Current Theories Related to Early Childhood Education and Preschool as Frames of Reference for Sustainable Education

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Abstract

This paper focuses on different early childhood education and preschool background theories as theoretical frames of reference for sustainable education and sustainable development. In Finland, for thirty years, theoretical frames for early childhood education and preschool have been outlined through Bronfenbrenner´s ecological approach, Vygotsky´s developmental theory, didactic theories and the psychological theories of learning, among which the latest is the constructivist theory of learning. This article presents a critical survey of the abovementioned theories and stresses the issues, related to the solutions, offered to early childhood education and preschool by these theories. Finally, a basis is laid for the argument in favour of a comprehensive systems educational theory that would also respond to the challenges of sustainable education and sustainable development. The author has studied pedagogical systems thinking in the theories of history's philosophers/pedagogues.

Methodologically, the sources are approached as a textual material that is analysed in accordance with content analysis principles. While going through the texts, the researcher identifies central categories, conceptions and their meanings in these theories and makes an interpretative and representative comparison. From the constructivist point of view, the interpreter´s own historical and cultural background and pedagogical experience influence the processes.

The article is an attempt to answer the question as to how the systems character of educational thinking can be observed in these theories and how systems theory can be developed to suit the needs of early childhood education, preschool and sustainable education. Finally it will be concluded that in order to be able to make sustainable education a part of early childhood education and preschool a new versatile theoretical frame of reference should be developed.

Key words: early childhood education; preschool; primary school; sustainable development; sustainable education; Bronfenbrenner's ecological theory; Vygotsky's socio-cultural theory; didactics; constructivism; systems theory.

Introduction

The main concepts, ideas and structure of presentation are outlined in this introduction. In order to contextualise the message of this article some important issues about the author's home country Finland will be introduced at first.

In Finland *preschool* is understood as early childhood education for six-year-olds. The newest national preschool curriculum was adopted in 2000. *Early childhood education* means care, education and teaching for children from the birth to seven years of age. *Primary school* starts at the age of seven. Preschool has many things in common with the first two grades at school. In Finland s*ustainable devel-*

opment is a valuable goal also for education at day care centres and at schools. But what does the concept of sustainable development mean?

In Finland, Doctor Mauri Åhlberg has studied sustainable development and education related to it for a long time. Åhlberg (2003) writes that "sustainable development is a global goal, set in order to ensure the survival and continuation of life on earth. Sustainable development is development in which real long-term needs of both present and future human generations are met as optimally as possible. This means that not only the basic individual biological needs, but also real economical, cultural and social needs ought to be met."

Åhlberg (2003) proposes that "there are three strands in Environmental Education: 1) education and learning about environment, 2) education and learning in environment and 3) education and learning for environment. The last one comes nearest to Education for Sustainable Development. In addition to ecology, economics, quality improvement, organisational development, peace education, population education, human rights education, etc. are important aspects of Education for Sustainable Development. Education for Sustainable Development, when at its best, is integrating best theories and best practices, testing constructed new theories both theoretically and empirically when it is possible" (See also Åhlberg & Filho, 1998).

I agree with Åhlberg and I understand *sustainable education* as *education for sustainable development.* G.Lakatos (2001: 21) has also used the same concept *education for sustainable development.*

The Hungarian doctor Gyula Lakatos (2002: 20-27) has written about sustainable development and referred to some pivotal publications in this area (e.g. Csobod et al., 2001; Hopkins et al., 1996; Jakucs & Lakatos, 1990; McKeown et al., 1999; Palmer, 1998; Tilbury, 1995). *Sustainable development* is a concept that focuses the attention of human beings on the conditions of continuity of life. Even a utilitarian view of the environment requires that we should understand the principles of sustainable development, the interdependence of environment, economy and social systems, so that we could use natural resources and the environment efficiently, while preserving the homeostasis of the Earth. The society, based on a sustainable form of development, is a dynamic and a permanently changing one. While utilising natural resources, investments, technological improvements and institutional systems in the process of permanent changes in conformity with the demands of the present and the near future sustainable development is a way to satisfying the demands and hopes of the present generation without hazarding similar aspirations for future generations.

