Situated Learning and Galperin's Notion of Object-Oriented Activity

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Abstract

Situated learning theories are largely based on the idea that the knower cannot be separated from the known, i.e. the individual, its context, and its activity in the environment mutually constitute each other. This way of attending the issues of cognition and learning has been heavily criticised by many researchers since sociocultural aspects such as social interaction and tool use are not believed to explain the issues of transfer and generality. The approach developed by Russian psychologist Piotr Galperin (1902–1988), on the other hand, provides substantial support for situated learning theories and should, thus, be considered a valuable complement to the theoretical framework of situated learning.

Introduction

The paradigm shift from cognitivism (e.g. Pylyshyn, 1990) to situated cognition (e.g. Hutchins, 1995; Clark, 1997; Clancey, 1997) has also triggered an overall rethinking of educational practices and research. Rather than viewing learning as exclusively taking place in people's minds, many researchers now describe learning in terms of a process emerging from activity in a subjective and socially constructed world. Especially the theoretical framework of *situated learning* is strongly associated with this new perspective on learning and knowledge appropriation. However, unlike traditional learning theories (e.g. Gagné, Yekovich, & Yekovich, 1993) which have gained widespread acceptance in the scientific world and in public, situated learning has been less successful in gaining support of from teachers, educators and educational researchers.

The lack of acceptance has several reasons. Situated learning theories are closely related to the philosophies of situated cognition and have emerged in objection to cognitivist conceptions in educational thinking (e.g. Brown, Collins, & Duguid, 1989; Rogoff, 1990; Lave & Wenger, 1991). From the situated perspective, traditional learning theories are insufficient for dealing with the phenomenon of learning. When considering learning as the result of internal, innate processes, it has been argued, it is impossible to understand how people learn, how they make use of knowledge within and outside schools. Instead researchers need to consider learning and knowledge appropriation in terms of *interactions and meaning-construction within a sociocultural context*. The strong emphasis on the social and tool-mediated nature of learning has not met with enthusiasm in the scientific community (e.g. Anderson, Reder, & Simon, 1996). It has been argued that situated learning, by downplaying internal cognitive processes, actively disregards the very essence of human learning. Subsequently, it fails to "provide . . . a broader framework for understanding and improving educational practice" (Greeno, 1997, p. 15, describing the *advantages* of social-cultural learning theories). More exactly, considering cognition exclusively from a situated learning point of view sidesteps the issues of *generality* and *transfer*, which puts situated learning theories at the risk of becoming "educationally trivial" for teachers and educators (Kirshner & Whitson, 1997, p. 12).

From action to thought

The underlying tenet in situated learning, that learning is the result of social activity in context, has to a large extent its origins in cultural-historical psychology, an approach developed more than a half century ago by L. S. Vygotsky (1932). Central to this approach is the notion that cognition and learning are culturally and socially mediated by material and psychological tools and result from meaningful activity. The idea of higher mental processes being a function of and created through socially meaningful (mediated) activity was further explored by Leontiev (1978) and Galperin (1992a, 1992b). The research carried out by Galperin is of special interest in this paper since his work provided an important step to further investigation and understanding the process of internalisation. Galperin's approach shares many similarities with the theoretical framework of situated learning, but his approach is, in contrast to most of them, *also* concerned with how socially and culturally mediated activity is transformed into mental activity. In other words, his approach demonstrates that it is possible to explain *both* internal, mental processes *and* the situated and sociocultural nature of learning. This has also been recognised by Arievitch and colleagues (Arievitch, 2003; Arievitch & Haenen, 2005) who consider Galperin's approach a necessary and long missing link between sociocultural learning theories and traditional, more cognitivist approaches to learning.

However, while many researchers consider the sociocultural aspects of learning in Galperin's theory as a welcome addition to traditional theories, they do not seem to bother with the underlying assumptions and philosophies which often are quite contrary to cognitivist (learning) theories. Galperin's approach appears to have much more in common with the conceptions

of cognition and learning within the situated learning framework. However, research in situated learning has addressed questions concerning the nature of activity, learning and knowledge appropriation from a wide diversity of perspectives and viewpoints. Thus, further research is necessary to clarify and understand how and to what extent Galperin's approach can be integrated with situated learning. This paper aims to explore in some more detail the similarities, but also substantial differences, between Galperin's view on learning and central conceptions within situated learning. Furthermore, practical implications of Galperin's approach for university teaching are also addressed.

