Chapter 3
Constructivist Learning Theory and Creating Effective Learning Environments

Constructivism in Learning

Compared with traditional methods of teaching, constructivist pedagogy, due to its significant role in creating effective and engaging learning environment in schools, has become an increasingly popular and preferred pedagogy. One of the most obvious reasons for its popularity is that it offers to students much more social and cognitive interaction and engagement in collaborative and cooperative groups. Based on prolific research findings dealing with the nexus between constructivist pedagogy, quality teaching, and improvement in academic performance, I would like to suggest that effective learning environments need to offer continuous active engagement in schools globally. Constructivist pedagogy, based on psychological and social constructivism can become one of the effective classroom strategies for improving students' engagement and academic achievement (Richardson, 2003; Puacharearn, 2004; Kim, 2005; OECD, 2009a, b, c; Sharma & Sharma, 2012; Ayaz & Şekerci, 2015; Adak, 2017; Alt, 2017; Gupta & Tyagi, 2017; Zajda, 2018b). There exists a causal relationship between constructivist pedagogy and students' academic achievement. In one particular comparative and cross-cultural meta-analysis, Ayaz and Şekerci (2015) examined some 53 studies analysing the effects of constructivist pedagogy on students' academic achievement and concluded that 'the constructivist learning approach, compared to traditional teaching methods, has positive effects on the student's academic achievement' (Ayaz & Şekerci, 2015, p. 151). Similarly, Adak, (2017) demonstrated that the students exposed to the constructivist pedagogy 'performed significantly higher than those exposed to the traditional teaching method in respect of their gained scores at every intelligence levels', and that the constructivist approach strategy is capable of improving 'student's mastery of content at the higher order levels of cognition' (Adak, 2017,

The unexamined life is not worth living (Socrates, 399 BCE).

J. Zajda, *Globalisation and Education Reforms*, Globalisation, Comparative Education and Policy Research 25, https://doi.org/10.1007/978-3-030-71575-5_3

p. 1074). According to Shah, (2019), constructivism is not only popular, but resulted in 'significant success' in students' academic achievement:

> Constructivism has been a very powerful model for explaining how knowledge is produced in the world as well as how students learn. Moreover, constructivist teaching practices are becoming more prevalent in teacher education programs, while demonstrating significant success in promoting student learning. (Shah, 2019)

In addition, constructivist pedagogy in the classroom facilitates a good deal of students' engagement (Hunter, 2015; Zajda, 2018a; Shah, 2019; Zaphir, 2019). Constructivist pedagogy, by its nature, focuses on critical thinking and critical literacy activities during group work, and promotes students' cognitive, social and emotional aspects of learning.

The History of Constructivism

The idea of constructivism has its roots in the ancient world, beginning with Confucius (551-479 B.C.), Plato, Aristotle (384-322 B.C), Socrates, and his dialogues with his followers, in which he asked his students specific questions that led his students to realize for themselves the weaknesses in their thinking, and Epicurus, who invented a version of the Golden Rule, and many other great thinkers. In Homer's Odyssey (700 B.C.), goddess Calypso tells Odysseus: 'I'll be as careful for you as I'd be for myself in like need. I know what is fair and right.' **Golden Rule**, in the Gospel of Matthew (7:12) states 'In everything, do to others what you would have them do to you'. This rule of moral conduct depicts the Christian's duty to people in general. The Socratic dialogue continues to be a powerful analytical and cognitive tool used in analysis and critical thinking, and is employed by teachers in constructivist pedagogy, and elsewhere to assess and evaluate students' learning and plan new learning experiences. Socrates' idea that 'the unexamined life is not worth living', is one of the earliest manifestation of what we now call critical thinking, and critical literacy.

Constructivism, as a modern learning theory can be traced to Jean-Jacques Rousseau, Johann Heinrich Pestalozzi, Maria Montessori, John Dewey, Frederic Barlett, Jean Piaget, Jerome Bruner, and many others. Barlett (1932), as one of the forerunners of cognitive psychology, pioneered the modern constructivist approach. Learners, according to him, employ schemas in their meaning making process, when they read the stories, and in seeking to understand, they connect them to existing cognitive structures and prior knowledge. Barlett also studied the constructive character of remembering (Barlett, 1932). Modern constructivism originates from the work of a Swiss developmental psychologist Jean Piaget (1936, 1977). According to Piaget, children perceive and construct an understanding of the world around them, in their own and unique way. For Piaget, knowledge arises from the individual's activity, either cognitive or psychomotor. As a result, Piaget argued that 'All knowledge is tied to action, and knowing an object or event is to use it by

assimilating it to an action scheme' (Piaget, 1967, pp. 14–15). The ideas of a mental scheme, and the associated terms of assimilation and accommodation, are central to Piaget's modern constructivist theory of knowledge. Schemes are **cognitive** structures that an individual uses to organize and categorize knowledge, objects and events to interpret the phenomena in the world.