Lakatos (2002: 20-21) writes that e*ducation* is the key factor in ensuring sustainable development. It is the process of education and learning that leads to an ever-growing number of people, who are sensitive to environmental issues. *Learning*, as well as *teaching*, can be discerned so that learning is not a precondition of life, but can increasingly become one of its concomitants. To view it from a traditional aspect, the idea of "learning through life" means education outside the school system, taking place after the school is finished. It can be stated that learning is actually an endless process, having innumerable forms in human life outside the school system. Referring to Csobod et al. (2001) Lakatos writes that *education for sustainable development* trains teachers, who are capable of coupling their ecological, economic and environmental knowledge with other subjects and disciplines.

The main idea of this article is to focus the attention specifically on the area of early childhood education and preschool. Sustainable development is one of the

principles applied throughout all these educational areas. We ought to educate teachers, who are sensitive to environmental issues. They ought to be able to educate children in practice to become sensitive to nature. But the question is also - as it is said above - about theories. What kind of theories can organise the practice, theory, subjects and thinking?

During the past decades, early childhood education and preschool in Finland have been outlined mostly on the basis of several theories from developmental psychology. This article will make a reference to Bronfenbrenner´s and Vygotsky´s theories; Piaget will not be touched upon this time. Also the theories of school teaching have been applied to early childhood education and preschool in Finland. Some experts have favoured the so-called didactic theories. Lately the vogue has brought to the foreground the psychological theories of learning, especially the constructivist trends in them.

The mentioned theories rest on developmental psychology, didactics and psychology. The article features a critical attitude towards these theories because they do not by themselves represent the phenomena of care, education and teaching. Early childhood education and preschool call for a comprehensive pedagogical theory that can pertain to numerous lines of activities of the child. The theoretical state of early childhood education and preschool has a great meaning for all spheres of pedagogy, including sustainable development and sustainable education.

The author's purpose in a broader sense is to elaborate a comprehensive early childhood education and preschool theory. The primary task of this article is to assess the currently used developmental, didactic and psychological theories and point out the problems that they are not suited to answer. The other goal, derived from the first one, is to point out that the comprehensive realization of the principle of sustainable education is related to the development of early childhood education and preschool theory. This relation has to be supported by a modern theory that could well be a pedagogical systems theory.

The author has come to pedagogical systems thinking during her study of history's philosophers/pedagogues. Their thinking includes philosophy and its different parts, educational practice and its different parts, and the inter-relations between all them. Their thinking is built as a systems approach to entities and their parts. This article, though, gives just a reference to systems thinking (see Blauberg et al., 1977: 126-134; Checkland, 1985: 245-285).

Preschool today is a part of early childhood education and it is closely related to primary education. Therefore this theoretical presentation has a wide sphere of application.

U. Bronfenbrenner´s Theory and Discussion

Bronfenbrenner´s theory of ecological development (1979) has in Finland for almost thirty years been one of the most generally used theories to analyze the phenomena of early childhood education and, at the same time, of preschool. The importance of the theory of ecological development lies in the fact that personal development is seen in relation to different kinds and different levels of systems. This has introduced to the methodological principles of educational research a systems approach, according to which an object is studied as a system of its structural and functional relations (Davidova & Kokina, 2002: 14).

Bronfenbrenner (1989) has himself criticised his own theory and developed it further. For example, he makes some changes in the systems definitions. The defini-

tions are repeated here, so that the character of the theory in a renewed form is made apparent (changes in *italics*).

"A microsystem is a pattern of activities, roles, and interpersonal relations experienced by developing person in a given face-to-face setting with particular physical and material features, *and containing other persons with distinctive characteristics of temperament, personality, and systems of belief"* (Op. Cit.: 227). In this definition Bronfenbrenner emphasizes that personal features of other significant persons in the immediate environment are meaningful to the development.

