Olteanu Lucián Líviusz

Psychological Aspects of Teaching in Primary School

Journal of Preschool and Elementary School Education nr 1(7), 53-67

2015

Artykuł został opracowany do udostępnienia w internecie przez Muzeum Historii Polski w ramach prac podejmowanych na rzecz zapewnienia otwartego, powszechnego i trwałego dostępu do polskiego dorobku naukowego i kulturalnego. Artykuł jest umieszczony w kolekcji cyfrowej bazhum.muzhp.pl, gromadzącej zawartość polskich czasopism humanistycznych i społecznych.

Tekst jest udostępniony do wykorzystania w ramach dozwolonego użytku.

MUZEUM HISTORII POLSKI

Olteanu Lucián Líviusz
University of Szeged

Psychological Aspects of Teaching in Primary School

Introduction

The educational process has become the dominant response to challenges in all the domains of modern life. The key to a good primary education is the quality of its teachers. Quality education enables people to develop all of their attributes and skills to achieve their potential as human beings and members of society. In the words of the Delors Commission (UNESCO, 1996): "Education is at the heart of both personal and community development; its mission is to enable each of us, without exception, to develop all our talents to the full and to realize our creative potential, including responsibility for our own lives and achievement of our personal aims."

The highest-quality teachers, those most capable of helping their students learn, have deep mastery of both their subject matter and pedagogy (Darling-Hammond, 1997). Research shows that teacher quality is the strongest predictor of student achievement (Sanders & Rivers, 1996; Wenglinsky, 2000). Therefore, teachers need to gain a more comprehensive knowledge of the basic psychological theories. This deeper understanding of students' behavior enables the teacher to help guide them through the educational process. Understanding development, or the long-term changes in growth, behavior, and knowledge, helps teachers to have appropriate expectations of students, as well as to keep students' individual diversity in perspective. From kindergarten through the end

of high school, students double their height, triple their weight, experience the social and hormonal effects of puberty, and improve basic motor skills.

Major theories and models of learning

Several ideas and priorities affect how we teachers think about learning, including the curriculum, the difference between teaching and learning, sequencing, readiness, and transfer. The ideas form a "screen" through which we understand and evaluate whatever psychology has to offer education. As it turns out, many theories, concepts, and ideas from educational psychology *do* make it through the "screen" of education, meaning that they are consistent with the professional priorities of teachers and helpful in solving important problems faced in classroom teaching. In the case of issues about classroom learning, for example, educational psychologists have developed a number of theories and concepts that are relevant to classrooms, in that they describe at least *some* of what usually happens there and offer guidance for assisting learning. It is helpful to group the theories according to whether they focus on changes in behavior or in thinking. The distinction is rough and inexact, but a good place to begin. For starters, therefore, consider two perspectives on learning, called behaviorism (learning as changes in overt behavior) and constructivism (learning as changes in thinking). The second category can be further divided into psychological constructivism (changes in thinking resulting from individual experiences), and social constructivism (changes in thinking due to assistance from others). The rest of this paper describes key ideas from each of these viewpoints. As I hope you will see, each describes some aspects of learning not just in general, but as it happens in classrooms in particular. So each perspective suggests things that *you* might do in *your* classroom to make students' learning more productive.

Behaviorism: changes in what students do

Behaviorism is a perspective on learning that focuses on changes in individuals' observable behaviors – changes in what people say or do. At some point we all use this perspective, whether we call it "behaviorism" or something else. The first time that I drove a car, for example, I was concerned primarily with whether I could actually do the driving, not with whether I could describe or explain how to drive. For another example: when I reached the point in life where I began cooking meals for myself, I was more focused on whether I could actually produce edible food in a kitchen than with whether I could explain my recipes and cooking procedures to others. And still another example – one often relevant to new teachers: when I began my first year of teaching, I was more focused on doing the job of teaching – on day-to-day survival – than on pausing to reflect on what I was doing.

In classrooms, behaviorism is most useful for identifying relationships between specific actions by a student and the immediate precursors and consequences of the actions. They also rely primarily on two basic images or models of behavioral learning, called *respondent (or "classical") conditioning* and *operant conditioning*.

