1, P2, P3, A1, M1
Assistance to administration	T1, P1, P5, P6, A1
Flexible approach to parents	M2, P1, P2, P3, P5
Voluntary collaboration of families	M2, T1, P1, P2, P3, P5, P6, A1, M1
Weaknesses of SPP	
Lack of participation	M2, P1, P2, P3, P5, T2, A1, M1
Insufficient financial provision	M2, T1, P1, P2, P3, p6, T2, A1, M1
Unsatisfactory support to poor students	P1, P2, P3, P4, P6, T2
Lack of community support	M2, P6, M1
Misconceptions about SPP memberships	P1, P2, P3, T2
Gender discrimination	M2, T2
Lack of competency of SPP members	P1, P2, P3, P6
Expectations/suggestions about SPP	
Involvement and participation (balance)	M2, T1, P1, P2, P3
Contribution to ss' education	M2, T1, P1, P2, P3, A1, M1
Help with attendance problems	T1
Training for parents	T1, P1, P2
Helping poor students	P1, P6

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7TH AND 8TH GRADE STUDENTS` GENERALIZATION STRATEGIES OF PATTERNS

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ABSTRACT
Pattern is a combination of shapes, sounds, actions or symbols in a specific order (Souviney, 1994). The definition of mathematics which is stated as pattern and system science (Goldenberg, Cuoco and Mark, 1998) and the universal language which is used to understand the relationships among these (Olkun and Toluk-Uçar, 2006) shows the importance of pattern in mathematics. Pattern is one of the main concepts that contribute to comprehend mathematical concepts, recognize mathematical relationships and interpret them correctly (Burns, 2000). Therefore, it is important to know the strategies that students used to reach generalization in patterns and how they think in this process in terms of teaching mathematics. The purpose of this study is to describe 7th and 8th grades students` ways of thinking related to pattern and investigate the generalization strategies. This research was carried out total 8 students attending the teaching program at 7th and 8th grades in a primary school in İstanbul in the term of 2012-2013. Of these participants, 4 were at 7th grade and 4 were 8th grade. Open ended 4 problems related to patterns were used as data collection tool. Besides, semi-structured interviews were made with the aim of exposing how students think while solving these problems. The collected data was classified through the generalization strategies in the related literature. As a result of the study it is seen that most of the students use guess and check or explicit strategies whereas few of them apply contextual and only one use addictive strategy. In addition, addictive strategies are usually used in near generalization whereas explicit strategies are used in far generalization.
Keywords: Pattern, generalization strategies, 7th and 8th grade students

Introduction

Mathematics is seen as the science of patterns and order (Steen, 1988) and looking for a pattern or regularity is one of the actions which are performed in mathematics on the whole (Orton, 1999). There are several definitions of patterns which have important place in mathematics. According to Guerrero and Rivera (2002), pattern is a rule among the elements of mathematical objects such as numbers, shapes. Pabic and Mulligan (2005) has defined pattern as spatial or numerical regularity whereas it has been defined by Olkun and Toluk-Uçar (2006) as a system which consists of the objects or shapes are recurring or ordered regularly. In addition, according to Orton and Orton (1999) pattern is an approach which conveys to algebra. According to Reys, Suydam, Lindquist and Smith (1998) patterns help students to develop the skills of calculating, putting in order and structure their thinking strategies. In addition they have important role in improving the skills of reasoning, communication, association and problem solving (Tanışlı and Özdaş, 2009). Patterns generally include the actions of counting, comparing, classifying,

measuring, estimating and making symbolization and these processes make students` mathematical skills and knowledge meaningful (Fox, 2005).

Patterns are at the center of mathematical thinking and mathematical inquiry (Waters, 2004). The activities related to patterns are essential in terms of realizing mathematical relationships, understanding the system and logic of mathematics (Burn, 2000). Besides they constitute prerequisite for algebra and have a significant role in terms of development of it (Herbert and Brown, 1997). In general, these activities include searching for pattern, extending patterns, making pattern generalization (Lan Ma, 2007) and contribute to the skills of organizing data systematically, conjecturing and generalizing (Barbosa, Vale and Palhaders,2012). Generalization which is described by Dörfler (1991) as a tool and communication of thinking is one of essential aims of mathematics instruction (NCTM, 2000). At this point, patterns is a fundamental step in the formation of generalization (Hangreaves,Shorrocks and Threlfall, 1999). In this direction pattern can be seen the first step for generalization whereas generalization is the heart of algebra (Jones, 1993; Hargreaves, Shorrocks-Taylor and Threlfall, 1998).

