

Two Project Methods: Preliminary observations on the similarities and differences between William Heard Kilpatrick's project method and John Dewey's problem-solving method

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Abstract

The project method became a famous teaching method when William Heard Kilpatrick published his article 'Project Method' in 1918. The key idea in Kilpatrick's project method is to try to explain how pupils learn things when they work in projects toward different common objects. The same idea of pupils learning by work or action in an environment with objects also belongs to John Dewey's problem-solving method. Are Kilpatrick's project method and Dewey's problem-solving method the same thing? The aim of this article is to analyze and prove that Kilpatrick's project method differs radically from Dewey's problem-solving method.

Keywords: William H. Kilpatrick, John Dewey, learning, project method

Introduction

The purpose of this article is to examine William Heard Kilpatrick's (1871–1965) and John Dewey's (1859–1952) ideas of the pupil's learning process and the teacher's teaching activity in different common objects of work, *projects*. It is generally thought that Kilpatrick's and Dewey's thinking in educational philosophy is very close to each other (see e.g. Tenenbaum, 1951, p. 305; Beineke, 1998, pp. 102, 105, 107, 391). A special conformity is seen between Kilpatrick's project method and Dewey's problem-solving method. Kilpatrick (1918; Kilpatrick, 1926) points out this conformity when he elaborates his project method. The starting-points of Kilpatrick's project method derive, however, from the psychological thinking, *connectionism*, of Edward L. Thorndike (1874–1949), the classic educational psychologist, and from motivation psychology, while Dewey's educational philosophy is based on a transactionalist approach to the individual's learning in different contexts of activity. The above starting-point connected with the different premises has not been taken into account in concept-analytical examinations of the similarities and differences in Kilpatrick's and Dewey's educational philosophy. The scientific activity of both Kilpatrick and Dewey lasted for more than 50 years

and included various phases in the development of their educational philosophical thinking. This is why my article does not discuss Kilpatrick's or Dewey's educational philosophical production as a whole, as my concept analysis is aimed at the ideas connected with educational philosophy in Kilpatrick's essay entitled 'Project Method' (1918) and his book on the project method entitled *Foundations of Method; Informal Talks to Teaching* (1926), and in Dewey's books *How We Think* (1910 [MW6]) and *Democracy and Education* (1916 [MW9]).¹

Kilpatrick and Dewey

According to John Beineke (1998, pp. 400–402), Kilpatrick's educational philosophical thinking cannot be understood without Dewey's philosophy. Dewey is indisputably the leading figure of American progressive pedagogy. Kilpatrick and Dewey were friends and worked together for more than 50 years at Columbia University in New York. Kilpatrick ended up thinking at a very early stage in the early 1910s that Dewey's educational philosophy opens up very poorly to researchers interested in educational philosophy and to people involved in practical educational work. Kilpatrick therefore decided that he should become an interpreter of Dewey's educational philosophy to make it better known.²

What are the differences in the educational philosophical thinking of Kilpatrick and Dewey? According to Beineke (1998, p. 113), Daniel Tanner and Laurel Tanner, in their book entitled *History of The School Curriculum* (1990, p. 160), present two premises that distinguish between Kilpatrick's and Dewey's educational philosophical thinking; firstly, Kilpatrick's idea of learning with the project method is based on Thorndike's educational psychology, connectionism, and is thus different from Dewey's thinking of the learning process. Secondly, Kilpatrick's idea of the teaching process in his project method is centred on the pupil or child, thus promoting the activity of the pupil above that of the teacher. In Dewey's educational philosophy, the teacher has a more focal position and meaning in the pupil's learning process.

Two elements of the different foci in 1) learning theoretical and 2) child-centred educational thinking separate the educational philosophies of Kilpatrick and Dewey from each other. The purpose of my article is to show analytically how, as a consequence of the two above-mentioned premises, Kilpatrick's project method differs from Dewey's problem-solving method. In this way the common idea stressed by Kilpatrick (1918; Kilpatrick, 1926) in several of his writings, i.e. that his project method derives from Dewey's problem-solving method—reflective activity—is not valid.

Kilpatrick's Project Method

I will first discuss Kilpatrick's project method, presented in 1918 in his essay 'Project Method'. The project method quickly attracted worldwide attention. Kilpatrick's (1918, p. 320) aim is to try to find a teaching method that takes into account the general psychological rules of law in the pupil's learning process (1) and is also ethical and democratic in nature (2). The teaching method should combine both the social situation and the individual attitude at the same time.