Respondent conditioning: learning new associations with prior behaviors

As originally conceived, **respondent conditioning** (sometimes also called *classical conditioning)* begins with involuntary responses to particular sights, sounds, or other sensations (Lavond, 2003). When I receive an injection from a nurse or doctor, for example, I cringe, tighten my muscles, and even perspire a bit. Whenever a contented, happy baby looks at me, on the other hand, I invariably smile in response. I cannot help myself in either case; both of the responses are automatic. In humans, as well as other animals, there is a repertoire or variety of such specific, involuntary behaviors. At the sound of a sudden loud noise, for example, most of us show a "startle" response – we drop what we are doing (sometimes literally!), our heart rate shoots up temporarily, and we look for the source

of the sound. Cats, dogs and many other animals (even fish in an aquarium) show similar or equivalent responses.

Involuntary stimuli and responses were first studied systematically early in the twentieth-century by the Russian scientist Ivan Pavlov (1927). Pavlov's best-known work did not involve humans, but dogs, and specifically their involuntary tendency to salivate when eating. He attached a small tube to the side of the dogs' mouths, which allowed him to measure how much the dogs salivated when fed (Exhibit 1 shows a photograph of one of Pavlov's dogs). But he soon noticed a "problem" with the procedure: as the dogs gained experience with the experiment, they often salivated *before* they began eating. In fact, the most experienced dogs sometimes began salivating before they even saw any food, simply when Pavlov himself entered the room! The sight of the experimenter, which had originally been a neutral experience for the dogs, became associated with the dogs' original salivation response. Eventually, in fact, the dogs would salivate at the sight of Pavlov even if he did *not* feed them. This *change* in the dogs' involuntary response, and especially its growing independence from the food as stimulus, eventually became the focus of Pavlov's research. Psychologists named the process *respondent conditioning* because it describes changes in *responses* to stimuli (though some have also called it "classical conditioning" because it was historically the first form of behavioral learning to be studied systematically).

Operant conditioning: new behaviors because of new consequences

Instead of focusing on associations between stimuli and responses, **operant conditioning** focuses on the effects of consequences on behaviors. The operant model of learning begins with the idea that certain consequences tend to make certain behaviors happen more frequently. If I compliment a student for a good comment during a discussion, there is more of a chance that I will hear comments from the student more often in the future (and hopefully they will also be good ones!). If a student tells a joke to several classmates and they laugh at it, then the student is more likely to tell additional jokes in the future and so on.

Operant conditioning and students' learning: As with respondent conditioning, it is important to ask whether operant conditioning also describes learning in human beings, and especially in students in classrooms. On this point, the answer seems to be clearly "yes". There are countless classroom examples of consequences affecting students' behavior in ways that resemble operant conditioning, although the process certainly does not account for all forms of student learning (Alberto & Troutman, 2005).

Behavioral psychologists have studied the effects of **cues.** In operant conditioning, a cue is a stimulus that happens just prior to the operant behavior and that signals that performing the behavior may lead to reinforcement. Its effect is much like discrimination learning in respondent conditioning, except that what is "discriminated" in this case is not a conditioned behavior that is reflex-like, but a voluntary action, the operant. In the original conditioning experiments, Skinner's rats were sometimes cued by the presence or absence of a small electric light in their cage. Reinforcement was associated with pressing a lever when, and only when, the light was on. In classrooms, cues are sometimes provided by the teacher or simply by the established routines of the class. Calling on a student to speak, for example, can be a cue that *if* the student *does* say something at that moment, then he or she *may* be reinforced with praise or acknowledgment. But if that cue does *not* occur – if the student is *not* called on – speaking may *not* be rewarded. In more everyday, non-behaviorist terms, the cue allows the student to learn when it is acceptable to speak, and when it is not.