Generalization of patterns improves algebraic thinking and constructs the concepts of variable and function (Lesley and Freiman, 2004). Besides generalization helps students to understand symbolic representations and interrelate among previous knowledge of arithmetic (Lannin, 2005, p.233). Thus it facilitates to proceed from arithmetic to formal algebra. Patterns tasks enable to observe and verbalize individuals` own generalizations and translate them symbolically (English and Warren, 1998). Due to that searching for patterns is a fundamental step in order to make generalization it is seen as a way of approaching algebra (Mason, Johnston-Wilder and Graham, 2005; Orton & Orton, 1999; Zazkis and Liljedahl, 2002). Therefore they are used by many educators as a pre-algebraic activity (Mason, 1996). In short, patterns have an important role as a bridge between generalization and algebra in primary level for providing constitution of algebraic thinking that is the base of formal algebra.

Formulation of the relationships and generalizations which are in the subcategory of patterns has recently taken an important place in curriculum of ABD and United Kingdom (NCTM, 2000; Zaskis and Liljedahl, 2002). Armstrong (2000) emphasizes that introducing and searching out the patterns at early grades develop algebraic thinking whereas Tall (1992) points out that proceeding to algebra is easier through generalization of arithmetic. Therefore, students need to have experiences related to patterns as from preschool education and teaching needs to include tasks which are oriented the figurative and numerical understanding of generalization (Rivera and Becker, 2005). Smith (2003) supports integration of them in programmes of instruction by emphasizing the relationship among patterns, functions, generalization and algebra.

Many researches emphasize the importance of patterns in mathematics (Risnick et al, 1987; Rawson, 1993; Zazkis & Liljedahl, 2002; Lannin, 2005; Radford, 2006; Becker & Rivera, 2006; Papic, 2007; Carraher et al, 2008; Amit and Neria, 2008; Mulligan et al, 2008) and present different strategies for generalizations of patterns. Examining students` generalization strategies of patterns is important in terms of learning advanced algebra. In addition, although many studies related to patterns and

generalizations of patterns have been conducted in international literature there is limited number of researches in Turkey due to that the subject of patterns incorporated into primary mathematics curriculum in 2005 (Tanışlı and Köse, 2011). However, getting knowledge about how students construct patterns, use cognitive processes and think in this construction is important for development of algebraic thinking. Thus there is need to conduct more studies related to patterns and generalization of them. On the other hand, RAND Mathematics Study Panel (2003) emphasizes, "because most studies have focused on algebra at the high school level, we know little about younger students' learning of algebraic ideas and skills" (p. 48). Therefore, the study aims to investigate strategies involved in generalizations of patterns of students attending primary level and gain some insight on their thinking processes. Hence, the study attempted to answers the following questions:

1. What are 7^{th} and 8^{th} grade students` generalization strategies of patterns?
2. How do students continue the patterns to a near and a far step?

Method

A qualitative research approach was chosen as methodology for this study since it best answers the questions what and how. This was a case study which provides to a depth understanding of the cases or a comparison of several cases (Stake, 1995). It was applied because the aim of the study was to obtain rich, detailed information reflecting the viewpoints of participants on how to figure out and generalize the patterns (Bogdan and Biklen, 1998, Glesne, 1999).

2.1.Study Group

This research was carried out total 8 students attending the teaching program at 7^{th} and 8^{th} grades in a primary school in İstanbul in the term of 2012-2013. Of these participants, 4 were at 7^{th} grade and 4 were 8^{th} grade. The students were selected by the teacher considering achievement profiles as well as volunteering and having good communication skills so that they were representative of the grade 7 and 8 classes.