Adding to the work of Piaget, von Glasersfeld (1995) suggested that there were two key principles that establish the purpose of constructivism. Firstly, that knowledge is not passively received, but rather that it is built up by the cognizing subject, and secondly, that the function of cognition is adaptive and serves the organisation of the experiential world rather than the discovery of an ontological reality. Similarly, Adler (1997) suggested that constructivism was the view that 'the manner in which the material world shapes and is shaped by human action and interaction depends on dynamic normative and epistemic interpretations of the material world' (Adler, 1997, p. 322).

In addition, Guzzini (2000) also argued that constructivism is a reflexive metatheory, combining epistemology, ontology, and reflexivity:

> This reconstruction starts by taking seriously the double sociological and interpretivist turn of the social sciences. Based on 'double hermeneutics', constructivism is perhaps best understood by distinguishing its position on the level of observation, the level of action proper, and the relationship between these two levels…that constructivism is epistemologically about the social construction of knowledge and ontologically about the construction of social reality. It furthermore asks us to combine a social theory of knowledge with an intersubjective, not an individualist, theory of action. (Guzzini, 2000)

With reference to constructivism, McLeod (2019), like many other constructivist researchers, suggested that knowledge is indeed socially constructed, and that learning is a necessarily active process (see Dewey, 1938; Bruner, 1963; Vygotsky, 1978). The purpose of constructivism is, then, for the individual to construct her or his own meanings out of the elements of individual experience (see McLeod, 2019).

Constructivist Theory

Constructivism as a view of learning, maintains that each person, using perception, and thinking, creates his or her meaningful knowledge and interpretations of the world. Constructivist teaching philosophy is based promoting students' autonomy, where students' thinking 'drives the lessons, where dialogue, inquiry, and puzzlement are valued' and assessing students' learning is in the context of teaching (Akpan & Beard, 2016, p. 392).

There exists a consensus, among researchers writing on constructivism, that constructivism emphasises how knowledge is constructed, as the result of a person's interaction in the world, either individually or with others (Piaget, 1972; Fosnot, 1989; Steffe & Gale, 1995; Oldfather et al., 1999; Packer & Goicoechea, 2000; Thompson, 2000; OECD, 2009a, b, c). Thompson (2000) argued that constructivism is not a theory of learning, but a model of knowing and constructivism can be

used to build a theory of learning. Richardson (2003), however, argues that the view of constructivism as a *learning theory* has 'guided most of the developments of constructivist pedagogy' (Richardson, 2003, p. 1624).

McLeod (2019) argues that constructivism is 'an approach to learning that holds that people actively construct or make their own knowledge and that reality is determined by the experiences of the learner' (McLeod, 2019). In explaining constructivists' theory, Arends (1998) asserted, like other researchers, that constructivist theory of learning refers to individual's cognitive construction of meaning through experience. Constructivism is, according to Richardson (2003), a theory of 'learning or meaning making' (Richardson, 2003). This meaning making process takes place during an interaction between what individuals already know and new knowledge. Shor (1992), defined constructivism as a way of building knowledge about self, school, everyday experience, and society through reflection and meaning making (Shor, 1992). The three guiding principles of constructivist learning are:

- Learners are *active participants* in their learning, and learning by doing, or experiential learning is central to constructivist leaning in practice (Howe & Berv, 2000)
- Learners are *self-regulated* and they construct and monitor their learning, where meta-cognition plays an important role in meaningful learning.
- *Social interactions* is essential for meaningful learning.

In constructivist learning, as demonstrated earlier, students, when confronted with new learning tasks, are actively engaged in the meaning-making process, by deciphering and constructing their own interpretation and knowledge of the world. The concept of meaning making was initially developed and explained by Postman and Weingartner (1971) as a dynamic and dialogical process, where the focus is on the individuality and the uniqueness of the meaning maker (p. 94).