Situated learning

Despite individual differences in approaches to situated learning (e.g. Brown et al., 1989; Rogoff, 1990; Lave & Wenger, 1991), there are some central themes common to the situated learning literature. Since situated learning theories are closely related to situated cognition, they seem, at least at first glance, heavily oppose to dualistic assumptions, according to which the mind can be described and understood in isolation to its environment. Cognition is situated since it emerges from the interaction between agent and environment, and therefore sociocultural aspects and the situated nature of cognition and learning activity have been emphasised. Consequently, social interactions with other individuals and the active use of external structures in the environment are considered an important part of situated learning activity.

Cultural-historical conceptions of activity, learning and development have had important implications for the situated learning framework. The notion of activity, subsequently, is essential for situated learning theories which is reflected in concepts such as participation and apprenticeship. These concepts present the particular interests of researchers in various disciplines (e.g. Brown et al., 1989; Rogoff, 1990) and emphasise the indivisible character of learning and (work) practice, as well as the social, distributed nature of learning and knowledge (Lave, 1988). The focus in situated learning is, in other words, almost entirely on *social-cultural* aspects of learning activity which, as already mentioned in the introduction, gives rise to one or another question.

One of the main problems in situated learning is, according to its critics, the view on cognition and learning as being distributed across people and artefacts; looking at these processes exclusively from a sociocultural point of view, it has been argued, completely sidesteps the issues of generality and transfer. The position taken in situated learning, however, receives substantial support from the work of Galperin (1992a, 1992b). The cornerstone in his approach, *the conception of object-oriented activity*, strongly indicates that social interactions with other people and the use of different kinds of tools is a necessary precursor condition for all forms of mental activity. In contrast to cognitivist approaches to cognition and learning where human activity is occurring in and surrounded by an external, objective world, and our thoughts the result of something internal, Galperin considered activity a process in which an internal plane of consciousness is formed (Wertsch, 1985). This position puts Galperin's approach much closer to situated perspectives on cognition and learning because dualistic views on cognition (mind) and activity (body) are seriously questioned. Galperin's approach, thus, can be seen as a logical and valuable complement to situated learning theories as he explicitly and particularly addressed the internalisation of socially and culturally mediated human activity.

The concept of object-oriented activity

The idea of higher mental processes being a function of and created through *socially meaningful mediated activity* is fundamental to cultural-historical psychology (Galperin, 1992a; Leontiev, 1978; Vygotsky, 1932). The phenomenon of human activity was approached from different research directions. Vygotsky (1932), for instance, was mainly interested in exploring the importance of symbolic tools and social interactions in human thinking, while Leontiev (1978) was more interested in studying the formation of activity, which is reflected in the concepts of *activity*, *action*, and *operation*, and corresponding, *motive*, *goal*, and *conditions*. The underlying idea is to describe activity in terms of socially meaningful behaviour which is centred around shared goals and conditions. However, Leontiev's concept of meaningful activity was, according to Galperin (1992a), limited since it was given "a psychological description with regard to only one aspect – motivation" (ibid., p. 42). As a consequence, the *object-related operational content of activity* was largely overseen, that is, that mental activity in fact is highly dependent on external, object-related activity (Galperin, 1992a).

One of the main problems was, according to Galperin (1992a), the consideration of object-related activity as a non-psychological process, and mental activity, in contrast, as a non-objective process. As long as the "external remained external, and the internal remained internal" (ibid., p. 44) and no explanation was given for what exactly took place in the process of internalisation – as defined by Vygotsky – the underlying dualistic views on the mind would not change.

Galperin's approach to activity, however, has not received as much attention as Leontiev's and Vygotsky's theories, mainly because it has been largely associated with "concrete educational procedures", despite the fact that Galperin himself considered his work an important step to further investigation and understanding the origin and content of human functioning (Gindis, 1998).

