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LEARNING BY BEING OR ASSUMPTION OF COGNITIVE GOALS

Mihail CALALB

Tiraspol State University

The analysis of the recent evolution of educational paradigms is made and the new approach of *Learning by being* is presented in this work. A series of teaching and learning approaches are discussed from the point of view of Visible Teaching and Learning (VTL) theory. The role and the place of student's personal learning effort within several teaching strategies, which have a significant impact on academic achievement of students, is analysed. In this context, the author presents his concept of *guided self-scaffolding* and emphasises that at least three student-related moments should be presented in each constructivist teaching strategy: student's personal effort, mutual feedback and metacognition. Also, such learning approaches like information structuring, recurrent use of information or help seeking are analysed in relation with *Learning by being* concept.

Keywords: *Learning by being, cognitive goals, assumption of learning, visible teaching and learning, learning effort.*

ÎNVĂȚAREA PRIN A FI SAU ASUMAREA OBIECTIVELOR COGNITIVE

Este efectuată analiza evoluției recente a paradigmelor educaționale și este prezentată o nouă abordare, denumită *Învățarea prin a fi* (*Learning by being*). O serie de strategii de predare și învățare este analizată din punctul de vedere al teoriei *Predării și Învățării Vizibile* (Visible Teaching and Learning). Este analizat rolul și locul efortului personal al elevului în cadrul unor strategii didactice, care au un impact semnificativ asupra succesului academic al elevilor. În acest context, autorul prezintă conceptul său de *autoînvățare ghidată* (*guided self-scaffolding*) și subliniază că cel puțin trei momente legate de elev ar trebui să fie prezente în fiecare strategie de predare constructivistă: efortul personal al elevului, legătura inversă reciprocă și metacogniția. De asemenea, astfel de strategii de învățare ca structurarea informației, folosirea recurentă a informației, cererea ajutorului sunt analizate în contextul conceptului de *Învățare prin a fi*.

Cuvinte-cheie: *Învățare prin a fi, obiective cognitive, asumarea învățării, predarea și învățarea vizibilă, efort de învățare.*

Introduction

The evolution of educational paradigms reflects the main problem educational systems from various countries faces. Namely, low motivation and interest showed by the majority of school students for getting involved into the educational process [1]. In this way, a successful educational strategy will target to achieve higher involvement degree of students into the class process. More and more researchers and teachers have realised that school doesn't belong to entertainment industry and student centered education hides actually the central role of the teacher.

In this short communication, we analyse the recent evolution of educational paradigms from the perspective of student's role in the learning process and propose an integrated approach named *Learning by being*. For example, in the Sec. I, a ladder of paradigms consisting of three major steps is presented. According to the results of the *Visible Teaching Learning* (VTL) theory, the impact factors on academic achievement of students are analysed for the case of several didactical well-known strategies [2]. In this context, we put the accent on student's *ownership of cognitive goals* and on *synergy effect*.

In the Sec. II of the article, we analyse the student's place within several teaching approaches, which have a proven high impact factor. In fact, all analysed approaches focus on student's personal learning effort, feedback and metacognition. In addition, the skills for permanent creative structuring of new information are important.

In the Sec. III, which is dedicated to the analysis of learning approaches from the teacher's point of view, we examine such approaches as: a) guided self-scaffolding; b) structuring of new information; c) recurrent application of previously learned knowledge; d) problem solving; and e) seeking help. We have to note that, along with the term of *learning by being*, the author also proposes for the first time the term of *guided self-scaffolding*. Both terms tend to accentuate high level of student's intrinsic motivation.

In the Sec. IV of the article we present the main obtained results and several major conclusions from the perspective of the new approach of *Learning by being*.

I. Steps in the evolution of educational paradigms

Firstly, we have to underline that all modern educational paradigms declare themselves to be constructivist ones, and put the accent on student's active role within teaching – learning process. For example, one of the most – known strategy of *Learning by doing* tries to find solutions for more noticeable presence of students in class. In this sense, *ludic education* has an impact factor equal to 35%, and *problem-based learning* – only 26%. If we relate to benchmark level of 40%, these approaches would have a negative impact factor.

The next step in the evolution of educational paradigms is the one of *Learning by understanding*. The transition from the linear paradigm of *doing* to the one of *understanding* requires a higher degree of students' involvement. Thus, it is about understanding through involvement. We would add – a more advanced level of communication. Moreover, in the case of learning by understanding the teacher should be able to inspire and challenge the students by creating in class an atmosphere of empathy. An indicative example in this sense is inquiry – based science education (IBSE) [3]. IBSE is about the involvement of students into the process of collective debates and reflections. The value of knowledge obtained through the personal effort of students is much higher than the one transmitted by teacher. For example, according to the theory of *Visible Teaching and Learning* (VTL), the impact factor in this case is equal to 77% [4]. Thereby the approach of *understanding* has a double effect compared with *doing*. In this way, VTL gives a clear response to the adepts of mechanistic gamification or digitalisation of education.