Brooks and Brooks (1993) argued that constructivism is a theory about knowledge and learning. Fosnot and Perry (2005), however, stressed that 'Constructivism is a theory about learning, not a description of teaching' (Fosnot and Perry (2005), p. 33). Constructivist learning theory is also based on the belief that *meaningful* learning occurs, when learners are actively involved in a process of meaning-making and knowledge construction, rather than passively receiving and memorizing information (rote-learning). Learners become the meaning-makers, as they attempt to understand new ideas. As such, constructivist teaching is likely to promote critical thinking and create intrinsically-motivated and autonomous learners. Matthews (2000, p. 17) identified 17 different forms of constructivism in education, and he also mentions three major constructivist traditions: philosophical, sociological, and educational. For him, sociological or social constructivism considers '…growth of science and changes in its theories and philosophical commitments are interpreted in terms of changing social conditions and interests' (Matthews, 2000, p. 169). In addition, Phillips (2000) described two major types of constructivism: social constructivism and psychological constructivism, or cognitive constructivism. Maypole and Davies (2001) when analysing students' perceptions of constructivist learning in a community college American history course, were able to demonstrate that

students 'thought more critically and independently, they developed cognitively and affectively, and they enjoyed the learning process' (Maypole & Davies, 2001). More recently, Akpan and Beard (2016) discussed classroom teaching, using constructivist teaching strategies to enhance academic outcomes of students with special needs.

Implicit in constructivist views of learning is the idea that an effective learner actively monitors his or her learning and the meaning-making process, where metacognitive skills and reflection play an important role. Constructivists view learning as dependent on the degree to which learners can activate existing cognitive structures and construct new knowledge, which added to existing knowledge. Constructivist pedagogy of learning and teaching emphasizes that there are perceptual and cognitive differences in the way people perceive things and how they *form ideas* related to the linguistic, visual, logical, interpersonal, intrapersonal, environmental and existentialist factors (see also Gardner's theory of multiple intelligence, 1983, 1999). Fosnot and Perry (2005) offered a cultural and post-structuralist view of representation in constructivist learning, where individuals, by means of language and interpretation, end up constructing their own symbolic representations of new knowledge:

> All cultures represent the meaning of experience in some way: through symbol, music, myth, storytelling, art, language, film… Abstracting and generalizing experience by representing them with symbols (itself a constructive process) allows the creation of 'semiotic spaces' where we can negotiate meaning (Wertsch, 1991). We may not understand in the same way as other humans who have had different experiences, but by using language, stories, and metaphors and models, we can listen to and probe each other's understanding… Constructing symbolic representations empowers us to go beyond the immediacy of the concrete, to cross cultural barriers, to encounter multiple perspectives that generate new possibilities, to become conscious of our actions on the world in order to gain new knowledge with which to act. (Fosnot & Perry, 2005, pp. 30–31)

Drawing on Doll (1993), Fosnot and Perry (2005), also argued that constructivism, unlike Piaget's functionalist-structuralist paradigm, and Skinner's functionalist perspective, is a poststructuralist psychological theory:

> … one that construes learning as an interpretive, recursive, nonlinear building process by active learners interacting with their surround-the physical and social world. It is a psychological theory of learning that describes how structures, language, activity, and meaning-making come about, rather than one that simply characterizes the structures and stages of thought, or one that isolates behaviours learned through reinforcement. It is a theory based on complexity models of evolution and development. (Fosnot & Perry, 2005, p. 34)

Post-structuralist interpretation of constructivist learning adds another perspective to the on-going discourse surrounding the complexity of constructivism as a theoretical paradigm, and a theory of learning.

Constructivist Approaches: Two Major Strands of the Constructivist Perspective

Cognitive constructivism, or psychological constructivism draws on earlier research of Piaget (1977), Kelly (1991), Black and Ammon (1992), Fosnot and Perry (2005), and others. This approach is informed by developmental psychology, and learning theories (cognitive), which suggest that learners actively construct the meaning around ideas they encounter. Here, the individuals mentally construct the meaning around the concept, and these constructions are 'idiosyncratic, dependant in part on the learner's background knowledge (Richardson, 2003, p. 1625). Cognitive constructivism places more emphasis on the 'individual cognitive structuring process' (Fosnot & Perry, 2005, p. 28).

Social-Cultural Constructivism

By contrast, social-cultural constructivism draws on Vygotsky (1934a, b), Bruner (1963), Bandura (1977), Kolb and Fry (1975), Wertsch (1991), O'Loughin (1992), Hirtle (1996), Howe and Berv (2000), Kukla (2000) and many other researchers globally. Social constructivism emphasizes the importance of culture and context in understanding what occurs in society, and constructing knowledge based on this understanding (Watson, 2003; Beck & Kosnik, 2006). This perspective is closely associated with many contemporary theories; most notably the socio-cultural and developmental theories of Vygotsky, Bruner, and Bandura's social cognitive theory.

