PEDAGOGICAL TECHNOLOGIES IN SEARCH OF IMPROVING THE LEARNING PROCESS

Rumiana Budjeva

Institute of Philosophy and Sociology, Bulgarian Academy of Sciences, Bulgaria, r.budjeva@gmail.com

Abstract: The contemporary world gets more and more complex. Increasingly number of jobs nowadays requires relatively high level of knowledge and skills. At the same time the educational achievements are becoming a necessity rather than an optional extra. The crisis in the economy as well as the increasingly complicated social life require getting better education and social competences as a starting point for success in professional and private life. A good education is critical to get better life chances and a commitment to achieving this has been an important part of the culture of modern people. Environments that consistently fail to prepare students for higher levels of education result in threaten opportunities for high school graduation, postsecondary education, successful career, consequential poverty and low life satisfaction as a whole.

In that context, the role of the teacher is undeniably crucial. The teacher plays an undeniably crucial role in the acquiring of new knowledge by students. Furthermore, he/she must also model and direct the learning process, so it might be the most effective. In search of efficiency the teacher often turns into an innovator - finding, testing and implementing new technologies in pedagogy, new approaches, strategies and models for improving the learning process.

In this article we review the best pedagogical practices and strategies that lead to improved quality of education in schools. Increasing knowledge and grades is only one criterion for success of students. Other indicators are acquiring important social knowledge and skills (such as communication skills, group work, presentation of ideas, effective time management and meeting deadlines, etc.), developing high personal and professional goals and significant contribution to society in the future. Based on the literature review of a number of empirical researches, report provides an overview of best practices in this area. On this basis, we analyze various approaches and strategies to make this process possible and successful.

Keywords: effectiveness in the pedagogical process; pedagogical strategies; teaching technologies; best teaching practices.

1. INTRODUCTION

The contemporary world gets more and more complex. Increasingly number of jobs nowadays requires relatively high level of knowledge and skills. At the same time the educational achievements are becoming a necessity rather than an optional extra. The crisis in the economy as well as the increasingly complicated social life require getting better education and social competences as a starting point for success in professional and private life. A good education is critical to get better life chances and a commitment to achieving this has been an important part of the culture of modern people. Higher achievements for all students are the key to every country's future prosperity and for individuals, it is becoming essential just to make sense of the world and finding fulfilling work. Environments that consistently fail to prepare students for higher levels of education result in threaten opportunities for high school graduation, postsecondary education, successful career, consequential poverty and low life satisfaction as a whole.

In that context, the role of the teacher is undeniably crucial. He/she is involved in a most direct way in the acquiring of new knowledge by students. Moreover, the teacher must also model and direct the learning process so it might be the most effective. In search of efficiency the teacher often turns into an innovator - finding, testing and implementing new approaches, strategies and models for improving knowledge.

In this article we review the best pedagogical practices and strategies which have particular role in children's outcomes at school. The interest to educational processes that can create better child outcomes underlies the importance of understanding how teachers promote successful learning. Increasing knowledge and grades is only one criterion for success of students. Other indicators are acquiring important social knowledge and skills (such as communication skills, group work, presentation of ideas, effective time management and meeting deadlines, etc.), developing high personal and professional goals and significant contribution to society in the future.

2. METHODOLOGY AND SOURCES

The article is based on literature review of a number of empirical researches. It provides an overview of best practices in the area of school effectiveness and working pedagogical strategies. On this basis, we make an overview of various approaches and strategies that make the process of learning possible and successful. The main evidence base for the pedagogical part of this publication is a study into primary pedagogy conducted as part of the Effective

Pre-School, Primary and Secondary Education research study. EPPSE is a large-scale, longitudinal, mixed-method research study (Sammons et. all, 2015: 211), (Siraj-Blatchford et. all, 2016). It has followed the progress of over 3,000 children from the ages of 3 to 16 years (Sylva et. all, 2016).

How teachers teach is, like curriculum, an important and contentious matter. It can also have immense impact on effectiveness of school learning and pupil's success – in professional, social and personal respect. The strategies, reviewed here consistently emphasized on the importance of *how* students were taught. They reinforced the messages from school improvement researchers that what happens in the classroom and the interactions between student and teacher are fundamentally important to a range of outcomes - academic, social or attitudinal. They all emphasized on the importance of pedagogy and especially on *how* of teaching (Stoll & Fink, 1996).

