

## Japanese Lesson Study: Can it work in Turkey?

### Japon Ders Arařtırması: Trkiye’de İřler mi?

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#### *Abstract*

In all international comparison studies, Japanese students, who were at the eighth and seventh grades in Junior high school, performed very well in mathematics. Researchers in mathematics education believe that one of the key reasons for this impressive achievement is the process of lesson study practiced by the Japanese teachers. Thus, the purpose of this paper is to describe what the Japanese lesson study is and then to examine the procedure in terms of how it is planned and conducted by Japanese teachers. The last part of the paper discusses whether teachers in Turkey should work collaboratively within the lesson study model to improve student learning, and in doing so enhance their own teaching practice.

*Keywords:* Junior high school, lesson study, student learning, teaching practice

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Tm uluslararası karřılařtırmalı alıřmalarda, ortaokul yedi ve sekizinci sınıfta okuyan Japon đrenciler matematikte ok iyi bir performans gstermiřlerdir. Matematik eđitimi arařtırmacıları, bu nemli bařarının en nemli sebeplerinden birinin, Japon đretmenler tarafından uygulanan *ders arařtırması* olduđuna inanmaktadırlar. Bu yzden bu alıřmanın amacı Japon ders arařtırmasını aıklamak, Japon đretmenler tarafından nasıl planlanıp uygulandıđını incelemek ve sonunda Trkiye’deki đretmenlerin bu model iinde đrenci đrenimini artırmak ve kendi đretim uygulamalarını geliřtirmek iin ortaklařa alıřıp alıřamayacaklarını tartıřmaktır.

*Anahtar Szckler:* İlkđretim ikinci kademe, arařtırma dersi, đrenci đrenimi, đretim uygulaması.

#### Introduction

In the last decade, the Third International Mathematics and Science Study (TIMSS) measured the achievement of students in the middle school years in various countries around the world. In these international comparative studies (TIMSS 1995, 1999, 2003), Japanese students, who were in 7th and 8th grade in Junior high school, reached the impressive levels of achievement in mathematics and seated on top of other countries. On the other hand, Turkish

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students, who only participated in 1999, were ranked under the international average among 38 nations (TIMSS, 1999). Researchers believe that Japanese professional development practice of lesson study is one of the key factors behind the Japanese success. The teachers in Japan also see the process of the lesson study as the source of their success (Lewis and Tsuchida, 1997). Thus, the recent professional development efforts focused more on examining and analyzing teachers' classroom practices (Lampert and Ball, 1998; Stein, Silver and Smith, 1998). Many researchers around the world, particularly in the USA, saw great promise in the Japanese lesson study and carefully examined the whole procedure of it, and then tried to implement it as a form of teachers' professional development in their country (Stigler and Hiebert, 1999; Yoshida, 1999). In parallel with these efforts, this paper first describes what the Japanese lesson study is and then looks at the whole process of the lesson study in terms of how it is planned and conducted by Japanese teachers. In the last part of the paper, it looks for an answer to the question if we can adopt and implement the Japanese lesson study in an effort to improve both students' mathematical learning and teachers' professional learning in Turkey.

### *The Japanese Lesson Study*

In general, lesson study is a professional development process that a vast majority of Japanese elementary and middle-school teachers work collaboratively in schools throughout the country in which they observe each other's lessons, discuss and critique the lessons, and then refine those lessons in order to be more effective in teaching mathematics (Stepanek, 2001). Prospective teachers also conduct lesson study during student teaching with their university-based mentors and the teacher with whom they have been assigned to work in their school (Fernandez, 2002; Peterson, 2005). According to Stigler and Hiebert (1999), the lesson study process involves the next eight steps: (1) defining the problem, (2) planning the lesson, (3) teaching the lesson, (4) reflecting and evaluating the lesson, (5) revising the lesson, (6) teaching the revised lesson, (7) reflecting and evaluating, and (8) sharing results.

