

ORGANIZING AND DEVELOPING A MATHEMATICS LESSON

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**Abstract**

In this article I expressed my observations of three mathematics lessons. Each of them was handled by different teachers. I observed three different classes. One of them was at secondary school and others were in high school. I classified my observations according to these topics: Focus, lesson objective, lesson planning, beginning, teaching methods, communication, transitions between activities, managing students, lesson ending and evaluating student work.

*Key Words:* organizing/developing a lesson, lesson planning, classroom dynamics.

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## Introduction

The purpose of this article was to express my lesson observation schedules in Bilkent Secondary and High School on 3<sup>rd</sup> of October, 2013. I observed three mathematics lessons and explained my findings in detail in this article.

### What Happens During A Lesson In A Classroom?

#### Lesson Observation Schedule 1

This first schedule was about 6/B Class whose number of students was 20. Their class teacher was Çiğdem Dalbudak. The lesson was “Lowest Common Multiple & Highest Common Factor”.

**Focus:** The teacher mentioned about general things first (such as homework). Then there was a revision part of the last class (prime numbers and factorization of a positive integer). After that there was an exploration part that students try to discover about main subject (lowest common multiple). Different ways of finding lowest common multiple was described. Likewise highest common factor was described. Finally problems were solved by using lowest common multiple and highest common factor. The teacher organized her lesson according to this system and used different types of questions to develop the lesson.

**Lesson Objective:** Students find out about lowest common multiple and highest common factor and use them by solving problems.

**Lesson Planning:** The teacher prepared some notes on smart board before the lesson.

**Beginning:** When the teacher came into the classroom students stood up and said “Good morning” to her. After greeting part, the teacher asked who did his/her homework and who did not, asked for an explanation from who did not do his/her homework and checked homework. Then by asking some questions the teacher made the students to remember the last class.

**Teaching Methods:** The teacher used questioning-answering technique at revision and exploration part and also while doing exercises and solving problems. The teacher encouraged students to think and discover about main subject by giving some examples. While students were doing exercises the

teacher walked around, monitored and helped them to understand. After each exercise on board, students made individual work so the teacher observed their own understandings without any assistance. However sometimes there was peer-teaching.

**Communication:** The teacher asked different types of questions and had an explanation such as: “what is a factor/divisor/prime number?” “What is the property of two as a prime number?” “Is one a prime number? Why?” “... Then what will we do as the question asks us to find out 780 and 510 for example? This way is not effective, you see? Because of this we need the second way.” During the lesson, the teacher’s voice was sometimes getting higher and lower.

**Transitions Between Activities:** The teacher moved students from one activity to another by asking questions gradually. The teacher gave clear instructions such as: “Okay, now look at the new question on the board and try to solve it on your notebooks.”

**Managing Students:** While students were trying to do exercises, some students finished earlier and the teacher wanted them to stand up and help their friends. I think these students understood the question better by telling others. They became more active for following questions. I think, to finish early and help others motivated almost all students. There was sometimes a noise. Especially to take their attention on board the teacher’s voice was increasing sometimes or if the teacher noticed a student with a faraway look in her eyes, she also made her voice’s volume up. If the teacher took true answers/questions etc. she usually said “Well done!” and sometimes made some students to do the first step of question by giving instructions and calling their names. The teacher used eye contact and body language to prevent some potential disturbances.

**Lesson Ending:** The teacher summarized the lesson quickly by using a problem which consists of the whole components of the topic. She wrote down the homework on board and solved and explained the problems.

**Evaluating Student Work:** There was not an examination but the teacher assessed students while they were asking, answering and trying to do exercises/problems during the lesson.

## Lesson Observation Schedule 2

The second schedule was about 12/B IB SL Class whose number of students was 11. Their class teacher was Devrim Özata. The lesson was “Properties of Curves”.

**Focus:** The teacher first checked homework and wanted a student to explain a question in homework on board. After the students solved and asked their questions the lesson went on with a new topic. When the teacher noticed a student did not understand something he always asked questions gradually until the student/students got it. Before definitions the teacher made them think on examples. The teacher developed his lesson by asking different types of questions to each student.