The definitions of the mesosystem and the exosystem remain unchanged from 1979. "The mesosystem, comprises the linkages and processes taking place between two or more settings containing the developing person (e.g., the relations between home and school, school and work place, etc.). In other words, a mesosystem is a system of microsystems." And "the exosystem, encompasses the linkage and processes taking place between two or more settings, at least one of which does not ordinarily contain the developing person, but in which events occur that influence processes within the immediate setting that does not contain that person (e.g., for a child, the relation between the home and the parent´s work place; for a parent, the relation between the school and the neighbourhood group)" (Op. Cit.: 227).

The macrosystem definition has been changed. "The macrosystem consists of the overarching pattern of micro-, meso-, and exosystems characteristic of a given culture, subculture, or other broader social context, *with particular reference to the developmentally-instigative belief systems, resources, hazards, life styles, opportunity structures, life course options, and patterns of social interchange that are embedded in each of these systems.* The macrosystem may be thought of as a societal blueprint for a particular culture, subculture, or other broader social context" (Op. Cit.: 228).

The paradigm of Bronfenbrenner´s ecological theory (1989: 189-193) is based on Kurt Lewin´s (1935: 73) classical formula according to which behaviour emanates from the person and the environment. Lewin's formula is the following: B=(PE) [Behaviour is a joint function of person and environment].

Bronfenbrenner (1989: 190) has in a provocative way substituted development for behaviour, reaching the following formula: D=f(PE) [Development is a joint function of person and environment]. Though Bronfenbrenner mentions the change, he does not give any reasons for that even in his critical article.

The revised formula for the development theory is Dt=f (t-p)(PE)(t-p). In the formula the attention is drawn to the results of development that will only be reached in a certain time ´t´. The sign ´t-p´ refers to the period, or periods, during which the joint forces, emanating both from the person and the environment, were operating over time to produce the outcome existing at the time of observation. Note that, on the right-hand side of the equation, the subscript (t-p) appears not only for the substantive (PE) term but also for the operators ´f´. This means that the process producing development change is not instantaneous, but one that takes place over time, and, like the other terms in the equation, can change over time (Op. Cit.: 190).

The problematics of orientation towards the future and in setting goals for development is not entirely clear. It can also be questioned, which are the features of the person and the environment that result in certain development in a certain time. For development, significance is detected in the person's activities, roles and interactional relations, and also in the same features of surrounding persons. An-

swers to this question have been looked for in numerous and extensive developmental studies that at times are hard to comprehend. The answer that is most difficult to reach is concealed in the letter ´f´. Bronfenbrenner asks, what is the process that is to be created by the person and the context. Bronfenbrenner (1989: 221) is not content with earlier answers, and defines the study of this issue as a new challenge.

Brofenbrenner´s theory is a *theory of development* rather than behaviour, but still not a theory of education or training. This can be seen even in the title of Bronfenbrenner's book (1979) and, for instance, in several subtitles of his critical article (1989: 189, 193, 226). Bronfenbrenner (1989: 188-189) himself has also said that many of the central concepts of his theory have an empty content.

Bronfenbrenner's theory is a systems theory. Ballantine (1989: 14) has interpreted the systems theory not as a theory but as a model. Olsen (1978: 22) says that "a systems model is not a substantive theory of social organization. Rather, it is a highly general, content-free conceptual framework within which any number of different substantive theories of social organization can be constructed." Olsen (1978:21) defines a system in the following way: *"A system is a bounded and unified set of interrelated, dynamic, stable processes."*

Education and teaching are the phenomena, different from development; moreover, even education and training are themselves different phenomena. They are, though, dependent on development and influence it. When thinking of early education and preschool age children, it is also necessary to consider the care taken of them, because it is a significant factor in a child´s development. The basis for philosophies, goals, contents, methods, environments, means and interactions must be found in some place other than the theory of development in question. Bronfenbrenner´s theory cannot offer a holistic model for sustainable education, training or learning.