The following overview of the process is based on the work of Stigler and Hiebert (1999). The lesson study process starts with a broad, school-wide goal such as love of learning or independent thinking. This goal can also be a problematic concept that the teachers come across in their own classrooms. In the second step, the teachers research the topic of the study, reading books and articles about the problem they are working on, and then come together and develop a detailed, written lesson plan to achieve their goal. Next, while one of the teachers in the group presents the lesson in his or her classroom, the others observe the lesson being taught and take careful notes on what the students and the teacher are doing and saying. They particularly pay attention to the conversations that students have with each other as well as with their teacher. After school, in the next phase, the group meets to share their observations and reactions to the lesson in light of questions: what worked or did not work with students in the classroom? What did the teacher miss? In what part of the teaching did students have difficulty to understand? In the fifth step, based on the problems identified in the first lesson, the group makes necessary changes in the lesson. Students' misunderstandings are the main focus in revising the lesson. In the following phase, the same person or another member of the group teaches the modified version of the lesson to his or her students while all teachers in the school and an outside expert working with the lesson study group are invited to observe this revised lesson. After the lesson, in the seventh phase, they all come together to discuss their observations and make comments and suggestions on the issues of learning and instruction. At the end of the process of lesson study, teachers share the lessons they develop through this process. They also publish a written lesson study report including a summary of teachers' reflections and discussions. These reports are shared with all teachers throughout Japan. As seen in the whole procedure, the lesson study includes a number of effective professional development strategies, such as peer observation,

ongoing collaboration, and looking closely at how students are thinking and reacting (Darling-Hammond and McLaughlin, 1995). The following discusses these strategies with respect to how they support professional growth in teaching mathematics and compare with those in Turkey.

When teachers take part in lesson study and observe a lesson being taught, they have an opportunity to see things that they do not have a chance to pay close attention in the flow of their own teaching: how students are thinking, how they are reacting with each other, and how eager they are to investigate mathematical concepts presented. This direct observation of students and teachers in the classroom as well as open discussions about what they have observed help Japanese teachers to support their own professional learning (Stepanek, 2001). In addition, “teachers are able to develop a shared language for describing and analyzing classroom teaching and to teach each other about teaching” (Stigler and Hiebert, 1999, p. 123). On the other hand, teachers in Turkey work in isolation and have no opportunity to observe each other. It is a common belief that one’s classroom is a private place and should not be interrupted. Even under the new teacher education program put into practice in 1998, individual observations conducted during the first and end of the undergraduate years at the teacher education programs are limited and do not include a follow-up meeting with the classroom teacher and the university-based mentor to discuss about their observations. Thus, prospective teachers do not benefit from this process as much as they want.

Another benefit of the collaborative nature of lesson study is that it helps teachers to evaluate their own teaching skills (Stepanek, 2001). Continuing discussions about effective teaching strategies and observing these strategies in action help teachers reflect and see new possibilities for their own practice. Stigler and Hiebert pointed out that when a teacher teaches the lesson and the others observe, problems that emerge are attributed to the lesson as designed by the group, not to the teacher who implemented the lesson. Thus, this approach overcomes the fear of one’s teaching in front of others and the follow-up critiques about his or her teaching. In Turkey, some teacher professional learning efforts are made by means of short term workshops; however, this kind of a broad-based professional development process is not known.

#### *Factors to Lesson Study Implementation in Turkey*

The Japanese lesson study suggests an effective model in a set of principles about how teachers learn and improve their teaching as time goes. The process opens a clear window for teachers to see themselves with new eyes in terms of how to be effective in teaching mathematics. Perhaps these effective, high quality teachers coming from this ongoing and career-long process can be the answer to bring our students to the mathematics level in learning we all hope for. So, can lesson study work in Turkey as it works in Japan? Before answering this question, we need to take a closer look at some major parts of the process of lesson study. The most important point is that teaching is a cultural activity and “cultural activities, such as teaching, are not invented full-blown but rather evolve over long periods of time in ways that are consistent with the stable web of beliefs and assumptions that are part of culture” (Stigler and Hiebert, 1999, p. 87). So, beliefs of nature of mathematics and learning, and about the role of a teacher in the classroom have a significant effect on how well lesson study can be implemented in another education system. Teachers in Japan see mathematics as a set of relationship between concepts, facts, and procedures (Stigler and Hiebert, 1999), unlike teachers in Turkey, where mathematics is considered as algorithms or a set of rules for solving problems (Berberoğlu, Çelebi, Özdemir, Uysal, ve Yayan, 2003). Allowing students to struggle to solve mathematics problems and make mistakes on them are an essential part of learning process in Japan (Shimizu, 1999), whereas practicing procedural skills many times with familiar problems

is the core of mathematics learning in Turkey (Berberoğlu et al., 2003). Parallel with these beliefs mentioned above, Japanese teachers lead classroom discussions, ask questions about the solution methods and emphasize important points of students' problem solving methods (Shimizu, 1999), while majority of the Turkish teachers demonstrate how to solve problems step-by-step and then assign similar problems for students to work on (Berberoğlu et al., 2003). These different cultural beliefs about the nature of mathematics and the teacher' different roles make it more difficult to adopt the Japanese lesson study into our education system.