The essential idea in Kilpatrick's (1918, p. 321; Kilpatrick, 1926, pp. 66–67, 200–201; see also Tenenbaum, 1951, pp. 143–144) project method is connected with the pupil's desire, ability and motivation to execute systematic projects, in accordance with his or her own goals. Kilpatrick defines a project as follows:

Postponing yet a little the more systematic presentation of a matter, let us from some typical instances see more concretely what is contemplated under the term project or hearty purposeful act? Suppose a girl make a dress. If she did in hearty fashion purpose to make the dress, if she planned it, if she made it herself, then I should say the instance is that of a typical project. We have a wholehearted purposeful act carried on amid social surroundings. That the dressmaking was purposeful is clear; the purpose once formed dominated each succeeding step in the process and gave the unity of the whole. That the girl was wholehearted in the work was assured in the illustration. That the activity proceeded in a social environment is clear; other girls at least are to see the dress All of the foregoing have been acts of individual purposing, but this is not to rule out group projects: a class presents play, a group of boys organize a base-ball nine, three pupils prepare to read a story to their comrades. It is clear then that projects may present every variety that purposes present in life. (Kilpatrick, 1918, p. 321)

So, the nature of Kilpatrick's project method has two dimensions; first of all, a pupil's activity aiming at a certain purpose is always a project or purposeful act (Kilpatrick, 1918, p. 322; see also Waks, 1997, p. 396). The fact that the pupil can act towards a given goal always requires that the pupil is aware of the goal that he or she is supposed to reach. On the other hand, the pupil also needs to have a motivation to aim at a given goal by planning his or her own activity and to act in practice in accordance with the project that he or she has planned. Secondly, the project method is most often a social event in nature. In a classroom the pupils can make observations of the other pupils' projects, but in accordance with the principles of the project method, it is above all a matter of being able to identify in the pupils' work as a group a conscious aim, a motive for activity, a project plan made as groupwork, a collaborative working method for practical activity in the group.

The general principles of the project method described above also constitute Kilpatrick's (1918, p. 322) ideal of democratic citizenship. A democratic citizen is a determined, active, morally responsible individual in his or her actions, capable of planning and carrying out both individual and collective projects that aim at a better life (Kilpatrick, 1918, p. 322; see also Beineke, 1998, p. 103). It is Kilpatrick's (1918, p. 323; Kilpatrick, 1926, pp. 13, 110) idea to introduce democratic activity as an essential principle of teaching, whereby the working methods of schools would be consistent in relation to democratic society. Democracy, teaching and learning are thus connected with each other as a principle of both activity and ideology.

The Theory of Learning in Kilpatrick's Project Method

Kilpatrick's (1918, pp. 323–324; Kilpatrick, 1926, pp. 22–23; see Beineke, 1998, p. 107) project method is based on a theoretical learning approach that has its origins in the

psychological thinking, *connectionism*, of Edward L. Thorndike, the classic educational psychologist. Kilpatrick's conception of learning involves the idea of a certain developmental curve in an individual's learning. An individual's learning ('laws of learning') is always a process based on a stimulus and response, in which the response produced by the stimulus changes the nervous system. In a certain situation the stimulus that caused the response produces bonds and an emergence of various connections in the nervous system, i.e. learning. The changes thus caused in the nervous system result in the individual learning.

According to Kilpatrick (1918, p. 324; Kilpatrick, 1926, p. 28), the things learnt by an individual can be seen in that in certain situations the individual is ready to behave in a certain way and in others in a different way. The individual's readiness to behave in a certain way is dependent on whether the consequence of an act of conduct produces satisfaction for his or her needs. If his or her behaviour produces satisfaction (or disappointment), the activity has had an effect on the individual.

As Kilpatrick (1918, pp. 324–325; Kilpatrick, 1926, pp. 25–30, 70) points out, the human race's intellectual abilities make it possible for an individual to be able to direct his or her activities toward goals that satisfy him or her. It is specifically activity oriented towards a goal that finally produces a satisfaction of the individual's needs that can produce learning. Learning takes place in such a way that the readiness in the nervous system to achieve a goal gives rise to individual activity towards the desired goal. If the objective is reached, changes occur in the activity of the nervous system, which results in learning from the individual's point of view. Kilpatrick expresses the issue described above as follows:

These facts fit well with the generalization that man's mental powers and capacities came into being in connection with the continual attaining of ends demanded by the life of organism. The capacity for 'set' means in the case of man the capacity for determined and directed action. Such action means for our discussion not only that (objective) success is more likely to result, but that learning take better place. The bonds whose action brought success are by resulting satisfaction more firmly fixed, both as distinct bonds separately considered and as a system of bonds working together under the 'set'. Set, readiness, determined action, success, satisfaction, and learning are inherently connected. (Kilpatrick, 1918, p. 325)

And satisfaction means learning. (Kilpatrick, 1926, p. 63)