2.2.Data Collection Tools

Open ended 4 problems related to patterns were used as data collection tool. The questions were composed of linear patterns problems which were chosen from textbooks. Curriculum of MEB related to 6-8. grades and the researches in our country show that linear and quadratic patterns are more included in the form of number sequence and visual. Therefore two of pattern problems were chosen to represent number sequence form and the other two were visual. However, linear patterns were chosen because they were more appropriate to be practiced by the students attending the second primary stage. Besides, three experts` opinions were taken in order to determine whether the problems were convenient in terms of aims so that the validity of language, grade and content was provided.

Semi-structured interviews were made with the aim of determining the pattern generalization strategies of students and exposing how students think while solving these problems. The fundamental

aim of interviews is to determine cognitive abilities of individual and explore the richness in the opinions by revealing the concepts which individual has and the relationships among these concepts (Zazkis and Hazzan, 1999). Each student was interviewed in approximately 30 minutes. During interviews, students were asked to solve four pattern problems and explain what their answers were and how they found them. In addition they were expected to answer the explanatory questions such as "How did you think?", "How did you solve?", "Why?". The students were videotaped while solving questions to record everything they knew and to analyze in detail. Using video as a research tool allows one to visit the situation repeatedly and to determine what the students have been thinking or what understanding has taken place (Borgen and Manu, 2002).

2.3.Analysis of the Data

The collected data was classified according to Table 1 which was constituted by (Akkan and Çakıroğlu, 2012) considering the patterns generalization strategies in the previous researches in the related literature (Amit and Neri, 2008; Ebersbach and Wilkening, 2007; Garcia-Cruz and Martion, 1997; Krebs, 2003; Lanin, 2003, 2005; Lannin, Barker and Townsend, 2006; Ley, 2005; Orton and Orton, 1999; Rivera and Becker, 2005; Stacey,1989; Swafford and Langrall, 2000; Steele and Johaning, 2004). Besides, according to Yıldırım and Şimşek (2008) the data must be described in detail and include direct quotations in order to provide the reliability and validity of the findings. Thus, direct quotations from dialogs were used to present a descriptive and realistic picture. While presenting the qualitative data to describe the researcher and students names such as S1-7, S2-7, S3-7, S4-7, S5-8, S6-8, S7-8, S8-8 and R were used (S1-7 represents first student and 7th grade student whereas S5-8 means fifth student and 8th grade student).

Table 1. Generalization Strategies of Patterns

Strategies	Properties
Counting	It includes calculating the number of components which form a shape or constructing a model or drawing a picture which describes the situation in order to calculate desirable qualification.
Recursive and Additive	It includes use of previous term in the pattern to find next term or terms. Students usually try to find difference between two terms and add obtained difference on last term in order to find next term.
Multiplying with Difference	It involves multiplying with the difference between two terms. It is generally encountered in the generalization of linear relationships. Students notice constant difference between terms and express n. term as multiplication of n and difference.
Whole-Object or Proportion	It includes use of proportional reasoning in solving of pattern problems. According to Lannin (2003) this strategy is use of a piece as a unit to construct a larger unit by using multiples of units.
Guess and Check	It involves rule estimation without paying attention whether the rule works or not. Student introduces an algebraic relationship (rule) representing the problem situation and doesn't take note of validity of his rule during process. Algebraic construction generally consists of numbers and operations related to problem situation.
Contextual	It includes constructing a rule or formula focused on context, namely, information related to situation.
Explicit	It involves the generalization of relationship between two variables in order to determine any value. Since this strategy provides to determine the functions by using equations and formulas it can be used to find near and far terms. Therefore it enables to obtain n. term and write general rule.

Findings

The Pattern Generalization Strategies of Students

Question 1: Write the algebraic expression corresponding to 1, 5, 9, 13,… number pattern by using parameter. Find the number at the 13. step of pattern.

The students S2-7 and S3-7 try to wrote some general formulas without focusing on the relationship between term and the value of term and checked the accuracy of formulas by comparing the number and value of the step. However, they weren't able to find general formula. Although they couldn't express algebraically they applied *Guess and Check* strategy.

