

# Formative assessment – several examples from school practice

Irena DVOŘÁKOVÁ

*Charles University, Faculty of Mathematics and Physics, V Holešovičkách 2, 1800 00 Prague 8,  
Czech Republic*

**Abstract.** The poster presents several techniques of formative assessment that proved to be useful in physics teaching and learning at the level of junior secondary school.

## 1 Introduction

Formative assessment is considered to be one of most effective methods of teaching and learning [1]. However, in spite of the fact that formative assessment has been mentioned and discussed for tens of years already (see, e.g., [2]), it seems that its potential is not yet fully exploited. In [1] the authors say: “Knowing about these techniques and strategies is one thing; figuring out how to make them work in your own classroom is something else.”

## 2 Meaning of formative assessment used in this paper

In different sources, different meanings of the term “formative assessment” are used, but for my purpose the most appropriate definition is the definition used in [3]:

“Practice in a classroom is formative to the extent that evidence about student achievement is elicited, interpreted, and used by teachers, learners, or their peers, to make decisions about the next steps in instruction that are likely to be better, or better founded, than the decisions they would have taken in the absence of the evidence that was elicited.”

D. William in [3] formulates two key points of teachers’ work. The teacher would examine the relationship between questions (and answers on) “What I did do as a teacher?” and “What did my students learn?” He also describes that assessment improves learning when it is used to support five key strategies in learning. From these, I will focus on the following one in the poster: “Engineering classroom discussions, activities, and tasks that elicit evidence of student achievement.”

## 3 Activities for eliciting evidence of student achievement

I would like to offer some activities, which help teachers and students to gain evidences or proofs of students’ achievement. The main reason I decided to offer these activities to participants of the GIREP conference is very well formulated in [4]:

“Perhaps the biggest deterrent to using formative assessments in science classes is that instructors lack techniques for using continuous formative assessment in ways that are unobtrusive and fit seamlessly with instruction.”

In the poster I will present several examples of the activities and techniques concerning formative assessment in teaching physics I have used in my classes. Some of these activities are inspired by the book [3], some of them were invented by me or other colleagues and now they are a part of methodology of the Heureka project [5].

Examples of concrete activities include:

- *Create a task for the test.* In this activity, each pupil formulates several tasks for a given topic, chooses the best one (according to their opinion) and writes it on the blackboard. Some of

the tasks written on the blackboard are later used in the test for the whole class. After the test a reflection of the whole activity follows.

- *Teach your peer.* A set of statements concerning properties of electric charge is given to students. Working in pairs, the students put the statements in order that (according to their opinion) would help their peers to understand this topic. Pupils also have to draw a figure of suitable experiment to each statement.

- “*Grafseso*” is a game based on principles of Pexeso (known also as Pairs or Pelmanism). One set of cards has graphs describing different types of motion, on cards of the second set there are verbal descriptions of those motions. Pupils find right pairs of cards.

- “*Measuring the world.*” This activity is suitable for the end of the topic Physics quantities. It helps students to understand why this topic is important. Working in pairs, pupils create a poster describing in which situations and jobs it is necessary to measure different quantities. Again, as in all activities, the reflection phase follows.

More activities of formative assessment will be presented and discussed in the poster; all will be illustrated by examples of pupils’ work.

#### 4 Conclusion

I have used these activities with pupils of age 12-15 for several years already. Pupils appreciate them and I also found such formative assessment very useful for my teaching. Therefore, I have offered my experience with these methods to Czech physics teachers in various courses of in-service teacher training. I hope they could serve as an inspiration also for teachers in other countries.

#### References

- [1] Leahy, S., Lyon, C., Thompson, M., & Wiliam, D. (2005). *Classroom assessment: minute-by-minute and day-by-day*. Educational Leadership.
- [2] Black P., Harrison Ch. (2000): Formative Assessment. In: *Good practice in Science Teaching. What research has to say*. (Ed.: Monk M., Osborn, J.). Open University Press.
- [3] Leahy, S., William, D. (2015): *Embedding Formative Assessment: Practical Techniques for K-12 Classrooms*. Learning Sciences International.
- [4] Mestre, J., P. (2001): Implications of research on learning for the education of prospective science and physics teachers. *Phys. Educ.* **36**
- [5] The Heureka project, (online) <http://kdf.mff.cuni.cz/heureka/en/>