Constructivism: changes in how students think

Behaviorist models of learning may be helpful in understanding and influencing what students do, but teachers also usually want to know what students are *thinking,* and how to enrich what students are thinking. For this goal of teaching, some of the best help comes from **constructivism,** which is a perspective on learning focused on how students

actively create (or "construct") knowledge out of experiences. Constructivist models of learning differ about how much a learner constructs knowledge independently, compared to how much he or she takes cues from people who may be more of an expert and who help the learner's efforts (Fosnot, 2005; Rockmore, 2005). For convenience, these are called **psychological constructivism** and **social constructivism,** even though both versions are in a sense explanations of thinking within individuals.

Psychological constructivism: the independent investigator

A person learns by mentally organizing and reorganizing new information or experiences. The organization happens partly by relating new experiences to prior knowledge that is already meaningful and well understood. Stated in this general form, individual constructivism is sometimes associated with a well-known educational philosopher of the early twentieth century, **John Dewey** (1938–1998).

Although Dewey himself did not use the term constructivism in most of his writing, his point of view amounted to a type of constructivism, and he discussed in detail its implications for educators. He argued, for example, that if students indeed learn primarily by building their own knowledge, then teachers should adjust the curriculum to fit students' prior knowledge and interests as fully as possible. He also argued that a curriculum could only be justified if it related as fully as possible to the activities and responsibilities that students will probably have *later,* after leaving school. To many educators these days, his ideas may seem merely like good common sense, but they were indeed innovative and progressive at the beginning of the twentieth century.

Psychological constructivism is the cognitive theory of **Jean Piaget** (Piaget, 2001; Gruber & Voneche, 1995). Piaget described learning as interplay between two mental activities that he called *assimilation* and *accommodation*. **Assimilation** is the interpretation of new information in terms of pre-existing concepts, information or ideas. A preschool child who already understands the concept of *bird,* for example, might initially label any flying object with this term – even butterflies or mosquitoes.

Assimilation is therefore a bit like the idea of *generalization* in operant conditioning.

Social Constructivism: assisted performance

Unlike Piaget's rather individually oriented version of constructivism, some psychologists and educators have explicitly focused on the relationships and interactions between a learner and more knowledgeable and experienced individuals. One early expression of this viewpoint came from the American psychologist **Jerome Bruner** (1960, 1966, 1996), who became convinced that students could usually learn more than had been traditionally expected as long as they were given appropriate guidance and resources. He called such support **instructional scaffolding** – literally meaning a temporary framework, like one used in constructing a building, that allows a much stronger structure to be built within it. In a comment that has been quoted widely (and sometimes disputed), he wrote: "We [constructivist educators] begin with the hypothesis that any subject can be taught effectively in some intellectually honest form to any child at any stage of development" (1960, p. 33).

Similar ideas were proposed independently by the Russian psychologist **Lev Vygotsky** (1978), whose writing focused on how a child's or novice's thinking is influenced by relationships with others who are more capable, knowledgeable, or expert than the learner.

Implications of constructivism for teaching

One strategy that teachers often find helpful is to organize the content to be learned as systematically as possible, because doing this allows the teacher to select and devise learning activities that are more effective. One of the most widely used frameworks for organizing content, for example, is a classification scheme proposed by the educator Benjamin Bloom, published with the somewhat imposing title of *Taxonomy of Educational Objectives: Handbook #1: Cognitive Domain* (Bloom, et al., 1956; Anderson & Krathwohl, 2001). **Bloom's taxonomy**, as it is usually called, describes six kinds of learning goals that teachers can in principle expect from students, ranging from simple recall of knowledge

to complex evaluation of knowledge. (The levels are defined briefly in Table 2.3 with examples from *Goldilocks and the Three Bears*.)