Social constructivism, as a variety of cognitive constructivist theories, emphasizes social interaction, the role of language in the meaning-making process and collaborative nature of much learning. Social constructivism was first developed by Lev Vygotsky. As originally proposed by Vygotsky (1934a, b), social constructivism focused on the role of environment, and its impact on individual's language development (Onuf, 2003). Onuf (2013) also argued that social constructivism begins when individual 'construct, or constitute, social reality, even as their being, which can only be social, is constructed for them' (Onuf, 2013, p. 1). Onuf (2003), like Vygotsky (1978) and other social constructivists, believed that a principal medium of social construction is language. Onuf (2003) further argued that when it comes to constructivist analysis of language and agency, 'language makes us who we are' (Onuf, 2003, p. 27).

Although Vygotsky was a cognitive and developmental Russian psychologist, he did not accept the assumption made by cognitive psychologists, such as Piaget and others, that it was possible to separate learning from its social context. In contrast to Piaget and his followers, Vygotsky argued that all cognitive functions originated in social interactions and that learning did not simply comprise of the assimilation and accommodation processes of new knowledge by learners. For Vygotsky (1968), language and culture were the frameworks through which humans experience,

communicate, and understand reality (Vygotsky, 1968, p. 39). Vygotsky's main relevance to social constructivism derives from his theories about language and thought, and social interaction. Vygotsky believed that social interaction played a major role in the development of language and cognition (Vygotsky, 1978). Vygotsky's socio-cultural theory stressed that individuals acquired their language and knowledge through a socially mediated process (Zajda, 2018b). Mahn and John-Steiner (2012) examined two central ideas of Vygotsky, dealing with the 'unification of thinking processes with language' and the role of the internal system of meaning 'created through the use of language':

> Central to Vygotsky's work is the examination of the unification of thinking processes with language processes. Vygotsky spends most of his last and major work Thinking and Speech describing the nature of verbal thinking—the entity that issues from that unification, and its key role in the development of higher psychological processes. We describe a central, but little known, aspect of his work, the internal system of meaning that is created through the use of language in social interaction and that is central to concept formation. Having described Vygotsky's theory and method. (Mahn & John-Steiner, 2012)

Social constructivism is based on specific assumptions about reality, knowledge, and learning (Searle, 1995; Thomas et al., 2014). Martin and Sugarman (1999) offered a meaningful description of social constructivism, as an approach to both learning and teaching, which is based on engagement, social interaction and dialogue:

> We acquire, develop, convey, and confer upon others the symbolic cognitive tools through which we manage our psychological engagement with the world. (Martin & Sugarman, 1999, p. 8)

Judith Watson (2003) uses examples from classroom practice to demonstrate how, within a framework of social constructivism, small changes in teachers' practice can promote effective teaching in pupils of all ages and levels of ability, across the curriculum (see also Beck & Kosnik, 2006). To use social constructivism in the classroom, it is necessary to know and understand critically epistemological assumptions that define it, namely the nature of the nexus involving reality, knowledge, and learning:

> *Reality:* Social constructivists believe that reality is constructed through human activity. Members of a society together invent the properties of the world (Kukla, 2000). For the social constructivist, reality cannot be discovered: it does not exist prior to its social invention.
>
> *Knowledge*: To social constructivists, knowledge is also a human product, and is socially and culturally constructed (Gredler, 1997). Individuals create meaning through their interactions with each other and with the environment they live in.
>
> *Learning:* Social constructivists view learning as a social process. It does not take place only within an individual, nor is it a passive development of behaviors that are shaped by external forces. Meaningful learning occurs when individuals are engaged in social activities (cited in Kim, 2001, p. 3).

These two strands, or theories, namely cognitive constructivism and social constructivism, are different in emphasis, but they also share many common perspectives about teaching and learning. Richardson (2003), for instance, argues that the

difference between the two forms of constructivism is that cognitive constructivism draws on developmental psychology, whereas social constructivism is informed by sociology and cultural disciplines.

Before looking at the differences between cognitive and social constructivists, it might be worthwhile to look at what they have in common. Jonassen's (1994) description of 8 pedagogical practices that differentiate *constructivist* learning from other learning environments is a succinct and practical summary of the constructivist perspective:

1. Constructivist learning environments provide *multiple* representations of reality.
2. Multiple representations avoid oversimplification and represent the complexity of the real world.
3. Constructivist learning environments emphasize knowledge construction instead of knowledge reproduction.
4. Constructivist learning environments emphasize authentic tasks in a meaningful context rather than abstract instruction out of context.
5. Constructivist learning environments provide learning environments, such as real-world settings or case-based learning instead of predetermined sequences of instruction.
6. Constructivist learning environments encourage thoughtful reflection on experience.
7. Constructivist learning environments 'enable context- and content- dependent knowledge construction'.
8. Constructivist learning environments support 'collaborative construction of knowledge through social negotiation, not competition among learners for recognition' (Jonassen, 1994; see also Jonassen, 2000).