Learning is connected with an individual's readiness to try to act consciously in relation to the goal that he or she has set for himself or herself. Setting the goal for activity³ (1), the tools (thinking) to act towards the goal (2), the individual's practical activity to achieve the goal (3), success in the practical activity (4) that produces in the individual satisfaction for the achievement of the set goal (5), enable learning (6). Underlying learning there is the idea that the individual is motivated and in control of his or her own resources to achieve his or her goals and to learn things. (Kilpatrick, 1918, p. 325; Kilpatrick, 1926, p. 3; see Beineke, 1998, p. 103.) Kilpatrick's (1918, p. 325) example of motivated learning is connected with a process in which the pupil builds a kite. The

starting-point is that the pupil shall have a motivation to build a kite and make it fly (1). To achieve this goal, building the kite in the right way requires knowledge and skills of how to build it (2). The pupil thinks about the characteristics of the kite for his or her activity to achieve the goal to be controlled (3). Having made the kite function as desired, the issues related to building the kite produce satisfaction in the pupil (4). As a result of the process described, learning takes place (5). Kilpatrick describes the relation between motivation, volition,⁴ the goal of the activity and learning as follows:

This purpose is but the 'set' consciously and volitionally bent on this end
The purpose thus supplies the motive power, makes available inner resources, guides the process to its pre-conceived end, and by this satisfactory success fixes in the boy's mind and character the successful steps as part and parcel of one whole. The purposeful act does utilize the laws of learning. (Kilpatrick, 1918, p. 325)

From the pupil's point of view, Kilpatrick (1918, p. 333; Kilpatrick, 1926, p. 214; see Beineke, 1998, p. 102; Waks, 1997, pp. 396–397, 399) crystallizes the project method in four different principles that follow each other in a phase-theoretical manner: 1) determination of the goal of the activity, 2) planning and 3) execution of practical actions to achieve the set goal, and 4) evaluation of the results of the project. This constitutes the *pupil's* activity in order to achieve a certain goal. Kilpatrick puts the theoretical idea of the project method in this way:

... purposing, planning, executing and judging. It is in accord with general theory here advocated that the child as far as possible take each step himself. (Kilpatrick, 1918, p. 333)

Kilpatrick's Project Method, Teaching and School

How can the teacher's teaching activity be understood in relation to Kilpatrick's project method? According to Michael Knoll (1995, p. 312), Kilpatrick's project method focuses on activity directed at the learner's own goal in learning, and thus the meaning of the teacher's teaching activity remains unclear in the project method. It is the main idea in the project method to improve the child's mental development as the most important principle of teaching. According to Knoll, however, this leads to an unresolved situation about the possibility of the teacher's teaching activity, as the project method is only built on the pupil's own interests. Kilpatrick (1918, pp. 327–328) considers, however, that it is the teacher's duty to support the learning process rising from the pupil's own interests and achievements, i.e. direct or indirect guidance of the pupil's project.

It is the teacher's duty to produce events that motivate the pupils. It is possible for a pupil to learn if the teacher is capable of evaluating the pupil's situation and giving the pupil a motivating task, a project. At the same time the teacher needs to give the pupil's project as much freedom as possible (Kilpatrick, 1918, pp. 329–330; Kilpatrick, 1926, pp. 106, 127, 209; see also Beineke, 1998, p. 108; Tenenbaum, 1951, pp. 155, 177).

In addition to individual pupils, the teacher should also be able to evaluate social situations. When new projects are planned, the teacher is responsible for a social and democratic viewpoint in the projects. It is thus the teacher's duty to evaluate the

applicability of the projects to moral social life, democracy, yet in such a way that the teacher's teaching activity corresponds to the demand set for the project, i.e. the pupil's genuine interest in the task proposed by the teacher (Kilpatrick, 1918, p. 330; see Tenenbaum, 1951, pp. 178–179). A special problem encountered by the teacher is how to maintain the pupil's interest in the project as long and purposefully as possible (Kilpatrick, 1918, p. 331).

The project method represents orthodox learning theory to Kilpatrick, and it is therefore natural that he thinks that the principles of the project method shall also provide the basis for practical school teaching. This is why Kilpatrick (1918, p. 334, see also Beineke, 1998, p. 108; Tenenbaum, 1951, p. 144) presents in his essay on the project method, based on progressive pedagogy, a typical requirement of a complete reform of the school, meaning a child-centred teaching method, the changing of classrooms and school architecture to be compliant with the new teaching methods, new kinds of textbooks and learning environments, as well as curricula formulated according to the new requirements.