This is also in line with Arievitch and Stetsenko (2000) who described Galperin's theory (1992b) as an advanced account of cognitive development in relation to learning as it placed the origin of thinking in the concrete, observable activities of the child. Galperin's approach to activity was to describe the internalisation of socially meaningful activity by means of six different steps, that is, he was concerned with how mental (orienting) activity, with its origin in material (practical) activity, evolves

through formal and informal instruction by adults in the zone of proximal development (ZPD). In addition to Vygotsky who strongly emphasised the importance of speech, signs, and symbols as unique human tools in practical activity, Galperin recognised and explored the role of human (practical) activity in thinking. Galperin strongly believed that practical human activity constitutes the basis for the development of semiotic means, and described learning in terms of an *internalisation of action to thought*.

The underlying assumption in Galperin's approach to learning and activity is that there are two different types of actions: (1) an ideal action that is performed in the presence of objects and (2) an ideal action that is carried out separately, without any presence of objects (Arievitch, 2003). While the first type of actions is characteristic for different types of animals, the second type of actions can according to Arievitch only be found in humans and constitutes the basis for a wide range of cognitive phenomena (e.g. 'mental models', inner speech). Therefore, despite the fact that *all* actions are object-related, only the second type is performed without a physical execution. This, however, does not mean that the second type of action is carried out according to some internal (mental) laws; rather, it is performed according to the laws of the external world, that is, material forms of external activity is gradually transformed into mental forms of that same external activity.

The idea of material action being *the* fundamental basis of all forms of mental action is highly consistent with findings within *embodied cognition* research (e.g. Hesslow, 2002; Barsalou, 2003; Grush, 2004) because this assumption suggests that mental processes are deeply rooted in sensorimotor activity.

Stepwise learning

The central idea in Galperin's theory (1992a, 1992b) is to describe the internalisation of an object-oriented activity (the formation of mental activity) as a process in which an action passes through a series of stages. At each of these stages, an action is carried out in a new form and undergoes changes in several directions. Galperin conceptualised a process of internalisation in which an action must go through six different steps before becoming a complete mental action (Galperin, 1992b). However, the realisation of an action usually depends on a number of varying factors such as the learning task and the learner's prior knowledge and experiences, sometimes leading to situations in which the sequence of the steps can be changed or a certain step is rather unnecessary. The stepwise teaching strategy, accordingly, serves as a guideline for teachers rather than as an instruction manual that needs to be followed in every single detail. Galperin, after having eventually abandoned the idea of a strict sequence, particularly emphasised four distinctive phases (steps) of the teaching-learning process: (1) orientation, (2) communicated thinking, (3) dialogical thinking and (4) acting mentally.

In the *orientation phase*, the new action to be learned is brought to the learner's attention, that is, the learner gets to know the task and its conditions. The orientation phase, accordingly, is designed to provide the learner with all the information necessary for a successful action execution. The information is given to the learner in form of an orienting chart ('cheat chart') where aspects such as the intended output, means and objects of an action are explicitly described. Working with such a chart guarantees that the action in question is initially realised on the materialised level.

After the learner has learned to use action specific objects and representations of them, the action is separated from its materialised forms in the second phase (*Communicated thinking = overt speech*). Instead, overt or social speech is frequently used. The learners are encouraged to communicate about the action, and to think aloud while executing it without the use of objects and its representations. The execution of the action at this stage is neither material nor completely mental "since the pupil is not yet able to perform it silently 'in his mind' " (Galperin, 1969, p. 260). At this stage, the use of overt speech is not only an opportunity for the learner to execute an action without external (materialised) tools, but also to communicate with others, that is, to establish a social relation with others and to execute an action in a way which can be understood by others (Galperin, 1989).

The phase of *dialogical thinking* is seen as a complement to the previous phase. By encouraging the learner to establish a dialogue with him/herself, a transformation of the structure of speech takes place. As pointed out by Haenen (2001), "the psychological significance of an audible image lies in the fact that it is more stable and stronger than a perceptual image, which should evolve on the basis of merely a materialised action without the subsequent overt speech" (p. 164). During dialogical thinking, an action is mastered on a more routine level, resulting in an *almost* automatic action.

At the final stage (*Acting mentally*), an action has become a pure mental act. Instead of controlling the outcomes of single operations, the teacher now focuses on the final outcome of the action. The action, to put it in Haenen's words, "has been transformed into a mental phenomenon and has become a chain of images and concepts" (Haenen, 2001, p. 164). The action now has an orienting function as it is mentally performed by means of mental images and concepts reflecting real-life situations. These concepts help a person to deal with similar and differing situations on the basis of previous experiences.