The above Jonassen's summary of the constructivist perspective in the classroom defines both social and cognitive constructivist pedagogies. Most of these statements typify current approaches to classroom teaching globally. What then is the unique quality of constructivist pedagogy? To me the most significant tenant of constructivist pedagogy is the *meaning making* process in the classroom, which embraces both cultural diversity and multiple perspectives in learning and teaching. In research literature, the most frequently observed characteristic, defining constructivist learning, is learning by doing, 'discovery learning' or 'experiential learning', popularised by Bruner (1963) and Kolb and Fry (1975). Bruner believed that discovery learning helps students learn to relate ideas to each other and to existing knowledge, so that students are able to independently solve problems in real situations. Similarly, David Kolb and Fry (1975) held that meaningful learning can only be prompted by experiential learning. He was also influenced by Dewey and Piaget. In the ancient Greece, it was Aristotle who said 'For the things we have to learn before we can do them, we learn by doing them' (Bynum & Porter, 2005). Furthermore, as Richardson (2003) explained, constructivist pedagogy is associated with the creation of classroom environments that are 'grounded in a constructivist theory of learning, with goals that focus on individual students developing deep understandings…' (Richardson, 2003, p. 1627). Richardson also presented her five dimensions of constructivism:

1. Attention to the individual and respect for student's background (informed by student-centred classroom pedagogy)
2. Facilitation of group dialogue, to create a consensus on understanding a key idea/topic (focusing on cooperative learning)
3. Introducing knowledge via text, readings, activities and ICT.
4. Opportunities for students to engage in constructing their own new knowledge, based on activities
5. Developing student's meta-awareness of their own understanding (Richardson, 2003, p. 1626).

In addition, constructivist learning increases reflection, metacognition, teacher-initiated teaching of knowledge, skills, critical thinking, and the use of multi-modal models in learning, instead of passive and uncritical knowledge reproduction. Also, social constructivist learning and teaching strategies make an effective use of collaborative and cooperative groups, analysed below.

Constructivist Learning in the Classroom

In critiquing constructivist learning in the classroom we need to examine the following major factors affecting learners: individual differences and students' learning, teachers' knowledge, and cultural influences.

Individual Differences and Learning Styles

Learners from diverse cultures, with different levels of knowledge and skills and at different stages of cognitive development, are likely to exhibit different ways of learning. Yet, in a traditional classroom there is a tendency to adopt a singular, unifying and one-dimensional approach to the learning/teaching process. There is also a tendency to normalise learning using the normal curve, and by teaching to the 'average' students, which ignores individual differences. The learner's question 'Is this the right way?' already reflect the uncritical acceptance of learning. Students learn in diverse ways. How and what students learn is influenced and determined by a variety of factors and variables that can be grouped under affective, cognitive, psychomotor, intelligence, perception, cultural, and environmental domains. The unresolved *nature-nurture* discourse is just as relevant to the learning process today as it was at the turn of the century.

The term '***learning style***' is used widely in education and training to ***refer*** to a range of '… habitual ***way*** in which some individuals processes and organise ***information***, at times based on their ***preferred learning style*** and that of an ***individual's style*** (Dunn & Smith, 1990; Sadler-Smith, 2001; Dunn et al., 2009). Most cognitive psychologists agree that *cognitive learning styles* refer to the preferred way

individual processes information. Unlike individual differences in abilities (e.g., Gardner, Guilford, Sternberg and others), which describe peak performance, learning styles describe a person's typical mode of thinking, remembering or problem solving. Furthermore, learning styles are usually considered to be bipolar dimensions whereas abilities are unipolar (ranging from zero to a maximum value). Having more of ability is usually considered beneficial while having a particular cognitive style simply denotes a tendency to behave in a certain manner. Cognitive style is a usually described as a personality dimension, which influences attitudes, values, and social interaction.

Research findings have demonstrated that one teaching style or modality does not meet all individual needs and learners should be taught in multi-modal and multi-sensory learning environments (Stoffers, 2011; Kharb et al., 2013; Al Sayyed Obaid, 2013; Crogman & Trebeau Crogman, 2016; Abdullah Alwaqassi, 2017). Kharb et al. (2013) for instance, discovered that students' the most common unimodal preference was 'kinaesthetic, followed by visual, auditory and read and write' and stressed that educators need to be aware of different learning styles:

> One single approach to teaching does not work for every student or even for most of the students. The educators' awareness of the various learning styles of the students and their efforts towards matching the teaching and learning styles may help in creating an effective learning environment for all the students. (Kharb et al., 2013)

In addition, pedagogues need to be acutely aware of the 'biological and developmental nature of other learner's modalities' (Zajda, 2008a, b, c, p. 98). Research has shown that the link between sensory abilities (in this case colour and sound discrimination) and general intelligence (the *g* factor) is weak, suggesting that sensory abilities are quite distinct from general intelligence (Acton & Schroeder, 2001).