Dewey and Reflective Thinking

The learning theory of Dewey's educational philosophy is based on the concepts of growth, emergence of working habits, experience and creativity. The fact that a growing person invents and learns new things means growth. Dewey (MW9, pp. 50–59; see also Allan, 1996, p. 458; Campbell, 1995, pp. 134–137; Moore, 1961, pp. 227–228) refers to the working habits learnt by a human being with the concepts of plasticity, habit and growth. Plasticity refers to the human ability to learn through experience and to take into account previous experiences and change one's action models. When action models remain unchanged, the result is a certain routinized way to act. Meanwhile growth is an endless and repeatedly restarting individual—and also educational—process that constantly leads to new ways of action. Growth is understood as something that people do. A human being grows in a situation in which plasticity makes it possible for ways of action to emerge and for them to change or develop continuously. If plasticity disappears, the learning of new ways of action also vanishes, and the individual stops growing.

Growth is based on individual experience. According to Dewey (MW9, p. 146), experience always contains an active and a passive element. Experience emerges in a situation where the individual functions actively in relation to an object in the environment. The passive element of experience contains the feedback, the consequences arising from the experience that the individual observes. In the context of the individual's experience it is possible for him or her to discover something in the experience and thus learn something new. A thing learnt by experience means something to the individual.

Growth and experience are the cornerstones of Dewey's learning theory, and inter-mediating factors in the origin of an individual's thinking. The individual grows when he or she experiences a thing and changes his or her way of action into some new way of action as a result of the thing that he or she experienced. From the individual's point of view, the new thing that emerged in experience contains a meaning. According to Dewey (MW6, pp. 272–273), meaning is a central factor in thinking when new things are

discovered in an activity. The meanings arise in the individual's thinking, when he or she understands and discovers things in the activity. The discovery of meanings presupposes an ability in the individual to interpret and explain a new thing in the relation between the individual and an object in the environment. Meaning in a conceptual form arises through the individual's experience, when the characteristics of an object in the environment are interpreted and transformed into a verbal form (Dewey, MW6, pp. 280–281, 314–315, 391).

In his book *Democracy and Education* published in 1916, Dewey (MW9, p. 19) outlines the concept of meaning from the viewpoint of social activity as follows: meaning arises in social activity in a situation where the characteristics of an object in the environment are organised as functional consequences, as meanings in an activity between two individuals. When a verbal expression is connected with a meaning, the individuals remember the meaning connected with the concept. Dewey's example involves the meaning of the word 'hat'. When individuals—such as an adult and a child—use the object in the environment—i.e. the hat—in a certain way, they express the meaning connected with the hat by, for instance, putting the hat on their heads, and by indicating at the same time that they 'put the hats on their heads'. In this way the word 'hat' means something. A word that does not refer to anything is meaningless (Dewey, MW9, p. 20).

The meaning produced in an activity that the individual has connected with a verbal expression is a central issue in the emergence of thinking. Thinking is about an ability to use language. This is clearly shown in Dewey's idea of reflective activity. In his book entitled *How We Think* (1910), Dewey structures the thinking of the individual, the pupil ('A complete act of thought') into five different phases. According to Dewey (MW6, pp. 236–242), the pupil's thinking as a reflective activity is logically divided into five different phases. 1) The pupil observes a problem in his or her activity ('a felt difficulty'). 2) The pupil defines the problem in the activity ('its location and definition') and 3) considers various possibilities to solve the problem in the activity ('suggestion of possible solution'). 4) The pupil outlines a solution to the problem in the activity relying on his or her own thinking and ('development by reasoning of the bearings of the suggestion') 5) tests his or her idea experimentally to solve the problem ('further observation and experiment'). The first phase of reflective thinking in which the pupil encounters the problem means a situation in which the pupil's activity stops or the activity cannot be continued for some reason. In the second phase the pupil structures the problem into a conceptual form. This is only possible insofar as the pupil is in possession of the concepts related to the activity. In the third phase, the pupil starts to consider various alternatives based on his or her own thinking to make the problem in the activity disappear. In a situation where the pupil has formulated an idea—or a supposition, conjecture, guess, hypothesis, and (in elaborate cases) theory, as expressed by Dewey—to solve the problem in the activity, the pupil moves to the fourth phase of reflective activity. Relying on the hypothesis that he or she has formulated, the pupil can try to solve the problem by testing the hypothesis in his or her own practical action. The fifth phase of reflective activity is formed through practical experimentation.

By reflective activity connected with human thinking, Dewey (MW6, p. 243) means a situation in which a pupil learns something new after a test, an experiment made on the

basis of his or her own hypothesis. The logic of reflective thinking thus proceeds in such a way that after coming across a problem, the pupil tries to formulate conceptually the issues related to the problem, thus directing his or her own activity towards the problem based on his or her own thinking. Having encountered the problem relying on his or her own hypothesis, a solution to the problem may appear, something new and previously unknown, with the help of the pupil's practical activity.

