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„How to make a needle to float?” Heuristic-branched e-model of an animated movie utilized for class work

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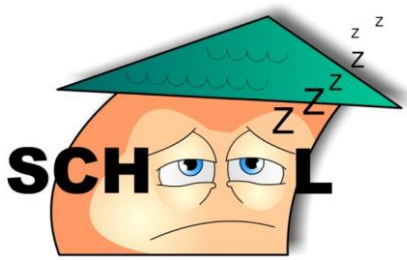
1. The children in serbian schools: „We want more interesting learning forms!"

Every change, bring the change. Every change without the change, brings boredom.



The children at Serbian elementary schools yearn for some changes. Educational forms are obsolete and frustrating. New and contemporary approaches of learning seem to go by the schools. At contemporary schools, children get bored, there are no challenges! And whilst the ideas of the innovators (for ex. Mensa methods on functional learning are implemented and applied at most European schools), our school falls into „a dream that is hard to cease".

Games, e-learning, animated movie... have proven its educational, motivational and functional superiority in comparison to the traditional learning methods and forms. There are numerous examples to confirm that [www.ixl.com; www.brainpop.com; www.lilibi.si].

„The teaching units that are immersed into the form of animated movie proved themselves as being superior in comparison to the traditional forms and they do not require some additional motivation to engage. The popular Web Site **BrainPOP** (www.brainpop.com) has published the results of their experimental research on effects of its (animated movie) use in learning when compared and contrasted to the traditional approaches that never had such animated content" [Hilčenko 2011].

„We are aware of the fact that most of children fancy video games and some researchers claim that they represent a potent learning/teaching tool" [www.edupoint.carnet.hr/casopis/57/clanci/1.html]. According to Black (Black), „the efficiency of learning by the means of manipulating animation process is quite conspicuous in the example of functional relations. The pupils that learned this way achieved higher scores than the ones who acquired the same subject units with accompanying pictures that were provided with the text, sequence of

diapositives or even movies. Namely, the results were higher prevalently due to the present activity of the pupils that they showed when manipulating the parts of animations and when they learned the mutual relations. Therefore, it was not the superiority of the technology that made the difference"[1].

So as to provide the answer what manipulation by the means of animation represents, the 4th principle „predicting" can help. Here is the essence of this principle: „Prediction in animation marks various threatening dangers – »accidents«, that are forerun by numerous effects. For example widely spread eyes, sound effects and etc. herald some threatening jeopardy... Certainly, predicting may refer to merely harmless actions which are also forerun in order to elevate the effect of the whole action in the animation. However, if we take a look at this principle within the framework of interactive multimedia educational software it refers to actions or behavior of the direct user of animations. This requires preparation of a sequence of animations by the programmer and animator that will »cover« or be in the function of every possible step application user can make" [Hilčenko 2012a; 2012b].

2. Heuristic-branched e-model of an animated movie

Furthermore, our application, the presented model of animated movie we upgraded with heuristic-branched teaching/learning approach.

Programmed learning is contemporary method of teaching/learning where larger amount of what will be learnt is divided into a sequence of mutually interconnected parts that pupils learn gradually, step by step. After each and every part, a pupil checks his/her knowledge and advances individually, in accordance to the pupil's previous knowledge level. We can successfully program tightly interconnected and structured parts that represent basic knowledge any pupil should acquire. Programmed learning can be linear and branched.