Effective Teachers and Teachers' Knowledge

McInerney and McInerney (2018) has defined an effective school as 'one that promotes the progress of its students in a broad range of intellectual, social and emotional outcomes, taking into account socio-economic status, family background and prior learning' (McInerney & McInerney, 2018). Slavin (2020) summarises good and effective pedagogy in term of the following four characteristics:

- Knowledge of subject and teaching resources
- Knowledge of students and their learning (these are related to self-knowledge and self-regulation)
- Critical thinking and problem-solving skills (reflection)
- Communication skills and decision making

Teachers' own understanding of the subject matter, and the extent and depth of their knowledge is significant in a constructivist classroom. Slavin's (1984) popular

model of effective teaching, useful in constructivist pedagogy, is based on 4 core characteristics:

1. *Quality of Instruction*: The degree to which information or skills are presented so that students can easily learn them. Quality of instruction is largely a product of the quality of the curriculum and of the lesson presentation itself.
2. *Appropriate Levels of Instruction:* The degree to which the teacher makes sure that students are ready to learn a new lesson (that is, they have the necessary skills and knowledge to learn it), but have not already learned the lesson. In other words, the level of instruction is appropriate when a lesson is neither too difficult nor too easy for students.
3. *Incentive*: The degree to which the teacher makes sure that students are motivated to work on instructional tasks and to learn the material being presented.
4. *Time*: The degree to which students are given enough time to learn the material being taught (Slavin, 1984).

Effective and Engaging Teachers

What makes a great pedagogue in the classroom today? This can be summarised by the following 5 main characteristics: teacher's self-efficacy, lesson structure, awareness of cultural diversity, positive motivational atmosphere, and mastery skills. These are described below:

1. Effective teachers have a sense of *self-efficacy* (the belief and confidence that they can successfully influence the learning of students)
2. Structure their lessons as constructivist and student-based learning experience (using advanced organisers, executive summaries, metacognition, etc.)
3. Sensitive to cultural diversity and employ global/cross-cultural perspective
4. Maintaining positive classroom climate and positive expectations
5. Exhibit mastery of teaching skills: high level of knowledge, excellent communicator, effective questioning and the use of motivational strategies (Zajda, 2018a).

Thus, effective teaching is shaped by the teacher's skills in regard to knowledge, organisation, clarity, classroom management, lesson planning, objectives, the use of engaging questioning techniques, and above all, showing students how to learn (see also David Fontana, *Psychology for Teachers*, 1995, p. 384). Successful teachers tend to be friendly, enthusiastic, responsible, imaginative, systematic, understanding and warm. Current research suggests that effective pedagogues are those who:

- demonstrate a mastery of knowledge
- show enthusiasm
- set *realistic* lesson objectives and outcomes
- have high, rather than low, students' expectations
- provide frequent positive reinforcement and feedback
- impose structure on the content to be covered

- present new material in an engaging, and a step-by-step manner
- have a well-managed classroom where children have the optimum opportunity to learn and interact
- maintain a positive and motivational environment
- communicate empathy and adjusting teaching to individual needs (teaching pace)
- use a variety of questioning techniques to motive students and to check for comprehension
- maintain a sense of balance (knowledge, skills, values and behaviour outcomes)
- use a variety of teaching styles and resources
- use student-centered approaches to learning (cooperative/collaborative learning strategies)
- use effective assessment tools—assessment to improve learning
- demonstrate the learning in ways that stress *higher level* skills and involve active engagement by students
- are effective classroom managers of authentic learning (see also OECD, 2013, 2019a).

Cultural Influences

Constructivism and constructivist learning theory are influenced by a variety of social, cultural, and dominant educational ideologies. Invariably, one of the unresolved issues is the use of constructivism as a learning theory in a culturally diverse classroom (Zajda & Majhanovich, 2021). Is it appropriate to use constructivist learning in such settings? Richardson (2003), using her own research findings, argues that this was an 'imposition of an inappropriate pedagogy' on minority students (Richardson, 2003, p. 1633). Both teachers' and students' attitudes towards constructivism as a learning theory can be attributed to their cultural values and beliefs about the nature of learning and teaching. For instance, in some traditional cultures, teachers are valued as masters of their knowledge and skills and are expected to teach in a curriculum and standards defined milieu. Academic performance is values above all. In other cultures, there are different pedagogical models defining performing schools.