**Lesson Objective:** Students learn about properties of curves and use them in tangents and normal.

**Lesson Planning:** The teacher prepared the desks U-shaped before the lesson and prepared his notes on projector.

**Beginning:** Students stood up when the teacher came into the classroom. There was a greeting part. The teacher asked about homework and began to check. While a student was explaining a question in homework on the board the teacher continued checking homework by making jokes, giving feedback, encouraging students. Then the teacher explained some parts of the question and reminded the last class.

**Teaching Methods:** The teacher monitored the students and asked different types of questions, sketched some curves and graphs to make the subject clear.

**Communication:** The teacher asked such questions during the lesson: “Is there  $\ln x$  in this function’s derivative or not?” “What was the relation between tangents’ and normal’s slopes? Where did it come from?” “Why are we adding this constant  $c$  in such an integral question?” The teacher always waited for students’ answers, sometimes called their names and asked what his/her idea was. The teacher encouraged them to ask questions. For example one of the students asked: “What does this expression mean in this question?” It was a different type of question and the teacher gave feedback: “That’s the question! Well done!” The teacher conducted and motivated them with his questions and explanations.

**Transitions Between Activities:** The teacher sometimes gave clear instructions such as “We are skipping these questions and doing the question with number 7.” If there was a misconception the

teacher moved to the board's other side and there was usually a fast questioning-answering part. The teacher took notes there; then again he turned back the subject.

**Managing Students:** The teacher knew students and their potentials, I think. When the teacher noticed two of the students would start talking, he immediately asked a question and prevented potential disturbances. The teacher always used students' names, sometimes made jokes, sometimes just looked him/her and made him/her understand. After answering his questions, the teacher gave feedback especially weaker students: "Bravo!" The teacher made his voice's tone up and down to take attention to his sayings.

**Lesson Ending:** The teacher explained the last question but it did not finish so he wanted students to complete the solution as homework and gave extra homework for the next class.

**Evaluating Student Work:** During the lesson the teacher monitored students. Sometime a student gave a nice and different explanation to a question and the teacher gave him extra points. Additionally the teacher assessed students' understandings by asking various questions and their participation during the lesson.

### Lesson Observation Schedule 3

The third schedule was about 12/E Class whose number of students was 10. Their class teacher was Seçkin Karaaslan and the lesson was "Even and Odd Functions".

**Focus:** This lesson was a blocked lesson's second part. There were some trigonometric functions on board from the last class and the teacher had reminded trigonometric functions. The teacher had explained odd and even trigonometric functions. Some exercises were done in the second part of the lesson. When the students were working individually the teacher monitored them and solved some questions on board. Then the teacher explained what would be done for the next week. The teacher developed his lesson by using individual work since he saw the misconceptions and explained them on board.

**Lesson Objective:** Students realize the difference between odd and even functions and decide a function is odd, even or neither.

**Lesson Planning:** The teacher prepared the related questions of the subject before the lesson.

**Beginning:** The teacher continued his lesson by doing some exercises. The teacher explained some keywords in the questions and what it meant. Then asking questions gradually the teacher solved questions on board.

**Teaching Methods:** For each question the teacher first explained what the question meant and what would be necessary for the next step. The definition/rule etc. was given and the question was solved. Individual work was used to make students consider and they tried to solve questions on their own first.

**Communication:** The students asked some questions about university entrance exam and the teacher explained about mathematics questions in the exam and advised a planned study program for students. The teacher had eye contact with students and his explanations were clear.

**Transitions Between Activities:** The teacher always gave clear instructions such as “Open your books page 26 and begin to solve questions and if you need help ask me.”

**Managing Students:** The teacher used individual work and this kept the students quite. When a student disturbed others by increasing her voice’s tone, the teacher warned her. By walking around and monitoring students, the teacher managed the students’ behavior.

**Lesson Ending:** There was a summing up and the teacher explained the following week’s program and gave homework for the next class.

**Evaluating Student Work:** The teacher assessed students while monitoring them during the lesson.

### Conclusion

The purpose of this article was to observe how the teacher organizes the lesson, which teaching methods were used during the lesson. I also observed teacher’s communication, lesson planning, beginning and ending, managing the classroom and evaluating student work. I learned

there were different ways of developing a lesson but always I should consider about the class' dynamics and make my lesson planning according to this.

"A Bilkent student does not lie, cheat, or steal or tolerate those who do. On my honor, as a Bilkent student, I have neither given nor received unauthorized aid on this academic work."

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