Education and the Pupil's Thinking

Thinking is based on a pupil's ability to use language. Thinking is connected with the pupil's verbal activity in such a way that the pupil's activity in relation to an object in the environment produces a meaning, if the pupil is capable of interpreting the functional consequence, the meaning connected with the object in the environment in the relationship between the pupil and the environment. When the meaning is linked to a verbal expression, word or symbol, the pupil acquires the tools to retain the language connected with the activity in his or her mind. Through verbal activity he or she can examine the problem arising in the activity based on his or her own thinking and formulate hypotheses through which problems in the activity can be solved. The connection between language and thinking is central to reflective activity, intelligent thinking. This is the very reason why Dewey emphasises in education the fact that the educator should help the pupil to form a relationship between meaning and language.

We can identify three levels in Dewey's educational philosophy on which the educator—such as the teacher—tries to direct the growing person's, the pupil's, learning process, or growth. All the levels of the teacher's educational activity are about the educator's interpretation of a pupil's activity. The basis for the teacher's educational acts is provided by the teacher's interpretation of the pupil's activity and of the direction in which the pupil is actively aiming through his or her growth. On the basis of his or her interpretation, the teacher tries to change or transform the characteristics of objects in the pupil's environment. Underlying Dewey's educational philosophy we have the idea of the non-causality of the teacher's educational activity in relation to the pupil's growth. The teacher's educational activity may produce, or may fail to produce, growth in the pupil's activity. The teacher's interpretative-transformative educational activity always takes place in a certain environment.

The first phase in the teacher's educational activity is connected with the guidance of the pupil's non-verbal or preverbal activity. Dewey (MW9, pp. 29, 188) points out that the pupil's own active involvement in relation to the environment is an important factor that makes his or her growth possible. It is not possible to control the pupil's learning process externally, as the pupil's learning process is enabled by his or her own active involvement that is directed by the pupil's own spontaneous activity. It is the teacher's duty to interpret the orientation of the pupil's active involvement, and to transform objects in the environment to be carried out on its basis, so that whatever the pupil is striving at in his or her growth is realised. The example presented by Dewey (MW9, p. 308) is connected with a situation in which spontaneous moving of the legs by the growing person can, supported by the educator, lead to him or her learning to walk.

The goal of the second phase in a teacher's educational activity is, according to Dewey (MW9, pp. 36–37, 150), to integrate the pupil into the sphere of the jointly shared world of meanings. The achievement of a joint world of meanings connotes that the pupil must understand the functional consequence, the meaning, connected with an object in the environment in social activity, and join this meaning as a verbal expression. In this way the pupil starts to understand social activity and becomes able to direct his or her own activity consciously and purposefully. The pupil must interpret his or her own activity in relation to the social object in the environment, and transform the invented meaning into a verbal form. The above is about the *pupil's* viewpoint on his or her process of knowledge creation. This makes it possible for thinking to emerge (Dewey, MW9, p. 152). From the *teacher's* point of view, it is about two forms of activity through which an effort is made to structure the pupil's experience in a verbal form. First of all, it is up to the teacher to transform the contents in the teaching activity into a concrete form such that can be experienced by the pupil. This transformation takes place on the basis of the teacher's interpretation of where he or she thinks the pupil's growth will be directed (Dewey, MW9, pp. 189–191). Secondly, changing the environment to be such that the pupil can personally experience an aspect of the teacher's teaching activity is connected with a situation in which the teacher attempts, on the basis of his or her own interpretation, to transform the pupil's experience into a verbal form. It is the teacher's duty to structure the pupil's experience in a verbal form (Dewey, MW9, p. 242).

In the third phase, the teacher's function is to try to enable the emergence of reflective thinking in the pupil. According to Dewey (MW9, pp. 159–160), the five-phase model of human reflective thinking is a method for the educator by means of which reflective thinking arises in the growing person. The realization of thinking as described by Dewey produces an intelligent way to learn things in the growing person.