L. Vygotsky´s Theory and Discussion

L.Vygotsky´s theories are based on the dialectical philosophical tradition of the 19th century. Vygotsky´s main achievement is the developmental psychology theory, a theory of development of psychological functions (Lehtinen & Kuusinen, 2001: 121). Vygotsky´s linguistic and developmental psychology thinking marked the beginning of the so-called socio-cultural theory. The description in his theory of development and learning has brought about the concept of the so-called zone of proximal development. He named the process of internalisation as the central mechanism of development and learning, on this he later based his cultural development genetic law. Vygotsky also introduced into psychology the term ´activities´ and laid foundations for the theory of psychological activities (Op., Cit.:122-125).

"The central issue in Vygotsky´s theoretical thinking is the *development of qualitatively new ('higher') psychological functions in the history of cultures and ontogeny of children in the process of organisms' (i.e. culture or child) goal-directed acting upon their environments"* (Valsiner, 1987: 64). Vygotsky underlines the social roots of development. He makes difference between two types of social factors: 1) cultural-historical and 2) interaction of individuals. These are intrinsically related. Cultural factors comprise institutions, working tools and sign systems, created previously by people, and that have developed differently in different cultures. The interaction and development of individuals can only be understood

in relation to these historic-cultural systems of social relations. Vygotsky uses the term ´social situation of development´ assuming that a social situation determines the forms and the path that the child will follow in the course of development and learning. This way, the social becomes the individual. The environment´s qualitative changes lead to psychological changes (Vygotsky, 1930; 1978: 52-57).

Vygotsky tries to point out that language has a most significant meaning for the development of human mental activities, direct social interaction and independent solution finding. Vygotsky´s theory for describing development and language is called the socio-cultural theory (Vygotsky, 1962; Vygotsky, 1978: 56-57; Vygotsky & Luria, 1994: 99-174).

According to Vygotsky´s socio-cultural theory, learning is seen as a development influencing ways for passing on to the child the historically moulded cultural factors through interaction with a more capable peer. Through this interaction children and young people are socialized to culture. On the other hand, cultural meanings themselves are constantly undergoing change, part of which is due to the innovations that children introduce into their (and their parents') senses during their development (Valsiner, 1987: 69).

According to Vygotsky, in the child´s learning the zone of proximal development (ZPD) can be observed. This is the stage of the learning process, when an individual is unable to solve the problems alone, but needs the help of a more experienced person. From this point of view, good learning environment offers in a socially supported environment the tasks that are placed at the zone of proximal development. Vygotsky maintains that in teaching specific learning promotes a more general cognitive development that makes it possible to apply the acquired knowledge. Teaching supports learning most effectively only then, when it creates a proximal development zone, and this is done while it happens to take place in the initial stage of developing a new skill. The zone of proximal development is built in interaction between a child and a grown-up, a child and a more experienced child or a child and a stimulating object environment and tools. In the course of interaction the so-called process of internalisation takes place. The idea of internalisation is based on Vygotsky´s genetic law of cultural development. According to it every activity in the child´s development appears twice or as two ´plans´, first, as a social category, human interaction, and, second, a psychological category, inside an individual. The child learns pivotal cultural skills from other people, but he/she is active, learning through one´s own activities. Learning is a necessary and a universal aspect in this way of development of human psychological activities (Valsiner, 1987: 64-66; Vygotsky, 1981: 163).

Vygotsky studied the problem of human consciousness and concluded that it develops as the result of a historical and social process, in culture-related human activities, and the use of tools. Most often used forms of activities encompass play, work action, goal-oriented learning and studying. The development of language and thinking is related to action. Reality is reflected in activities, but so that it is refracted through a word and the word becomes a factor, refracting the reality. Vygotsky wrote at the end of his book about thought and language that a meaningful word is the microcosm of human consciousness (Vygotsky, 1962).

According to Davidova & Kokina (2002: 15), Vygotsky is one of such theoreticians, who make the pedagogical researcher think of the wholeness approach, invariable and changeable processes, as well as dominating and subordinated parts of a system. Research should be focused at such circumstances and the whole sys-

tem and the parts of it that determine the results and are related to the best results of activities. Davidova and Kokina clearly detect a systems way of thinking in Vygotsky´s mind. Vygotsky´s theories are clearly useful also in handling the problematics of sustainable development and sustainable education.