Further, the third step in the evolution of educational paradigms would have the name of *Learning by being* when the student not only knows the learning objectives, but also assumes them. Here we should speak about the *ownership of cognitive goals*. There is a series of approaches related to learning by being such as independent research – 83%, knowledge of success criteria – 113%, or revealing similarities and patterns – 132%. Since the *Learning by being* approach integrates several efficient strategies, its impact is much higher than the given numbers due to the synergy effect. Thus, simultaneous or parallel application of such didactical strategies, based on deep intrinsic motivation, would give strong cumulative effect.

II. Student's role within teaching approaches

In this section, we will examine several teaching strategies from student's point of view. This reminds us that the didactical process implies two-way teacher – student communication and the role of students should not be underestimated even when the teacher designs his/her teaching approach for the next lesson.

2.1. Knowledge of objectives and assumption of learning. When each class starts with clear definition of the learning objectives: what students need to know, understand, and be able to do. This teaching strategy has an impact factor on academic achievement of students equal to 113% (see Table 1). We have to emphasize that each student must not only know the learning objectives, but also assume them. In order to achieve this assumption the learning objectives must be challenging and exciting for students, according to their current level of knowledge. Here a well-known didactical principle of learning with effort will be respected, because only the effort develops, and any ascension requires effort. For a better assimilation of cognitive goals of the lesson, we can group the learning objectives. Thus, in order to obtain a more advanced involvement of the students, we may prepare a series of questions such as: a) what do you think should follow previous subject? b) what are the aims of today's lesson? c) what do we already know and would it help us to reach today's goals? d) what should we do in order to achieve our goals? [5]. As we can see from the structure of the questions, we actually prepare students for inquiry-based learning. Such type of learning will be a successful one if the impulse for research is intrinsic for the student.

Table 1

Key features of several high-impact teaching approaches

Teaching approach	Didactical principle	Didactical tools or means	Impact factor
Assumption of learning objectives	Learning effort	• Structuring of learning goals • Inquiry-based learning	113%
Involvement through practice	Practice	• Series of practical tasks with different complexity degrees	77%
Knowledge of understanding degree	Scientific character of teaching	• Offline digital evaluation system • Peer instruction	129%

Structuring new material	Intuitiveness of teaching	• Support signals • Interactive white board	114%
Fostering metacognition	Consciousness of learning	• Analysis of learning strategies • Self-assessment	61%

2.2. Involvement through practice. When the teacher comes with a new subject, the first question of students is "What use is it?" Here series of practical examples will directly give an explicit answer. Another well-known didactical principle: practice and training contribute to a deeper understanding. For this purpose, the practical examples and the tasks proposed later to the students will be of a certain degree of complexity, so that the students can break them down into stages. Thus, we not only say and show, but also challenge the students for a creative fulfillment of tasks. In addition, we could say that the rules of good presentation may be applied within each lesson. Firstly we tell the students what we are going to talk about, then we expose the material with underlining the main moments, then we assign the students to draw conclusions, finally the students analyze if and how the objectives of the lesson were achieved.

2.3. Knowledge of understanding degree. In order to evaluate easier the degree of understanding of the new notions and terms, the lesson may be divided into several sequences, so that a sequence will answer a question. An offline digital assessment system will ensure the participation of all students in this ad-hoc formative evaluation, i.e. the total inclusion of students in questioning. This strategy of sequential questioning corresponds to an important didactical principle that the student must leave the classroom with the learned lesson, which means – with the scientific understanding of the new concepts and the inclusion of these notions in his/her active vocabulary. A good example in this sense could be peer instruction strategy [6].

2.4. Anchoring new material into the student's conscious and subconscious. In this article we deal more with deep understanding than with superficial knowledge. Because only the knowledge "that is not forgotten" has a noticeable impact on student's personality and his/her lifelong learning skills. The memorisation of certain amount of information is impossible without structuring which could be in the form of charts, tables, maps, etc. generically called landmarks or support signals [7]. This approach corresponds to the didactical principle of intuitiveness of teaching. Nowadays the logical connections between new concepts or terms tools may be easily presented by using the tools of interactive whiteboards. The diagrams constructed by the teacher will only contain landmark signals (expressions, symbols, images, video files), which will help to form the logical connections and anchor the new matter in the student's conscious and subconscious. Research shows that it does not matter who drew the support signals – the teacher or the student [8].