The learning of reflective thinking at school starts with a situation in which the teacher structures a problem that the pupil can experience personally (Dewey, MW9, pp. 161–162). According to Dewey (MW9, p. 242), the problem in the pupil's activity (1), conceptualization of the activity related to the problem in the form of a hypothesis (2) and the testing of the hypothesis (3) constitute the method that the teacher should follow in his or her teaching activity. As the learning of a new thing by the pupil is connected with a thing invented from the pupil's experience, the teacher should try to change and transform the pupil's experience into a verbal form, so that the pupil can formulate hypotheses about the problem in the activity and thus deliberately test hypotheses to solve the problem (Dewey, MW2, p. 285). Dewey's educational philosophical thinking in the third phase of teaching activity is related to direction of the pupil's practical activity in such a way that it is up to the teacher to produce educative experiences for the pupil such that are connected with the problem in the pupil's activity. It is the teacher's duty to change and transform the pupil's new experience into a verbal form so that the pupil is capable of restructuring a new hypothesis for the new problem in the pupil's activity. The problems observed in the activity can be solved by directing one's activity based on the hypothesis towards the problem, by experiencing the new thing connected with the problem in the activity, and by verbalizing this new thing. By means of reflective thinking, it is possible to give rise to democratic activity, as efforts are made to solve intelligently the problems in collaborative activity.

Similarities and Differences in Kilpatrick's and Dewey's Educational Philosophy

Kilpatrick's project method and Dewey's idea of pupils' reflective activity contain a similarity that is related to the motive of the pupil's thinking. In both Kilpatrick's project method and Dewey's problem-solving method, the pupil acts with a sense of purpose to achieve the goal set for the activity. The difference between the educational philosophies of Kilpatrick and Dewey arises in the way in which the aspiration towards the desired goal is explained (1) and what the purpose of this activity is (2).

I discuss next learning theory in Kilpatrick's project method based on motivational psychology, and the circular reasoning related to it. Kilpatrick's idea of a pupil's learning in the project method can be described as follows:

Figure 1 shows that Kilpatrick's learning theory is based on five elements. A pupil motivated for a project 1) is willing to achieve a certain goal through his or her activity ('set', 'the mind-set-to-an-end', 'purposing'). To achieve this goal, the pupil 2) has the ability to plan consciously his or her own activity in such a way that ('readiness', 'planning') 3) practical activity to achieve the goal is possible ('success', 'executing'). Kilpatrick makes the assumption that an activity cannot be motivated without the pupil knowing what the object of motivation is. The planning and practical realization of an activity is not possible, either, without a conscious goal that the pupil is aiming at. If the pupil wishes 4) to evaluate something, the pupil must have a reference point for what is being evaluated, i.e. the goal set for the activity ('satisfaction', 'judging'). If the pupil achieves the goal that was set in such a way that the achievement of the goal produces satisfaction, we can, according to Kilpatrick, speak about 5) 'learning'.

What does learning mean? Learning can be understood to mean that new ways of action are formed for the pupil or learner as a result of his or her own activity. Learning is always something new that did not exist before. It is about a new way of action into which some new, previously unknown thing has been connected as a result of a previous activity. If the pupil persists in carrying out his or her earlier way of action along with the activity, nothing new has emerged in his or her action through the activity performed. No learning has taken place in the pupil.

How can Kilpatrick's approach to learning theory based on motivation and volition explain learning, the emergence of a new and previously unknown thing? Kilpatrick cannot avoid ending up in circular reasoning on learning. It is not consistent that an effort is made to explain learning in such a way that setting a goal for the activity produces something new, learning, if the starting point is that the end result is known when the goal for the activity is determined. As the student knows—subject to his or her

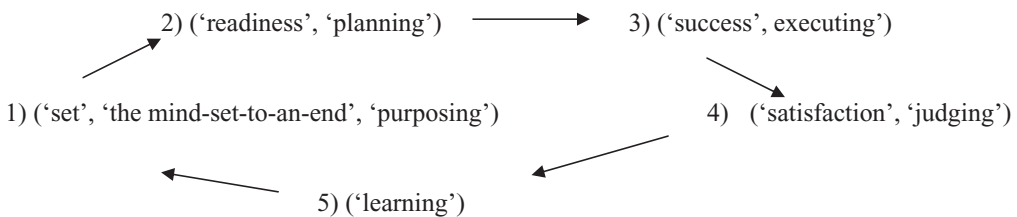


Figure 1: Kilpatrick's idea of learning based on motivation and volition

own motivation and volition—when the goal of the activity, the project, is set, what he or she is aiming at, the end result of the pupil’s activity, must be known at the start of the project. If the pupil is motivated to build a kite and he or she does build a kite, the result of the activity was given at the start of the project. Thus nothing new can arise such that is not based on the starting point of the project. It is not possible to explain the emergence of learning, something new. Figure 1 shows to us this circular reasoning on learning theory, which applies to both individual and collective learning.