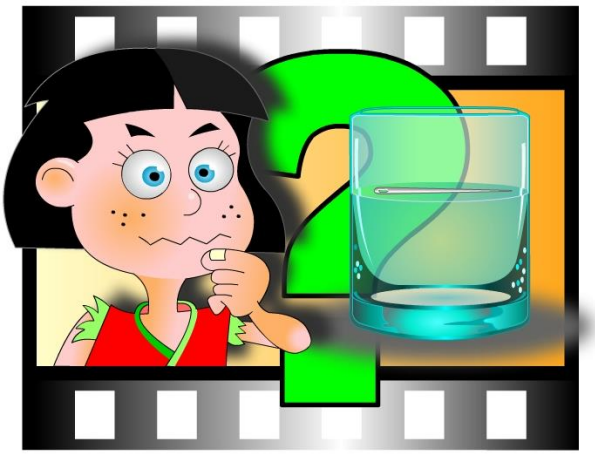
On the other hand, heuristic includes methods and techniques of solving problems, learning and discovering that are based upon experience. These methods are used in order to speed up the process of finding out a satisfactory solution in situations when undertaking a detailed research is not practical. We may find the examples for the aforementioned in the usage of various general rules, guessing, intuition and **common sense** [http://sr.wikipedia.org/wiki/].

The presented example task features the following: **„How to make a needle to float?"**, within the optional subject Craft [http://rukautestu.vin.bg.ac.rs/?Page_Id=50]. The model of programmed-heuristic animated task is solved throughout several steps. Therefore, it is predictable and finite with implicit-explicit educational dimension (picture no. 1).

[1] www.edupoint.carnet.hr/casopis/57/clanci/1.html Ph.D. John B. Black, Teachers College, Columbia University (2nd International Conference on e-learning ICEL 2007).

The text of the task is:

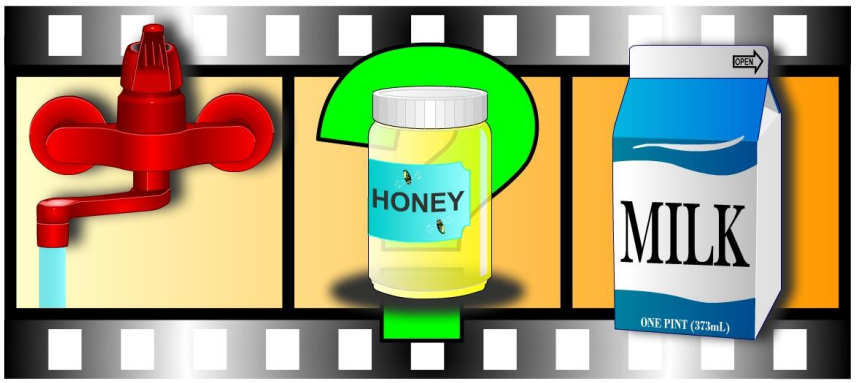
„Although made of steel, a needle can float! Can you prove it! Think through the offered options and write down in a notebook your decisions!"



Picture no. 1. The beginning of animated heuristic-branched logical task

1st Step. Think well and choose the adequate liquid:

a) **water,**
b) honey or,
c) milk.

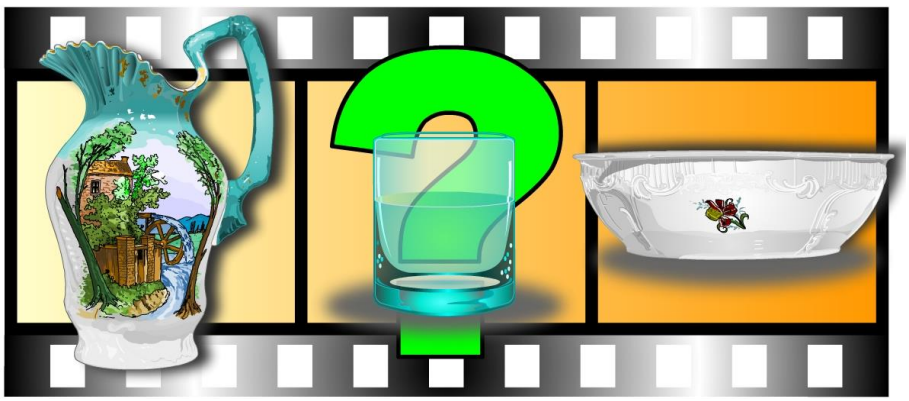


Picture no. 2. 1st step

In the presentation of the algorithm the correct answer is shaded for the reader. In the case of wrong answer the pupil watches the part of the animated movie that leads to dead end and afterwards the pupil is directed to start again the previous step!