One needs to take into account that constructivism, as a construct, in both psychological and social constructivism, has evolved epistemologically as a 'Western, liberal, and individualistic (Eurocentric)' idea (Richardson, 2003, p. 1633). Some researchers have written about 'cultural imperialism', or the imposition by one usually politically or economically dominant nation of various aspects of its own culture and ideology onto another cultures. The critique of this perspective was addressed by Bowles and Gintis (1976) in their influential book *Schooling in capitalist America*. This argument continues to be relevant.

To apply meaningfully pedagogical models that are grounded in the philosophy of social constructivists, it is important to know the premises that underlie them. First, social constructivists believe that *reality* is constructed through human

activity. Members of a society together invent the properties of the world (Kukla, 2000). For the social constructivist, reality cannot be discovered: it does not exist prior to its social invention. Second, to social constructivists, *knowledge* is also a human product, and is socially and culturally constructed. Individuals create meaning through their interactions with each other and with the environment they live in. Third, social constructivists view *learning* as a social process. It does not take place only within an individual, nor is it a passive development of behaviours that are shaped by external forces. Meaningful learning occurs when individuals are engaged with other in social activities.

To perceive constructivist learning and pedagogy critically, it is useful to contrast the two dominant approaches to classroom teaching: traditional teaching and constructivist teaching (see Table 3.1 below).

Improving Constructivist Pedagogy: Learning and Teaching

When analysing the effectiveness of constructivist pedagogy in producing the desired quality teaching and quality learning outcomes, we need to take into account students' learning strategies and positive reinforcement, the nature of teaching, specifically questioning techniques, as well as students' cultural identities, and their stages of cognitive social and emotional development. In addition, we need to add such factors as metacognition, positive reinforcement, individual differences, cultural diversity, motivational atmosphere and teachers' strategies, as well as and social and cultural factors at home, and the quality of teachers.

How do students learn best?

First, ask yourself, 'How do I learn best?'

> Do you learn better when someone tells you exactly how to do something, or do you learn better by doing it yourself? Many people are right in the middle of those two scenarios. This

Table 3.1 Differences between traditional and constructivist classrooms

Traditional classroom	Constructivist classroom
1.Teacher-dominated didactic learning	1. Learning is interactive and teachers engaged in an interactive manner
2. Students learn new textbook material by rote	2. Students engaged in meaning-making activities
3. Prescribed curriculum defines learning	3. Students construct their own knowledge
4. Students learn alone in a passive manner	4. Students learn in cooperative groups
5. Students learn for examinations	5. Students engage in self-directed mastery learning
6. Assessment to rank students, not improve learning	6. Assessment is to improve meaningful learning
7. Rigid and prescribed curriculum	7. Students' knowledge, interests and questions are valued

has led many educators to believe that the best way to learn is by having students construct their own knowledge instead of having someone construct it for them. (**Source**: http://www.ndt-ed.org/TeachingResources/ClassroomTips/Constructivist%20_Learning.htm)

This belief that the more effective way to learn in the classroom settings, is for students constructing their own knowledge, is explained by the Constructivist Learning Theory. This theory states that learning is an active process of creating meaning from different experiences. In other words, students will learn best by trying to make sense of something on their own, with the teacher as a guide to help them along the way (see also Shively, 2015).

Suggestions for Constructivist Pedagogy

- Assess/determine students' prior knowledge, understanding, skills and experiences about a concept/topic before teaching it to them.
- Encourage student critical thinking and inquiry by asking them thoughtful, open-ended questions, and encourage them to ask questions to each other.
- Encourage and accept student autonomy and initiative.
- Try to use raw data and primary sources, in addition to manipulative, interactive, and physical materials.
- When assigning tasks to the students, use cognitive and analytical terminology such as 'classify', 'analyze', 'predict', 'evaluate', and 'create'.
- Encourage communication between the teacher and the students and also between the students (cooperative groups)
- Ask follow up questions and seek elaboration after a student's initial response.
- Put students in situations that might challenge their previous ideas.
- Provide enough time for students to construct their own meaning when learning something new.