The SESI (The Scientific and Engineering Student Internship Program) research draws attention to the centrality of teaching, learning and classroom processes in determining schools' academic effectiveness (Scheerens & Bosker, 1997); (Hill & Rowe, 1998); (Teddlie & Reynolds, 2000). Researchers as Creemers and Scheerens argue that theories of learning and instruction stands at the core of educational effectiveness models, with school factors seen as facilitating conditions for classroom factors (Creemers, 1994); (Scheerens, 1992). On the other hand, Luyten provides an overview of the size of school effects compared to teacher effects and challenges the general consensus that teacher effects generally outweigh school effects (Luyten, 2016). The report *Research into Teacher Effectiveness* (Hay McBer, 2019) developed a model of teacher effectiveness that links three factors to pupil progress: professional characteristics, teaching skills and classroom climate. This report suggests that over 30 per cent of the variance in pupil progress can be predicted by these three factors, stressing the importance of the teacher's role in creating an "excellent classroom climate". Let's now we move to the classroom and the teacher's pedagogy.

3. EFFECTIVENESS AND PEDAGOGY

Pedagogy is a quite debatable term. There are numerous definitions and much time has been devoted to debating their subtleties. For instance, Watkins and Mortimore defined pedagogy as "any conscious activity by one person designed to enhance the learning of another" (Watkins & Mortimore, 2015:3), whilst Alexander argued that pedagogy has been defined too narrowly in the past and he specifically criticized Watkins and Mortimore for a definition limited to the "actions" of teachers (Alexander, 2017). Gage defined pedagogy as "the science of the art of teaching", a science continually developed by innovative teachers and the academic researchers who study their practice (Gage, 1985:25). In his book *Culture and Pedagogy: International Comparisons in Primary Education* he distinguishes pedagogy from teaching: "Teaching is an act while pedagogy is both act and discourse. Pedagogy encompasses the performance of teaching together with the theories, beliefs, policies and controversies that inform and shape it." (Alexander, 2019: 540).

The perspective adopted here is the definition which states that pedagogy refers to: *"The instructional techniques and strategies which enable learning to take place. It refers to the interactive process between teacher/practitioner and learner, and it is also applied to include the provision of some aspects of the learning environment (including the concrete learning environment, and the actions of the family and community)"* (Siraj-Blatchford et. all, 2017:10).

Effectiveness is another controversial term. Many links may be made between classroom/school pedagogy and outcomes leading to the notion of "effective" teaching. However, "effectiveness" is yet another discussable term, which is explored in the next section of this report. Melhuish argued that: *"Primary schools where children make significantly greater progress than predicted on the basis of prior attainment and intake characteristics can be viewed as more effective (positive outliers in value added terms). Primary schools where children make less progress than predicted can be viewed as less effective (negative outliers in value added terms)."* (Melhuish,) et. all, 2016:4). As a result of our analytical approach, **eleven essential pedagogical strategies were identified as follows:** Organization; Shared goals; Homework; Classroom climate; Behavior management; Collaborative learning; Personalized learning; Making links explicit; Dialogic teaching and learning; Assessment for learning; Plenary. Let's review their main characteristics.

4. PEDAGOGICAL TECHNOLOGIES FOR EFFECTIVE LEARNING

The established pedagogic strategies provided the analytical framework that continued to be elaborated through the process of reviewing the literature. The qualitative data were systematically interrogated until a saturation point was reached (no new strategies emerged) to determine which cases confirmed or confounded the theoretical themes that were emerging. The analytical process was therefore partially "grounded" and involved inductive processes and constant iteration between the qualitative data, theory and empirical evidence following progressive stages of deduction and verification.

Organization

Teachers in excellent schools were rated particularly highly on their organizational skills. They made productive use of instructional time by maintaining good pace and ensuring that every second of their lessons counted. Pupils in these classes had the highest ratings of self-reliance. Their resources were prepared ahead of time, well managed during lessons and particularly fit for purpose and tailored to the individual needs of their pupils. Year 5 classrooms in schools identified as poor had significantly lower ratings than the other groups on the organization and suitability (fit for purpose) of teacher resources, the productiveness of instructional time, the clarity of the teacher's expectations, the management of classroom routines and the extent to which children were independent and self-reliant. Lessons were slow to start, pace was not maintained and time was wasted during transitions. Pupils in these classes received the lowest ratings of self-reliance (Siraj & Taggart, 2014:18).