How does Kilpatrick think that learning takes place? As a result of a project that is carried out, new ways of action arise in the pupil in such a way that nervous activity as an internal activity of the pupils produces new ways of action, i.e. learning. The way in which learning takes place is, to Kilpatrick, a metaphysical process in which an internal element of the pupil produces learning for the pupil, a change of his or her ways of action, after the project is completed. This is in conflict with the principles of Kilpatrick’s project method, as the project method cannot produce new things and learning by the pupil, but—as was stated above—a circle that repeats itself. Despite this conflict, Kilpatrick thinks that learning is a change in the pupil’s central nervous system that is based on a stimulus and response. The existence and change of moral and democratic characteristics in the individuals in a community is based on changes in the central nervous system, i.e. on learning.

How does Dewey solve the problem related to the pupil’s learning? In Figure 2, we see the main principles of reflective activity as suggested by Dewey.

Figure 2 illustrates the relation between Dewey’s reflective thinking—i.e. the problem solving method—and the invention of a new thing. When a pupil encounters a problem (1) he or she tries to define the nature of the problem (‘a felt difficulty’) (2) and consider various possibilities (‘its location and definition’) to solve the problem (‘suggestion of possible solution’) (3). The attempt to solve the problem in the activity takes place on the basis of hypotheses (‘development by reasoning of the bearings of the suggestion’) (4), as the pupil consciously steers his or her own activity conceptually and tests his or her own hypothesis based on a practical test, an experiment (‘further observation and experiment’) (5). If the pupil encounters and finds a new thing when testing the hypothesis that is not based on previous knowledge, it is possible to learn a new thing. This requires that the pupil finds and creates for himself a new thing in the relationship between the pupil and the environment (‘discovery’) (6). The finding of a new thing

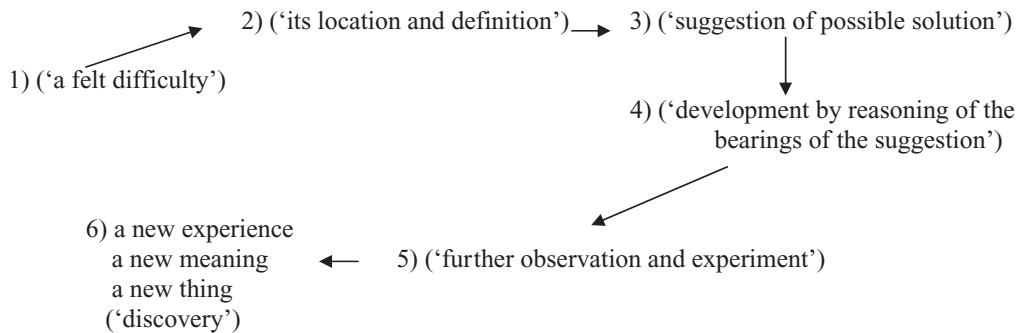


Figure 2: Dewey’s problem-solving method

presupposes an experience that has not taken place earlier. A new experience can give rise to a meaning. When a verbal expression is linked to the meaning, it becomes possible for the pupil to understand the new thing conceptually.

How is learning possible in Dewey's learning-theory thinking? Differently from Kilpatrick, Dewey manages to avoid circular reasoning on learning theory. Dewey thinks that knowledge that arises along with a new experience—in phase 6—is not known at the beginning of the reflective activity. In the five-phase model on pupils' thinking and problem solving, the pupil's learning takes place after testing a hypothesis, after an experiment, with the pupil inventing and creating for himself a new thing in his or her new experience. How is this learning of a new thing possible? The pupil's learning is based on the invention of a new thing in the experience, which is from the learner's point of view an internal process of the pupil that takes place in the relationship between the pupil and the environment. In this way Dewey is driven into metaphysics in his explanation of the pupil's learning, as learning something new is an internal, non-transparent process to the pupil. Learning is based on the pupil's ability to experience a new thing (1), to interpret the thing that was experienced (2) and to transform the thing that was experienced (3) into a verbal form (4). Dewey's learning theory is based on an internal interpretative-transformative process in the pupil and it is therefore speculative and aesthetic.

How can Kilpatrick's and Dewey's learning-theory ideas be related to the teacher's teaching activity? Kilpatrick's project method focuses on the pupil's self-direction. Assuming that the way in which the pupil works meets the theoretical learning principles of the project method, the teacher need not intervene in the pupil's goal-oriented work. This is because the pupil is directed spontaneously to the goals of his or her work. The above also implies that the teacher's teaching or guidance cannot have any significance from the pupil's point of view, as the learning-theoretical basis of the project method is phase-theoretical and thus teleological. The learning theory of Kilpatrick's project method does not involve any built-in idea about the effectiveness of the teacher's teaching activity in relation to the pupil's learning. A special problem in terms of the teacher's teaching is to understand the pupil's learning as an internal neurological process. As learning is an internal process connected with the pupil's neurological activity, the teacher cannot know how the pupil knows, or the teacher's contribution to it remains vague. The teacher cannot know which thing in teaching has contributed or not contributed to the pupil's learning. Although the pupil's learning is understood as a process based on a stimulus and response, a more important part in the pupil's learning is played by the pupil's neurological processes, his or her neurological changes. In this way the meaning of the interaction between the teacher and pupil remains unclear. On the other hand, Kilpatrick points out that it is the teacher's task to produce processes that motivate pupils, so that interesting projects emerge for the pupil. This starting-point conflicts with Kilpatrick's theoretical premises: if the teacher can influence the pupil's learning process, the pupil's learning cannot be a closed phase-theoretical learning theory or an invisible neurological process internal to the pupil.