Vygotsky´s theory is *the theory of development.* It comprises views on principles of learning and teaching, but it is not a straightforward pedagogical theory for systemizing the phenomena of education and training. In Finland, Vygotsky´s theory is applied to these phenomena by certain psychologists, as well as developmental and educational psychologists, though somewhat less by education researchers and practical educators and teachers.

When studying Vygotsky´s theory of sustainable education, a conclusion could be made that in his theory development and learning are moulded from the products of historical evolution. But, what to do then, when the past pushes to the fore such a global or a social problem that calls for changes on the part of humankind as a whole, societies and individuals? For the human being, evidently the most difficult processes are those of denial and giving up. It is not enough that humans develop in accordance with the normal developmental psychology processes, but even the already existing psychological structures and spirituality of individuals (Belousa, 2002: 3-12) should change. The values, goals, contents and sensibility of learning should be found in the image of a changed and better future, but not only in psychological internalisation of the historical process.

Maybe the deepest human need for change is connected to the need to survive. But, does everybody have such a need, is there knowledge and consciousness? It is necessary to determine the values, make an all-round analysis of lifestyles, activities and emotions. Consciousness, responsibility and action are important in education and in life. Adults must also create an image of the ecological future by the force of thinking. Children can learn together with adults, if only the adults and the grown-ups are ahead of children in the zone of proximal development.

Bare psychological analysis of development, learning and teaching is not enough. It is absolutely necessary to focus on the subject matter and action content of these processes. In order to outline the educational and didactic process, a theory for outlining these phenomena is needed.

Didactics, Constructivism and Discussion

Didactics is an integral part of pedagogy with a long historical background in science and history. In this paragraph a short incursion into didactics is given by the means of general definitions. Later on a closer look will be taken on how didactics is related to early childhood education and preschool in Finland. In this connection learning theories will be reviewed, among which, presently, the most popular one is constructivism, with behaviourism being in the background. In conclusion there will be some evaluation.

Didactics (Brotherus, Hytönen & Krokfors, 2002: 105) is a discipline, the study of teaching. The development of didactics is closely connected to the history of development of school teaching. The term ´school pedagogy´ refers to the relationship between school and society. Didactics is both a philosophy of thinking as well as the source for generating a theory and theoretical models. It is at the same time both models of the teaching-studying-learning process and a meta-theory for interpreting and comparing separate models.

Didactics is a doctrine about teaching. It offers guidelines for the best possible way for reaching through teaching the goals, set by the curriculum. The teacher, using these guidelines, possibly, sets for the activities with preschool and school children and the substance content of the issues that they have handled together. Didactics is about decisions to be made in connection with drawing up a curriculum and putting it into practice. At a closer look at preschool and primary education curricula it becomes evident that their education-norming, knowledge and learning conceptions are value-oriented. Practical didactics is always about guidelines, it is normative (Op. Cit.: 103-116).

Teaching is a comprehensive process, it is planning, action and evaluation (Brotherus, Hytönen & Krokfors, 2002: 113). It means determining the goals, content and methods. Goals are always related to the starting values. The knowledge massive may be based on sciences or branches of knowledge, it may be tradition, experience of understanding, know-how or concealed knowledge. Both the teachers and the pupils may have their own views on things; this also influences teaching and learning. There are different teaching methods; they are not goals themselves, but a means to reach the goals. Didactics can be split into subject didactics and general didactics (Brotherus, Hytönen & Krokfors, 2002: 114-116). The frame of reference for general didactics is formed by the ´interaction outlining models´, the ´method consciousness describing models´ and the ´models for studying persons involved in a teaching situation´ (Kansanen, 1992). Kansanen (1991) has studied about the teachers' and next teachers' pedagogical thinking. He says that "pedagogical thinking is a basic skill behind a teaching of teachers and it is also a basic problem of teacher education" (Op. cit.: 251).