Another point is that lesson study requires a flexible scheduling for teachers to watch each other teaching practice during school hours and some extra time after school to evaluate and discuss the lesson presented. This seems not to be a big problem in Turkey. In general, school hours in elementary and middle school levels are scheduled in two sessions: one in the morning from 7 am to noon and the other in the afternoon from 1pm to 6 pm. A teacher in either session does not have to be in the school when his or her classes out of session. So, teachers in the morning session can meet in the afternoon for lesson study, while teachers in the afternoon session can meet in the morning. However, in order to encourage teachers to engage in such a model, they need to be paid for each lesson study application by the government. Because of the low socio-economic status of the Turkish teachers, this external reward makes this process have a good start. Then when teachers find this process useful to improve both their own teaching and student learning, they willingly will continue to practice.

Curriculum is another important part of lesson study. Like in Japan, where there is a national curriculum to which teachers have to obey, Turkey has a national curriculum as well. Mathematics curriculum is the same for all students. Over the content of the curriculum, the Ministry of Turkish National Education has complete authority in terms of which mathematics textbooks should be used for each grade. Since all teachers in Turkey teach the same mathematics curriculum, knowledge generated by lesson study groups can be used by anyone who teaches at the same grade level across the country. With a common electronic database, lesson study reports written by teachers in Turkey can easily and quickly be shared with other teachers.

Lastly, outside experts or advisors, who observe key meetings and offer feedback, play a key role in the process of lesson study. They have strong content, pedagogical and curricular knowledge of mathematics and in particular let teachers know about recent research findings related to the specific topic being taught by the group. In Turkey, this role can easily be filled with the university-based mentors who are expert in their fields.

### Conclusion

Japan has succeeded in developing a functional model that not only creates effective teachers but also creates successful students in mathematics. So, the lesson study application can be the answer for Turkey to improve both student learning and teacher professional learning. Since the Japanese lesson study is a teacher activity, the success of this activity depends entirely on teachers. Without interest, commitment, and hard work of the teachers, the process of lesson study has a little chance to be successful in Turkey. In order to make this process work, teachers have to put the energy, time, and commitment which are absolutely needed.

Now, in Turkey, it may be right time to put this project in to action to see if it is effective or useful because Higher Education Council recently introduced a new teacher education program by putting more emphasis on field experiences and practicum. This new emphasis particularly increased the amount of time allocated for classroom observations and teaching practice in

schools. This reformed plan also developed an effective faculty-school partnership program. In parallel with this reform, prospective teachers, who registered the course of the Practice Teaching offered at the last semester of teacher education programs, can work as a lesson study group while teaching students in assigned schools. Like in Japan, while one of these prospective teachers teaches his or her lesson, other prospective teachers, the cooperating teacher, and the university-based mentors observe from the back of the classroom. At the end of the school day, they all come together and reflect and comment on the lesson in terms of the strengths and weaknesses. Then, they will follow the rest of lesson study steps until the lesson is complete. Since this is a big project, the lesson study application initially can be carried out by a selected pilot university and its affiliated schools. If the findings obtained from this application are effective or useful, the process of the Japanese lesson study spreads out to whole universities in the country. The ultimate goal, in the long run, is to extend this application to all inservice teachers in elementary and secondary schools in Turkey.

It is true the Japanese culture of education is different from that of Turkey's and adopting that model into our system will not be easy. However, at least we can learn from the Japanese lesson study by placing a more emphasis on observing and learning from each other's teaching, promoting the interactions among teachers, and sharing information about how students are thinking and reacting. Through these activities, while teachers play an active role in their professional learning, as suggested by the NCTM (2000), they also motivate students in the process of learning and promote students' mathematical learning.

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