In Dewey's educational philosophy, teaching activity is based on the teacher's interpretative-transformative activity. The pupil's learning is connected with the relationship between the pupil and the environment, where the pupils can experience and learn

things. Dewey thinks that a pupil's learning can be seen in his or her new ways of action, as the pupil's learning is not something only connected with his or her internal activity, but something taking place in the relationship between the pupil and the objects in his or her environment. As the pupil's learning is connected with the relationship between the individual and the environment, the teacher may teach by interpreting the direction of the growing person's growth and by changing the characteristics of the objects in the environment, so that it becomes possible for the pupil to learn. Differently from Kilpatrick for whom learning is an internal neurological change, Dewey thinks that learning takes place in the relationship between the pupil and the environment, thus making it possible for the teacher to contribute to the pupil's growth.

Conclusions: Two Project Methods

On a general level, Kilpatrick's project method and Dewey's problem-solving method share the idea of the pupil trying to act in accordance with a certain way of action to achieve the goal set at the start of an activity, the learning of a new thing. This idea of a form of activity achieving a certain goal has led to the fact that Kilpatrick's and Dewey's ideas of teaching a way of action to a pupil are understood to mean basically the same project method. The purpose of my article has been to show that this is not the case. Kilpatrick's and Dewey's starting-points in terms of learning and teaching theory differ from each other in that Kilpatrick's project method ends up in circular reasoning in its explanation of learning (1), while Dewey's problem solving method ends up in the metaphysics of the pupil's internal creativity (2). Kilpatrick's and Dewey's learning theories differ radically from one another, and both of these learning theories come concept-analytically to the conclusion that the pupil's learning process cannot be explained. Kilpatrick emphasises in his project method the pupil-centred approach to such an extent that the learning theory of the project method leads to anti-pedagogy, as the project method is development-theoretical in nature (3). On the other hand, Kilpatrick understands the pupil's learning as an internal neurological process, in which case it remains unclear how the teacher can contribute to the pupil's learning process (4). Differently from Kilpatrick, Dewey does not end up in anti-pedagogy or emphasising radical pupil-centredness in his educational philosophy, as he thinks that in the interaction or transaction between the teacher and pupil the teacher can interpret and transform the pupil's environment time and again, so that whatever the pupil aspires to through his or her activity and own growth is realized (4). Kilpatrick's project method and Dewey's problem-solving method are not the same thing considering their basis in teaching and learning theory. We therefore need to declare that they are two different project methods, Kilpatrick's project method and Dewey's method of problem solving.

Notes

1. In the case of Kilpatrick this means that his educational philosophical thinking connected with the principles of the project method is placed in the times from the late 1910s to the early 1930s. So far as Dewey is concerned, we are dealing with his 'mid-period' educational philosophical thinking, starting with the pragmatism of the Chicago School in the late 19th century and ending in the late 1920s.

2. An excellent example of how Kilpatrick tried to make Dewey's educational philosophical thinking known is provided by Kilpatrick's 1922 articles entitled 'Subject Matter and the Educative Process-I', 'Subject Matter and the Educative Process-II' and 'Subject Matter and the Educative Process-III'. Kilpatrick (1922a, Kilpatrick 1922b; Kilpatrick 1922c) discusses Dewey's educational philosophy in these articles. Kilpatrick uses Dewey's concepts of experience, educational experience, growth and education as the continued 'reconstruction of experience' in the sense that can be identified in Dewey's educational philosophy.
It is also interesting that in these articles Kilpatrick does not discuss at all the concepts typical of his project method. Although the articles discuss the relation between teaching and learning, Kilpatrick does not connect Dewey's view on educational philosophy with the teaching and learning theoretical principles of the project method.
3. Kilpatrick (1926, pp. 25–26) uses the concept of 'set' to describe the setting of a goal for an activity. According to Kilpatrick, the concept of 'set' can also be described with the concepts 'the mind-set-to-an-end' (*ibid.*).
4. Of the individual's voluntary actions.

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