One example about teachers' thinking is a way in which teachers think about a child. In the on going Finnish debate on preschool and early childhood education there is a confrontation between adult-centred and child-centred teaching. Brotherus, Hytönen and Krokfors (2002: 50-59) have expressed their opinion in their book. According to some views the term ´teaching´ in itself denotes behaviourist and adult-centred, even adult-led activity. The holders of these views maintain that one should talk in a constructivist sense about child-centred or even child-inspired learning pedagogy, where children themselves can define their goals, choose the contents and methods. In such a case a curriculum would be impossible to draw up in beforehand. The contrary argument underlines that didactics as a field of knowledge is not tied to any specific conception of learning. The term ´teaching´ is necessary and teaching should be planned, it should have goals, but still it can be conducted on the basis of a particular philosophy or theory of learning. Teaching should not only be individual, but collaborative as well. Openness and making curricula public will ensure social control (Op. Cit.: 50-59).

At these times there have been attempts to partially outline preschool in Finland by the means of didactics, developed on the basis of school teaching. Concerning preschool and primary education, the pedagogical frame of reference is nevertheless different, because the social functions of school education and early childhood education are different. In spite of that we have seen no debate on the suitability of school didactics to preschool. Children´s age and developmental differences must also be considered when talking about general school, preschool and primary education (Härkönen, 2002).

Teaching is closely related to knowledge, *learning* and theories of learning. Constructivist theory is currently popular as a basis for understanding learning.

Knowledge is seen neither absolute nor objective, stress is put on the changing nature of knowledge and subjectivity of knowledge, generated in the process of learning (see Puolimatka, 2002).

The notion is that a child constructs knowledge through learning and that earlier knowledge structures channel the adoption of new knowledge. A child learns most of all when basic needs are satisfied and the conditions are safe. Learning is the result of child´s own activities. Children learn in social interaction with adults and other children, often through play. A child is motivated by the interest towards an object and an urge to know. Individual variations have an impact on learning and development (Bredekamp & Rosegrant, 1992).

Constructivist learning is an unending renewal of the relationship between an individual and the environment. The constructivist teacher must know the principles of the constructivist theory of learning in order to be able to undergo a constant change in relation to the learners, the environment and oneself. The curriculum is a framework, where the goals and the conditions for reaching them are scrutinized and questioned (Prawat, 1990).

On some occasions it has been noted that human learning is such a multi-faceted phenomenon that for its perception a number of theories is needed, no one theory alone can provide the answers. Moving towards a more mature understanding, theories must not be listed in a strict order of preference (Puolimatka, 2002).

To my mind the use of ´teaching´ is somewhat problematic. It should clearly be separated from the terms of pedagogy and education. Teaching should be treated as a part of education and a factor of the pedagogical process. A truly significant and acute problem arises, when the conception of school teaching is applied for outlining preschool that belongs to the wholeness of early childhood education. Early childhood education and preschool education traditionally have been very versatile in their goals, contents, methods and modes of activities. In preschool, teaching is a method among others; such as basic activities like elementary care, play, work, celebrations and outings. Alongside these the didactics of teaching becomes understandable and is distinguished from play pedagogy, work pedagogy and the principles related to other methods. If the focus is put only on teaching and didactics, then there is a danger that some activities, which are natural for children, and theories, related to them, will disappear from preschool education. I suppose that many kinds of children's activities and the corresponding theories are important also for sustainable education or training.

Constructivism is a theory on *learning*. Learning is a psychological process within a human mind. The term ´learning´ has in some contexts been replaced by the term ´teaching´ that has led to the evident confusion of these two phenomena. Teaching is an institution, created in organised societies, it realises important individual and social development functions. Moreover, the relationship between learning and teaching to playing, working, taking care of oneself, celebrating and going out-of-doors, and the corresponding pedagogical categories should be understood. The nature of different kinds of children's activities and the corresponding theories should be separated. A child's learning is different in different activities. Learning gets constructed from different kinds of learning experiences.

Still, the psychology-forwarded learning theory based view might draw too much attention away from all other even larger issues that make a strong impact on the process of education and teaching, like world outlooks, human, knowledge, education and other conceptions. The philosophers/pedagogues like Fröbel, Steiner,

Montessori, Dewey, Neill, Freinet, Malaguzzi and others have in addition to learning and teaching also spoken of these large issues. They are especially important in facing the big global problems.