S2-7: Here, 1, 5, 9, 13… it increases four by four? ıımmm…[he works on the question but isn't able to find the formula]… Unfortunately…[he continues to thinks]. 2n+3… [he thinks loudly and tries to understand giving numbers instead of n]. 2n+3, two times one is two, two plus three is 5. It proves.
R: What should you find in return for first term when you write one instead of n?
S2-7: One…ıımmm. 4n+1, four times one is four plus one is five. It gives five.
R: But you said that you should find one.
S2-7: [he tried to obtain formula but wasn't able to find it].

S3-7: [she tries to solve question and think for a while]. Unfortunately…[she writes 2n+(n-1) on the paper]
R: What did you try to do in here? [points n.2+(n-1)]
S3-7: I thought according to five. Two times two is four, two minus one is one, if we add one on four, five comes. However, when I made the same for nine, three times two is six, three minus one is two, six plus two is eight. Because of that nine didn't come, it isn't suitable.

The students S1-7, S4-7 and S8-8 estimate approximate formula by focusing on the difference between terms and then check the accuracy of it for first few terms. So they obtained the general formula of the patterns using *guess and check* strategy.

S1-7: I tried n+4 but it didn`t work.
R: Ok if we explain the relationship, what kind of relationship is there?
S1-7: It continues increasing four by four.
R: If we want to express by using parameters what can we say?
S1-7: I guess I found… 4n-3. [thinks for a while and writes something]. Iımmm… for example when we checked with one, four times one is four, minus three is one, when we checked with two four times two eight, minus three is five… it proves the pattern.

S4-7: n+4… one plus four is five… it is true.

R: Is it first term?

S4-7: Yes it is.

R: For one what is the first term of pattern?

S4-7: Hmm. Ok, one. [he holds to think for a while]. 4n-3, four times one is four minus three is one. For first term, one times four is four, four minus three is one. Here is one [he shows the first term in the question]. For second term, two times four is eight, eight minus three is five. It proves the pattern.

The student S5-8 realizes the relationship between terms and using this relationship he expresses the general formula of pattern. In addition his thinking process shows that he has conceptual knowledge about the obtained formula. Here student use *Explicit* strategy while making generalization of pattern.

S5-8: Here, I first tried to find general term. They continue increasing four by four. So I write 4n. When we write one, four times one is four then we reduce three and first term becomes one. Thus rule is 4n-3.
R: Is 4n-3 general term?
S5-8: Yes.
R: Can you explain your thinking process?
S5-8: The pattern increases four by four so I write n near four. Then if it is 4n, in order to obtain one, namely, first term we should reduce three from 4n. Hence general term is 4n-3.

While the student of S6-8 was solving the linear number sequence pattern, she expressed that she learned a rule to solve this kind of problems. She applied *contextual* strategy due to that S6-8 tried to solve the problem by using a rule which includes letter symbols instead of numerical value. Although she tried to make generalization through rote rule her generalization was correct. In addition the student S7-8 tried to construct a rule focusing on the context and relationships and check the accuracy of it to be sure so she used contextual strategy as well.

S6-8: I solve the question in two ways. In the first, I find 13. term by counting but it is little hard because if 100. term was asked I couldn't count one by one. In mathematics lesson teacher showed a rule like a+(n-1)k. Here, a represents first term and k means common difference. In this pattern, common difference is four and first term is one. When we put them into the rule, 4n-3 is obtained.
R: If you don't know the rule, how do you find general formula? Is there any different way?
S6-8: I try to understand the relationship among terms.

S7-8: First, I tried to understand how the numbers increase and find that the difference is four. So I write 4n then I put one instead of n to find first term. Four times one is four and I reduce three to get one since first term is one. I check general formula for second term, four times two is eight then I subtract three from eight and obtain five. I confirm the accuracy of formula by checking for first few terms.
R: How did you decide to reduce three from 4n?

S7-8: I wrote the numbers in the formula. In order to find first term I had to write one instead of n so four times one is four. However, here we want to obtain one so we subtract three to find one.

Question 2: Write the rule of pattern given at the below table.

Sequence Number in Pattern	Stick Number
1	4
2	7
3	10
…	…
n	

The students S1-7, S2-7, S4-7 and S5-8 correctly find the general formula of pattern considering the difference and focusing on the relationship between terms and the place of term. In addition they explain the reasons of their thinking ways so it is seen that they have conceptual knowledge about generalization of patterns. Students solve the question by applying *Explicit* strategy.

