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### *The Short Films in Teaching of Physics*

The short films (1-5min) are very important in teaching of physics. Showing the short films and experiments make lectures more interesting and exciting. It is very important, especially for the younger students. Some experiments are very long and take a lot of time. Some are too complicated and not convenient to do and show to students, and some are too dangerous for the audience. Instead of this experiment we can show the films and take students in word of physics. Showing films with the experiment in the same time are good idea for lectures.

The short films are very useful to teacher and helpful for the students to make the physics more friendly for them.

Today e-learning seems to be very popular and one of the important way to teaching, therefore that short films are necessary and the only way to show experiment in e-learning system.

A lecture which students are listening to the speaker with a full attention there are probably a dream of each teacher.

Physical theories and the appropriate mathematical framework are notoriously difficult to solve for most pupils. The challenge for educators is to somehow overcome the difficulties. A lot of teacher is interested in making physics fun and friendly for students. This is a possible way to encourage students to interesting in physics.

Today we have a lot of different didactical aids – one of them very strong is visual aid. A very good idea to better explain an audience physics phenomenon is show them experiments. Unfortunately some experiments needs a lot of time (for example crystal growing). Sometimes observed objects or interaction between elements are too small. Sometimes natural phenomenon goes too fast (e.g. ball collision, gun shoot, etc.). Sometimes a very interested experiment takes a long time to prepare or teacher needs complex - often big or heavy apparatuses or the experimental arrangement is not convenient for him. Some of experiments are too dangerous for audience. In all described situation, teacher can show experiments in a movie.

Short movies about we talk, was used by the author on the lectures was financed by Europe Union within project named “Kinder Academe”. Beneficiaries of free education were Polish, German and Czech children in their 8-14 year old. Lecture was simultaneously translated into their native language. Short movies had a positive influence to keep children attention. It was described at rapport [1]

Of course if we decide to use visual aid, we have to think about its didactical value. This problem was described by scientist dr hab. Piotr Jagodziński, dr Robert Wolski and prof. dr hab. Andrzej Burewicz from *The Institute of Chemical Education, Adam Mickiewicz University, Poznań* from Poland. The scientist examined two groups [2]. Control and experimental group were consisting of 100 pupils each. In experimental group, who watched experiments in a movie, scientist observed improve:

- a) understanding 22%,
- b) memorizing 28%,
- c) using knowledge in typical situation 40%,
- d) using knowledge in untypical situation 37%.

We can't do similar experiments, but we observed enormous interested in films by students.

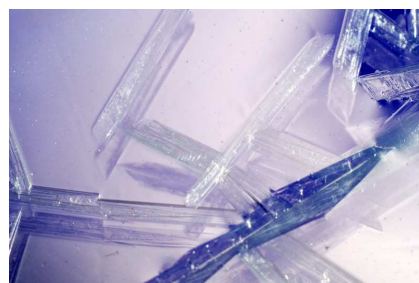
We can say short movie can be a valuably visual aid.

We also should remember this film is very important in e-learning.



A snapshot from the movie „Rose and Liquid Nitrogen“.

A snapshot from the movie „The crystal growing”



A snapshot from the movie “The pressure”.



A snapshot from the movie “The Geyser”.

A snapshot from the movie “The Superconductivity”.



A snapshot from the movie “The liquid nitrogen”.

## References

- [1]. Andrea Horn, *Kinderakademie Görlitz Evaluationsbericht Eine wissenschaftliche Analyse zu Prozess und Wirksamkeit der Kinderakademie Görlitz im Auftrag der Hochschule Zittau/Görlitz (FH), Untersuchungszeitraum Juni 2006 – Dezember 2006*, 16. Januar 2007
- [2]. Piotr Jagodziński, Robert Wolski, Andrzej Burewicz, *Jak wykorzystać filmy edukacyjne w rozwiązywaniu problemów chemicznych*, Horyzonty Dydaktyki Chemii, zeszyt 11(2006).