Mental development in primary school (the concrete operational stage: age 7 to 11)

As children continue into elementary school, they become able to represent ideas and events more flexibly and logically. Their rules of thinking still seem very basic by adult standards and usually operate unconsciously, but they allow children to solve problems more systematically than before, and therefore to be successful with many academic tasks. In the concrete operational stage, for example, a child may unconsciously follow the rule: "If nothing is added or taken away, then the amount of something stays the same." This simple principle helps children to understand certain arithmetic tasks, such as in adding or subtracting zero from a number, as well as to do certain classroom science experiments, such as ones involving judgments of the amounts of liquids when mixed. Piaget called this period the **concrete operational stage** because children mentally "operate" on concrete objects and events. They are not yet able, however, to operate (or think) systematically about *representations* of objects or events. Manipulating representations is a more abstract skill that develops later, during adolescence. Concrete operational thinking differs from preoperational thinking in two ways, each of which renders children more skilled as students. One difference is **reversibility,** or the ability to think about the steps of a process in any order. Imagine a simple science experiment, for example, such as one that explores why objects sink or float by having a child place an assortment of objects in a basin of water. Both the preoperational and concrete operational child can recall and describe the steps in this experiment, but only the concrete operational child can recall them *in any order*. This skill is very helpful on any task involving multiple steps – a common feature of tasks in the classroom. In teaching new vocabulary from a story, for another example, a teacher might tell students: "First make a list of words in the story that

you do not know, then find and write down their definitions, and finally get a friend to test you on your list". These directions involve repeatedly remembering to move back and forth between a second step and a first – a task that concrete operational students – and most adults – find easy, but that preoperational children often forget to do or find confusing. If the younger children are to do this task reliably, they may need external prompts, such as having the teacher remind them periodically to go back to the story to look for more unknown words.

The other new feature of thinking during the concrete operational stage is the child's ability to **decenter,** or focus on more than one feature of a problem at a time. There are hints of decentration in preschool children's dramatic play, which requires being aware on two levels at once – knowing that a banana can be both a banana and a "telephone". But the decentration of the concrete operational stage is more deliberate and conscious than preschoolers' make-believe. Now the child can attend to two things at once quite purposely. Suppose you give students a sheet with an assortment of subtraction problems on it, and ask them to do this: "Find all of the problems that involve two-digit subtraction *and* that involve borrowing from the next column. Circle and solve *only* those problems." Following these instructions is quite possible for a concrete operational student (as long as they have been listening!) because the student can attend to the two subtasks simultaneously – finding the two-digit problems *and* identifying which actually involve borrowing. (Whether the student actually knows how to "borrow" however, is a separate question.)

In real classroom tasks, reversibility and decentration often happen together. A well-known example of joint presence is Piaget's experiment with **conservation,** the belief that an amount or quantity stays the same even if it changes apparent size or shape (Piaget, 2001; Matthews, 1998). Imagine two identical balls made of clay. Any child, whether preoperational or concrete operational, will agree that the two indeed have the same amount of clay in them simply because they look the same. But if you now squish one ball into a long, thin "hot dog", the preoperational child is likely to say that the amount of that ball has changed – either because it is longer or because it is thinner, but at any rate because it now

looks different. The concrete operational child will not make this mistake, thanks to new cognitive skills of reversibility and decentration: for him or her, the amount is the same because "you could squish it back into a ball again" (reversibility) and because "it may be longer, but it is also thinner" (decentration). Piaget would say the concrete operational child "has conservation of quantity". The classroom examples described above also involve reversibility and decentration. As already mentioned, the vocabulary activity described earlier requires reversibility (going back and forth between identifying words and looking up their meanings); but it can also be construed as an example of decentration (keeping in mind two tasks at once – word identification *and* dictionary search). And as mentioned, the arithmetic activity requires decentration (looking for problems that meet two criteria *and* also solving them), but it can also be construed as an example of reversibility (going back and forth between subtasks, as with the vocabulary activity). Either way, the development of concrete operational skills supports students in doing many basic academic tasks; in a sense they make ordinary schoolwork possible.

Summary

The term learning has many possible meanings, it is used by teachers to emphasize its relationship to curriculum, to teaching, and to transfer. Still another result of focusing the concept of learning on classrooms is that it raises issues of usefulness or transfer, which is the ability to use knowledge or skill in situations beyond the ones in which they are acquired. Combining enjoyment and usefulness, in fact, is the "gold standard" of teaching: we generally seek it for students, even though we may not succeed in providing it all of the time.

Viewed in this light, the two major psychological perspectives of learning – behaviorist and constructivist – have important ideas to offer educators.