Discussion

Early childhood education and preschool have received strong theoretical stimuli from developmental psychology. This is true of Finland even today and evident also in this article. Developmental psychology theories are represented here by the often referred to theories of Bronfenbrenner and Vygotsky. They both focus their attention on human development and both have introduced a systems dimension to their ideas. It may well be that Vygotsky´s theory gives a more varied picture of this system and its character rather than Bronfenbrenner´s theory. The constructivist theory is a wider way of interpretation and it has been used to outline a myriad of phenomena. The constructivist learning theory is a psychological way of interpretation for outlining learning. All these theories make a great number of references to education and teaching, as well as to early childhood education and preschool education.

Yet the abovementioned theories do not represent pedagogy or education and do not, therefore, interpret these phenomena. Didactics as a ´science´ belongs to pedagogy and is devoted to one part of education, namely teaching. What is still lacking is a theory that would be pedagogical and treat the phenomena of education widely, including caring, education and teaching and having a connection to both developmental psychology and psychology.

The analysis featured in this article leads to the conclusion that those more pointed questions can be directed at the mentioned theories: Bronfenbrenner´s ecological theory is a developmental theory, but what is the process that a person and the environment must initiate for development to take place? In what way do caring, educating and teaching fit into this process and which characteristics they must have? Vygotsky´s socio-cultural theory is a developmental theory, but how is the future-changing education and teaching process initiated and carried out? And how does this theory cover caring, educating and teaching? The constructivist theory is applicable to learning, but how are caring, education and teaching verified? Didactics is a theory for outlining teaching, but how do caring and education fit in this field and how is the relationship to development verified? In the area of early childhood education and preschool it must be remembered that education consists of many methods as play, work, celebrations, excursions, basic activities and also teaching. These are also educational areas of their own.

Figure 1 shows a tree that pictures the author´s understanding of the situation with early childhood education and preschool in Finland. The roots of the tree are the historic heritage. The four bunches of branches stand for the theories that have been actual during the past decades and that have been referred to in this article. Their order, size, place or shapes do not have any specific meaning. The text briefly recalls the name of the theory, the field of science and a few general critical remarks from the direction of pedagogical science. The top branches carry certain issues from lower levels and questions from other fields of pedagogy that are waiting for answers and a new theoretical frame of reference that is supposed to be the pedagogical systems theory. It is expected that it will help also to outline and develop the spheres of sustainable development and sustainable education in a better way. The

theories in the four groups of branches are in a constructivist train of thought expected to at least partially serve as building blocks for creating a new theory that is still lacking (Figure 1).

The theories of developmental psychology, learning and didactics offer the subject matter and channels of interpretation that are necessary for education and teaching. The theories presented, though, leave without due attention certain issues that are vital from the point of view of education and teaching. Even if they offer the construction blocks for education, they are not sufficient for explaining the entire phenomenon of education. This way, among the issues that are left open according to this article, is care that in the life of preschool children is still very important and belongs to education and even has elements of teaching. The applicability of didactic principles of teaching in the case of preschool children should be studied more carefully than it is done in general school teaching. Mutual relationships between education and teaching, and care, as well as the differences between them should be studied. Teaching should not be held as the only and not even the main method of educating preschool children, but the use of all early childhood education methods should be pointed out. The comprehensive pedagogical process of education must be recognized with its goals, contents and many different methods. Sustainable education ought to be connected to all the parts of the whole process.

The systems and comprehensive character of Vygotsky´s and Bronfenbrenner´s developmental theories is a productive feature of these theories. But because they are not educational theories and because the phenomenon of education emerges in the result of interaction of a number of factors, there arises the need for a systems educational theory. History´s great educational philosophers, who were engaged in practical work while elaborating new theories, have described the nature of the educational phenomenon as being of systems character. Sustainable development and sustainable education deserve to be put on a firm pedagogical theory foundation.

Figure 1. Theories of development, learning and teaching as construction blocks for the lacking educational theory

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