S1-7: n.3+1. For one, one times three plus one is equal to four, two times three plus one is seven, three times three plus one is ten… like that.
R: How did you decide to write 3.n?
S1-7: Since these increased three by three [shows the right part of column].
R: How did you decide to add one?
S1-7: Namely, it was suitable [her statement wasn't clear while saying, she smiled].
R: Why was it suitable?
S1-7: In my mind, I multiplied three by one, it is three but here writes four so I had to find something else. I added one and it matched with the others.

S4-7: 3n+1. Three times one is three, three plus one is four. Three times two plus one is seven. It is true.

R: How did you decide to write 3n+1?

S4-7: It increases three by three so I used 3n and when I wrote one instead of n three comes to get four I added one.

The student S6-8 and S7-8 tried to solve the question using a rule that they learned in the mathematics lessons. It shows that they prefer not reasoning and their conceptual knowledge is restricted.

Since they used a rule that they have already known they apply *contextual* strategy. Although they tried to make generalization through rote rule the generalizations were correct. Besides since S3-7 use numeric calculation and focus on the relationships between numbers, namely, context in the patterns this student applies contextual strategy.

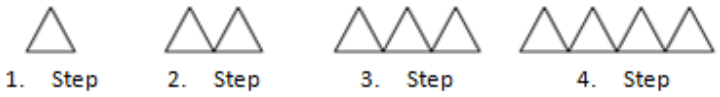
S7-8: There are the numbers of sequence and sticks in the table. The difference between terms is three. I use the rule in the form of a+(n-1)k. I write the difference and first stick number in the formula and find the general term as 3n+1.
R: From where do you know the rule?
S7-8: In a mathematics course, the teacher taught this rule.

S3-7: I found n.4 - (n-1). One times four is equal to four, one minus one is equal to zero, four minus zero is equal to four. For two, two times four is equal to eight, two minus one is equal to one, eight minus one is seven. It is suitable for all.
R: How did you decide to write n.4 - (n-1)?
S3-7: I looked at one and four, now… if we say four times... first I considered as four times. One times four is four, two times four is eight, three times four is twelve. I understood that I should reduce something from them. So, (n-1) one minus one is zero, if I get out of zero from four nothing changes. So I made in this way. I found for first. For second I had to reduce one, for third I had to reduce two. It was true for all.

The student S8-8 realized the increment value, however, although he wrote and checked many generalization formulas he weren't able to express the general term algebraically in written or verbally. This situation shows that the student use *Guess and Check* strategy.

S8-8: 4,7,10.. It increases three by three. [he writes some formula and check them..]. If you want next term, it is thirteen.
R: Ok. Can you express general formula?
S8-8: General formula.. immm..[he writes formulas such as n+1, 2n+1 but can`t find the formula].

Question 3:



a. Complete the 5. and 6. steps of the stick pattern.
b. Find the number of sticks is needed for 20.
c. Find the general formula of the pattern.

The students S1-7, S2-7, S3-7, S4-7, S5-8 and S7-8 correctly find the general formula of pattern considering the difference and focusing on the relationship between terms and the place of term. In addition they explain the reasons of their thinking ways so it is seen that they have conceptual knowledge about generalization of patterns. Students solve the question by applying *Explicit* strategy.

S1-7: There is one triangle in first step, two in second step… it is same with steps so there are respectively one, two, three, four, five and six triangles in first sixth step. Triangle composes of three sticks. So five times three is fifteen in 5. step and six times three is eighteen in the 6. step. I multiply step number by three so the general formula is found as 3n.

S4-7: Due to that there is one triangle in first step, two in second step and three triangle in third step, I understand there will be five triangles in fifth step and six triangles in sixth step
R: What is the general formula of patter?
S4-7: 3n.
R: why?
S4-7: Due to that triangle has three edges and ıımmm…it continues to increase one by one in each step, namely, the number of the step and the number of the triangle at this step is same, we multiply n with three.