The other major psychological perspective – constructivism – describes how individuals build or "construct" knowledge by engaging ac-

tively with their experiences. The psychological version of constructivism emphasizes the learners' individual responses to experience – their tendency both to assimilate it and to accommodate to it. The social version of constructivism emphasizes how other, more expert individuals can create opportunities for the learner to construct new knowledge. Social constructivism suggests that a teacher's role must include deliberate instructional planning, such as that facilitated by Bloom's taxonomy of learning objectives, but also that teachers need to encourage metacognition, which is students' ability to monitor their own learning.

Understanding development, or the long-term changes in growth, behavior, and knowledge, helps teachers to hold appropriate expectations for students as well as to keep students' individual diversity in perspective. From kindergarten through the end of high school, students double their height, triple their weight, experience the social and hormonal effects of puberty, and improve basic motor skills. Their health is generally good, though illnesses are affected significantly by students' economic and social circumstances. Cognitively, students develop major new abilities to think logically and abstractly, based on a foundation of sensory and motor experiences with the objects and people around them. Jean Piaget has one well-known theory detailing how these changes unfold.

Socially, students face and resolve a number of issues – especially the issue of industry (dedicated, sustained work) during childhood, and the issue of identity during adolescence. Erik Erikson has described these crises in detail, as well as social crises that precede and follow the school years. Students are motivated both by basic human needs (food, safety, belonging, esteem) and by needs to enhance themselves psychologically (self-actualization). Abraham Maslow has described these motivations and how they relate to each other.

Morally, students develop both a sense of justice and of care for others, and their thinking in each of these realms undergoes important changes as they mature. Lawrence Kohlberg has described changes in children and youth's beliefs about justice, and Carol Gilligan has described changes in their beliefs about care.

Bibliography

Appleton K., (2003). *How Do Beginning Primary School Teachers Cope with Science? Toward an Understanding of Science Teaching Practice*, Research in Science Education, Volume 33, Issue 1, pp. 1–25.

Alberto, P. & Troutman, A. (2005). *Applied Behavior Analysis for Teachers, 7th edition*. Upper Saddle River, NJ: Prentice Hall.

Anderson L. & Krathwohl D. (Eds.), (2001). *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. New York: Longman.

Bredekamp S. & Copple C., (1997). *Developmentally appropriate practice,* revised edition. Washington, D.C.: National Association for the Education of Young Children.

Bruner J., (1960). *The Process of Education*. Cambridge, MA: Harvard University Press.

Bruner J., (1966). *Toward a Theory of Instruction*. Cambridge, MA: Harvard University Press.

Bruner J., (1996). *The Culture of Education*. Cambridge, MA: Harvard University Press.

Case R. & Okomato U., (1996). *The Role of Central Conceptual Structures in Children's Thought*. Hillsdale, NJ: Erlbaum.

Copple C. & Bredekamp S., (2006). *Basics of Developmentally Appropriate Practice*. Washington, D.C.: National Association for the Education of Young Children.

Delors Commission (1996). *Learning: The Treasurer Within*. New York: UNESCO Publishing

Dewey J., (1938/1998). *How We Think*. Boston: Houghton Mifflin.

Ferster C., Skinner B. F., Cheney C., Morse W. & Dews D., *Schedules of Reinforcement*. New York: Copley Publishing Group.

Fosnot C. (Ed.), (2005). *Constructivism: Theory, Perspectives, and Practice*, 2nd edition. New York: Teachers College Press.

Gardner H., (1999). *Intelligence Reframed: Multiple Intelligences for the 21st Century*. New York: Basic Books.

Gardner H. (2006). *The Development and Education of the Mind*. New York: Routledge, p. 39.

Goldman J., (2006). *Web-based Designed Activities for Young People in Health Education: A Constructivist Approach.* Health Education Journal *65*(1), 14–27.

Gruber H. & Voneche J. (Eds.), (1995). *The Essential Piaget.* New York: Basic Books.

Inhelder B. & Piaget J., (1958). *The Growth of Logical Thinking from Childhood to Adolescence.* New York: Basic Books.

Israel S. (Ed.), (2005). *Metacognition in Literacy Learning.* Mahwah, NJ: Erlbaum.