(Adapted from Brooks, J. and Brooks, M. (1993). *In Search of Understanding: The Case for Constructivist Classrooms,* ASCD) http://www.ndt-d.org/TeachingResources/ClassroomTips/Constructivist%20_Learning.htm

The above suggestions are very useful, but we still need to consider macro and micro-sociological factors affecting the teaching and learning process as a whole. There are numerous assumptions here. Specifically, we need to consider students, and their cognitive, social and emotional development, their identities, individual differences, cultural diversity, classroom environments, teachers, and schools. Together, they influence significantly the quality of teaching and learning in schools, and students' performance (Zajda, 2018a, 2021). In my graduate classes (M.Teach.), I have used some of the ideas above, employing my own synthesis of behavioural, cognitive, humanistic and social constructivism, as well as focusing on critical thinking, and critical literacy, grounded in critical discourse analysis.

Evaluation

As demonstrated above, there is a great deal of research dealing with constructivist learning teaching, and academic achievement. One of the problems with understanding and discussing constructivism and classroom application is that this particular construct draws on many diverse disciplines, including philosophy, psychology, sociology and education. This was noted by Doolittle and Hicks (2003) who stressed that constructivism, as a concept, is a diverse construct that lends itself to numerous interpretations, be they psychological, social, cultural or pedagogical:

> …the concept of 'constructivism' is diverse, with varied interpretations. This diversity necessitates that the asserting of constructivist claims be made with caution and significant forethought. (Doolittle & Hicks, 2003, p. 81)

The other issue is, that constructivism in teaching tends to be discussed as a teaching method only (a method is how?), rather than 'why'? We need to consider other parts of this curricular process, including the student's self-concept, identity, culture and the ecology of the classroom. Social and cultural differences have a significant effect on schools, teachers, students and pedagogies employed (Zajda, 2020a). The constructivist pedagogy, or any other classroom pedagogy, is likely to be affected by social, economic and cultural differences. Vygotsky's learning theory stressed the social dimension in thought and language (Vygotsky, 1973, pp. 134–137). Hence, the Vygotskian prefix 'socio' added to the term 'constructivism' indicates the acknowledgement of cultural issues in learning, as opposed to cognitive approaches to learning.

The research on constructivist teacher education by Dangel (2011), included findings, which suggested six key mediatory experiences for preservice teachers: social interaction, meaningful learning experiences, ownership, reflection, developing a personal theory of learning, and a supportive environment (Dangel, 2011). All of these principles of constructivism, especially the ones offering meaningful learning experiences, developing a personal theory of learning, and providing an inclusive and supportive environment continue to be relevant in learning and teaching globally.

One of the most serious issues with the use of constructivist pedagogies in schools arises when it is misused by teachers in their classroom environments, who do not really understand the epistemological complexity and philosophy of constructivism. The other problem is when constructivist pedagogies become the preferred method of teaching, imposed on all learners. There is no one 'right way', as Carnoy writes, 'to organize an education system' (Carnoy, 1999, p. 84). Richardson also warned us against the misuse of the constructivism pedagogy, 'when it becomes valued as best practice for everyone' (Richardson, 2003, p. 1634).

By imposing the constructivist pedagogy, as the dominant model, we may be ignoring students' cognitive, social, affective, and cultural differences and other effective pedagogical practices in improving motivation, students' engagement and academic achievement (Zajda, 2018a; Zajda & Majhanovich, 2021). Since knowledge, skills and academic performance are the most highly valued commodities in

the knowledge society globally, teachers play a significant role in this process. The quality of teaching and learning will depend, not so much on the teaching style, as on the quality of its human capital— teachers, the quality of their professional knowledge, the quality of their training, and the type of incentives available (salaries, promotion, job opportunities and rewards for excellence in teaching). These much-needed incentives would attract quality teachers to the profession, as they do in Finland and elsewhere, and increase their status and prestige in schools, and improve their capacity to generate and transmit quality knowledge, performance standards, and skills to their students in culturally and globally diverse classrooms (see OECD, 2007, 2009a, 2013, 2019a).

Conclusion

The key idea of constructivist pedagogy is that student's meaningful knowledge is actively constructed, in diverse ways, employing cognitive, cultural, affective and social dimensions, and that individual learning, in a constructivist sense, is a necessarily socially active process. This idea is most relevant to the process of creating effective learning environments in schools globally. In addition, constructivist pedagogy promotes critical thinking and critical literacy. By comparison with traditional models of teaching, it also integrates more effectively students' cognitive, social and emotional learning, offering a holistic approach in the classroom. It can be certainly used in learning and teaching as one approach, within the multiple pedagogical models and strategies, designed to maximise effective teaching, students' engagement, learning environments, academic standards and quality learning for all. Research informed teachers tend to use constructivist learning to improve meaningful and authentic learning. It is argued that the effectiveness of constructivist learning and teaching is dependent on students' self-concept, cultural identity, cognitive, social and emotional development, and students' academic achievement goals and their relevant learning strategies.