S5-8: First, I count the number of sticks. There are three sticks in the first step, then six and nine. The question asks to find 5. and 6. steps. At first I find the rule of this pattern.
R: How do you find?
S5-8: It goes by increasing three by three so I write 3n. When I write one instead of n it becomes three and I obtain first term. So the rule is 3n and to find 5. and 6. steps I respectively write five and six instead of n and obtain the numbers in these steps as fifteen and eighteen.

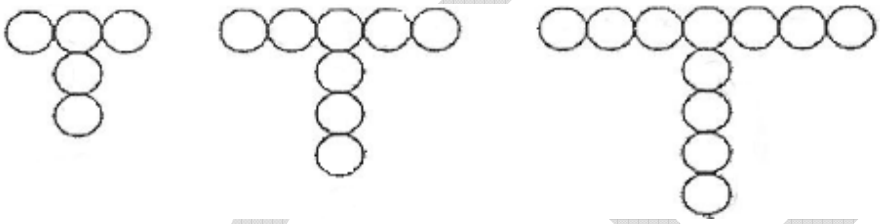
While the student of S6-8 was solving the linear number sequence pattern, she expressed that she learned a rule to solve this kind of problems. Due to that S6-8 tried to solve the problem by using a rule which includes letter symbols instead of numerical value and she previously knew she applied *contextual* strategy. Although she tried to make generalization through rote rule her generalization was correct.

S6-8: I use the rule of a+(n-1)k and since difference among the numbers of sticks and first term are three I write three instead of both a and k. From here general formula of the pattern comes as 3n. It increases three by three so I continue by counting and find the numbers as fifteen and eighteen for 5. and 6. steps. However, in order to find 20. step I use general formula and write twenty instead of n and twenty times three, sixty is obtained.

The student S8-8 focuses on the difference between terms and maintains the patterns by adding difference on previous terms. So it is seen that *addictive* strategy was used here. In addition, although the student recognized how to maintain pattern he wasn't able to obtain general formula.

S8-8: I tackle the number of triangle. There is one triangle in first step, two triangles in second step and three triangles in third step. Since there are three sticks in each triangle first term is three, second is six, third is nine and the pattern goes by increasing three by three. Therefore it continues in the form of 12, 15, 18, 21. From here, it is seen that 5. term is fifteen and 6. term is eighteen.
R: Can you express general formula of pattern?
S8-8: It continue increasing three by three.. but iimm.. general formula [He thinks for a while but can`t find the rule of pattern].

Question 4:



a. Find the numbers of circles in the first five steps in.
b. Find the general formula of the pattern.

The students S3-7, S4-7, S6-8 and S7-8 tried to solve the question using a rule that they learned in the mathematics lessons. It shows that they prefer not reasoning and their conceptual knowledge is restricted. Since they used a rule that they have already known they apply *contextual* strategy. Although they tried to make generalization through rote rule S7-8 wasn't able to obtain general formula of pattern whereas S6-8 found the correct formula.

S7-8: [He counts the number of circles] it continues as 5, 8, 11. So the pattern increases three by three. When I use the rule a+(n-1)k a is the first term so I write five instead of it. The difference is three so I write it instead of k. When I write three instead of n I find eleven. Third term is eleven so general formula is true.
R: What is the general formula?
S7-8: a+(n-1)k.
R: Yes, it is a rule but what is the general formula of pattern?
S7-8: [He thinks on it] I couldn't find.

S4-7: I write 3n since pattern increases three by three. When I write one instead of n I obtained three but first term is five so I add two. Thus, I find general formula as 3n+2. Then I check for second and third steps by writing two and three in the formula and I see the accuracy of general formula. Then I write four and five in the formula and find the number of circles in 4. and 5. steps as fourteen and seventeen.

The student S8-8 focusing on the relationship between term and the place of it estimate approximate formula and then check the accuracy of it for first few terms. S5-8 obtained the general formula of the pattern but S8-8 wasn't able to get formula using *guess and check* strategy.

S8-8: The pattern goes increasing three by three so I continue adding three on previous term and find circles numbers in 4. and 5. steps. For next option..[He writes some formulas but can`t find correct one]. I couldn't find it.