2.5. Fostering metacognition. Awareness and understanding by students themselves of their way of thinking in the case of learning is more than applying a learning strategy, taken from the teacher. Because the metacognition assumes that the students: a) analyze what strategies they will use in order to accomplish the task; b) argue why they selected a certain strategy; c) estimate the possible result; d) analyze the obtained result; e) decide if it is necessary to change the strategy for carrying out the task. In this way, the metacognition is equivalent with the didactical principle of consciousness of learning. Thus, metacognition closely relates to the assumption of learning objectives by the students [9]. Like in sport when the athlete not only knows what the coach wants from him/her, but also assumes these tasks as his/her own goals and he/she has all physical, technical, tactical and emotional means to achieve the goal initially set by the coach.

III. Teacher's role within learning approaches

Just as there is no efficient teaching without active involvement of the student, in the same way there is no successful learning without teacher guidance. Thus, the student – teacher interaction acts as a harmonic oscillator, which (as is known from physics) has common characteristics, determined by those of component parts. In this way, the place and the role of the teacher in a series of learning strategies is examined in this section. The impact factors of these learning approaches on students' academic achievement and the related didactical tools are presented in the Table 2.

3.1. Guided self-scaffolding. The student's mind is far to be a *tabula rasa*. Students already understand the world – in their own way, often having naive or quasi – scientific representations. In this context we have to remind that the task of the school system is to form citizens with scientific understanding of the world. The learning act consists of several stages: a) understanding; b) sublimation to the essence; c) coding; d) transferring the knowledge into the category of deep one. Thus, without the last two stages, knowledge remains into the

phase of the superficial one, volatizing rapidly and having no noticeable impact on personality development. Research shows that students had better encode new information when they connected it with their previously existing knowledge and understanding [10]. In this sense, for the effective application of this strategy based on previous knowledge, the teacher will teach the students to ask themselves the following questions about how and what they learned: a) did it *confirm* what I already knew? b) did it *complete* what I already knew? c) did it *cancel* what I think I knew? d) did it *challenge* me for a deeper research? Thus, it is about activating a scheme through which new knowledge is connected with previous one. Learning with this scheme can be easily performed even in primary classes, when pupils are taught to summarize the text they read. In fact, this process lays the foundations for the formation of critical and analytical thinking, which will facilitate learning through research in middle school and high school. Also, this set of simple questions contributes not only to the student's understanding and assumption of cognitive objectives, but also to the formulation of their own learning objectives. Thus, the student knows which learning vector he is going to and is able to anticipate what he will learn in the near future. In this sense, we could say that the strategy of basing on previous knowledge facilitates the anticipation by the student of the future learning finalities, because the students is aware about their learning and fully assume the learning process. That is why the reliance on previous knowledge has such a big impact (92%) on the student's academic success. If in the international literature there is talk about the scaffolding process (in the context of inquiry-based learning, or IBSE), then here we could introduce the term of *self-scaffolding*, which would emphasize the student's personal effort in research – type learning.

3.2. Structuring of information that is going to be learned is another approach, which fully requests student's effort and involvement. The process involves the introduction by the students themselves of the titles, subtitles, bulleted lists, underlining, etc. In addition, here we could add analysis of information coming from different sources. This is what good students do at university when they prepare for exams, but for school students, at least in middle school, it is a little bit unusual. Thus, structuring of information relates with the formation of analytical and critical thinking skills. For this reason, the permanent application in the classroom of this strategy of information structuring has a significant impact of 85% on academic success (see Table 2). We have to note that structuring is a mandatory step before understanding and memorization [11]. The procedure of structuring information is similar in some extent with diagonal reading, useful in the case of a large amount of information, when the reader is forced to separate the necessary from useless. We consider if the student got used with permanent structuring of new information, he/she is immunized against surrounding informational buzz, which has a deviant action on the motivation to learn, because it induces a false impression of knowing the subject.

3.3. Recurrent application of previously learned knowledge. Here we talk about information retrieval by applying it to understanding and studying a new situation; in other words: the practical application at a deeper level. The benefits are multiple: a) learning new material in a practical way that involves the formation of knowledge about things, phenomena, and procedures; b) passing the previous knowledge from the category of operative memory into deep understanding, which also implies a certain degree of mastery in the application of research skills. We have to emphasize that this strategy is one of learning (not of teaching) where the student uses his/her research skills, formed during previous studies. The given strategy is not about practice or repetition when the goal is to "strengthen the material", but it is about the student's conquest of a new fortress of knowledge with the same available weapons (skills). Therefore, recurrent application is a learning strategy that integrates previous knowledge into future ones. It is effective when students do not use textbooks, concepts, course notes, etc. Alone with their skills and knowledge. Meaning is based on just what the students really know.