The contributions to situated learning

Situated learning has almost exclusively concentrated on the role of human caretakers and other individuals in learning without addressing questions regarding how these social-cultural processes transform into mental processes. The research carried out by Galperin, on the other hand, has been instrumental in revealing the interdependency of socially and culturally mediated activity and mental activity. Galperin's approach, thus, can be considered a crucial link between situated learning and cultural-historical conceptions of (mental) ac-

tivity. Moreover, Galperin's interest in transforming his theory into a teaching framework is also what distinguishes his research from most research within situated learning. Being more concerned with a better understanding of human cognition and learning in general (cf. Clancey, 1995), most researchers advocating the situated and sociocultural nature of learning have successfully bypassed questions regarding the implications of situated learning theories for educational practice. However, if the theoretical framework of situated learning aims to provide an *alternative* framework for understanding and improving educational practice, researchers within situated cognition and learning need to consider and examine the implications for educational practice in schools and other educational organisations. Here, Galperin's stepwise learning strategy could serve as a useful complement for 'practical research' within situated learning.

The approach developed by Galperin (1992a, 1992b) bears, for instance, many similarities to the approach introduced by Collins, Brown, and Newman (1989). In both cases, learning is described as a process in which observation, guidance, and practice are essential elements, and which is characterised by transparent access to learning strategies and methods. However, the approaches of Galperin (1992b) and Collins et al. (1989) differ in some aspects as Galperin's teaching strategy is characterised by precise steps that are introduced to and need to be carried out by the students, while Collins *et al.* emphasise the visible access to strategies and methods in more general terms. Having access to the implicit knowledge of teachers and instructors, in Collins' terms, means mainly the observation of the instructor's actions in a community of practice. This is also why learning here is viewed as highly context-dependent, which according to Collins et al. (1989) sometimes makes necessary a de-contextualisation of knowledge. Galperin, on the other hand, did not distinguish between 'real-life situations' and 'classroom situations' because, according to him, the transformation of material actions to mental actions is the process in which knowledge is *actively created* and being generalised. The tools and information given to the students contain, in other words, situation-specific knowledge, but once a material action has transformed into a mental action, the transformed (and thereby generalised) knowledge can be used in different situations.

Still, there appear, at least at first glance, to be some aspects in Galperin's theory that are not consistent with situated learning theories in general. Galperin's approach is, according to Arievitch (2003), largely based on the assumption that humans attain and use different kinds of mental representations, which is an assumption that seems to be very close to traditional perspectives on learning and activity. However, as already pointed out, dualistic perspectives on human thinking are seriously challenged by Galperin, which is why Arievitch and Haenen (2005) view on his approach as a link to cognitivist learning theories can be questioned. Moreover, the role of mental representations in human cognition is also intensively being discussed in a wide range of research fields within situated and embodied cognition (e.g. Clark, 1997; Svensson & Ziemke, 2005). Given the strong emphasis on material action (sensorimotor activity) and its striking similarities with the theoretical framework of situated learning, Galperin's approach can, thus, rather be considered an important link between the research fields of situated learning and embodied cognition (cf. Rambusch & Ziemke, 2005).

Stepwise learning in undergraduates

In order to explore a) what a situated learning perspective would be like in practice, and b) how, and to what extent, Galperin's stepwise teaching strategy could be applied to university teaching, a small case study was carried out at the University of Skövde, (Sweden). The participants were 13 undergraduate students in the cognitive science program. The students participating were enrolled in the course "Situated cognition" in the course of which they were introduced to central terms and ideas within the theoretical frameworks of situated and embodied cognition. During a lecture that specifically focused on situated learning and Galperin's theory, the students were engaged in an exercise. Its purpose was threefold. Firstly, the students were given the opportunity to experience Galperin's theory in practice. Secondly, they were to gain a better understanding of central concepts in situated cognition; concepts such as 'situated' and 'context' are usually understood by students at a fairly general level, without necessarily grasping their hidden, underlying meanings. Thirdly, as researchers, we were interested in the outcome of the exercise.

The preparation of the exercise was a challenge because there is not much material to rely on, since most studies carried out with the aim of testing the implications of Galperin's approach for educational practice focus on children.[1] Another problem we had to deal with was the content of the orienting chart. Most orienting charts are quite complex and usually contain a huge amount of information about how an action is to be executed, in what order, and why. Since we were dealing with undergraduates, the information given to them had to be at a more abstract level.