The students S1-7, S2-7, and S5-8 correctly find the general formula of pattern considering the difference and focusing on the relationship between terms and the place of term. Students solve the question by applying *Explicit* strategy.

S1-7: The pattern goes increasing three by three so I write 3n. When I give one instead of n it comes three but I must add two on it to obtain five which is the first term of pattern. Thus the general formula of pattern is obtained as 3n+2. Then I write four and five in the formula and find the number of circles in 4. and 5. steps as fourteen and seventeen.

Table 2. The Pattern Generalization Strategies of 7th and 8th Grade Students

Students		The Type of Patterns			
		Number Sequence	Number Sequence	Visual	Visual
7th Grade	S1-7	Guess and Check	Explicit	Explicit	Explicit
	S2-7	Guess and Check	Explicit	Explicit	Explicit
	S3-7	Guess and Check	Contextual	Explicit	Contextual
	S4-7	Guess and Check	Explicit	Explicit	Contextual
8th Grade	S5-8	Explicit	Explicit	Explicit	Explicit
	S6-8	Contextual	Contextual	Contextual	Contextual
	S7-8	Contextual	Contextual	Explicit	Contextual
	S8-8	Guess and Check	Guess and Check	Additive	Guess and Check

Furthering the Pattern on Near and Far Steps

Some students focus on the difference between terms and find the next term by adding the difference on previous term. Here 5. and 6. terms are near steps and the students prefer *additive* strategy to find them.

S6-8: There are respectively five, eight and eleven circles in the first third step so I understand that it continues by increasing three by three. I find the circle numbers in 5. step by adding three by three.

S8-8: I tackle the number of triangle. There is one triangle in first step, two triangles in second step and three triangles in third step. Since there are three sticks in each triangle first term is three, second is six,

third is nine and the pattern goes by increasing three by three. Therefore it continues in the form of 12, 15, 18, 21. From here, it is seen that 5. term is fifteen and 6. term is eighteen.

13. and 20. steps can be considered as near or far steps depending on the structure of the pattern. In terms of the questions that we asked in this study both steps can be calculated through a basic strategy like addictive or an advance strategy like explicit. The examples of dialogs show that some students first prefer obtaining the general formula and then find any asked term by using it. So we understand that some students use *explicit* strategy to find terms.

R: What is the number in 13. step?
S7-8: When I write 13 instead of n in formula, four times thirteen minus three is forty nine.

R: What is the number of sticks at the 20. step?
S3-7: Sixty
R: How did you solve this question?
S3-7: I multiply twenty with three since triangle has three edges.
R: Can we find the outcome in a different way?
S3-7: We can find drawing figures but 80. step may be asked to find and we can`t draw until 80. step. Thus, solving is easier by finding a formula.

R: What is the number of sticks at the 20. step?
S4-7: Twenty times three.
R: How did you decide to do like this?
S4-7: The number of edges of triangle is three. There are twenty triangles at 20.step so I multiplied twenty with three.

Although 5. and 6. steps are near steps the dialogs show that some students prefer making generalization and get general formula then they use it to find the asked steps. Therefore it is seen that some students use *explicit* strategy to find near steps.

S5-8: First, I count the number of sticks. There are three sticks in the first step, then six and nine. The question asks to find 5. and 6. steps. At first I find the rule of this pattern.
R: How do you find?
S5-8: It goes by increasing three by three so I write 3n. When I write one instead of n it becomes three and I obtain first term. So the rule is 3n and to find 5. and 6. steps I respectively write five and six instead of n and obtain the numbers in these steps as fifteen and eighteen.

S1-7: Thus the general formula of pattern is obtained as 3n+2. Then I write four and five in the formula and find the number of circles in 4. and 5. steps as fourteen and seventeen.

The following sample dialogs show that some students are in tendency to use *addictive* strategy to obtain near steps whereas they prefer finding the general formula and use *explicit* strategy to get far steps.

R: Ok, the question asks to find the number at the 13. step. Can you find that?
S2-7: forty nine.
R: How did you find it?
S2-7: I did it by adding four
R: If the question asks the number at the 120. step?
S2-7: I try to solve with formula… ıımmm…I did like this because of that the step number was small.