3.4. Problem solving is an approach, which has 92% impact on the students' academic success. In order to solve a problem the student must be able to:

a) understand the problem (this is proved if the student can reformulate the problem, emphasize the essential and detach auxiliary details);

b) create a plan for solving the problem (by arguing a strategy and choosing it from a number of possibilities);

c) solve the problem by following the outlined plan;

d) analyze the obtained solutions, relating them to the initial statement and data;

e) formulate a pattern or procedure for solving such type of problems.

All these verbs refer only to the student. The teacher is the facilitator, site manager. We have to underline that namely permanent application, starting from primary school or even kindergarten, forms problem-solving skills, and prepares students for wide application of IBSE in middle and high school. The above-enumerated steps of this strategy require a certain degree of automatism, which can be achieved by practicing in a learning environment that promotes learning, such as, for example, the general atmosphere of empathy in the classroom, which leaves room for personal effort in ludic context.

3.5. Seeking help is a learning approach, which proves that the student has already taken over the learning objectives proposed by teacher and is oriented toward achieving them. It also reminds us that communication skills are a part of lifelong learning skills [12]. Diminishing student – teacher communication factor as seemingly unimportant compared to the immediate learning objectives decreases the rate of academic success. Moreover, if the student seeks help it denotes that he/ she already is engaged in the lesson and there is no longer the question of demotivation, low interest or commitment to personal effort. The student who seeks help both from colleagues and from teacher is a recoverable one because he/she already is in the process of independent learning. Based on this consideration, seeking help from the student part has almost double impact compared with the case of frontal teaching of an experienced teacher (72% versus 40%). Which confirms once again that the most important thing in the classroom is the student's personal effort. Indeed, research shows that the teacher's level of taught content does not have such a high impact on the students' success – about 17-19%.

Table 2

Key features of several high-impact learning approaches

Learning approach	Didactical principle	Didactical tools or means	Impact factor
Guided self-scaffolding	Learning through effort	• IBSE • Problem – based learning	75%
Structuring of information	Consciousness	• Highlighting • Revealing the logical links	85%
Recurrent use of previous knowledge	Consistency and systemic character of learning	• Retrieval • Integration • Practice	93%
Problem solving	Active character of learning	• Analysis • Formulation of patterns	92%
Help seeking	Commitment	• Offering and asking feedback	72%

IV. Discussion of results and conclusions

The most powerful strategies in terms of their impact on students' academic achievement relate to teaching, not to learning. Thus, in descending order we have:

- teacher's knowledge of students' response to his/her intervention (it is about promptness in having feedback) – 129%;
- teacher's mastery in structuring new material and highlighting the logical links – 114%;
- knowledge and assumption of cognitive goals (again, it is about teacher's mastery in identifying correctly the learning objectives and sharing them with students) – 113%.

These results confirm once again the value and the power of feedback in classroom [13].

Further we have some learning approaches with an impact factor far to be neglected:

- recurrent form of practice, meaning periodical refreshing and repetition – 93%;
- structuring of the knowledge to be learned (at this time, the effort belongs to students) – 85%;
- guided learning effort (this terms corresponds to the notion of teacher – student harmonic oscillator, when both things – guidance from teacher and student's effort – are equally important) – 75%.

The concept of *Learning by being* develops and enriches the ones of *Learning by understanding* and *Learning by doing* with the student's attitude, intrinsic motivation and ownership of cognitive goals. In this sense, *Learning by being* goes beyond metacognition. According to the approach of *Learning by being*, for a successful learning process we should target the assumption of learning objectives by students. As in *Learning by understanding*, the tools of feedback and practice are highly requested within *Learning by being*.

Parallel use or the overlapping of several teaching and learning techniques gives a synergistic effect.

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About author:

Mihail CALALB, PhD, Associated Professor at the Chair of Theoretical and Experimental Physics of Tiraspol State University. Mr. Calalb has Ph. D in theoretical physics from the Institute of Applied Physics in Chisinau, and holds MBA degree from Newport University, USA. For three decades he has been working constantly in the fields of education, theoretical physics and project management. Mihail Calalb is the first director of e-Twinning program of European Commission in Moldova and within this program he has involved 150 local teachers in international projects. As director of Expertise Council of Moldavian Academy of Science, he has elaborated the evaluation procedure for scientific research projects.

E-mail: mcalalb@hotmail.com

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