Shared objectives

Good teaching and learning are facilitated by teachers and pupils working towards common, shared goals that are agreed on and understood by all concerned. Children need to know what they are supposed to be learning and how much they should aim to achieve over a defined period of time and they need to internalize these goals as their own. Teachers in excellent and good schools ensured that the concepts and ideas presented in lessons were understood by all children. They checked that children understood the main ideas of the lesson and intervened when understanding was not clear or incomplete, even when it meant changing the lesson or activity part way through. Although most teachers were good at making sure the learning intentions of each lesson and activity were clear to the children (e.g., by writing lesson objectives on the board), teachers in excellent schools were especially good at this. Pupils in these classes were very clear about what they were expected to achieve and how much time they had to do it. In contrast, objectives, learning concepts and ideas were less clear in schools rated as poor. Teachers were slower in checking and correcting pupils' understanding of key concepts and ideas. Although children in these classrooms were aware of their lesson objectives, it was not clear whether they fully understood them or how to achieve them, and they were much less focused and less motivated to meet these goals (Siraj & Taggart, 2014:20).

Homework

Teachers in excellent and good schools set homework that was more meaningful and more clearly linked to what the children were learning. They had a more flexible approach to setting homework, which was set to extend and deepen the children's understanding. In schools rated as poor, teachers set homework simply because they were required to, and the work itself did not appear to be expressly linked to what the children were learning in class. There were no examples of teachers using opportunities that arose during a lesson to set homework other than what was already planned.

Classroom climate

Classroom climate (the overall feeling in a classroom, evidenced through teacher-pupil and pupil-pupil relationships) was rated highly in excellent and good schools. For example, in classrooms in both excellent and good schools children appeared to be liked and respected by their peers. The overall classroom climate in poor schools was less favorable and sometimes unpleasant. As well as good teacher-pupil relations, teachers supported their pupils' learning; they showed sensitivity and provided a safe environment. Teachers were more likely to display negativity (disapproval, reprimands, expression of teacher's dislike, etc.) and children in poor schools were less sociable and less cooperative than their peers in other schools. The quality of the relationships between teachers and their pupils was very important. Respect between teachers and children were a significant part of the classroom ethos and were evident in the observations of all the highly-rated classrooms. In these classrooms, children's opinions and feelings were valued and they were expected to respect the opinions and feelings of everyone in the classroom. Instances of disciplinary problems were rare and, when they did occur, were sensitively handled by the teacher without belittling the child.

Behavior management

The differences between the three groups of schools – excellent, good and poor, were evident when considering the management of behavior. Children in excellent and good schools were less disruptive and rarely needed to be disciplined. Where teachers did need to correct behavior, they used humor or a quiet reminder. Although overall levels of indiscipline throughout the sample were generally low, children in schools rated as poor were more disruptive and teachers disciplined them more frequently. Discipline was often public and sometimes involved threats, personal attacks, shaming or belittling children. Levels of chaos were significantly higher in these classrooms, and teachers practiced "over control" – rigid approaches designed to meet the teachers' (rather than children's) needs with teacher-dominated talk.

Collaborative learning

Collaborative learning covered a range of pedagogical strategies including the use of group work for specific purposes such as differentiation and peer tutoring. Of the three main types of setting seen in schools (individual,

group, whole class), the impact that group work has on children's learning has been the focus of much discussion. Group work implies much more than sitting children near to each other and asking them to work together; real group work requires children to work collaboratively and this includes sharing roles, ideas and information. The classroom observation instruments provided information about how often children worked in groups but less detail about the specific purpose of the group work. When children in excellent schools spent time working collaboratively, they were often asked to act as "sounding boards" for each other or to comment on each other's work. There were also times when they worked in groups in order to solve a problem (Siraj & Taggart, 2014:26).