Lavond D. & Steinmetz J., (2003). *Handbook of Classical Conditioning.* Boston: Kluwer Academic Publishing.

Matthews G., (1998). *The Philosophy of Childhood.* Cambridge, MA: Harvard University Press.

Maslow A., (1987). *Motivation and Personality*, 3rd edition. New York: Harper & Row.

Mazur J., (2005). *Learning and Behavior, 6th edition.* Upper Saddle River, NJ: Prentice Hall.

Onslow M., Menzies R. & Packman A., (2001). *An Operant Intervention for Early Stuttering.* Behavior Modification 25(1), 116–139.

Paley V., (2005). *A Child's Work: The Importance of Fantasy Play*. Chicago: University of Chicago Press.

Pavlov I., (1927). *Conditioned Reflexes.* London, UK: Oxford University Press.

Piaget J., (2001). *The Psychology of Intelligence.* London, UK: Routledge.

Piaget J., (1952). *The Origins of Intelligence in Children*. New York: International Universities Press.

Power F., Higgins A. & Kohlberg L., (1991*). Lawrence Kohlberg's Approach to Moral Education*. New York: Columbia University Press.

Rockmore T., (2005). *On Constructivist Epistemology.* Lanham, MD: Rowman & Littlefield Publishers.

Salkind N., (2004). *An Introduction to Theories of Human Development*. Thousand Oaks, CA: Sage Publications.

Sanders W. L. & Rivers J. C., (1996). *Cumulative and Residual Effects of Teachers on future Studenst Academic Achievement.* Knoxville, TN: University of Tennessee Value-Added Research and Assessment Center. Retrieved December 6, 2007.

Skinner B. F. (1938). *The Behavior of Organisms.* New York: Appleton-Century--Crofts.

Skinner B. F., (1948). *Walden Two.* New York: Macmillan.

Skinner B. F., (1988). *The Selection of Behavior*: The Operant Behaviorism of B. F. Skinner. New York: Cambridge University Press.

Tharp R. & Gallimore R., (1991). *Rousing Minds to Life: Teaching, Learning, and Schooling in Social Context*. Cambridge, UK: Cambridge University Press.

Vygotsky L., (1978). *Mind in Society: The Development of Higher Psychological Processes.* Cambridge, MA: Harvard University Press.

Wenglinsky H., (2000). *How Teaching Matters: Bringing the Classroom Back into Discussions of Teacher Quality*. Princeton.

Zimbardo P. & Radl S., (1999). *The Shy Child: Overcoming and Preventing Shyness from Birth to Adulthood.* Cambridge, MA: Malor Books.

Abstract

This theoretical paper reviews the major theories and models of learning and views them in the light of two major psychological perspectives of learning: behaviorist and constructivist. The educational process has become the dominant response to challenges in all the domains of modern life. The key to a good primary education is the quality of its teachers. Quality education enables people to develop all of their attributes and skills in order to achieve their potential as human beings and members of society.

A deeper understanding of the students' behavior enables the teacher to help guide them through the educational process. Understanding development, or the long-term changes in growth, behavior, and knowledge, helps teachers to hold appropriate expectations for students as well as to keep students' individual diversity in perspective. From kindergarten through the end of high school, students double their height, triple their weight, experience the social and hormonal effects of puberty, and improve basic motor skills.

Keywords: factors, educational process, teaching, primary school, learning, educational psychology.

Information about the author:

Olteanu Lucián Líviusz

I am a PhD student at the Doctoral School of Education at the University of Szeged. I was a teaching assistant at the Gál Ferenc College Hungary Faculty of

Education Szarvas, where I taught various psychology related subjects. My research interests focus on career decision making difficulties in high school and on developing an intervention program to prevent career decision making difficulties. Currently, I work as a school psychologist at the Lucian Magdu Elementary School and Kindergarten in Battonya.

Doctoral School of Education at the University of Szeged
6722 Szeged, Egyetem u. 2. Hungary
Contact address:
5830 Battonya, Petőfi tér 8.
e-mail: luciolteanu@gmail.com