The exercise was divided into four different stages, each of which corresponded to one of the stages described by Galperin. The students were divided into groups of three (four) to make sure all students would engage in the group's discussions. The students particularly appreciated the opportunity to *actively* work with central concepts within situated cognition while discussing them with their peers. The material they were provided included, among other things, a number of quotes reflecting different perspectives on situated cognition and learning, pictures of various real-life situations, and a list with central concepts that can be found in the situated cognition and learning literature, that is, the students

[1] Galperin and colleagues carried out more than 800 experiments and studies in many different places (Haenen, 1996). Most of this research, however, is only available in Russian, and those few studies translated into English focus primarily on children.

worked with concepts such as 'situated' and 'context' on a material basis while a number of questions helped them orient their actions. To make sure that all students would take part in all four steps, they were asked to write down their thoughts and ideas at stage three and four. The material written by the students was collected after the exercise and reviewed later. The students' thoughts and reflections were put together in one document and eventually returned to them to provide feedback and to assist their learning processes.

Conclusions

This paper has shown that the theoretical framework of situated learning and the approach developed by Galperin (1992a) to a considerable extent share the same underlying assumptions concerning the role of sociocultural aspects in human thinking. There are, naturally, also some differences, but most of them are complementary rather than contrary to each other, Galperin's teaching strategy being one example. His approach, thus, can be considered a good starting point for future educational 'practice research' within situated learning. The emphasis here is on *starting point*, because there are many learning aspects that only have played a minor role in Galperin's theory, e.g. the role of human caretakers and other individuals in a community of practice. These aspects, on the other hand, have exhaustively been explored within the theoretical framework of situated learning (e.g. Rogoff, 1990; Lave & Wenger, 1991), and would add a more specifically social dimension to Galperin's ideas.

The exercise carried out at the University of Skövde suggests that Galperin's stepwise strategy also can be used for teaching at college and university level. Students' reflections on this exercise (and the course as a whole) indicated that it was a success, despite problems encountered before and during the exercise. One of the students commented, for instance, that the repetition during phases two and three helped her attain a better understanding of several aspects of situated cognition. However, there were also several limitations of which the limited amount of time was a crucial one. The students had to go through all four steps within two hours, which did not leave much room for deeper, theoretical reflections. At the time, the lecture schedule was set, and changing it was not an option. Another serious limitation was the character of the case study; the fact that is was an exercise rather than a pure case study made it difficult for us to study and outline in greater depth and detail the ongoing activities, learning processes and outcomes. It became also clear that the role of the teacher is crucial for the outcome of such an exercise; it was impossible to provide the students with all information necessary in one single 'cheat chart'. More detailed explanations are needed sometimes, and not all knowledge held by a person can be written down, but becomes only 'visible' during people's interactions with each other (cf. Lave & Wenger, 1991).

Future work

With the classroom study in mind, future research needs more closely to address questions regarding the issues of generalisation and transfer by outlining the role of actions and the mechanisms involved in the transformation of material activity into mental activity (cf. Martin & Schwartz, 2005). Further empirical investigation is also necessary to study in greater detail how Galperin's approach can be translated into a concrete and effective educational program.

Moreover, the central assumption in Galperin's approach is that *all* mental activity is based on material activity which implies that we, in one way or another, always go through the steps described by Galperin. So far, most studies have concentrated on applying the stepwise procedure in different places such as schools and work places, that is, researchers and/or educators make sure that the four steps are more or less followed. More research, subsequently, is needed to explore and verify the existence of stepwise learning processes in peoples' daily activities. This is another critical area in which situated learning research is required. The conceptions of apprenticeship and participation are largely based on ethnographic (anthropological) studies of learning and everyday activity, and those studies have repeatedly demonstrated how different schooling is from daily activities, where activities themselves and culture usually give meaning and purpose to what is learned.

In conclusion, the theoretical framework of situated learning can rely on a strong body of research from a broad range of different research areas, and in combination with research carried out in the area of embodied cognition and Galperin's ideas, the theoretical framework of situated learning could take the step from being 'educationally trivial' (Kirshner & Whitson, 1997) to 'educationally effective and necessary'.

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