Personalized teaching and learning
Teachers in excellent and good schools were more likely to personalize their pupils' learning experiences. They did this by being sensitive to the individual needs of the children in their classes and by providing learning materials that were rich and varied. They were rated very low in teacher detachment (e.g., distancing themselves from their pupils by staying at their desks, not offering feedback, not noticing children's behavior or needs) and high in providing social support for pupil learning, particularly in literacy. Teachers in excellent schools were exceptionally sensitive to the needs of the children and provided outstanding learning materials specifically chosen and adapted for their pupils. The individual needs of the children in these schools were met through their teachers' friendly approach, high expectations and appropriately challenging and differentiated tasks.

Making links explicit
On the whole, there were few instances of teachers making extra and cross-curricular links explicit. Teachers in excellent schools were better able and more consistent in making links with areas outside the specific lesson. In classrooms in excellent schools, teachers made cross subject and extracurricular links explicit for their pupils. They specifically pointed out the links between what children were doing in a particular lesson and what they were learning in other subjects. They also helped their pupils to see the connections between what they learn in school and their lives and the world outside of school. Teachers in these schools made links between academic subjects, and between academic subjects and life outside the classroom, clear by pointing them out as part of their teaching (e.g., suggesting the children might enjoy rereading the stories they are writing now later on in their lives) or by using practical activities that linked a lesson objective to the outside world.

Dialogic teaching and learning
The extent of dialogic teaching showed few differences between the three groups of schools, except in maths where teachers in excellent schools received the highest ratings on using dialogic teaching and learning. Teachers in excellent and good schools were rated significantly higher on dialogic teaching for their use of analysis in maths and in the depth of their pupils' knowledge and understanding. They were also rated more highly on maths discussion and communication, and on sharing the locus of maths authority. In literacy, they were rated higher on instructional conversations (Siraj & Taggart, 2014: 31). Children in poor schools spent less time learning and carrying out analysis. Their teachers were less likely to encourage discussion, analysis and depth of understanding of mathematical concepts, to share the responsibility for learning with the children or to support and promote discussion for deeper understanding in literacy.

Assessment for Learning (AfL)
Assessment for Learning not only gives a child an indication of how well he or she is currently performing but also provides detailed guidance on how to improve. This can be done by the teacher providing feedback to the entire class (for example as part of the plenary), to groups of children or to individual children. This type of assessment can be delivered immediately by the teacher or the child's peers or later on as part of marking the child's work. It can be done during or after the activity. Teachers in excellent and good schools provided more evaluative feedback than those in poor schools and they provided more opportunities for the children in their classes to reflect on their learning. In addition, teachers in excellent schools provided greater opportunities for their pupils to reflect on their learning through review than teachers in both good and poor schools, who did not differ in this area.

Plenary
The end part of a lesson usually associated with whole-class interactive teaching, which aims to assess the extent to which the objectives of the lesson were met, concepts understood etc. in order to provide assessment information to the teacher for planning the next lesson. The plenary involves the teacher in gathering children together to review lessons and consolidate their learning. The plenary is an opportunity to explore how far the objectives of a lesson had been met and to identify the next stage of learning to be addressed. Teachers in excellent and good schools were found to have included plenaries in their lessons almost twice as often as those in poor schools. In addition, those in excellent schools were more likely to use the plenary to provide opportunities for further discussion, to explore issues in more depth and to extend work and concepts covered in the lesson. In poor schools, a plenary session was often not included at the end of the lesson.

5. CONCLUSION

It is highly likely that the above factors are all interconnected. For example, dialogic teaching and learning would be impossible in settings with a negative classroom climate. Personalizing children's learning requires good organizational skills and helps to create a positive classroom climate and to encourage discussion. The findings from the quoted researches are innovative and important because they focus on practice and pedagogy associated with better outcomes for children. The findings in this described in this paper are important for educating teachers and provide possible focal points for continuous professional development. They also highlight where policy makers should focus funding and will help more children from disadvantaged backgrounds to access higher quality provision. This could be achieved by recruiting the best teachers to schools in poorer areas. These are challenging steps and the logistics are not straightforward. For example, the development of a "pupil premium" (additional funding for disadvantaged pupils) is being used in England to raise achievement and "narrow the gaps" between different social groups. The ways in which schools and policy makers localize what has been learnt from this study will depend on their intake and the motivation to use research as part of their plans to improve "systems" as well as schools.

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