EVALUATION AND CLASSIFICATION OF PROJECTS WITHIN PROJECT-BASED LEARNING AT SECONDARY VOCATIONAL SCHOOLS IN SLOVAKIA

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Abstract

The article deals with the evaluation and classification processes within project-based learning at secondary vocational schools in Slovakia. It provides general overview of project-based learning as well as methods which are currently used for evaluation and classification of projects. Based on a short survey, it describes a new methodology which includes evaluation and classification of theoretical part of a project as well as evaluation and classification of practical part of a project. Each one is followed by an example. Finally, the article includes recommendations for successful realisation of project-based learning. This topic has been solved within KEGA Project 031-035 STU-4/2010 "Models of Project-Based Learning at Secondary Vocational Schools".

Key words

project-based learning, evaluation, classification, secondary vocational school

Project-based learning

The project-based learning is classified as a modern teaching method with the highest level of pupils' own cognition. The main aim of the project-based learning method is to lead pupils to their own independence and responsibility. The pupils learn via solving of problem situations, specific activities and searching solutions of different tasks. An advantage of project-based learning is in its wide implementation in almost all the subjects (1).

One of the basic features of project-based learning is to plan, realise and evaluate activities by pupils themselves. Pupils learn how to correct their own mistakes and how to verify if their results are correct. On the other hand, the cooperation among pupils as well as creating new relations is also highlighted. Teachers emphasise the cooperation and communication among pupils as well as defending and proving their own suggestions. During partial tasks, pupils recognise themselves and their relations towards others and they realise

that each of us has different thinking and different opinions. Thus, they learn to think, to reason, to be tolerant and to make compromises. What is more, the project-based learning tries to overcome imperfections which can be found in traditional learning. Those are the separation of knowledge from real practise, memorising, low level of motivation, etc. (2).

Features of project-based learning

Generally, there are 4 steps within project-based learning: choosing a topic, planning, solving the topic and presenting of results. There are 2 different types of projects: short-time projects realised within one subject and long-tine projects realised among several subjects. Each project within project-based learning should include: a topic which pupils are able to work with, a specific target, an organised time schedule, a development of pupils' own creativity, a final product as well as pupils' presentation. Project-based learning allows (3):

- implementing knowledge into a specific situation,
- developing creative thinking,
- working independently as well as in a team,
- taking responsibility for own work,
- processing information,
- cooperating and communicating with others,
- tolerating opinions and suggestions of different people,
- presenting own work, etc.

Evaluation and classification of project-based learning

Within evaluation and classification of projects-based learning, the following methods are currently used. Reflexive evaluation is that based on the whole impression of the presented project. Then, there is the evaluation which is based on the criteria which are usually given at the beginning. The next one is based on the criteria which are necessary and important according to the pupils' opinions. Finally, there is also a possibility of that evaluation which is based on evaluating projects via discussions and reasoning (2).

As for evaluation and classification of project-based learning, a short survey was realised. 192 pupils of 7 different secondary vocational schools in Slovakia participated in the survey. The aim of the survey was to find out how the pupils were evaluated within the project-based learning. The results have shown that more than 43 % of pupils were evaluated according to the criteria which had been given at the beginning of their work. More than 21 % of pupils were evaluated according to the criteria which had been given at the end of their work. On the other hand, 7 % of pupils said that their teacher usually evaluated them after their presentation comparing with other presentations. However, there are no teachers who would keep a part of the evaluation on pupils themselves as well as there are no teachers who would keep the evaluation on groups of pupils themselves. What is more, almost 29 % of respondents did not know how their performance in project-based learning had been evaluated.

Based on the results as well as on various surveys, different discussions and monitoring the realisation of project-based learning, the aim of the article is to introduce a methodology of evaluation and classification of project-based learning as there is a lack of those methods in Slovakia. The methodology includes 2 parts: evaluation and classification of a theoretical part and evaluation and classification of a practical part. Each part is followed by an example.

Evaluation of a project (theoretical part)

As for evaluation of a project within its theoretical part, an oral testing is strongly encouraged. Its aim is to find out if a pupil has the basic knowledge of a project topic. The advantage is that a pupil develops his/her own cognition and thinking. In our opinion, the oral testing is better than a written one as a pupil can defend, extend and explain his/her answers and a teacher can lead him/her into the depth of a solved topic. However, some disadvantages may appear. Some teachers may not be objective as there are many factors which influence a teacher's evaluation and classification of different pupils. Thus, it is a role for teachers to keep objectivity in evaluating pupils' performance and to respect their different attitudes and opinions.

Together with the method described above, the method of evaluation and classification based on given criteria is also used. It means that teachers can find out if a pupil reached the criteria which had been explained him/her during a preparation phased of the project. Each pupil is given 2 tasks (or more if necessary). Finally, the pupil has a possibility to evaluate himself/herself according to his/her answers. The main aim of the self-evaluation is to teach pupils how to evaluate themselves objectively.