S6-8: It increases three by three so I continue by adding and find the numbers as fifteen and eighteen for 5. and 6. steps. However, in order to find 20. step I use general formula and write twenty instead of n and twenty times three, sixty is obtained.

Discussion and Conclusion

The results of this study show that 7th and 8th grade students` pattern generalization strategies are diverse. They are generally in tendency to use contextual or explicit strategies. According to the study of Akkan and Çakıroğlu (2012) 7th and 8th grade students mainly use contextual and explicit strategies in linear patterns so it supports our study in terms of used strategies. It shows that some students applied contextual strategy benefiting from a rule without paying attention conceptual understanding of the patterns or the relationships among terms. These students focused on obtaining the general formula and finding the value of asked steps. In addition some students used guess and check strategy because of not realizing the relationships between terms and not being sure about the accuracy of general formula. On the other hand, only one student preferred using addictive strategy since he wasn`t able to find general formula of pattern. In this study students usually tried to get general formula at first since they believe that answering any question by using general formula is easier. However, if they didn't find it they applied adding the difference between terms on previous term or counting the numbers in sequence.

In number sequence patterns six of students preferred using guess and check strategy whereas five of them used explicit strategy. Besides, five students applied contextual strategy for generalization. Some of the students who used guess and check strategy weren't able to discover the general rule of pattern or make generalization whereas some of them were enough to find general formula or express correctly the relationship between terms in algebraic form. It shows that there are deficiencies in students` structures of knowledge since they think a formula without being sure and need to check it or use a rote rule.

In visual patterns nine of the students preferred using explicit strategy whereas five of them used contextual strategy. In addition only one student used addictive strategy and guess and check strategy was used by one student for generalization as well. In this type of patterns students are in tendency to change visual patterns into number sequence (Becker ve Rivera, 2006; Krebs, 2005; Lan Ma, 2007; Orton ve

Orton, 1999; Stacey, 1989) and work with numbers so they adopt numerical approach that they find numeric equivalent of shapes in each step (Becker ve Rivera, 2005, 2006; Garcia-Cruz ve Martinon, 1997; Krebs, 2005; Lan Ma, 2007; Orton ve Orton, 1999; Orton et al., 1999; Stacey, 1989).

There aren`t too many differences between generalization strategies which are used in number sequence and visual patterns since they solved visual patterns by changing into number sequence. According to the research of Akkan and Çakıroğlu (2012) students are more successful in solving number sequence patterns than visual patterns so this finding doesn't show parallelism with our study. In this study, most of the students achieved to recognize the relationships between terms and obtain the general formulas of the patterns. However, some of them weren't able to make generalization. Many researchers indicate that students more successful in the pattern problems which they are familiar (Feifei, 2005; Lannin, 2005; Orton and Orton, 1999). Due to that 7th and 8th grade students are familiar to linear patterns and this type is appropriate in terms of students` cognitive levels most of students might be successful in making correct generalization in this study.

This study shows that students may prefer addictive or explicit strategy to find near steps. There are some students who used explicit strategy to find near steps whereas some students used addictive strategy. It can be said if students obtain general formula of patterns they can apply both strategy according to their preferences but if they aren't able to find formula they are in tendency to use addictive strategy to find near steps. On the other hand, they need to make generalization and obtain the general formula, they don't use addictive strategy for far steps since they know it is difficult. Due to that they have the opportunity to find the near steps by adding the difference between terms on previous term or counting the numbers in sequence, students are more successful in finding near steps in contrast with far steps. The finding is parallel with the finding of the study of Akkan and Çakıroğlu (2012). In generally, the students are in tendency to use *addictive* strategy to obtain near steps whereas they prefer finding the general formula and use *explicit* strategy to get far steps. Stacey (1989) and Tanışlı and Özdaş (2009) also support that the focus is on explicit strategies within the near generalization and on addictive strategies within near generalizations.

Some students aren't succeed in making correct generalization whereas some of them are tendency to use rote rule and haven't enough conceptual understanding. So teachers should use different type of patterns and solution strategies to make rich their perceptions and also focus on making students understand the relationships between term and the place of it in order to develop their algebraic thinking and constitute a substructure for advanced algebra.

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