2nd Step. Carefully choose the adequate dish:

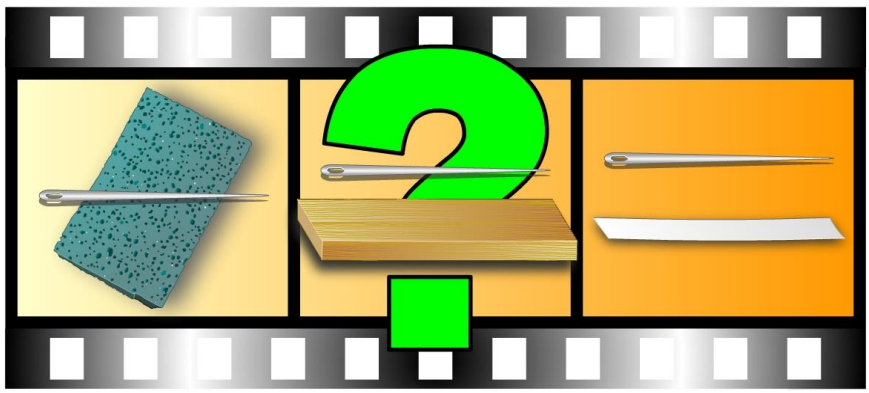
a) porcelain jar,
b) **plain glass** or
c) wide washbowl.



Picture no. 3. 2nd step

3rd Step. Choose the adequate surface with the needle:

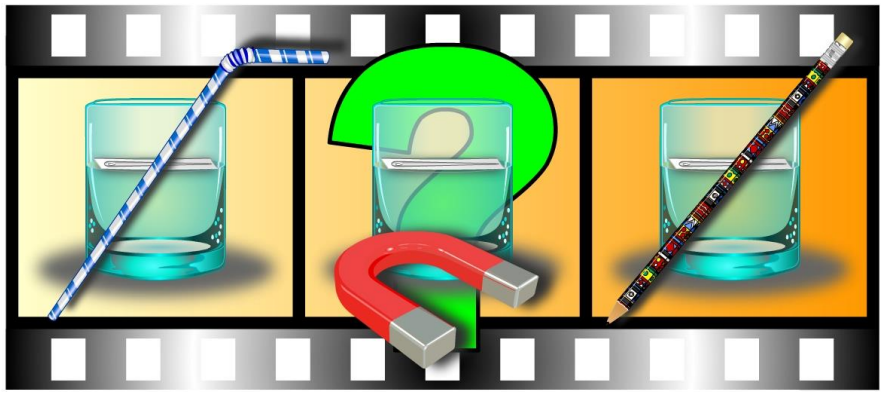
a) sponge,
b) wooden plate or,
c) **paper.**



Picture no. 4. 3rd step

4th Step. Thing through and choose the right option:

a) a straw,
b) magnet or,
c) **a pen.**



Picture no. 5. 4th step

5th Step. Watch out!, Carefully choose the right answer that will lead you to the end of the movie:

a) The top of the straw place in the water and gently blow the air through the straw. Thus, large number of small bubbles will appear, so called surface tension, that will not allow the needle to sink. Only left to do then is to remove the paper!