To sum up, a pupil can reach the maximum of 25 points, from which 10 points are of the first part of the evaluation, other 10 points are of the second part of the evaluation and the last 5 points are of self-evaluation. As an example of the evaluation and classification, a topic of low-energy houses (LEH) is presented (4).

POSSIBLE QUESTIONS AND TASKS   Table 1

Topic	Possible questions (tasks)	Points
1 Energy and savings	- describe kinds of energies	0 – 5
	- describe alternative kinds of energies	0 – 5
	- describe their implementation in practise	0 – 5
	- usage of terminology	0 – 4
	- finding relevant information	0 – 3
2 Basic terms of the topic	- definition of basic terms in civil engineering	0 – 5
3 Basic principles	- principles within designing LEH	0 – 5
	- principles based on the assignment	0 – 5
	- finding other relevant information	0 – 3
4 Heating and ventilation	- types of heating	0 – 5
	- types of ventilation	0 – 5
	- advantages and disadvantages in practise	0 – 4

CLASSIFICATION OF THEORETICAL PART OF A PROJECT   Table 2

Points		Classification	
25	23	Excellent	1
22	20	Very good	2
19	17	Good	3
16	12	Poor	4
11	0	Very poor	5

Evaluation of a project (practical part)

Within this part of an evaluation, pupils are asked to present their product, i.e. their project. The pupils (a team) should be able to defend their opinions as well as to answer to the questions which others ask. As for the topic of low-energy houses, the following questions are possible: Why did you choose the mentioned types of energy? Why is the sun energy so highlighted in your project? Why did not you include the wind energy? How did you solve ventilation and heating? etc. Within the evaluation, the following criteria are monitored:

CRITERIA FOR PRACTICAL PART OF A PROJECT   Table 3

	Criteria	Points
1	Topicality and targets of a project	0 – 5
2	References, i.e. the information used in a project	0 – 5
3	Searching and processing the information (chapters, documentation, etc.)	0 – 5
4	Graphical interpretation	0 – 5
5	Cooperation among team members	0 – 5
6	Creativity and independence	0 – 5
7	Project presentation	0 – 40
8	Aesthetical background of a project	0 – 5
9	Total evaluation of a project as a whole	0 – 5

Each group of pupils (a team) evaluates the presenting one. Finally, they provide their conclusions together with the mark they would give if they were teachers. At the end, a teacher summarises the project and gives the final mark according to the classification table.

CLASSIFICATION OF PRACTICAL PART OF A PROJECT   Table 4

Points		Classification	
80	70	Excellent project	1
69	60	Very good project	2
59	50	Good project	3
49	40	Poor project	4
39	0	Very poor project	5

Conclusions

The methodologies of evaluation and classification described in the Tables 1-4 can be slightly modified according to the teachers' needs. It depends on teachers' demands as well as on a subject within which the project-based learning is realised. However, the main idea of the evaluation and classification processes is the fact that a teacher is not the only person who participates in those processes but it is also a task of the rest of the class as well as of the presenters themselves. Generally, the following recommendations should be considered:

- Project-based learning should overcome imperfections in traditional learning. However, the project-based learning should not replace the traditional one but it should be used as a modern teaching and learning method.
- Evaluation and classification criteria for project-based learning should be given at the beginning. Partially, the criteria could be modified according to the needs.
- It is always necessary to involve pupils in the evaluation and classification processes.
- It is not suitable to use didactic tests for evaluation and classification as the project-based learning is focused mainly on the development of pupils' communication competencies.

- Project-based learning should also allow pupils implementing ICT as well as developing their skills with those technologies.
- Not everyone has to have excellent grades in all subjects. Each of us is interested in different things and subjects. However, project-based learning allows developing pupils' activity in those fields they are interested in.

Evaluation and classification processes are part of educational processes also at secondary vocational schools. The aim of those processes is to evaluate the level of reached knowledge and skills in education. The evaluation and classification should be based on given targets and specific criteria which can measure the level of a pupil's knowledge and cognition. Teachers should lead their pupils to learning new things as a part of their lifestyle. After each lesson, a pupil has to understand what the lesson was about, what he/she has just learned and what it was good for. Teachers' roles are to learn, develop and educate pupils. The project-based learning is an excellent example where all these can be realised.

References:

1. RÖTLING, G. Vyučovanie ako projekt. (Learning as a project). In *Methodology and Pedagogy Centre 2/2002*. Banská Bystrica: AP MPC, 2002. ISSN 1335-0404
2. GAVORA, P. *Akí sú moji žiaci? Pedagogická diagnostika žiaka. (What are my pupils like? Pedagogical diagnostics of a pupil)*. Nitra: Enigma, 2010. 216 p. ISBN 978-80-89132-91-1
3. TUREK, I. *Zvyšovanie efektívnosti učenia (The improvement of learning efficiency)*. Bratislava: Metodické centrum, 2002. 326 p. ISBN 80-8052-136-0
4. VODIČKOVÁ, E. *Všetko o nízkoenergetickom dome. (All about low-energy houses)*. Bratislava: JAGA GROUP, s.r.o., 2007. ISSN 1335-9142