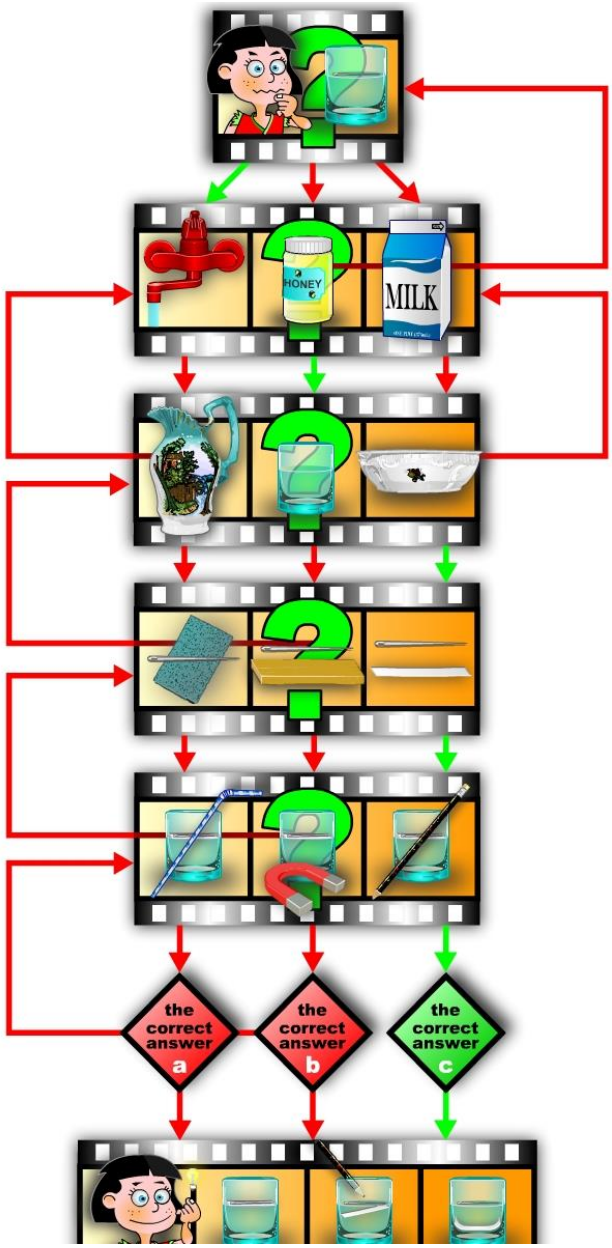
b) Put the magnet above the glass. It will effect and attract the needle. However, the surface tension of the water does not allow magnet to attract it what will make the needle to float. Only left to do then is to remove the paper!

c) **Using the sharp top of a pen slowly push the paper towards the bottom of the glass. The needle floats! It is sustained on the surface by the water membrane. Namely, small molecules of water attract themselves simultaneously and form some kind of membrane: that is the surface tension.**

In the case of correct answer the pupil can watch the whole procedure of the task-the animated movie, picture n. 6.

Picture no. 6. Animated movie: display of the „scientific" task solution

The whole algorithm scheme of solving the programmed-heuristic logical task, graphic no. 1:



Graphic no. 1. The scheme of the algorithm of solving the heuristic-branched task

Naturally, after the virtual task has been solved, pupils should approach, conceive and realize the practical-manipulative experimental solving of the logical task that instigates children's interest for the science.

3. Conclusion

The presented model of learning by the means of a programmed-heuristic animated movie, according to our knowledge and experience, should be very stimulating and should offer an opportunity for individual pace and progress in learning. In order to prove this statement we should, firstly develop the model and secondly test it in a population of elementary school pupils.

Furthermore, the model should be stimulating, concerning functional thinking, for pupils and as such it can be very suitable for acquiring, revising and testing the knowledge for each and every school subject.

The presented model is suitable for producing a larger sequence of movies that comprise one or more topic areas. Such learning and activity should be combined with practical-manipulative, experimental and other forms or methods as far as didactical and technical resources allow this approach.

Literature

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http://rukautestu.vin.bg.ac.rs/?Page_Id=50

Abstract

An animated movie does not require any motivation for watching it. That is why it is very useful as the learning source at elementary school class work. The

aim of this work is promotion of the heuristic-branched learning model on the example of the animated movie with direct manipulation of the animated content. The represented example of this „little scientific" animated e-task should instigate functional thinking and the model can be applied at each and every school subject.

Key words: animated movie, heuristic-branched learning model, direct manipulation of the animated content, motivation and wide range applicability, functional thinking.